

PNP medium power transistors

BC160; BC161

FEATURES

- High current (max. 1 A)
- Low voltage (max. 60 V).

APPLICATIONS

- General purpose applications.

DESCRIPTION

PNP medium power transistor in a TO-39 metal package.
NPN complements: BC140 and BC141.

PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector, connected to case

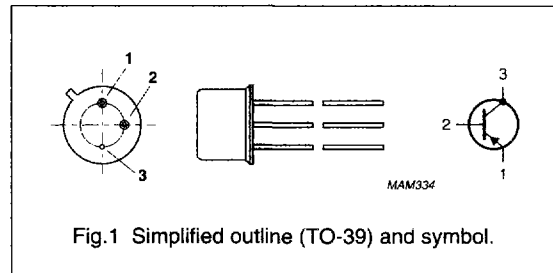


Fig.1 Simplified outline (TO-39) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	BC160		-	-	-40	V
	BC161		-	-	-60	V
V_{CES}	collector-emitter voltage	open base				
	BC160		-	-	-40	V
	BC161		-	-	-60	V
I_{CM}	peak collector current		-	-	-1.5	A
P_{tot}	total power dissipation	$T_{case} \leq 45\text{ }^{\circ}\text{C}$	-	-	3.7	W
h_{FE}	DC current gain	$I_C = -100\text{ mA}; V_{CE} = -1\text{ V}$				
	BC160-10; BC161-10		63	100	160	
	BC160-16; BC161-16		100	160	250	
f_T	transition frequency	$I_C = -50\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$	50	-	-	MHz

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LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CBO}	collector-base voltage	open emitter	-	-40	V
	BC160			-60	V
V _{CEO}	collector-emitter voltage	open base	-	-40	V
	BC161			-60	V
V _{EBO}	emitter-base voltage	open collector	-	-5	V
I _C	collector current (DC)		-	-1	A
I _{CM}	peak collector current		-	-1.5	A
I _{BM}	peak base current		-	-200	mA
P _{tot}	total power dissipation	T _{case} ≤ 45 °C	-	3.7	W
T _{stg}	storage temperature		-65	+150	°C
T _j	junction temperature		-	175	°C
T _{amb}	operating ambient temperature		-65	+150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	in free air	200	K/W
R _{th j-c}	thermal resistance from junction to case		35	K/W

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CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = -40\text{ V}$	-	-10	-100	nA
		$I_E = 0; V_{CB} = -40\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	-10	-100	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	-	-	-100	nA
h_{FE}	DC current gain BC160-10; BC161-10 BC160-16; BC161-16	$I_C = -100\text{ }\mu\text{A}; V_{CE} = -1\text{ V}$	-	80	-	
			-	120	-	
h_{FE}	DC current gain BC160-10; BC161-10 BC160-16; BC161-16	$I_C = -100\text{ mA}; V_{CE} = -1\text{ V}$	63	100	160	
			100	160	250	
h_{FE}	DC current gain BC160-10; BC161-10 BC160-16; BC161-16	$I_C = -1\text{ A}; V_{CE} = -1\text{ V}$	-	20	-	
			-	30	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -1\text{ A}; I_B = -100\text{ mA}$	-	-0.6	-1	V
V_{BE}	base-emitter voltage	$I_C = -1\text{ A}; V_{CE} = -1\text{ V}$	-	-1	-1.7	V
C_c	collector capacitance	$I_E = I_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	-	-	30	pF
C_e	emitter capacitance	$I_C = I_c = 0; V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}$	-	-	180	pF
f_T	transition frequency	$I_C = -50\text{ mA}; V_{CE} = -10\text{ V};$ $f = 100\text{ MHz}$	50	-	-	MHz
Switching times (between 10% and 90% levels)						
t_{on}	turn-on time	$I_{Con} = -100\text{ mA}; I_{Bon} = -5\text{ mA};$ $I_{Boff} = 5\text{ mA}$	-	-	500	ns
t_{off}	turn-off time		-	-	650	ns