

# NPN Silicon Planar Power Transistor

## 100V<sub>CB0</sub>, 15A I<sub>c</sub>, TO-3

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**RoHS  
Compliant**



### Applications

General Purpose Switching and Amplifier applications

### Absolute Maximum Ratings (T<sub>A</sub> = 25 °C)

Description	Symbol	Value	Units
Collector Base Voltage	V <sub>CB0</sub>	100	V
Collector Emitter Voltage	V <sub>CEO</sub>	60	
Collector Emitter Voltage(R <sub>BE</sub> =100Ω)	V <sub>CER</sub>	70	
Emitter Base Voltage	V <sub>EBO</sub>	7	
Collector Current Continuous	I <sub>c</sub>	15	A
Base Current	I <sub>B</sub>	7	
Power Dissipation @ T <sub>c</sub> =25°C Derate Above 25°C	P <sub>TOT</sub>	115 0.657	W W/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 65 to +200	°C

### Thermal Characteristics

Characteristics	Symbol	Value	Unit
Junction-to-Case	R <sub>th(j-c)</sub>	1.52	°C/W

### Electrical Characteristics (T<sub>C</sub>=25°C unless specified otherwise)

Description	Symbol	Test Condition	Min.	Max.	Units
Collector Emitter Sustaining Voltage	V <sub>CEO(sus)</sub> *	I <sub>c</sub> =200mA, I <sub>B</sub> =0	60	-	V
Collector Emitter Sustaining Voltage	V <sub>CER(sus)</sub> *	I <sub>c</sub> =200mA, R <sub>BE</sub> =100Ω	70	-	
Collector Cut off Current	I <sub>CEx</sub>	V <sub>CE</sub> =100V, V <sub>BE</sub> =(off)=1.5V T <sub>c</sub> =150°C V <sub>CE</sub> =100V, V <sub>BE</sub> =(off)=1.5V	-	1 5	mA
Collector Cut off Current	I <sub>CEO</sub>	V <sub>CE</sub> =30V, I <sub>B</sub> =0	-	0.7	
Emitter Cut off Current	I <sub>EBO</sub>	V <sub>BE</sub> =7V, I <sub>c</sub> =0	-	5	
Collector Emitter Saturation Voltage	V <sub>CE(Sat)</sub> *	I <sub>c</sub> =4A, I <sub>B</sub> =400mA I <sub>c</sub> =10A, I <sub>B</sub> =3.3A	-	1.1 3	V
Base Emitter on Voltage	V <sub>BE(on)</sub> *	I <sub>c</sub> =4A, V <sub>CE</sub> =4V	-	1.5	
DC Current Gain	h <sub>FE</sub> *	I <sub>c</sub> =4A, V <sub>CE</sub> =4V I <sub>c</sub> =10A, V <sub>CE</sub> =4V	20 5	80	-

\*Pulse Test: Pulse Width ≤300μs, Duty Cycle ≤2%

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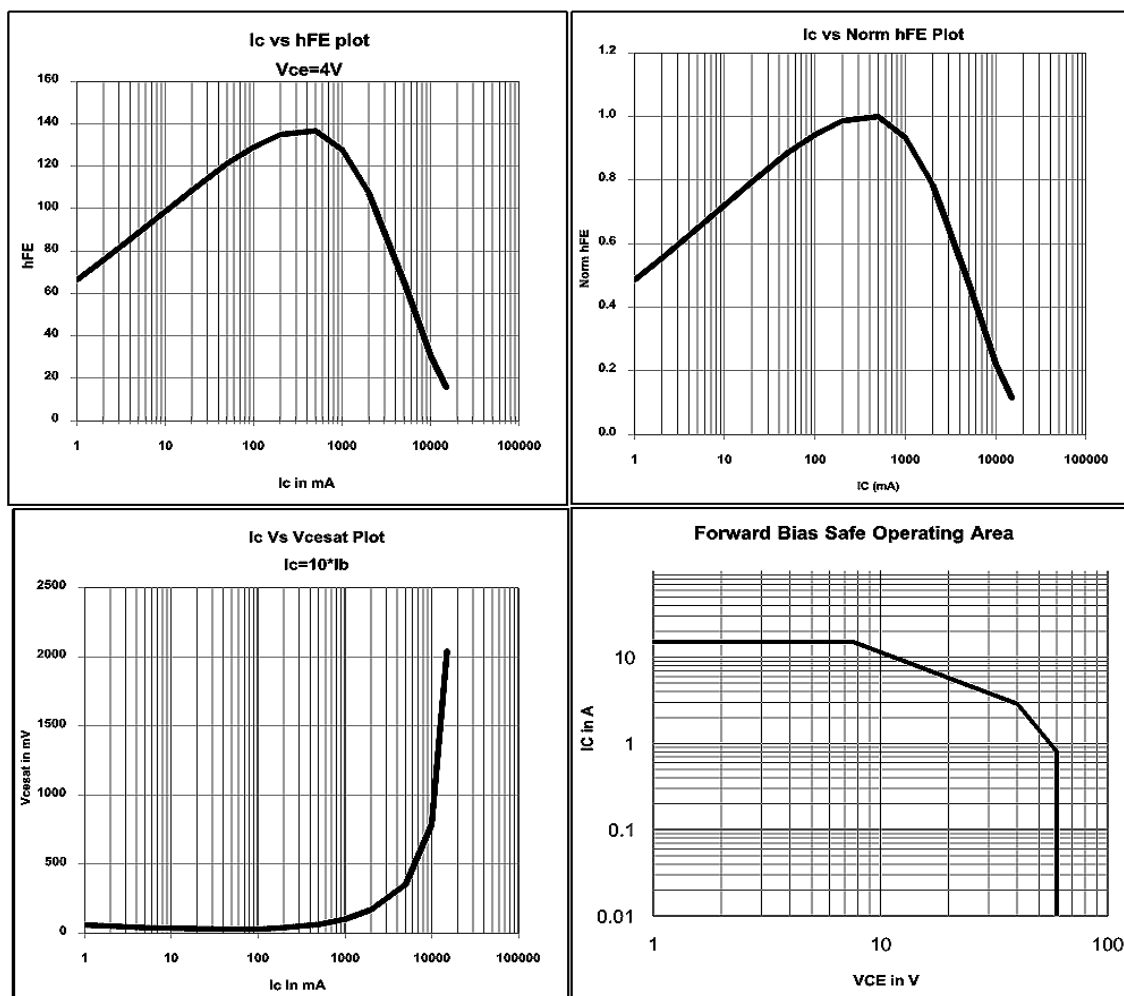
### Second Breakdown

Description	Symbol	Test Condition	Min.	Max.	Units
Second Breakdown Collector Current with Base Forward Biased	I <sub>S/b</sub>	V <sub>CE</sub> =40V, t=1s, Nonrepetitive	2.87	-	A

### Dynamic Characteristics

Description	Symbol	Test Condition	Min.	Max.	Units
Current Gain - Bandwidth Product	f <sub>T</sub>	I <sub>C</sub> =0.5A, V <sub>CE</sub> =10V, f=1MHz	2.5	-	MHz
Small Signal Current Gain	h <sub>FE</sub>	I <sub>C</sub> =1A, V <sub>CE</sub> =4V, f=1kHz	15	120	-
Small Signal Current Gain Cutoff Frequency	f <sub>HFE</sub>	I <sub>C</sub> =1A, V <sub>CE</sub> =4V, f=1kHz	10	-	kHz

### Typical Characteristics Curves



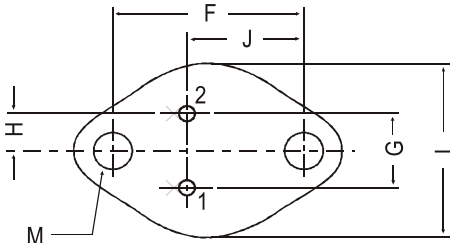
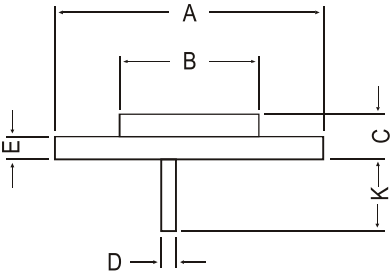
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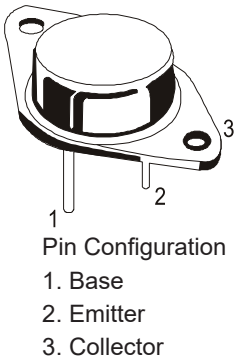


Diagram

TO-3 Metal Can Package



Dim.	Min.	Max.
A	—	39.37
B	—	22.22
C	6.35	8.5
D	0.96	1.09
E	—	1.77
F	29.9	30.4
G	10.69	11.18
H	5.2	5.72
J	16.64	17.15
K	11.15	12.25
L	—	26.67
M	3.84	4.19



Pin Configuration  
1. Base  
2. Emitter  
3. Collector

Part Number Table

Description	Part Number
NPN Silicon Planar Power Transistor, 15A, 100V, 115W	2N3055

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