

NPN BC140/10 – BC140/16
NPN BC141/10 – BC141/16

GENERAL PURPOSE TRANSISTORS

They are silicon planar epitaxial NPN transistors mounted in TO-39 metal package. They are particularly designed for audio amplifiers and switching applications up to 1A. PNP complements are the BC160 – BC161. Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit	
V_{CBO}	Collector-Base Voltage $I_E = 0$	BC140	80	V
		BC141	100	
V_{CEO}	Collector-Emitter Voltage $I_B = 0$	BC140	40	V
		BC141	60	
V_{EBO}	Emitter-Base Voltage $I_C = 0$	BC140	7	V
		BC141		
I_C	Collector Current	BC140	1	A
		BC141		
I_B	Base Current	BC140	0.1	A
		BC141		
P_{tot}		@ $T_{case} = < 45^\circ$	3.7	W
		@ $T_{amb} = < 45^\circ$	0.65	
T_J	Junction Temperature	175	$^\circ C$	
T_{Stg}	Storage Temperature range	-55 to +175	$^\circ C$	

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-c}	Thermal Resistance, Junction-case	35	K/ W
$R_{thJ-amb}$	Thermal Resistance, Junction-ambient	200	K/ W

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

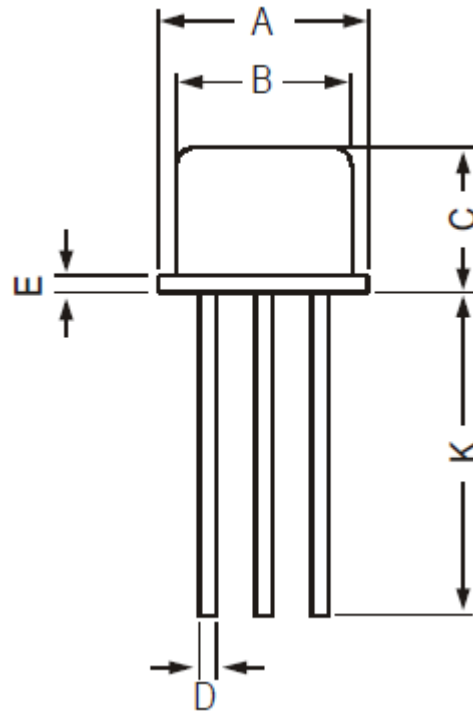
Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
I_{CES}	Collector – Cutoff Current	$I_E = 0$	-	-	100	nA	
		$V_{CES} = 60\text{ V}$					
		$I_E = 0, V_{CES} = 60\text{ V}$	-	-	100	μA	
		$T_{amb} = 150^\circ\text{C}$					
V_{CB0}	Collector – Base Breakdown Voltage	$I_C = 100\ \mu\text{A}$	BC140	80	-	-	V
		$I_E = 0$	BC141	100	-	-	
$V_{CE0} (*)$	Collector – Emitter Breakdown Voltage	$I_C = 30\text{ mA}$	BC140	40	-	-	V
		$I_B = 0$	BC141	60	-	-	
V_{EB0}	Emitter – Base Breakdown Voltage	$I_E = 100\ \mu\text{A}$	BC140	7	-	-	V
		$I_C = 0$	BC141				
$V_{CE(SAT)} (*)$	Collector-Emitter saturation Voltage	$I_C = 100\text{ mA}, I_B = 10\text{ mA}$	-	0.1		V	
		$I_C = 500\text{ mA}, I_B = 50\text{ mA}$	-	0.35			
		$I_C = 1\text{ A}, I_B = 100\text{ mA}$	-	0.6	1		
$V_{BE} (*)$	Base-Emitter Voltage	$I_C = 1\text{ A}, V_{CE} = 1\text{ V}$		1.25	1.8		
$h_{FE} (*)$	DC Current Gain	$I_C = 100\ \mu\text{A}, V_{CE} = 1\text{ V}$		-	75	-	-
			Gr 10	-	40	-	
			Gr 16	-	90	-	
		$I_C = 100\text{ mA}, V_{CE} = 1\text{ V}$		40	140	250	
			Gr 10	63	100	160	
			Gr 16	100	160	250	
		$I_C = 1\text{ A}, V_{CE} = 1\text{ V}$		-	26	-	
			Gr 10	-	20	-	
			Gr 16	-	30	-	
f_T	Transition Frequency	$I_C = 50\text{ mA}, V_{CE} = 10\text{ V}$	50	-	-	MHz	
C_{CB0}	Collector – base Capacitance	$I_E = 0; V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$	-	12	25	pF	
t_{off}	Turn-off times	$I_C = 100\text{ mA}$ $I_{B1} = -I_{B2} = 5\text{ mA}$	-	-	850	ns	
t_{on}	Turn-on times	$I_C = 100\text{ mA}$ $I_{B1} = 1\text{ mA}$	-	-	250	ns	

(*) Pulsed : pulse duration = 300 μs , duty cycle = 1%

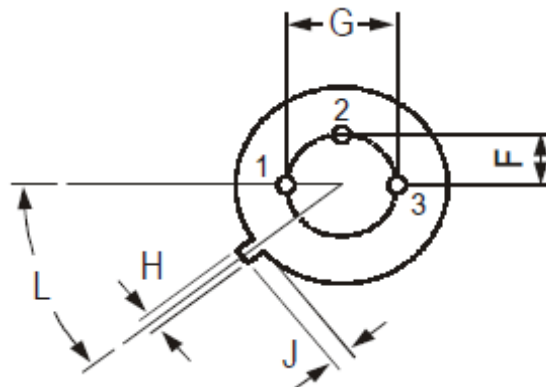
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MECHANICAL DATA CASE TO-39

DIMENSIONS (mm)		
	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°	48°



Pin 1 :	Emitter
Pin 2 :	Base
Pin 3 :	Collector
Case :	Collector



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