

Silicon NPN Power Transistor

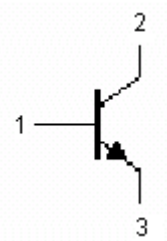


Application:

Intended for use in power linear and switching applications



Fig. 1 Simplified Outline (TO-220C) and Symbol



Pinning

Pin	Description
1	Base
2	Collector; connected to mounting base
3	Emitter

Absolute Maximum Ratings ($T_a = 25^{\circ}\text{C}$)

Symbol	Parameter	Conditions	Value	Unit
V_{CBO}	Collector - base voltage	Open emitter	100	V
V_{CEO}	Collector - emitter voltage	Open base	100	V
V_{EBO}	Emitter - base voltage	Open collector	5	V
I_C	Collector current	-	15	A
I_B	Base current	-	5	A
P_C	Collector power dissipation	$T_C \leq 25^{\circ}\text{C}$	90	W
T_j	Junction temperature	-	150	$^{\circ}\text{C}$
T_{stg}	Storage temperature	-	-65 to 150	$^{\circ}\text{C}$

Thermal Characteristics

Symbol	Parameter	Maximum	Unit
$R_{th\ j-c}$	Thermal resistance junction to case	1.4	$^{\circ}\text{C/W}$



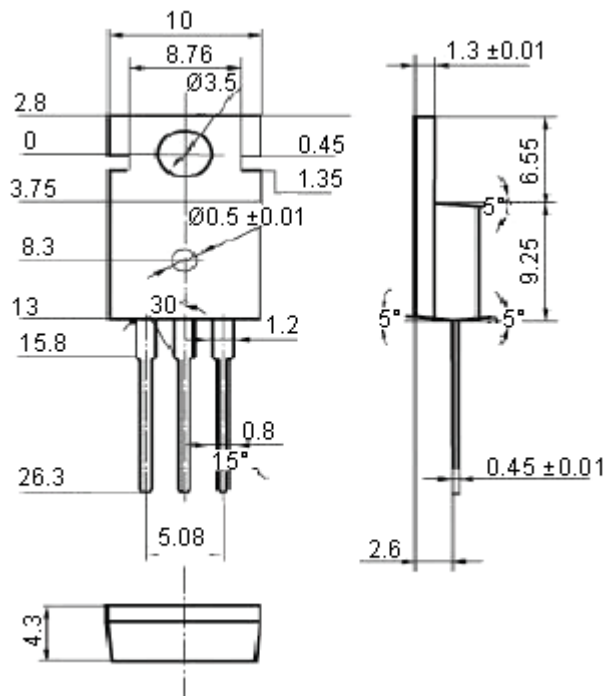
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Characteristics ($T_j = 25^\circ\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Conditions	Minimum	Typical	Maximum	Unit
V_{CEO} (SUS)	Collector - emitter sustaining voltage	$I_C = 0.1\text{ A}; I_B = 0$	100	-	-	V
$V_{CEsat-1}$	Collector - emitter saturation voltage	$I_C = 5\text{ A}; I_B = 0.5\text{ A}$	-	-	1	V
$V_{CEsat-2}$	Collector - emitter saturation voltage	$I_C = 10\text{ A}; I_B = 2.5\text{ A}$	-	-	3	V
V_{BEsat}	Base - emitter saturation voltage	$I_C = 10\text{ A}; I_B = 2.5\text{ A}$	-	-	2.5	V
V_{BE}	Base - emitter voltage	$I_C = 5\text{ A}; V_{CE} = 4\text{ V}$	-	-	1.5	V
I_{CBO}	Collector cut-off current	$V_{CB} = 100\text{ V}; I_E = 0$ $T_C = 150^\circ\text{C}$	-	-	0.5 5	mA
I_{CEO}	Collector cut-off current	$V_{CE} = 50\text{ V}; I_B = 0$	-	-	1	mA
I_{EBO}	Emitter cut-off current	$V_{EB} = 5\text{ V}; I_C = 0$	-	-	1	mA
h_{FE-1}	DC current gain	$I_C = 0.5\text{ A}; V_{CE} = 4\text{ V}$	40	-	250	-
h_{FE-2}	DC current gain	$I_C = 5\text{ A}; V_{CE} = 4\text{ V}$	15	-	150	-
h_{FE-3}	DC current gain	$I_C = 10\text{ A}; V_{CE} = 4\text{ V}$	5	-	-	-
f_T	Transition frequency	$I_C = 0.5\text{ A}; V_{CE} = 4\text{ V}$	3	-	-	MHz

Package Outline



Dimensions : Millimetres

Fig. 2 Outline Dimensions (Unindicated Tolerance : $\pm 0.1\text{ mm}$)

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Figure.3 DC Current Gain

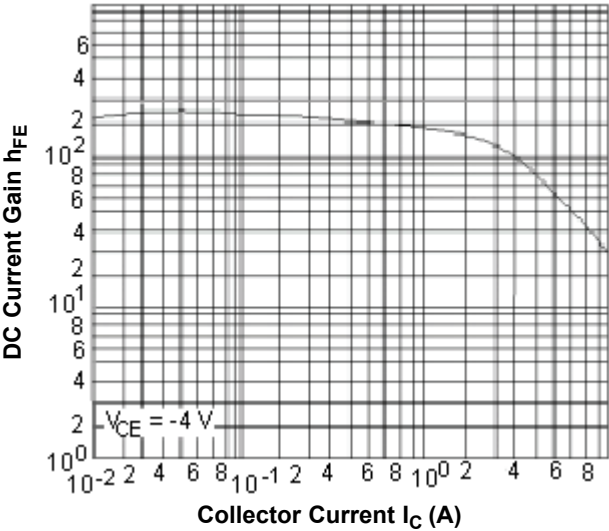


Figure.4 Safe Operating Area

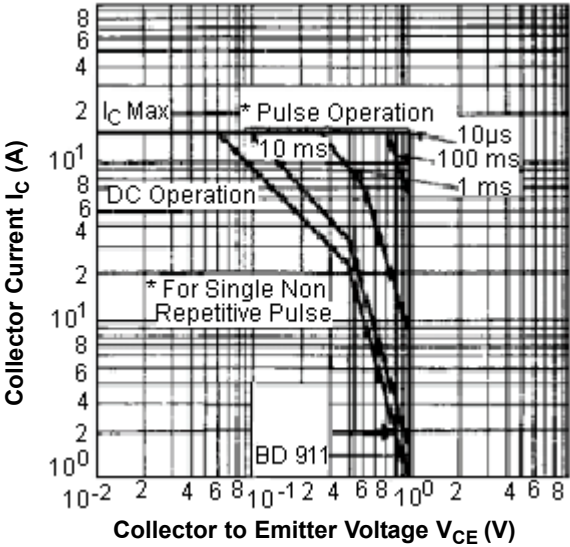
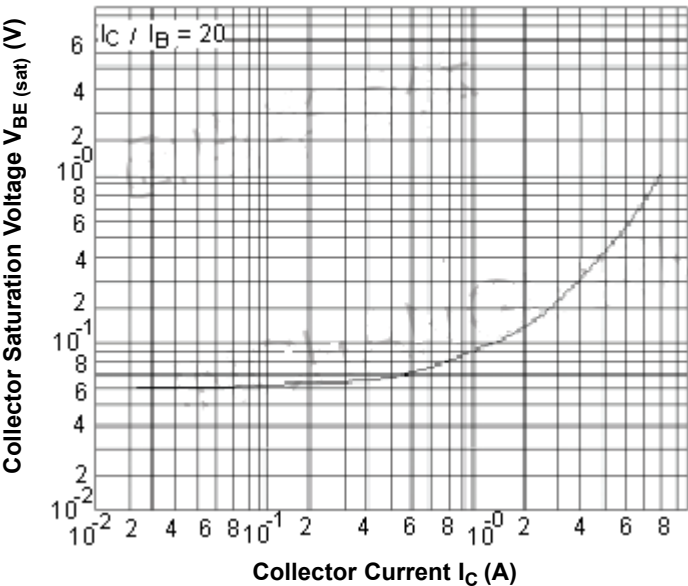


Figure.5 Collector-Emitter Saturation Voltage



Part Number Table

Description	Part Number
Silicon NPN Power Transistor	BD911

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