

PNP power transistors

BD136; BD138; BD140

FEATURES

- High current (max. 1.5 A)
- Low voltage (max. 80 V).

APPLICATIONS

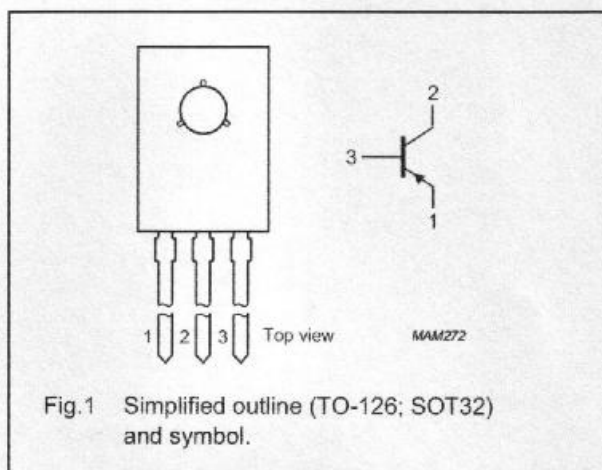
- General purpose power applications, e.g. driver stages in hi-fi amplifiers and television circuits.

DESCRIPTION

PNP power transistor in a TO-126; SOT32 plastic package. NPN complements: BD135, BD137 and BD139.

PINNING

PIN	DESCRIPTION
1	emitter
2	collector, connected to metal part of mounting surface
3	base



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			
	BD136		–	–45	V
	BD138		–	–60	V
	BD140		–	–100	V
V_{CEO}	collector-emitter voltage	open base			
	BD136		–	–45	V
	BD138		–	–60	V
	BD140		–	–80	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–1.5	A
I_{CM}	peak collector current		–	–2	A
I_{BM}	peak base current		–	–1	A
P_{tot}	total power dissipation	$T_{mb} \leq 70\text{ °C}$	–	8	W
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	100	K/W
$R_{th\ j-mb}$	thermal resistance from junction to mounting base		10	K/W

Note

1. Refer to TO-126 (SOT32) standard mounting conditions.

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = -30\text{ V}$	—	—	—100	nA
		$I_E = 0; V_{CB} = -30\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$	—	—	—10	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	—	—	—100	nA
h_{FE}	DC current gain	$V_{CE} = -2\text{ V}$; (see Fig.2)				
		$I_C = -5\text{ mA}$	40	—	—	
		$I_C = -150\text{ mA}$	63	—	250	
		$I_C = -500\text{ mA}$	25	—	—	
	DC current gain BD136-10; BD138-10; BD140-10 BD136-16; BD138-16; BD140-16	$I_C = -150\text{ mA}; V_{CE} = -2\text{ V}$; (see Fig.2)	63	—	160	
			100	—	250	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	—	—	—0.5	V
V_{BE}	base-emitter voltage	$I_C = -500\text{ mA}; V_{CE} = -2\text{ V}$	—	—	—1	V
f_T	transition frequency	$I_C = -50\text{ mA}; V_{CE} = -5\text{ V}$; $f = 100\text{ MHz}$	—	160	—	MHz
$\frac{h_{FE1}}{h_{FE2}}$	DC current gain ratio of the complementary pairs	$ I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$	—	1.3	1.6	