

**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	Watts
		@ $T_{amb} = < 45^\circ$	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

**ELECTRICAL CHARACTERISTICS**

TC=25 $^\circ C$  unless otherwise noted

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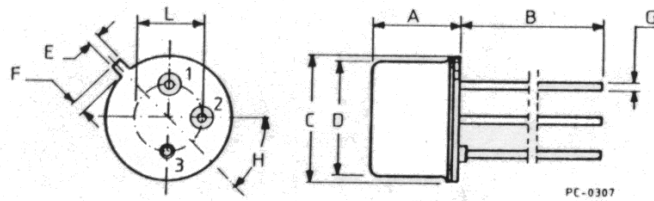
Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
$I_{CES}$	Collector – Cutoff Current	$I_E = 0 ; V_{CES} = 60 \text{ V}$		-	-	100	nA
		$I_E = 0 ; V_{CES} = 60 \text{ V}$ $T_{amb} = 150^\circ\text{C}$	<b>BC140</b> <b>BC141</b>	-	-	100	$\mu\text{A}$
$V_{CB0}$	Collector – Base Breakdown Voltage	$I_C = 100 \mu\text{A}$ $I_E = 0$	<b>BC140</b> <b>BC141</b>	80 100	- -	- -	V
$V_{CE0} (*)$	Collector – Emitter Breakdown Voltage	$I_C = 30 \text{ mA}$ $I_B = 0$	<b>BC140</b> <b>BC141</b>	40 60	- -	- -	V
$V_{EB0}$	Emitter – Base Breakdown Voltage	$I_E = 100 \mu\text{A}$ $I_C = 0$	<b>BC140</b> <b>BC141</b>	7	-	-	V
$V_{CE(SAT)} (*)$	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	$I_C = 100 \mu\text{A}, V_{CE} = 1 \text{ V}$	<b>Gr 10</b>	-	75	-	-
			<b>Gr 16</b>	-	40	-	
		$I_C = 100 \text{ mA}, V_{CE} = 1 \text{ V}$		40	140	250	
			<b>Gr 10</b> <b>Gr 16</b>	63 100	100 160	160 250	
		$I_C = 1 \text{ A}, V_{CE} = 1 \text{ V}$		-	26	-	
			<b>Gr 10</b> <b>Gr 16</b>	- -	20 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 $\mu\text{s}$ , duty cycle = 1%

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**MECHANICAL DATA CASE TO-39**

DIMENSIONS	
	mm
A	6,25
B	13,59
C	9,24
D	8,24
E	0,78
F	1,05
G	0,42
H	45°
L	4,1



Pin 1 :	Emitter
Pin 2 :	Base
Case :	Collector

*Information furnished is believed to be accurate and reliable. However, CS assumes no responsibility for the consequences of use of such information nor for errors that could appear.*

Data are subject to change without notice.