

/ Descriptions

TO-220

NPN

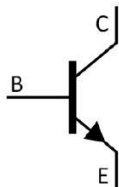
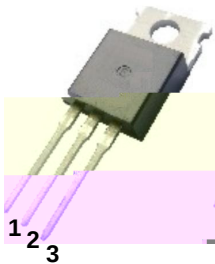
Silicon NPN transistor in a TO-220 Plastic Package.

/ Features

Low Current Low Voltage.

/ Applications

Low frequency power amplifier applications.

/ Equivalent Circuit**/ Pinning**

PIN1 Base

PIN 2 Collector

PIN 3 Emitter

/ h_{FE} Classifications & Marking

h_{FE} Classifications Symbol	C	D	E	F
h_{FE} Range	40~80	60~120	100~200	160~320

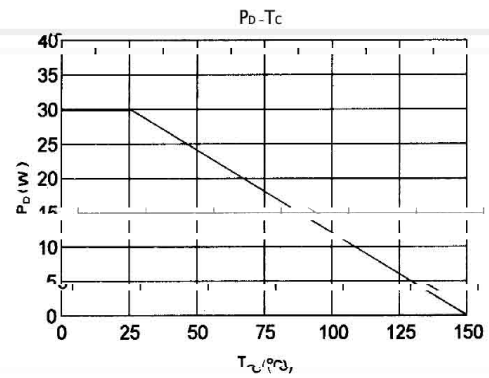
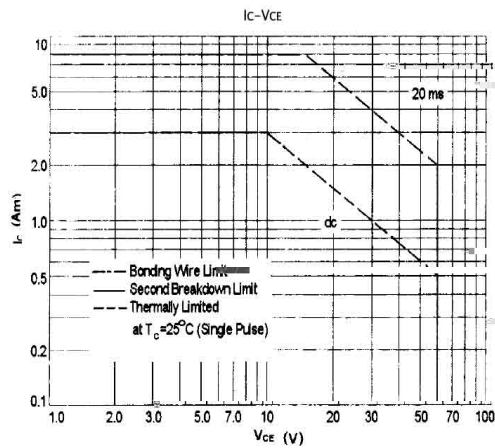
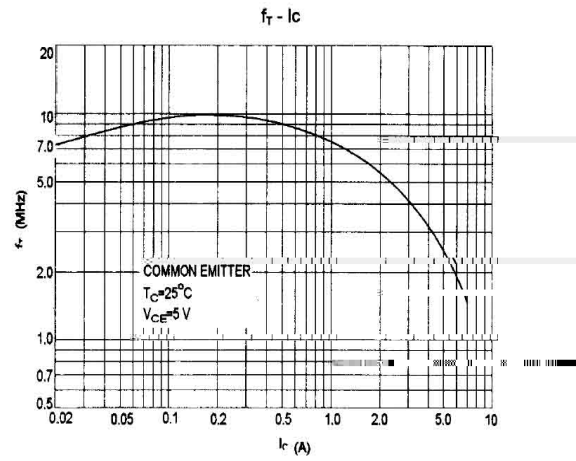
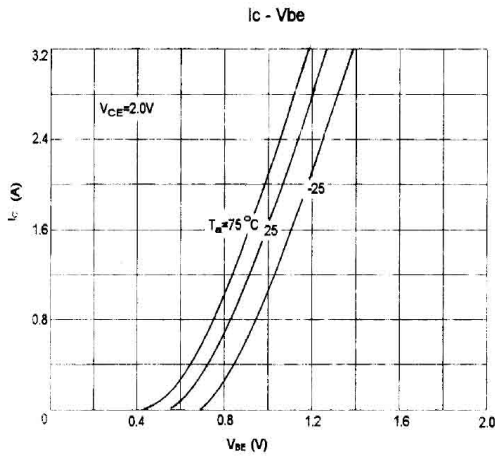
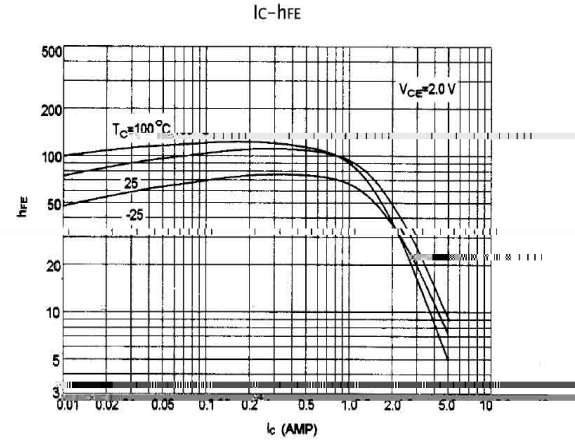
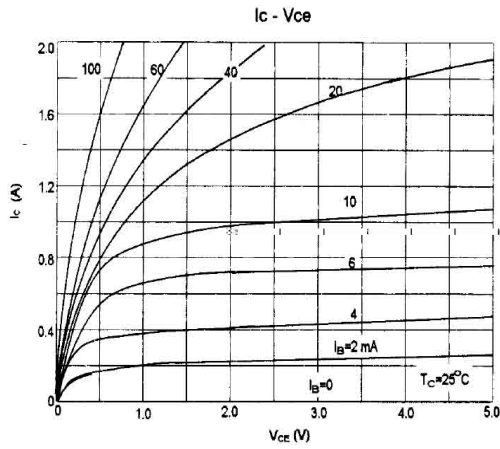
/ Absolute Maximum Ratings(Ta=25 –)

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}	5.0	V
Collector Current - Continuous	I_C	3.0	A
Base Current - Continuous	I_{CP}	8.0	A
Collector Power Dissipation	P_C	1.75	W
	$P_C(T_C=25^\circ C)$	30	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 Cut-Off Current	I_{CBO}	$V_{CB}=20V$ $I_E=0$			0.1	mA
Collector Cut-Off Current	I_{CEO}	$V_{CE}=60V$ $R_{BE}=\infty$			5.0	mA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=4.0V$ $I_C=0$			1.0	mA
DC Current Gain	$h_{FE(1)}$	$V_{CE}=2.0V$ $I_C=1.0A$	40		320	
	$h_{FE(2)}$	$V_{CE}=2.0V$ $I_C=0.1A$	40			
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}	$V_{CE}=2.0V$ $I_C=1.0A$			1.5	V
Transition Frequency	f_T	$V_{CE}=5.0V$ $I_C=0.5A$		8.0		MHz
Turn-On Time	C_{ob}	$V_{CB}=10V$ $f=1.0MHz$		65		pF

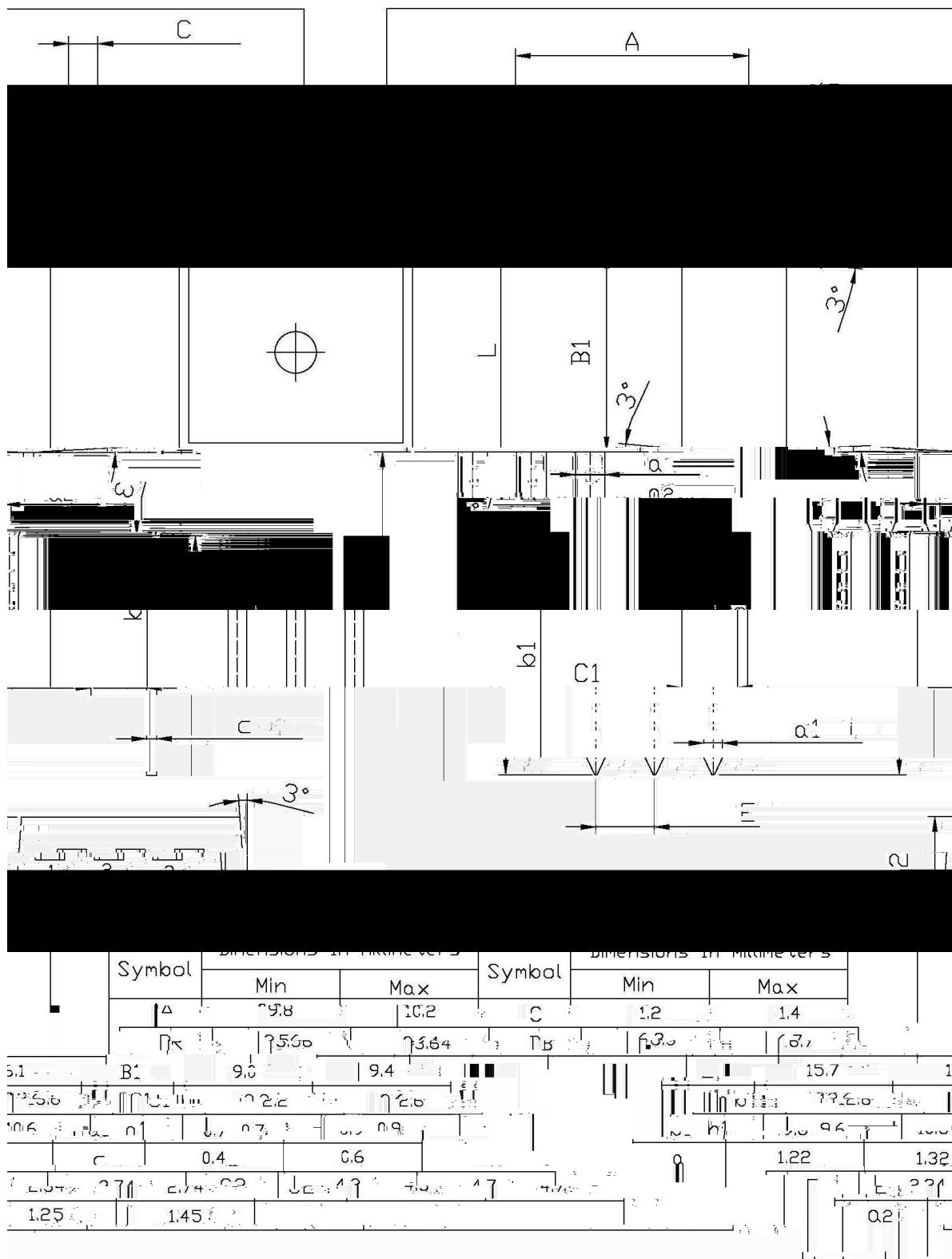
I Electrical Characteristic Curve



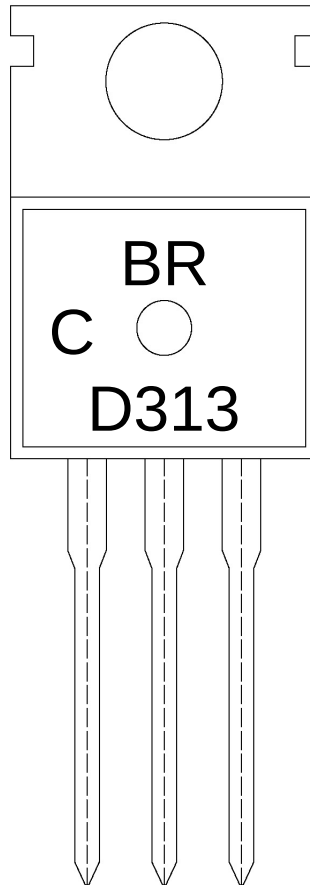
/ Package Dimensions

单位: mm

T0-220



/ Marking Instructions



BR

D313

C: h_{FE}

Note:

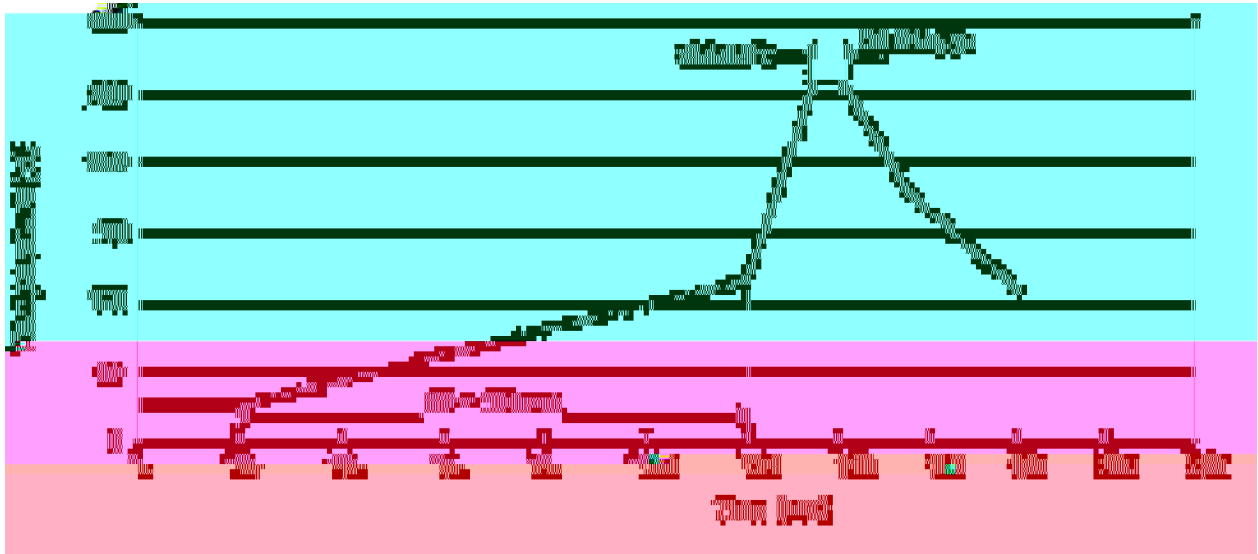
BR: Company Code

D313: Product Type.

C: 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	Units					Dimension (unit mm ³)		

/ TUBE

Package Type	Units					Dimension (unit mm ³)		

/ Notices