

## / Descriptions

Silicon NPN transistor in a TO-92LM Plastic Package.

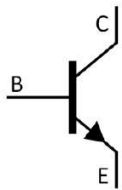
## / Features

Low saturation voltage, high speed switching time, complementary to 2SA1020.

## / Applications

Power amplifier and switching applications.

## / Equivalent Circuit



## / Pinning



PIN1 Base      PIN 2 Collector      PIN 3 Emitter

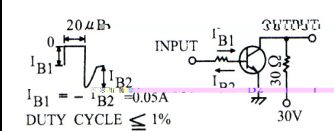
## / $h_{FE}$ Classifications & Marking

|                                    |        |         |         |
|------------------------------------|--------|---------|---------|
| $h_{FE}$ Classifications<br>Symbol | O      | Y       | G       |
| $h_{FE}$ Range                     | 70~140 | 120~240 | 200-400 |

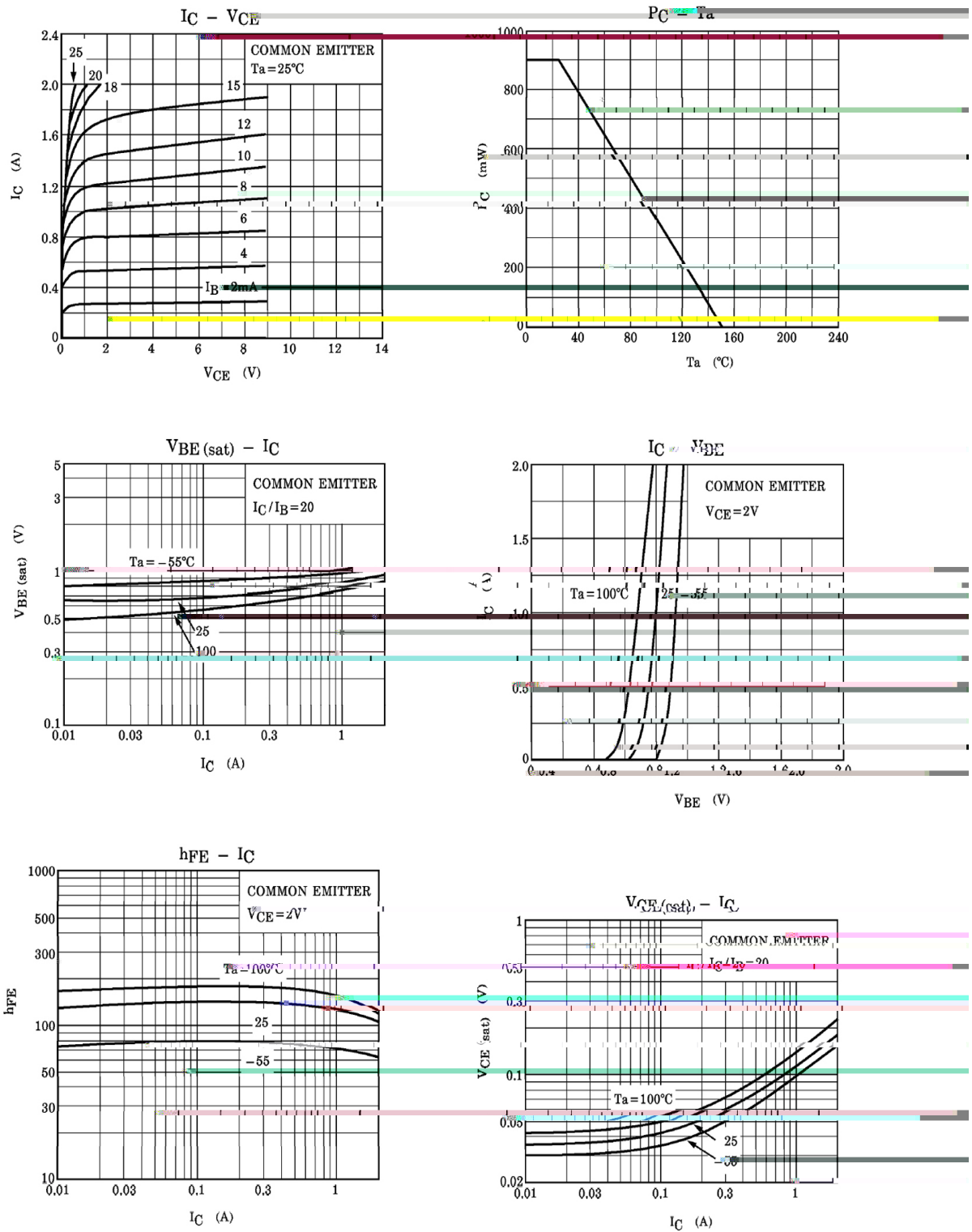
**/ Absolute Maximum Ratings(Ta=25 )**

| Parameter                    | Symbol    | Rating  | Unit |
|------------------------------|-----------|---------|------|
| Collector to Base Voltage    | $V_{CBO}$ | 50      | V    |
| Collector to Emitter Voltage | $V_{CEO}$ | 50      | V    |
| Emitter to Base Voltage      | $V_{EBO}$ | 5.0     | V    |
| Collector Current (DC)       | $I_C$     | 2.0     | A    |
| Collector Power Dissipation  | $P_C$     | 900     | mW   |
| Junction Temperature         | $T_j$     | 150     |      |
| Storage Temperature Range    | $T_{stg}$ | -55~150 |      |

**/ Electrical Characteristics(Ta=25 )**

| Parameter                               | Symbol               | Test Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                       | Min | Typ | Max | Unit |
|-----------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----|-----|-----|------|
| Collector to Emitter Breakdown Voltage  | V <sub>CEO</sub>     | I <sub>C</sub> =10mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I <sub>B</sub> =0     | 50  |     |     | V    |
| Collector Cut-Off Current               | I <sub>CBO</sub>     | V <sub>CB</sub> =50V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I <sub>E</sub> =0     |     |     | 1.0 | μA   |
| Emitter Cut-Off Current                 | I <sub>EBO</sub>     | V <sub>EB</sub> =5.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I <sub>C</sub> =0     |     |     | 1.0 | μA   |
| DC Current Gain                         | h <sub>FE(1)</sub>   | V <sub>CE</sub> =2.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I <sub>C</sub> =0.5A  | 70  |     | 400 |      |
|                                         | h <sub>FE(2)</sub>   | V <sub>CE</sub> =2.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I <sub>C</sub> =1.5A  | 40  |     |     |      |
| Collector to Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =1.0A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I <sub>B</sub> =0.05A |     |     | 0.5 | V    |
| Base to Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | I <sub>C</sub> =1.0A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I <sub>B</sub> =0.05A |     |     | 1.2 | V    |
| Transition Frequency                    | f <sub>T</sub>       | V <sub>CE</sub> =2.0V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I <sub>C</sub> =0.5A  | 50  | 100 |     | MHz  |
| Collector output capacitance            | C <sub>ob</sub>      | V <sub>CB</sub> =10V<br>f=1.0MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I <sub>E</sub> =0     |     | 30  | 45  | pF   |
| Turn-On Time                            | t <sub>on</sub>      |  <p>204B<sub>1</sub><br/>INPUT I<sub>B1</sub> I<sub>B2</sub> I<sub>B3</sub> I<sub>B4</sub> I<sub>B5</sub> I<sub>B6</sub> I<sub>B7</sub> I<sub>B8</sub> I<sub>B9</sub> I<sub>B10</sub> I<sub>B11</sub> I<sub>B12</sub> I<sub>B13</sub> I<sub>B14</sub> I<sub>B15</sub> I<sub>B16</sub> I<sub>B17</sub> I<sub>B18</sub> I<sub>B19</sub> I<sub>B20</sub> I<sub>B21</sub> I<sub>B22</sub> I<sub>B23</sub> I<sub>B24</sub> I<sub>B25</sub> I<sub>B26</sub> I<sub>B27</sub> I<sub>B28</sub> I<sub>B29</sub> I<sub>B30</sub> I<sub>B31</sub> I<sub>B32</sub> I<sub>B33</sub> I<sub>B34</sub> I<sub>B35</sub> I<sub>B36</sub> I<sub>B37</sub> I<sub>B38</sub> I<sub>B39</sub> I<sub>B40</sub> I<sub>B41</sub> I<sub>B42</sub> I<sub>B43</sub> I<sub>B44</sub> I<sub>B45</sub> I<sub>B46</sub> I<sub>B47</sub> I<sub>B48</sub> I<sub>B49</sub> I<sub>B50</sub> I<sub>B51</sub> I<sub>B52</sub> I<sub>B53</sub> I<sub>B54</sub> I<sub>B55</sub> I<sub>B56</sub> I<sub>B57</sub> I<sub>B58</sub> I<sub>B59</sub> I<sub>B60</sub> I<sub>B61</sub> I<sub>B62</sub> I<sub>B63</sub> I<sub>B64</sub> I<sub>B65</sub> I<sub>B66</sub> I<sub>B67</sub> I<sub>B68</sub> I<sub>B69</sub> I<sub>B70</sub> I<sub>B71</sub> I<sub>B72</sub> I<sub>B73</sub> I<sub>B74</sub> I<sub>B75</sub> I<sub>B76</sub> I<sub>B77</sub> I<sub>B78</sub> I<sub>B79</sub> I<sub>B80</sub> I<sub>B81</sub> I<sub>B82</sub> I<sub>B83</sub> I<sub>B84</sub> I<sub>B85</sub> I<sub>B86</sub> I<sub>B87</sub> I<sub>B88</sub> I<sub>B89</sub> I<sub>B90</sub> I<sub>B91</sub> I<sub>B92</sub> I<sub>B93</sub> I<sub>B94</sub> I<sub>B95</sub> I<sub>B96</sub> I<sub>B97</sub> I<sub>B98</sub> I<sub>B99</sub> I<sub>B100</sub> I<sub>B101</sub> I<sub>B102</sub> I<sub>B103</sub> I<sub>B104</sub> I<sub>B105</sub> I<sub>B106</sub> I<sub>B107</sub> I<sub>B108</sub> I<sub>B109</sub> I<sub>B110</sub> I<sub>B111</sub> I<sub>B112</sub> I<sub>B113</sub> I<sub>B114</sub> I<sub>B115</sub> I<sub>B116</sub> I<sub>B117</sub> I<sub>B118</sub> I<sub>B119</sub> I<sub>B120</sub> I<sub>B121</sub> I<sub>B122</sub> I<sub>B123</sub> I<sub>B124</sub> I<sub>B125</sub> I<sub>B126</sub> I<sub>B127</sub> I<sub>B128</sub> I<sub>B129</sub> I<sub>B130</sub> I<sub>B131</sub> I<sub>B132</sub> I<sub>B133</sub> I<sub>B134</sub> I<sub>B135</sub> I<sub>B136</sub> I<sub>B137</sub> I<sub>B138</sub> I<sub>B139</sub> I<sub>B140</sub> I<sub>B141</sub> I<sub>B142</sub> I<sub>B143</sub> I<sub>B144</sub> I<sub>B145</sub> I<sub>B146</sub> I<sub>B147</sub> I<sub>B148</sub> I<sub>B149</sub> I<sub>B150</sub> I<sub>B151</sub> I<sub>B152</sub> I<sub>B153</sub> I<sub>B154</sub> I<sub>B155</sub> I<sub>B156</sub> I<sub>B157</sub> I<sub>B158</sub> I<sub>B159</sub> I<sub>B160</sub> I<sub>B161</sub> I<sub>B162</sub> I<sub>B163</sub> I<sub>B164</sub> I<sub>B165</sub> I<sub>B166</sub> I<sub>B167</sub> I<sub>B168</sub> I<sub>B169</sub> I<sub>B170</sub> I<sub>B171</sub> I<sub>B172</sub> I<sub>B173</sub> I<sub>B174</sub> I<sub>B175</sub> I<sub>B176</sub> I<sub>B177</sub> I<sub>B178</sub> I<sub>B179</sub> I<sub>B180</sub> I<sub>B181</sub> I<sub>B182</sub> I<sub>B183</sub> I<sub>B184</sub> I<sub>B185</sub> I<sub>B186</sub> I<sub>B187</sub> I<sub>B188</sub> I<sub>B189</sub> I<sub>B190</sub> I<sub>B191</sub> I<sub>B192</sub> I<sub>B193</sub> I<sub>B194</sub> I<sub>B195</sub> I<sub>B196</sub> I<sub>B197</sub> I<sub>B198</sub> I<sub>B199</sub> I<sub>B200</sub> I<sub>B201</sub> I<sub>B202</sub> I<sub>B203</sub> I<sub>B204</sub> I<sub>B205</sub> I<sub>B206</sub> I<sub>B207</sub> I<sub>B208</sub> I<sub>B209</sub> I<sub>B210</sub> I<sub>B211</sub> I<sub>B212</sub> I<sub>B213</sub> I<sub>B214</sub> I<sub>B215</sub> I<sub>B216</sub> I<sub>B217</sub> I<sub>B218</sub> I<sub>B219</sub> I<sub>B220</sub> I<sub>B221</sub> I<sub>B222</sub> I<sub>B223</sub> I<sub>B224</sub> I<sub>B225</sub> I<sub>B226</sub> I<sub>B227</sub> I<sub>B228</sub> I<sub>B229</sub> I<sub>B230</sub> I<sub>B231</sub> I<sub>B232</sub> I<sub>B233</sub> I<sub>B234</sub> I<sub>B235</sub> I<sub>B236</sub> I<sub>B237</sub> I<sub>B238</sub> I<sub>B239</sub> I<sub>B240</sub> I<sub>B241</sub> I<sub>B242</sub> I<sub>B243</sub> I<sub>B244</sub> I<sub>B245</sub> I<sub>B246</sub> I<sub>B247</sub> I<sub>B248</sub> I<sub>B249</sub> I<sub>B250</sub> I<sub>B251</sub> I<sub>B252</sub> I<sub>B253</sub> I<sub>B254</sub> I<sub>B255</sub> I<sub>B256</sub> I<sub>B257</sub> I<sub>B258</sub> I<sub>B259</sub> I<sub>B260</sub> I<sub>B261</sub> I<sub>B262</sub> I<sub>B263</sub> I<sub>B264</sub> I<sub>B265</sub> I<sub>B266</sub> I<sub>B267</sub> I<sub>B268</sub> I<sub>B269</sub> I<sub>B270</sub> I<sub>B271</sub> I<sub>B272</sub> I<sub>B273</sub> I<sub>B274</sub> I<sub>B275</sub> I<sub>B276</sub> I<sub>B277</sub> I<sub>B278</sub> I<sub>B279</sub> I<sub>B280</sub> I<sub>B281</sub> I<sub>B282</sub> I<sub>B283</sub> I<sub>B284</sub> I<sub>B285</sub> I<sub>B286</sub> I<sub>B287</sub> I<sub>B288</sub> I<sub>B289</sub> I<sub>B290</sub> I<sub>B291</sub> I<sub>B292</sub> I<sub>B293</sub> I<sub>B294</sub> I<sub>B295</sub> I<sub>B296</sub> I<sub>B297</sub> I<sub>B298</sub> I<sub>B299</sub> I<sub>B300</sub> I<sub>B301</sub> I<sub>B302</sub> I<sub>B303</sub> I<sub>B304</sub> I<sub>B305</sub> I<sub>B306</sub> I<sub>B307</sub> I<sub>B308</sub> I<sub>B309</sub> I<sub>B310</sub> I<sub>B311</sub> I<sub>B312</sub> I<sub>B313</sub> I<sub>B314</sub> I<sub>B315</sub> I<sub>B316</sub> I<sub>B317</sub> I<sub>B318</sub> I<sub>B319</sub> I<sub>B320</sub> I<sub>B321</sub> I<sub>B322</sub> I<sub>B323</sub> I<sub>B324</sub> I<sub>B325</sub> I<sub>B326</sub> I<sub>B327</sub> I<sub>B328</sub> I<sub>B329</sub> I<sub>B330</sub> I<sub>B331</sub> I<sub>B332</sub> I<sub>B333</sub> I<sub>B334</sub> I<sub>B335</sub> I<sub>B336</sub> I<sub>B337</sub> I<sub>B338</sub> I<sub>B339</sub> I<sub>B340</sub> I<sub>B341</sub> I<sub>B342</sub> I<sub>B343</sub> I<sub>B344</sub> I<sub>B345</sub> I<sub>B346</sub> I<sub>B347</sub> I<sub>B348</sub> I<sub>B349</sub> I<sub>B350</sub> I<sub>B351</sub> I<sub>B352</sub> I<sub>B353</sub> I<sub>B354</sub> I<sub>B355</sub> I<sub>B356</sub> I<sub>B357</sub> I<sub>B358</sub> I<sub>B359</sub> I<sub>B360</sub> I<sub>B361</sub> I<sub>B362</sub> I<sub>B363</sub> I<sub>B364</sub> I<sub>B365</sub> I<sub>B366</sub> I<sub>B367</sub> I<sub>B368</sub> I<sub>B369</sub> I<sub>B370</sub> I<sub>B371</sub> I<sub>B372</sub> I<sub>B373</sub> I<sub>B374</sub> I<sub>B375</sub> I<sub>B376</sub> I<sub>B377</sub> I<sub>B378</sub> I<sub>B379</sub> I<sub>B380</sub> I<sub>B381</sub> I<sub>B382</sub> I<sub>B383</sub> I<sub>B384</sub> I<sub>B385</sub> I<sub>B386</sub> I<sub>B387</sub> I<sub>B388</sub> I<sub>B389</sub> I<sub>B390</sub> I<sub>B391</sub> I<sub>B392</sub> I<sub>B393</sub> I<sub>B394</sub> I<sub>B395</sub> I<sub>B396</sub> I<sub>B397</sub> I<sub>B398</sub> I<sub>B399</sub> I<sub>B400</sub> I<sub>B401</sub> I<sub>B402</sub> I<sub>B403</sub> I<sub>B404</sub> I<sub>B405</sub> I<sub>B406</sub> I<sub>B407</sub> I<sub>B408</sub> I<sub>B409</sub> I<sub>B410</sub> I<sub>B411</sub> I<sub>B412</sub> I<sub>B413</sub> I<sub>B414</sub> I<sub>B415</sub> I<sub>B416</sub> I<sub>B417</sub> I<sub>B418</sub> I<sub>B419</sub> I<sub>B420</sub> I<sub>B421</sub> I<sub>B422</sub> I<sub>B423</sub> I<sub>B424</sub> I<sub>B425</sub> I<sub>B426</sub> I<sub>B427</sub> I<sub>B428</sub> I<sub>B429</sub> I<sub>B430</sub> I<sub>B431</sub> I<sub>B432</sub> I<sub>B433</sub> I<sub>B434</sub> I<sub>B435</sub> I<sub>B436</sub> I<sub>B437</sub> I<sub>B438</sub> I<sub>B439</sub> I<sub>B440</sub> I<sub>B441</sub> I<sub>B442</sub> I<sub>B443</sub> I<sub>B444</sub> I<sub>B445</sub> I<sub>B446</sub> I<sub>B447</sub> I<sub>B448</sub> I<sub>B449</sub> I<sub>B450</sub> I<sub>B451</sub> I<sub>B452</sub> I<sub>B453</sub> I<sub>B454</sub> I<sub>B455</sub> I<sub>B456</sub> I<sub>B457</sub> I<sub>B458</sub> I<sub>B459</sub> I<sub>B460</sub> I<sub>B461</sub> I<sub>B462</sub> I<sub>B463</sub> I<sub>B464</sub> I<sub>B465</sub> I<sub>B466</sub> I<sub>B467</sub> I<sub>B468</sub> I<sub>B469</sub> I<sub>B470</sub> I<sub>B471</sub> I<sub>B472</sub> I<sub>B473</sub> I<sub>B474</sub> I<sub>B475</sub> I<sub>B476</sub> I<sub>B477</sub> I<sub>B478</sub> I<sub>B479</sub> I<sub>B480</sub> I<sub>B481</sub> I<sub>B482</sub> I<sub>B483</sub> I<sub>B484</sub> I<sub>B485</sub> I<sub>B486</sub> I<sub>B487</sub> I<sub>B488</sub> I<sub>B489</sub> I<sub>B490</sub> I<sub>B491</sub> I<sub>B492</sub> I<sub>B493</sub> I<sub>B494</sub> I<sub>B495</sub> I<sub>B496</sub> I<sub>B497</sub> I<sub>B498</sub> I<sub>B499</sub> I<sub>B500</sub> I<sub>B501</sub> I<sub>B502</sub> I<sub>B503</sub> I<sub>B504</sub> I<sub>B505</sub> I<sub>B506</sub> I<sub>B507</sub> I<sub>B508</sub> I<sub>B509</sub> I<sub>B510</sub> I<sub>B511</sub> I<sub>B512</sub> I<sub>B513</sub> I<sub>B514</sub> I<sub>B515</sub> I<sub>B516</sub> I<sub>B517</sub> I<sub>B518</sub> I<sub>B519</sub> I<sub>B520</sub> I<sub>B521</sub> I<sub>B522</sub> I<sub>B523</sub> I<sub>B524</sub> I<sub>B525</sub> I<sub>B526</sub> I<sub>B527</sub> I<sub>B528</sub> I<sub>B529</sub> I<sub>B530</sub> I<sub>B531</sub> I<sub>B532</sub> I<sub>B533</sub> I<sub>B534</sub> I<sub>B535</sub> I<sub>B536</sub> I<sub>B537</sub> I<sub>B538</sub> I<sub>B539</sub> I<sub>B540</sub> I<sub>B541</sub> I<sub>B542</sub> I<sub>B543</sub> I<sub>B544</sub> I<sub>B545</sub> I<sub>B546</sub> I<sub>B547</sub> I<sub>B548</sub> I<sub>B549</sub> I<sub>B550</sub> I<sub>B551</sub> I<sub>B552</sub> I<sub>B553</sub> I<sub>B554</sub> I<sub>B555</sub> I<sub>B556</sub> I<sub>B557</sub> I<sub>B558</sub> I<sub>B559</sub> I<sub>B560</sub> I<sub>B561</sub> I<sub>B562</sub> I<sub>B563</sub> I<sub>B564</sub> I<sub>B565</sub> I<sub>B566</sub> I<sub>B567</sub> I<sub>B568</sub> I<sub>B569</sub> I<sub>B570</sub> I<sub>B571</sub> I<sub>B572</sub> I<sub>B573</sub> I<sub>B574</sub> I<sub>B575</sub> I<sub>B576</sub> I<sub>B577</sub> I<sub>B578</sub> I<sub>B579</sub> I<sub>B580</sub> I<sub>B581</sub> I<sub>B582</sub> I<sub>B583</sub> I<sub>B584</sub> I<sub>B585</sub> I<sub>B586</sub> I<sub>B587</sub> I<sub>B588</sub> I<sub>B589</sub> I<sub>B590</sub> I<sub>B591</sub> I<sub>B592</sub> I<sub>B593</sub> I<sub>B594</sub> I<sub>B595</sub> I<sub>B596</sub> I<sub>B597</sub> I<sub>B598</sub> I<sub>B599</sub> I<sub>B600</sub> I<sub>B601</sub> I<sub>B602</sub> I<sub>B603</sub> I<sub>B604</sub> I<sub>B605</sub> I<sub>B606</sub> I<sub>B607</sub> I<sub>B608</sub> I<sub>B609</sub> I<sub>B610</sub> I<sub>B611</sub> I<sub>B612</sub> I<sub>B613</sub> I<sub>B614</sub> I<sub>B615</sub> I<sub>B616</sub> I<sub>B617</sub> I<sub>B618</sub> I<sub>B619</sub> I<sub>B620</sub> I<sub>B621</sub> I<sub>B622</sub> I<sub>B623</sub> I<sub>B624</sub> I<sub>B625</sub> I<sub>B626</sub> I<sub>B627</sub> I<sub>B628</sub> I<sub>B629</sub> I<sub>B630</sub> I<sub>B631</sub> I<sub>B632</sub> I<sub>B633</sub> I<sub>B634</sub> I<sub>B635</sub> I<sub>B636</sub> I<sub>B637</sub> I<sub>B638</sub> I<sub>B639</sub> I<sub>B640</sub> I<sub>B641</sub> I<sub>B642</sub> I<sub>B643</sub> I<sub>B644</sub> I<sub>B645</sub> I<sub>B646</sub> I<sub>B647</sub> I<sub>B648</sub> I<sub>B649</sub> I<sub>B650</sub> I<sub>B651</sub> I<sub>B652</sub> I<sub>B653</sub> I<sub>B654</sub> I<sub>B655</sub> I<sub>B656</sub> I<sub>B657</sub> I<sub>B658</sub> I<sub>B659</sub> I<sub>B660</sub> I<sub>B661</sub> I<sub>B662</sub> I<sub>B663</sub> I<sub>B664</sub> I<sub>B665</sub> I<sub>B666</sub> I<sub>B667</sub> I<sub>B668</sub> I<sub>B669</sub> I<sub>B670</sub> I<sub>B671</sub> I<sub>B672</sub> I<sub>B673</sub> I<sub>B674</sub> I<sub>B675</sub> I<sub>B676</sub> I<sub>B677</sub> I<sub>B678</sub> I<sub>B679</sub> I<sub>B680</sub> I<sub>B681</sub> I<sub>B682</sub> I<sub>B683</sub> I<sub>B684</sub> I<sub>B685</sub> I<sub>B686</sub> I<sub>B687</sub> I<sub>B688</sub> I<sub>B689</sub> I<sub>B690</sub> I<sub>B691</sub> I<sub>B692</sub> I<sub>B693</sub> I<sub>B694</sub> I<sub>B695</sub> I<sub>B696</sub> I<sub>B697</sub> I<sub>B698</sub> I<sub>B699</sub> I<sub>B700</sub> I<sub>B701</sub> I<sub>B702</sub> I<sub>B703</sub> I<sub>B704</sub> I<sub>B705</sub> I<sub>B706</sub> I<sub>B707</sub> I<sub>B708</sub> I<sub>B709</sub> I<sub>B710</sub> I<sub>B711</sub> I<sub>B712</sub> I<sub>B713</sub> I<sub>B714</sub> I<sub>B715</sub> I<sub>B716</sub> I<sub>B717</sub> I<sub>B718</sub> I<sub>B719</sub> I<sub>B720</sub> I<sub>B721</sub> I<sub>B722</sub> I<sub>B723</sub> I<sub>B724</sub> I<sub>B725</sub> I<sub>B726</sub> I<sub>B727</sub> I<sub>B728</sub> I<sub>B729</sub> I<sub>B730</sub> I<sub>B731</sub> I<sub>B732</sub> I<sub>B733</sub> I<sub>B734</sub> I<sub>B735</sub> I<sub>B736</sub> I<sub>B737</sub> I<sub>B738</sub> I<sub>B739</sub> I<sub>B740</sub> I<sub>B741</sub> I<sub>B742</sub> I<sub>B743</sub> I<sub>B744</sub> I<sub>B745</sub> I<sub>B746</sub> I<sub>B747</sub> I<sub>B748</sub> I<sub>B749</sub> I<sub>B750</sub> I<sub>B751</sub> I<sub>B752</sub> I<sub>B753</sub> I<sub>B754</sub> I<sub>B755</sub> I<sub>B756</sub> I<sub>B757</sub> I<sub>B758</sub> I<sub>B759</sub> I<sub>B760</sub> I<sub>B761</sub> I<sub>B762</sub> I<sub>B763</sub> I<sub>B764</sub> I<sub>B765</sub> I<sub>B766</sub> I<sub>B767</sub> I<sub>B768</sub> I<sub>B769</sub> I<sub>B770</sub> I<sub>B771</sub> I<sub>B772</sub> I<sub>B773</sub> I<sub>B774</sub> I<sub>B775</sub> I<sub>B776</sub> I<sub>B777</sub> I<sub>B778</sub> I<sub>B779</sub> I<sub>B780</sub> I<sub>B781</sub> I<sub>B782</sub> I<sub>B783</sub> I<sub>B784</sub> I<sub>B785</sub> I<sub>B786</sub> I<sub>B787</sub> I<sub>B788</sub> I<sub>B789</sub> I<sub>B790</sub> I<sub>B791</sub> I<sub>B792</sub> I<sub>B793</sub> I<sub>B794</sub> I<sub>B795</sub> I<sub>B796</sub> I<sub>B797</sub> I<sub>B798</sub> I<sub>B799</sub> I<sub>B800</sub> I<sub>B801</sub> I<sub>B802</sub> I<sub>B803</sub> I<sub>B804</sub> I<sub>B805</sub> I<sub>B806</sub> I<sub>B807</sub> I<sub>B808</sub> I<sub>B809</sub> I<sub>B810</sub> I<sub>B811</sub> I<sub>B812</sub> I<sub>B813</sub> I<sub>B814</sub> I<sub>B815</sub> I<sub>B816</sub> I<sub>B817</sub> I<sub>B818</sub> I<sub>B819</sub> I<sub>B820</sub> I<sub>B821</sub> I<sub>B822</sub> I<sub>B823</sub> I<sub>B824</sub> I<sub>B825</sub> I<sub>B826</sub> I<sub>B827</sub> I<sub>B828</sub> I<sub>B829</sub> I<sub>B830</sub> I<sub>B831</sub> I<sub>B832</sub> I<sub>B833</sub> I<sub>B834</sub> I<sub>B835</sub> I<sub>B836</sub> I<sub>B837</sub> I<sub>B838</sub> I<sub>B839</sub> I<sub>B840</sub> I<sub>B841</sub> I<sub>B842</sub> I<sub>B843</sub> I<sub>B844</sub> I<sub>B845</sub> I<sub>B846</sub> I<sub>B847</sub> I<sub>B848</sub> I<sub>B849</sub> I<sub>B850</sub> I<sub>B851</sub> I<sub>B852</sub> I<sub>B853</sub> I<sub>B854</sub> I<sub>B855</sub> I<sub>B856</sub> I<sub>B857</sub> I<sub>B858</sub> I<sub>B859</sub> I<sub>B860</sub> I<sub>B861</sub> I<sub>B862</sub> I<sub>B863</sub> I<sub>B864</sub> I<sub>B865</sub> I<sub>B866</sub> I<sub>B867</sub> I<sub>B868</sub> I<sub>B869</sub> I<sub>B870</sub> I<sub>B871</sub> I<sub>B872</sub> I<sub>B873</sub> I<sub>B874</sub> I<sub>B875</sub> I<sub>B876</sub> I<sub>B877</sub> I<sub>B878</sub> I<sub>B879</sub> I<sub>B880</sub> I<sub>B881</sub> I<sub>B882</sub> I<sub>B883</sub> I<sub>B884</sub> I<sub>B885</sub> I<sub>B886</sub> I<sub>B887</sub> I<sub>B888</sub> I<sub>B889</sub> I<sub>B890</sub> I<sub>B891</sub> I<sub>B892</sub> I<sub>B893</sub> I<sub>B894</sub> I<sub>B895</sub> I<sub>B896</sub> I<sub>B897</sub> I<sub>B898</sub> I<sub>B899</sub> I<sub>B900</sub> I<sub>B901</sub> I<sub>B902</sub> I<sub>B903</sub> I<sub>B904</sub> I<sub>B905</sub> I<sub>B906</sub> I<sub>B907</sub> I<sub>B908</sub> I<sub>B909</sub> I<sub>B910</sub> I<sub>B911</sub> I<sub>B912</sub> I<sub>B913</sub> I<sub>B914</sub> I<sub>B915</sub> I<sub>B916</sub> I<sub>B917</sub> I<sub>B918</sub> I<sub>B919</sub> I<sub>B920</sub> I<sub>B921</sub> I<sub>B922</sub> I<sub>B923</sub> I<sub>B924</sub> I<sub>B925</sub> I<sub>B926</sub> I<sub>B927</sub> I<sub>B928</sub> I<sub>B929</sub> I<sub>B930</sub> I<sub>B931</sub> I<sub>B932</sub> I<sub>B933</sub> I<sub>B934</sub> I<sub>B935</sub> I<sub>B936</sub> I<sub>B937</sub> I<sub>B938</sub> I<sub>B939</sub> I<sub>B940</sub> I<sub>B941</sub> I<sub>B942</sub> I<sub>B943</sub> I<sub>B944</sub> I<sub>B945</sub> I<sub>B946</sub> I<sub>B947</sub> I<sub>B948</sub> I<sub>B949</sub> I<sub>B950</sub> I<sub>B951</sub> I<sub>B952</sub> I<sub>B953</sub> I<sub>B954</sub> I<sub>B955</sub> I<sub>B956</sub> I<sub>B957</sub> I<sub>B958</sub> I<sub>B959</sub> I<sub>B960</sub> I<sub>B961</sub> I<sub>B962</sub> I<sub>B963</sub> I<sub>B964</sub> I<sub>B965</sub> I<sub>B966</sub> I<sub>B967</sub> I<sub>B968</sub> I<sub>B969</sub> I<sub>B970</sub> I<sub>B971</sub> I<sub>B972</sub> I<sub>B973</sub> I<sub>B974</sub> I<sub>B975</sub> I<sub>B976</sub> I<sub>B977</sub> I<sub>B978</sub> I<sub>B979</sub> I<sub>B980</sub> I<sub>B981</sub> I<sub>B982</sub> I<sub>B983</sub> I<sub>B984</sub> I<sub>B985</sub> I<sub>B986</sub> I<sub>B987</sub> I<sub>B988</sub> I<sub>B989</sub> I<sub>B990</sub> I<sub>B991</sub> I<sub>B992</sub> I<sub>B993</sub> I<sub>B994</sub> I<sub>B995</sub> I<sub>B996</sub> I<sub>B997</sub> I<sub>B998</sub> I<sub>B999</sub> I<sub>B1000</sub> I<sub>B1001</sub> I<sub>B1002</sub> I<sub>B1003</sub> I<sub>B1004</sub> I<sub>B1005</sub> I<sub>B1006</sub> I<sub>B1007</sub> I<sub>B1008</sub> I<sub>B1009</sub> I<sub>B1010</sub> I<sub>B1011</sub> I<sub>B1012</sub> I<sub>B1013</sub> I<sub>B1014</sub> I<sub>B1015</sub> I<sub>B1016</sub> I<sub>B1017</sub> I<sub>B1018</sub> I<sub>B1019</sub> I<sub>B1020</sub> I<sub>B1021</sub> I<sub>B1022</sub> I<sub>B1023</sub> I<sub>B1024</sub> I<sub>B1025</sub> I<sub>B1026</sub> I<sub>B1027</sub> I<sub>B1028</sub> I<sub>B1029</sub> I<sub>B1030</sub> I<sub>B1031</sub> I<sub>B1032</sub> I<sub>B1033</sub> I<sub>B1034</sub> I<sub>B1035</sub> I<sub>B1036</sub> I<sub>B1037</sub> I<sub>B1038</sub> I<sub>B1039</sub> I<sub>B1040</sub> I<sub>B1041</sub> I<sub>B1042</sub> I<sub>B1043</sub> I<sub>B1044</sub> I<sub>B1045</sub> I<sub>B1046</sub> I<sub>B1047</sub> I<sub>B1048</sub> I<sub>B1049</sub> I<sub>B1050</sub> I<sub>B1051</sub> I<sub>B1052</sub> I<sub>B1053</sub> I<sub>B1054</sub> I<sub>B1055</sub> I<sub>B1056</sub> I<sub>B1057</sub> I<sub>B1058</sub> I<sub>B1059</sub> I<sub>B1060</sub> I<sub>B1061</sub> I<sub>B1062</sub> I<sub>B1063</sub> I<sub>B1064</sub> I<sub>B1065</sub> I<sub>B1066</sub> I<sub>B1067</sub> I<sub>B1068</sub> I<sub>B1069</sub> I<sub>B1070</sub> I<sub>B1071</sub> I<sub>B1072</sub> I<sub>B1073</sub> I<sub>B1074</sub> I<sub>B1075</sub> I<sub>B1076</sub> I<sub>B1077</sub> I<sub>B1078</sub> I<sub>B1079</sub> I<sub>B1080</sub> I<sub>B1081</sub> I<sub>B1082</sub> I<sub>B1083</sub> I<sub>B1084</sub> I<sub>B1085</sub> I<sub>B1086</sub> I<sub>B1087</sub> I<sub>B1088</sub> I<sub>B1089</sub> I<sub>B1090</sub> I<sub>B1091</sub> I<sub>B1092</sub> I<sub>B1093</sub> I<sub>B1</sub></p> |                       |     |     |     |      |

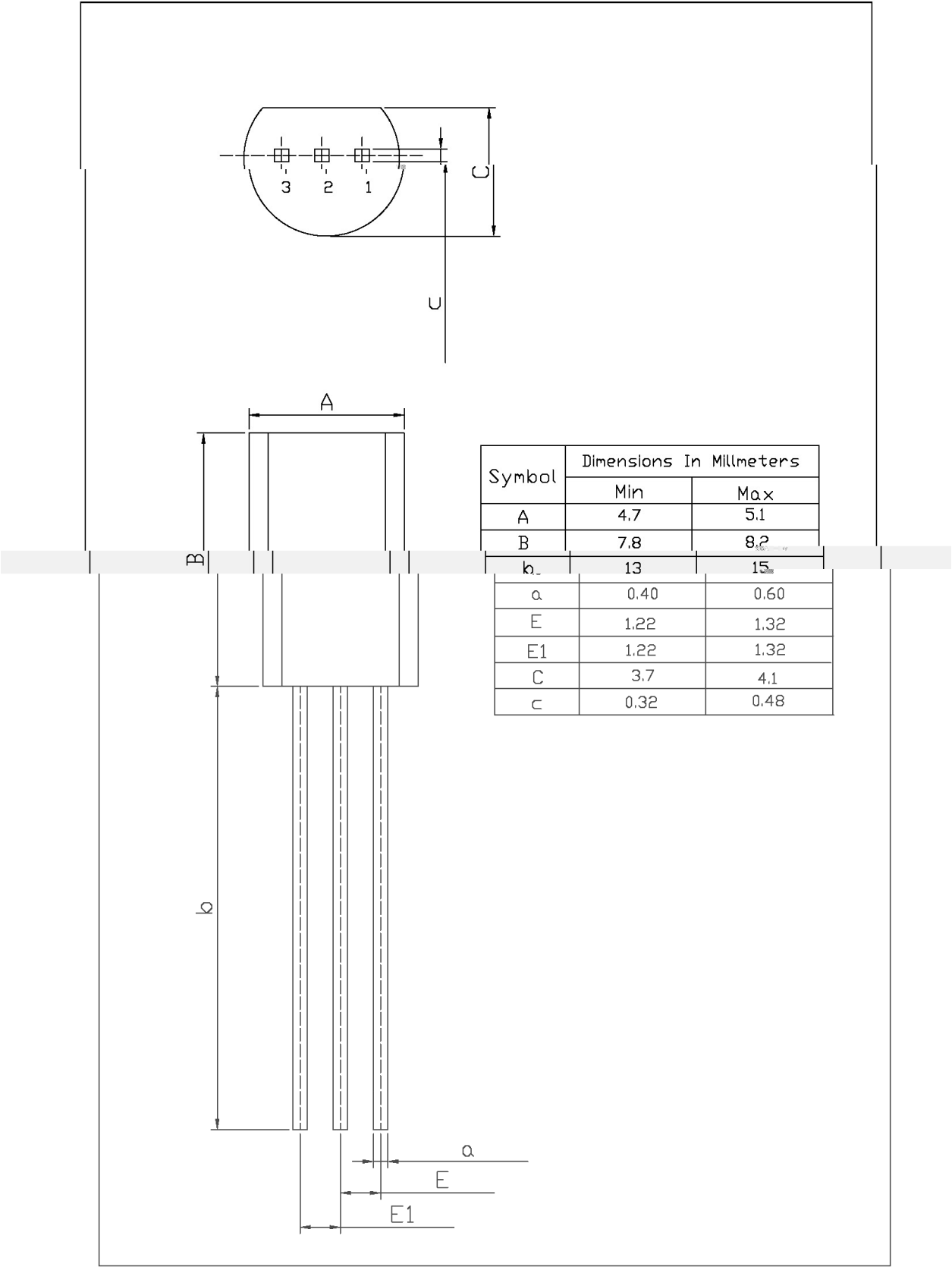
**/ Electrical Characteristic Curve**



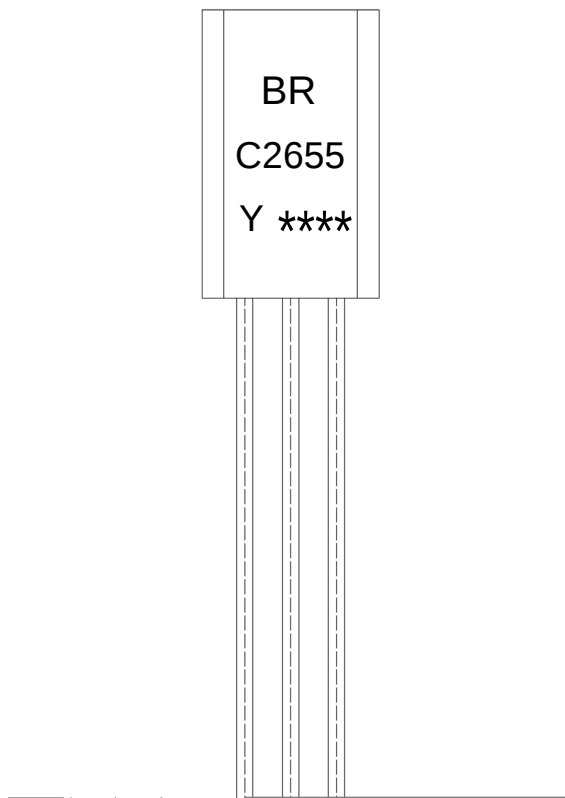
/ Package Dimensions

TO-92LM

Unit: mm



/ Marking Instructions



Note:

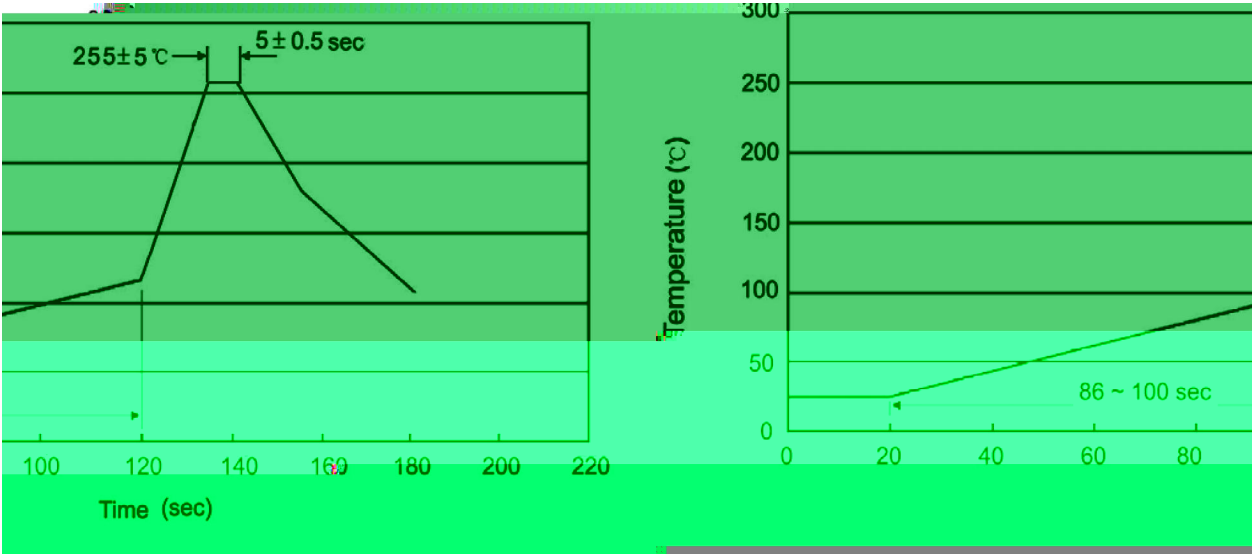
BR: Company Code.

C2655: Product Type.

Y:  $h_{FE}$  Classifications Symbol

\*\*\*\*: Lot No. Code, code change with Lot No.

( ) / Temperature Profile for Dip Soldering(Pb-Free)



Note:

- |   |     |     |    |         |                                         |
|---|-----|-----|----|---------|-----------------------------------------|
| 1 | 25  | 150 | 60 | 90sec;  | 1.Preheating:25~150 , Time:60~90sec.    |
| 2 | 255 | 5   | 5  | 0.5sec; | 2.Peak Temp.:255 5 , Duration:5 0.5sec. |
| 3 |     | 2   | 10 | /sec.   | 3. Cooling Speed: 2~10 /sec.            |

/ Resistance to Soldering Heat Test Conditions

270 5                      10 1 sec.                      Temp.:270±5                      Time:10±1 sec

/ Packaging SPEC.

/ BULK

| Package Type<br>封装形式 | Units 包装数量       |                       |                        |                              |                        | Dimension 包装尺寸 (unit: mm3) |             |             |
|----------------------|------------------|-----------------------|------------------------|------------------------------|------------------------|----------------------------|-------------|-------------|
|                      | Units/Bag<br>只/袋 | Bags/Inner Box<br>袋/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Bag 袋                      | Inner Box 盒 | Outer Box 箱 |
| TO-92LM              | 1,000            | 8                     | 8,000                  | 5                            | 40,000                 | 135×190                    | 237×172×102 | 560×245×195 |

/ AMMO

| Package Type<br>封装形式 | Units 包装数量         |                        |                         |                              |                        | Dimension 包装尺寸 (unit: mm3) |                                  |
|----------------------|--------------------|------------------------|-------------------------|------------------------------|------------------------|----------------------------|----------------------------------|
|                      | Units/tape<br>只/纸带 | Tape/Inner Box<br>纸带/盒 | Rows/Inner Box<br>纸带层/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Inner Box 盒                | Outer Box 箱                      |
| TO-92LM              | 2,500              | 1                      | 100                     | 10                           | 25,000                 | 328×230×42                 | 小箱 480×346×235<br>大箱 547×407×268 |

/ Notices