

## PNP BC160 – BC161

### GENERAL PURPOSE TRANSISTORS

They are silicon planar epitaxial PNP transistors mounted in TO-39 metal package. They are particularly designed for audio amplifiers and switching applications up to 1A. NPN complements are the BC140 – BC141. Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
$-V_{CBO}$	Collector-Base Voltage $I_E = 0$	BC160	40	V
		BC161	60	
$-V_{CEO}$	Collector-Emitter Voltage $I_B = 0$	BC160	40	V
		BC161	60	
$-V_{EBO}$	Emitter-Base Voltage $I_C = 0$	BC160	5	V
		BC161		
$-I_C$	Collector Current	BC160	1	A
		BC161		
$-I_B$	Base Current	BC160	0.1	A
		BC161		
$P_{tot}$	Total Power Dissipation	@ $T_{case} = < 45^\circ$	3.7	W
		@ $T_{amb} = < 45^\circ$	0.65	
$T_J$	Junction Temperature		175	$^\circ\text{C}$
$T_{Stg}$	Storage Temperature range		-55 to +175	$^\circ\text{C}$

#### 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	$I_E = 0 ; V_{CES} = 40 \text{ V}$	BC160	-	-	100	nA	
		$I_E = 0 ; V_{CES} = 60 \text{ V}$	BC161	-	-	-	-	
		$I_E = 0 ; V_{amb} = 150^\circ\text{C}$	$V_{CES} = 40 \text{ V}$	BC160	-	-	100	$\mu\text{A}$
			$V_{CES} = 60 \text{ V}$	BC161	-	-	-	-
$-V_{CB0}$	Collector – Base Breakdown Voltage	$-I_C = 100 \mu\text{A}$	BC160	40	-	-	V	
		$I_E = 0$	BC161	60	-	-		
$-V_{CE0} (*)$	Collector – Emitter Breakdown Voltage	$-I_C = 10 \text{ mA}$	BC160	40	-	-	V	
		$I_B = 0$	BC161	60	-	-		
$-V_{EB0}$	Emitter – Base Breakdown Voltage	$-I_E = 100 \mu\text{A}$	BC160	5	-	-	V	
		$I_C = 0$	BC161					
$-V_{CE(SAT)} (*)$	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	1.7	-		
$h_{FE} (*)$	DC Current Gain	$-I_C = 100 \mu\text{A} , -V_{CE} = 1 \text{ V}$	Gr 10	-	80	-	-	
			Gr 16	-	120	-		
		$-I_C = 100 \text{ mA} , -V_{CE} = 1 \text{ V}$	Gr 10	63	100	160		
			Gr 16	100	160	250		
		$-I_C = 1 \text{ A} , -V_{CE} = 1 \text{ V}$	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	$I_E = 0 ; -V_{CB} = 20 \text{ V}$ $f = 1 \text{ MHz}$	-	15	30	pF		
$t_{off}$	Turn-off times	$-I_C = 100 \text{ mA}$ $-I_{B1} = -I_{B2} = 5 \text{ mA}$	-	-	650	ns		
$t_{on}$	Turn-on times	$-I_C = 100 \text{ mA}$ $-I_{B1} = 1 \text{ mA}$	-	-	500	ns		

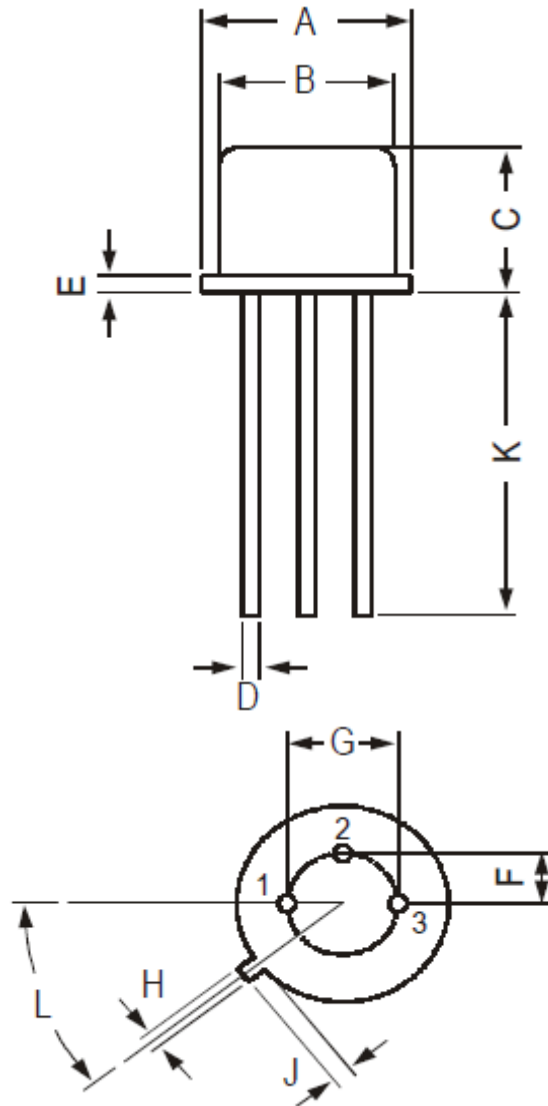
(\*) Pulsed : pulse duration = 300 $\mu\text{s}$ , duty cycle = 1%

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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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