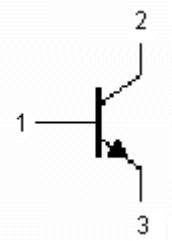
Silicon NPN Power Transistor

Application:

Intented 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°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	$T_C \leq 25°C$	90	W
T_j	Junction temperature	-	150	°C
T_{stg}	Storage temperature	-	-65 to 150	°C

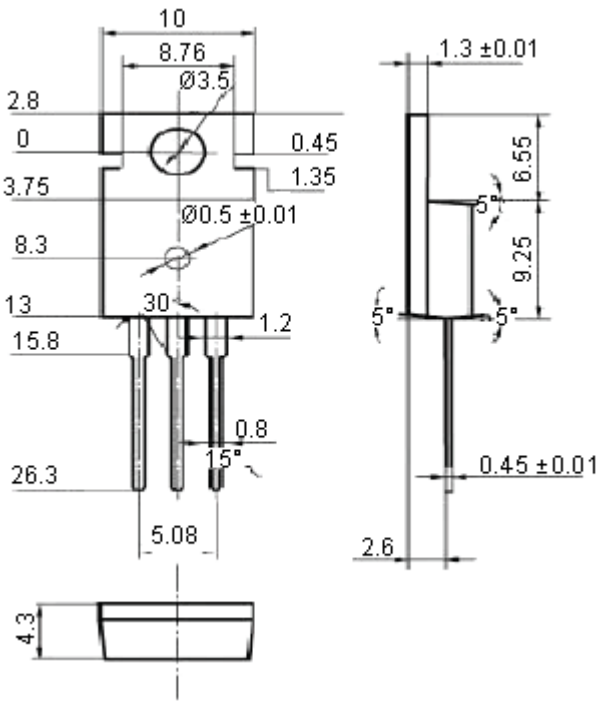
Thermal Characteristics

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

Characteristics (T_j = 25°C Unless Otherwise Specified)

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

Package Outline



Dimensions : Millimetres

Fig. 2 Outline Dimensions (Unindicated Tolerance : ±0.1 mm)

Figure.3 DC Current Gain

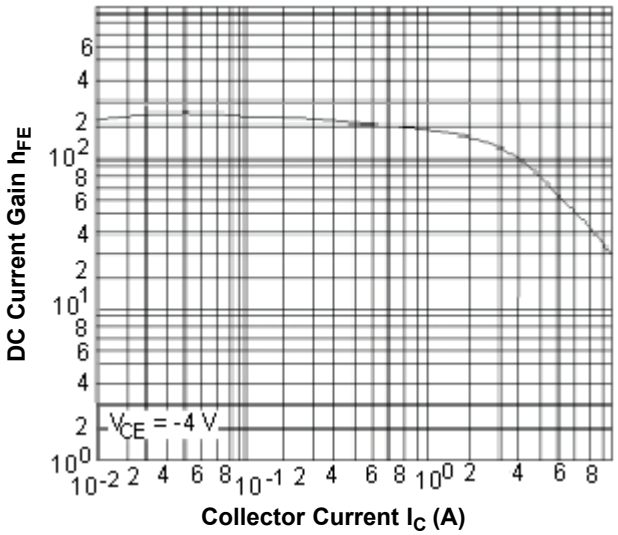


Figure.4 Safe Operating Area

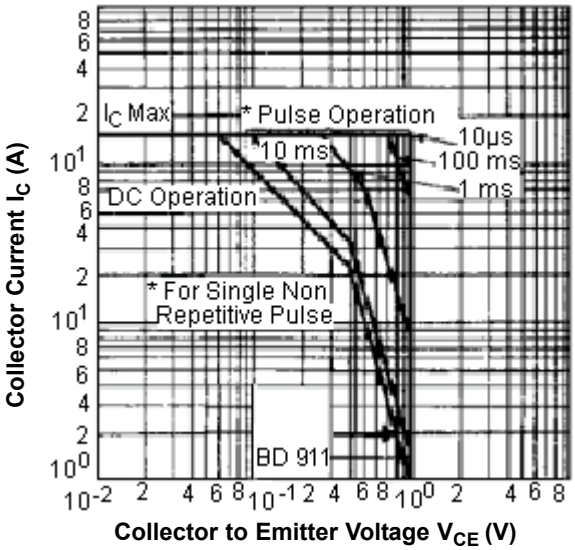
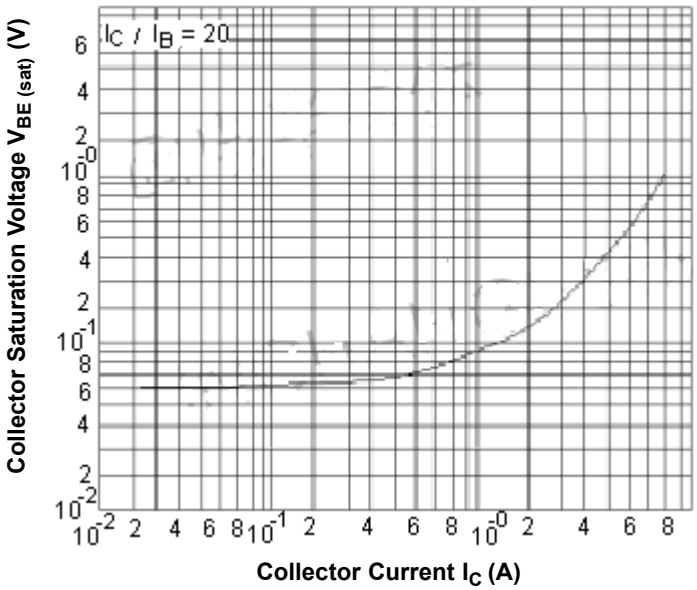


Figure.5 Collector-Emitter Saturation Voltage



Part Number Table

Description	Part Number
Silicon NPN Power Transistor	BD911