/ Descriptions

Silicon NPN transistor in a TO-220F Plastic Package.

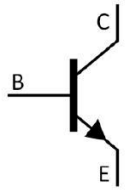
/ Features

Wide ASO, low saturation voltage, high breakdown voltage.

/ Applications

Low frequency power amplifier.

/ Equivalent Circuit



/ Pinning

PIN1 Base PIN 2 Collector PIN 3 Emitter

/ h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	Q	R	S
h_{FE} Range	70～140	100～200	140～280

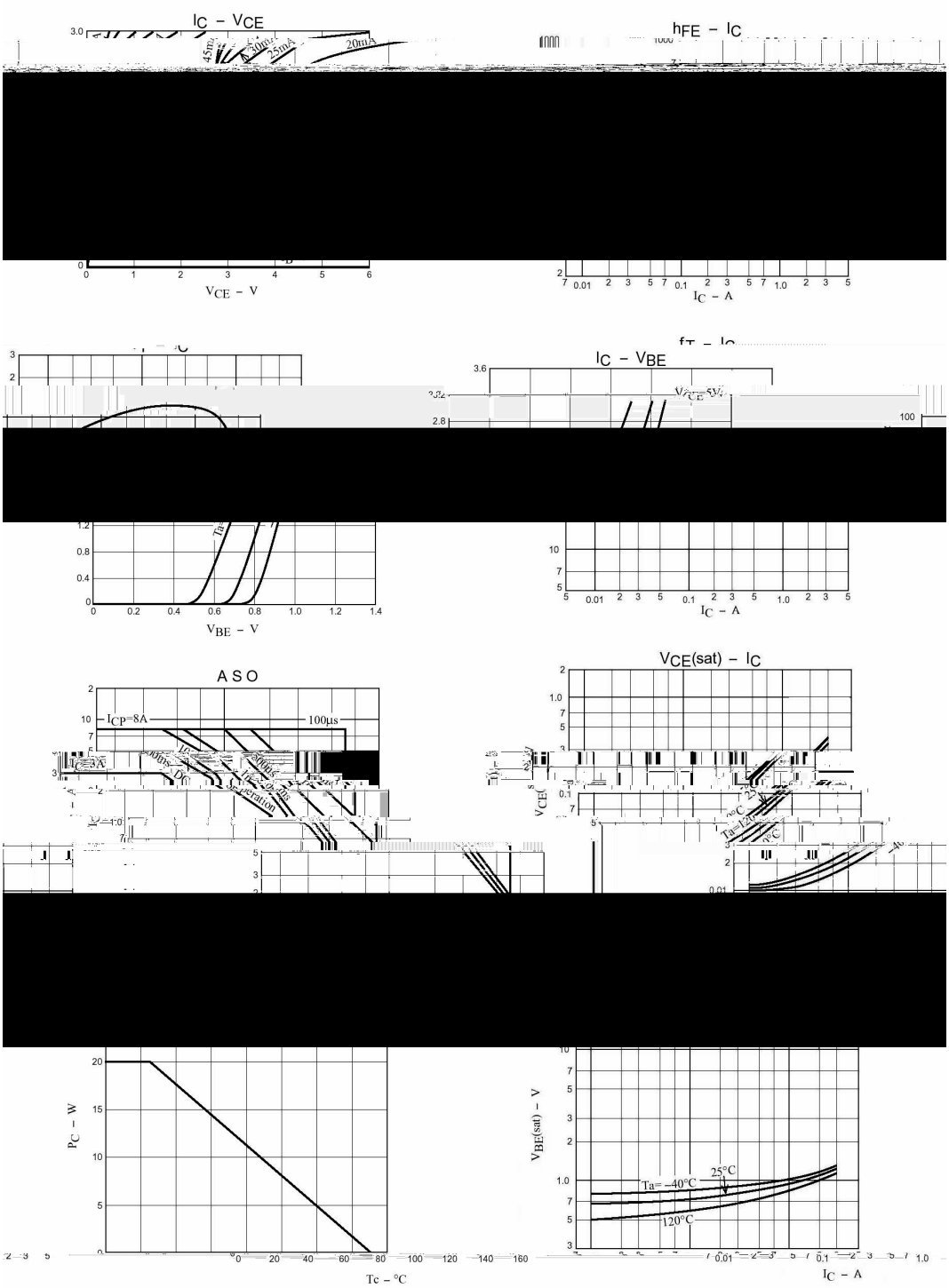
/ Absolute Maximum Ratings(Ta=25)

Parameter	Symbol	Rating	Unit
Collector to Base Voltage	V_{CBO}	60	V
Collector to Emitter Voltage	V_{CEO}	60	V
Emitter to Base Voltage	V_{EBO}	6.0	V
Collector Current - Continuous	I_C	3.0	A
Collector Current – Continuous(Pulse)	I_{CP}	8.0	A
Collector Power Dissipation	P_C	2.0	W
Collector Power Dissipation	P_C (T_c=25)	20	W
Junction Temperature	T_j	150	
Storage Temperature Range	T_{stg}	-55～150	

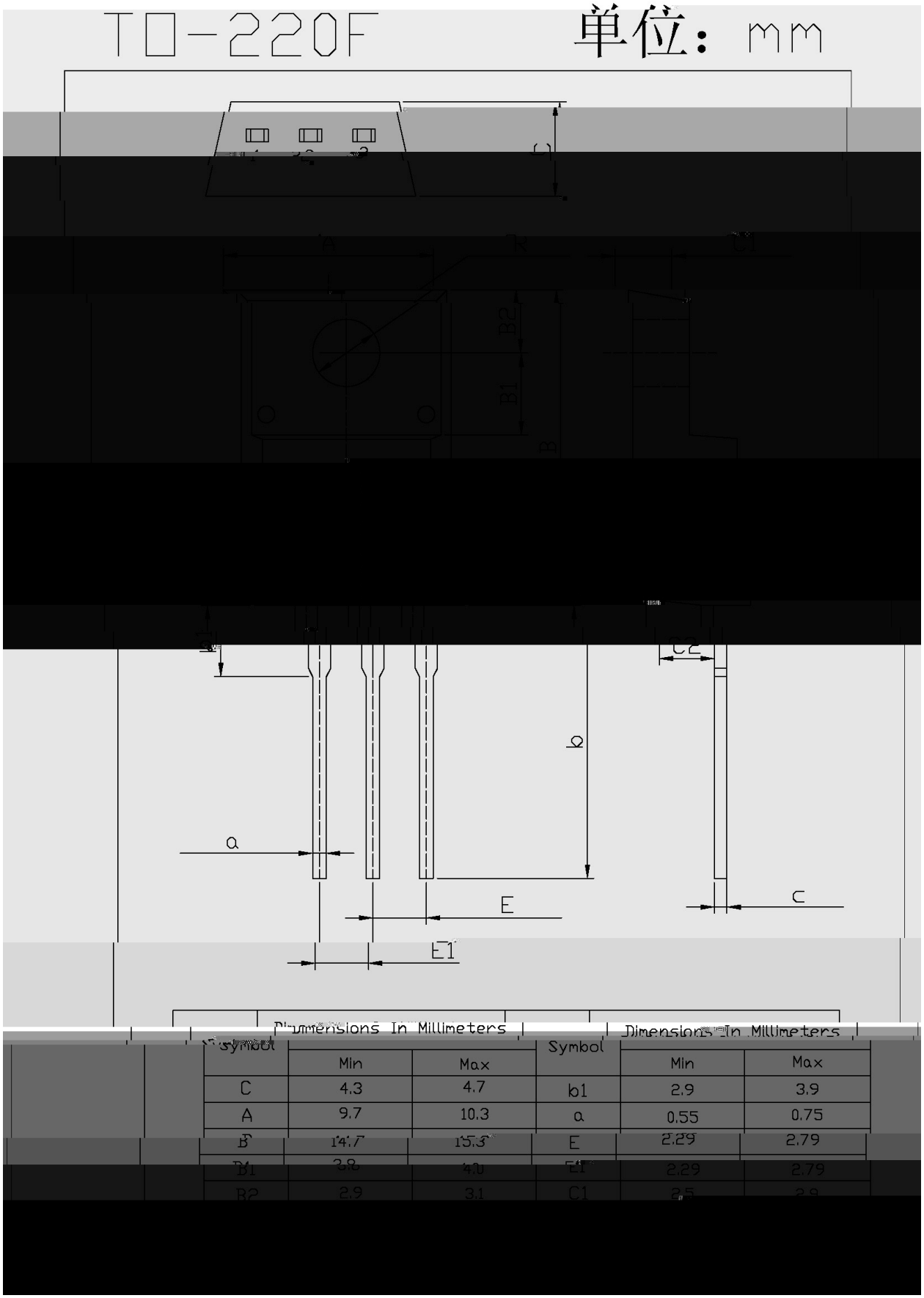
/ Electrical Characteristics(Ta=25)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector to Base Breakdown Voltage	V_{CBO}	I_C=1.0mA I_E=0	60			V
Collector to Emitter Breakdown Voltage	V_{CEO}	I_C=5.0mA R_{BE}=∞	60			V
Emitter to Base Breakdown Voltage	V_{EBO}	I_E=1.0mA I_C=0	6.0			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=40V I_E=0			0.1	μA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=4.0V I_C=0			0.1	μA
DC Current Gain	$h_{FE(1)}$	V_{CE}=5.0V I_C=0.5A	70		280	
	$h_{FE(2)}$	V_{CE}=5.0V I_C=3.0A	20			
Collector to Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=2.0A I_B=0.2A		0.4	1.0	V
Base to Emitter Voltage	V_{BE}	V_{CE} =5.0V I_C =0.5A		0.8	1.0	V
Transition Frequency	f_T	V_{CE}=5.0V I_C=0.5A		100		MHz
Collector output capacitance	C_{ob}	V_{CB}=10V f=1.0MHz		40		pF

/ Electrical Characteristic Curve

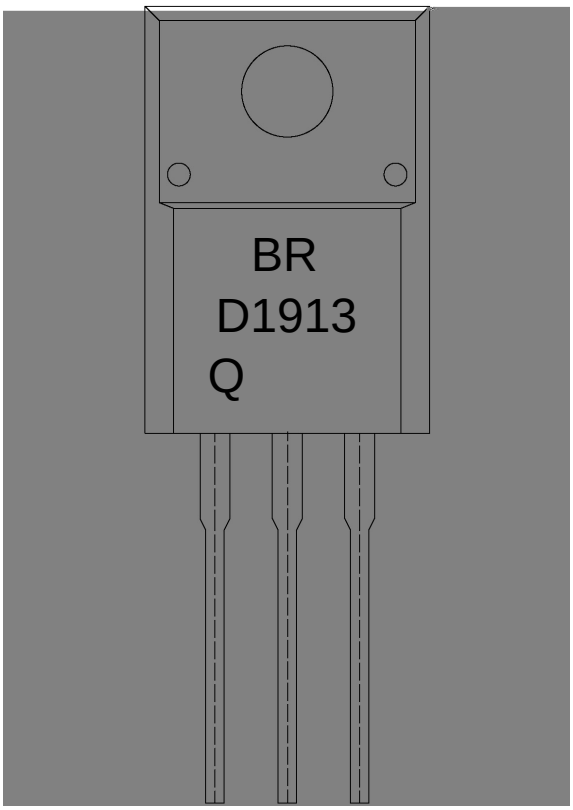


/ Package Dimensions



Dimensions In Millimeters			Dimensions In Millimeters		
Symbol	Min	Max	Symbol	Min	Max
C	4.3	4.7	b1	2.9	3.9
A	9.7	10.3	a	0.55	0.75
B	14.7	15.3	E	2.29	2.79
B1	3.8	4.0	E1	2.29	2.79
B2	2.9	3.1	C1	2.5	2.9

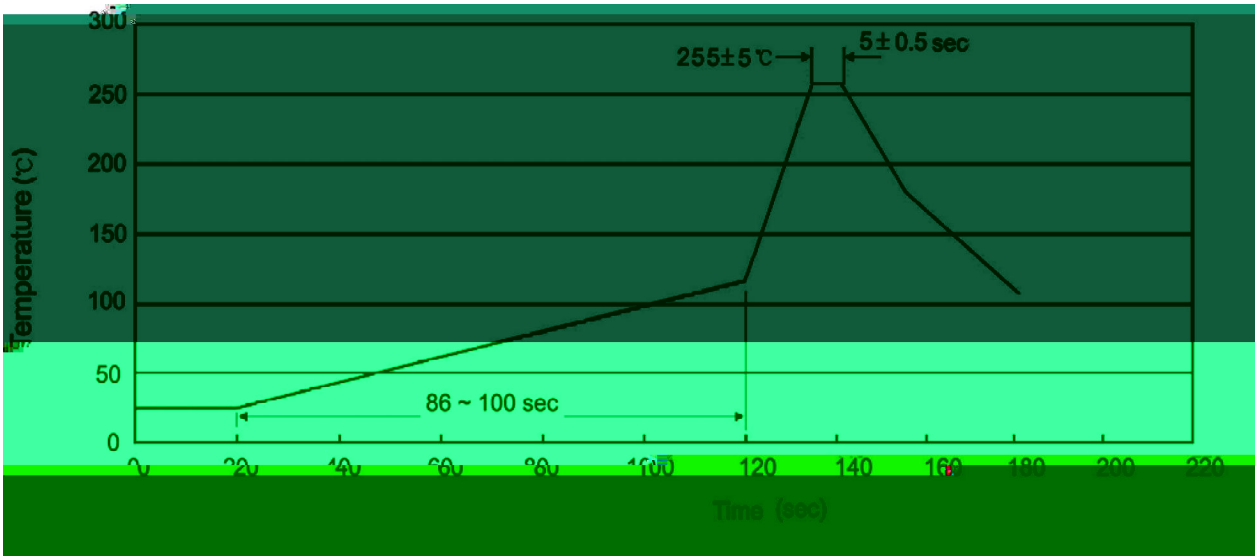
/ Marking Instructions



Note:

BR:	Company Code.
D1913:	Product Type.
Q:	h_{FE} Classifications Symbol
****:	Lot No. Code, code change with Lot No.

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



1		25	150		60	90sec;					
2		255	5			5	0.5sec;				
3				2	10	/sec.					

Note:

1.Preheating:25~150 , Time:60~90sec.

2.Peak Temp.:255 5 , Duration:5 0.5sec.

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	Units					Dimension		(unit mm^3)

/ TUBE

Package Type	Units					Dimension		(unit mm^3)

/ Notices