

/ Descriptions

Silicon NPN transistor in a SOT-23 Plastic Package.

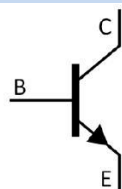
/ Features

Low C<sub>ob</sub>, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

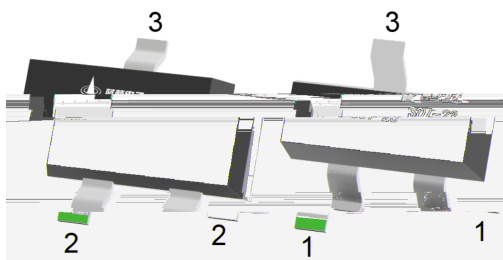
/ Applications

General amplifier, Meet the stringent requirements of automotive applications.

/ Equivalent Circuit



/ Pinning



PIN1    Base                      PIN 2    Emitter                      PIN 3    Collector

/ h<sub>FE</sub> Classifications & Marking

| h <sub>FE</sub> Classifications<br>Symbol | Q          | R          | S          |
|-------------------------------------------|------------|------------|------------|
| h <sub>FE</sub> Range                     | 120    270 | 180    390 | 270    560 |
| Marking                                   | QBQ        | QBR        | QBS        |

| @ f<br>Parameter             | ... Z<br>Symbol  | f ><br>Rating | % y<br>Unit |
|------------------------------|------------------|---------------|-------------|
| Collector to Base Voltage    | V <sub>CBO</sub> | 60            | V           |
| Collector to Emitter Voltage | V <sub>CEO</sub> | 50            | V           |
| Emitter to Base Voltage      | V <sub>EBO</sub> | 7.0           | V           |
| Collector Current            | I <sub>C</sub>   | 150           | mA          |
| Collector Power Dissipation  | P <sub>C</sub>   | 200           | mW          |
| Junction Temperature         | T <sub>j</sub>   | 150           |             |
| Storage Temperature Range    | T <sub>stg</sub> | -55 150       |             |

| @ f<br>Parameter                        | ... Z<br>Symbol      | y i Ú ^<br>Test Conditions                           | Â 4 ><br>Min | Á ° ><br>Typ | Â Ý ><br>Max | % y<br>Unit |
|-----------------------------------------|----------------------|------------------------------------------------------|--------------|--------------|--------------|-------------|
| Collector- Base Breakdown Voltage       | V <sub>CBO</sub>     | I <sub>C</sub> =50 A                                 | 60           |              |              | V           |
| Collector-Emitter Breakdown Voltage     | V <sub>CEO</sub>     | I <sub>C</sub> =1.0mA                                | 50           |              |              | V           |
| Emitter-Base Breakdown Voltage          | V <sub>EBO</sub>     | I <sub>E</sub> =50 A                                 | 7.0          |              |              | V           |
| Collector Cut-Off Current               | I <sub>CBO</sub>     | V <sub>CB</sub> =60V                                 |              |              | 0.1          | A           |
| Emitter Base Cut-Off Current            | I <sub>EBO</sub>     | V <sub>EB</sub> =7.0V                                |              |              | 0.1          | A           |
| DC Current Gain                         | h <sub>FE</sub>      | V <sub>CE</sub> =6.0V I <sub>C</sub> =1.0mA          | 120          |              | 560          |             |
| Collector to Emitter Saturation Voltage | V <sub>CE(sat)</sub> | I <sub>C</sub> =50mA I <sub>B</sub> =5.0mA           |              |              | 0.4          | V           |
| Transition Frequency                    | f <sub>T</sub>       | V <sub>CE</sub> =12V f=100MHz I <sub>E</sub> =-2.0mA |              | 180          |              | MHz         |
| Collector Output Capacitance            | C <sub>ob</sub>      | V <sub>CB</sub> =12V f=1.0MHz I <sub>E</sub> =0      |              | 2.0          | 3.5          | pF          |

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Ø □ = ) ¢ / Package Dimensions

, M y f / Marking Instructions

QBQ

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7 y h<sub>FE</sub> ) W A

Note:

Q: Automobile halogen-free product Code

( y Product Type Code

7 y h<sub>FE</sub> Classifications Symbol

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Note:

10•Ä½“† 150½200 - kž• 60½120sec; 1.Preheating:150~200TT