

NPN Silicon Transistor



Pin Configuration:

1. Base
2. Emitter
3. Collector

Feature:

- NPN Silicon Planar Epitaxial RF Transistor

Absolute Maximum Ratings

Description	Symbol	BC640	Unit
Collector Emitter Voltage	V_{CEO}	25	V
Collector Base Voltage	V_{CBO}	40	
Emitter-Base Voltage	V_{EBO}	4	
Collector Current Continuous	I_C	100	A
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate Above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above 25°C		1 8	W mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150	$^\circ\text{C}$

Thermal Resistance

From Junction to Case	$R_{th(j-c)}$	125	$^\circ\text{C/W}$
Junction to Ambient in Free Air	$R_{th(j-a)}$	357	

Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Description	Symbol	Test Condition	Min.	Typ.	Max.	Units
Collector Emitter Voltage	V_{CEO}^*	$I_C = 1\text{mA}, I_B = 0$	25	-	-	V
Collector Base Voltage	V_{CBO}	$I_C = 100\mu\text{A}, I_E = 0$	40	-	-	
Emitter-Base Voltage	V_{EBO}	$I_E = 10\mu\text{A}, I_C = 0$	4	-	-	
Collector Cut off Current	I_{CBO}	$V_{CB} = 20\text{V}, I_E = 0$	-	-	100	nA

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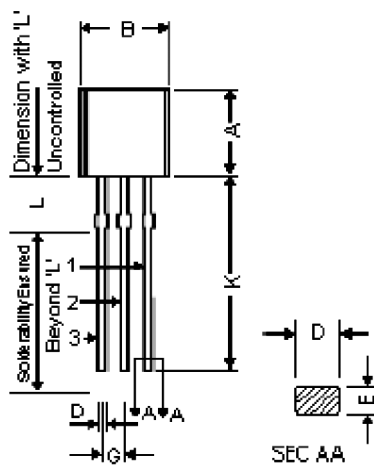


Electrical Characteristics ($T_a = 25^\circ\text{C}$ unless otherwise specified)

Description	Symbol	Test Condition	Min.	Typ.	Max.	Units
DC Current Gain	h_{FE}	$I_C = 7\text{mA}$, $V_{CE} = 10\text{V}$	40	-	-	-
Base Emitter On Voltage	$V_{BE(on)}$	$I_C = 7\text{mA}$, $V_{CE} = 10\text{V}$	-	-	0.9	V

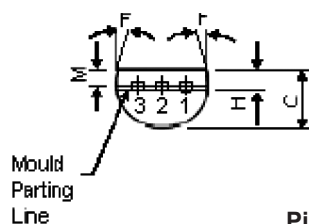
Dynamic Characteristics

Transistors Frequency	f_T	$I_C = 5\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$	400	-	-	MHz
Common Emitter Feedback Capacitance	C_{re}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	-	-	0.35	pF
Noise Figure	NF	$I_C = 4\text{mA}$, $V_{CE} = 10\text{V}$, $R_S = 50\Omega$, $f = 35\text{MHz}$	-	2.5	-	dB



Dimensions	Min.	Max.
A	4.32	5.33
B	4.45	5.2
C	3.18	4.19
D	0.41	0.55
E	0.35	0.5
F	5°	
G	1.14	1.4
H	1.2	
K	12.7	-
L	1.982	2.082
M	1.03	1.2

Dimensions : Millimetres



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Part Number Table

Description	Part Number
Transistor, NPN, TO-92	BF199

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