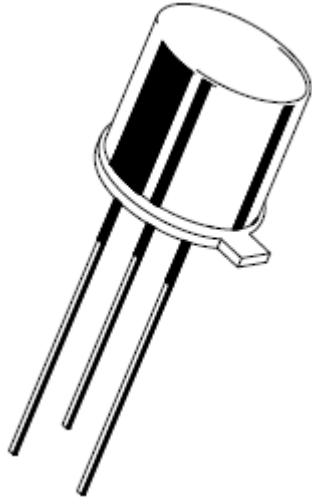


Silicon NPN Transistor



Features:

- High current (maximum 1 A)
- Low voltage (maximum 60 V)
- NPN transistor in a TO-39 metal package

Applications:

Designed for general purpose switching and amplification applications

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector - base voltage	100	V
V_{CEO}	Collector - emitter voltage	60	V
V_{EBO}	Emitter - base voltage	7	V
I_C	Collector current - continuous	1	A
I_B	Base current	100	mA
P_C	Collector power dissipation at $T_A \leq 45^\circ\text{C}$	0.65	W
T_J	Junction temperature	175	$^\circ\text{C}$
T_{stg}	Storage temperature range	-55 to 175	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Maximum	Unit
$R_{th\ j-c}$	Thermal resistance from junction to case	35	K/W
$R_{th\ j-a}$	Thermal resistance, junction to ambient	200	K/W

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

Symbol	Parameter	Conditions	Minimum	Typical	Maximum	Unit
$V_{CE(sat)}$	Collector - emitter saturation voltage	$I_C = 1\text{ A}; I_B = 0.1\text{ A}$	-	0.6	1	V
$V_{BE(on)}$	Base - emitter on voltage	$I_C = 1\text{ A}; V_{CE} = 1\text{ V}$	-	1.25	1.8	V
I_{EBO}	Emitter cut-off current	$I_E = 0; V_{EB} = 5\text{ V}$	-	-	100	nA
I_{CES}	Collector cut-off current	$V_{CB} = 60\text{ V dc}, I_E = 0$ $V_{CB} = 60\text{ V dc}, I_E = 0, T_J = 150^\circ\text{C}$	-	-	100 100	nA μA
h_{FE1}	DC Current Gain	$I_C = 100\text{ }\mu\text{A}; V_{CE} = 1\text{ V}$	-	90	-	-
h_{FE2}	DC Current Gain	$I_C = 100\text{ mA}; V_{CE} = 1\text{ V}$	100	160	250	-

Silicon NPN Transistor



Electrical Characteristics (T_C = 25°C Unless Otherwise Specified)

Symbol	Parameter	Conditions	Minimum	Typical	Maximum	Unit
h_{FE3}	DC Current Gain	$I_C = 1\text{ A}; V_{CE} = 1\text{ V}$	-	30	-	-
f_T	Transition frequency	$I_C = 50\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	50	-	-	MHz
C_{ob}	Output capacitance	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	-	12	25	pF

Switching Times (Between 10% and 90% Levels)

Symbol	Parameter	Conditions	Minimum	Typical	Maximum	Unit
t_{on}	Turn - on time	$I_C = 100\text{ mA}; I_{B1} = 5\text{ mA};$ $I_{B2} = -5\text{ mA}$	-	-	250	ns
t_{off}	Turn - off time		-	-	850	ns

Part Number Table

Description	Part Number
Silicon NPN Transistor	BC141-16

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