

# NPN Medium Power Transistor



### Pin Configuration

1. Emitter
2. Base
3. Collector

### Features:

- NPN Silicon Power Switching Transistors.
- Medium Power Amplifier and Switching Applications

### Absolute Maximum Ratings:

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

Characteristic	Symbol	BC140-16	BC141-16	Unit
Collector Emitter Voltage	$V_{CBO}$	40	60	V
Collector Base Voltage	$V_{CES}$	80	100	
Emitter Base Voltage	$V_{EBO}$	7		
Collector Current Continuous	$I_C$	1		A
Power Dissipation at $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	0.8		W
Power Dissipation at $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$		4.57		
Operating Storage Temperature Range	$T_j, T_{stg}$	-65 to +200		$^\circ\text{C}$

### Thermal Resistance

Junction to Ambient in Free Air	$R_{th(j-a)}$	219	$^\circ\text{C/W}$
Junction to Case	$R_{th(j-c)}$	44	

# NPN Medium Power Transistor

## Electrical Characteristics:

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector Emitter Voltage	$V_{CES}$	$I_C = 100\mu\text{A}, V_{BE} = 0$ BC140-16 BC141-16	80 100	-	-	V
	$*V_{CEO}$	$I_C = 30\text{mA}, I_B = 0$ BC140-16 BC141-16	40 60			
Emitter Base Voltage	$V_{EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	7	-	-	
Collector Cut off Current	$I_{CES}$	$V_{CE} = 60\text{V}, V_{BE} = 0$	-	-	100	nA
		$V_{CE} = 60\text{V}, V_{BE} = 0, T_a = 150^\circ\text{C}$			$\mu\text{A}$	
DC Current Gain	$*h_{FE}$	$I_C = 100\text{mA}, V_{CE} = 1\text{V}$ BC140-16/BC141-16 Group-6 Group-10 Group-16	40 40 63 100	-	400 100 160 250	-
		$I_C = 1\text{A}, V_{CE} = 1\text{V}$ BC140-16/BC141-16 Group-6 Group-10 Group-16	-		26 15 20 30	
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C = 1\text{A}, I_B = 0.1\text{A}$	-	-	1	V
Base Emitter on Voltage	$*V_{BE(on)}$	$I_C = 1\text{A}, V_{CE} = 1\text{V}$	-	-	2	

## Dynamic Characteristics

Transition Frequency	$f_T$	$I_C = 50\text{mA}, V_{CE} = 10\text{V}, f = 20\text{MHz}$	50	-	-	MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	25	$\mu\text{F}$
Input Capacitance	$C_{ib}$	$V_{EB} = 0.5\text{V}, I_C = 0, f = 1\text{MHz}$			80	

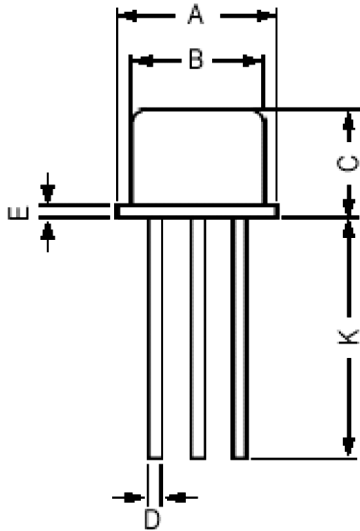
## Switching Characteristics

Turn On Time	$t_{on}$	$I_C = 150\text{mA}, I_{B1} = 7.5\text{mA}$	-	-	250	ns
Turn Off Time	$t_{off}$	$I_C = 150\text{mA}, I_{B1} = I_{B2} = 7.5\text{mA}$			850	

\*Pulsed : Pulse Duration  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 1\%$

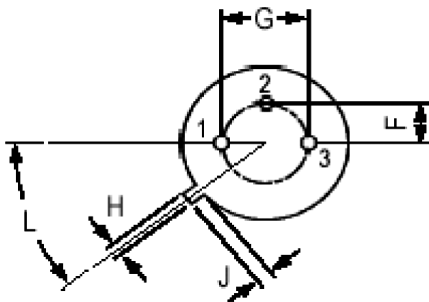
# NPN Medium Power Transistor

## TO-39 Metal Can Package



Dim.	Min.	Max.
A	8.5	9.39
B	7.74	8.5
C	6.09	6.6
D	0.4	0.53
E	-	0.88
F	2.41	2.66
G	4.82	5.33
H	0.71	0.86
J	0.73	1.02
K	12.7	-
L	42°	48°

Dimensions : Millimetres



### Pin Configuration

1. Emitter
2. Base
3. Collector

### Part Number Table

Description	Part Number
Transistor, NPN, TO-39	BC140-16
	BC141-16

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