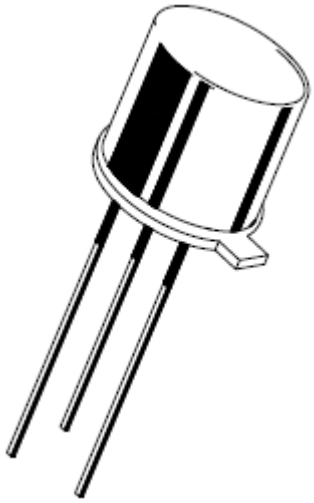
Silicon NPN Transistor



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°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 $T_A \leq 45°C$	0.65	W
T_J	Junction temperature	175	°C
T_{stg}	Storage temperature range	-55 to 175	°C

Thermal Characteristics

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

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

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

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

Symbol	Parameter	Conditions	Minimum	Typical	Maximum	Unit
h_{FE3}	DC Current Gain	I_C = 1 A; V_{CE} = 1 V	-	30	-	-
f_T	Transition frequency	I_C = 50 mA; V_{CE} = 10 V; f = 100 MHz	50	-	-	MHz
C_{ob}	Output capacitance	V_{CB} = 10 V, I_E = 0, f = 1 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 mA; I_{B1} = 5 mA; I_{B2} = -5 mA	-	-	250	ns
t_{off}	Turn - off time		-	-	850	ns

Part Number Table

Description	Part Number
Silicon NPN Transistor	BC141-16