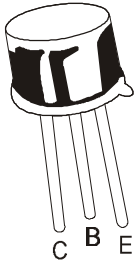


**NPN SILICON POWER SWITCHING TRANSISTORS**

**BC140, BC141**



**TO-39  
Metal Can Package**

**Medium Power Amplifier and Switching Applications**

**Complementary BC160 and BC161**

**ABSOLUTE MAXIMUM RATINGS**

DESCRIPTION	SYMBOL	BC140	BC141	UNITS
Collector Emitter Voltage	$V_{CEO}$	40	60	V
Collector Base Voltage	$V_{CBO}$	80	100	V
Emitter Base Voltage	$V_{EBO}$	7.0		V
Collector Current - Continuous	$I_C$	1.0		A
Power Dissipation@ $T_a=25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	0.8 4.57		W mW/ °C
Power Dissipation@ $T_c=25^\circ\text{C}$ Derate Above $25^\circ\text{C}$	$P_D$	4.0 22.73		W mW/ °C
Operating And Storage Junction Temperature Range	$T_j, T_{stg}$	- 65 to +200		°C

**THERMAL CHARACTERISTICS**

Junction to Ambient in free air	$R_{th(j-a)}$	219	°C/W
Junction to Case	$R_{th(j-c)}$	44	°C/W

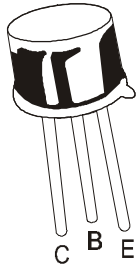
**ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$  unless specified otherwise)**

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Collector Emitter Voltage	$V_{CES}$	$I_C=100\mu\text{A}, V_{BE}=0$ <b>BC140</b> <b>BC141</b>	80 100			V V
Collector Emitter Voltage	$*V_{CEO}$	$I_C=30\text{mA}, I_B=0$ <b>BC140</b> <b>BC141</b>	40 60			V V
Emitter Base Voltage	$V_{EBO}$	$I_E=100\mu\text{A}, I_C=0$	7			V
Collector Cut Off Current	$I_{CES}$	$V_{CE}=60\text{V}, V_{BE}=0$ $V_{CE}=60\text{V}, V_{BE}=0, T_a=150^\circ\text{C}$			100 100	nA $\mu\text{A}$
DC Current Gain	$*h_{FE}$	$I_C=100\text{mA}, V_{CE}=1\text{V}$ <b>BC140 / BC141</b> <b>Group-6</b> <b>Group-10</b> <b>Group-16</b>  $I_C=1\text{A}, V_{CE}=1\text{V}$ <b>BC140 / BC141</b> <b>Group-6</b> <b>Group-10</b> <b>Group-16</b>	40 40 63 100		400 100 160 250	
				26 15 20 30		

\*Pulsed: Pulse duration  $\leq 300\text{ms}$ , Duty cycle  $\leq 1\%$

# NPN SILICON POWER SWITCHING TRANSISTORS

BC140, BC141



TO-39  
Metal Can Package

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

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNITS
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=1\text{A}, I_B=0.1\text{A}$			1.0	V
Base Emitter on Voltage	$*V_{BE(on)}$	$I_C=1\text{A}, V_{CE}=1\text{V}$			2.0	V

## DYNAMIC CHARACTERISTICS

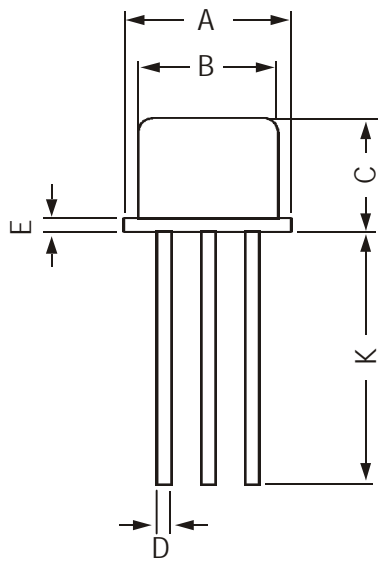
Transition Frequency	$f_T$	$I_C=50\text{mA}, V_{CE}=10\text{V}, f=20\text{MHz}$	50			MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$			25	pF
Input Capacitance	$C_{ib}$	$V_{EB}=0.5\text{V}, I_C=0, f=1\text{MHz}$			80	pF

## 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	ns

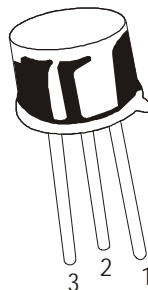
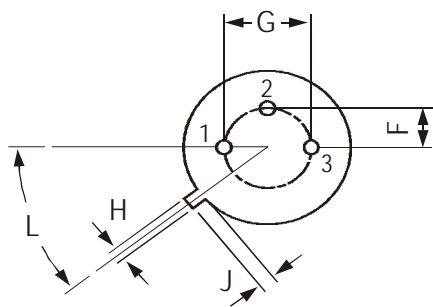
\*Pulsed: Pulse duration  $\leq 300\text{ms}$ , Duty cycle  $\leq 1\%$

TO-39 Metal Can Package



DIM	MIN	MAX
A	8.50	9.39
B	7.74	8.50
C	6.09	6.60
D	0.40	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	12.70	—
L	42 DEG	48 DEG

All dimensions are in mm



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR

Packing Details

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-39	500 pcs/polybag	540 gm/500 pcs	3" x 7.5" x 7.5"	20K	17" x 15" x 13.5"	32K	40 kgs

### **Disclaimer**

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