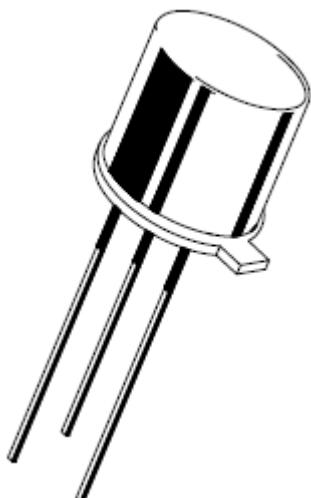


# Silicon NPN Transistor

**multicomp**



## 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
$V_{CE\ (\text{sat})}$	Collector - emitter saturation voltage	$I_C = 1\text{ A}; I_B = 0.1\text{ A}$	-	0.6	1	V
$V_{BE\ (\text{on})}$	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 $\mu\text{A}$
$h_{FE1}$	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	-

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## Electrical Characteristics ( $T_C = 25^\circ\text{C}$ 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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