PNP medium power transistors BSR30; BSR31; BSR33

FEATURES

- High current (max. 1 A)
- Low voltage (max. 80 V).

APPLICATIONS

- Telephony and general industrial applications
- Thick and thin-film circuits.

DESCRIPTION

PNP medium power transistor in a SOT89 plastic package. NPN complements: BSR40; BSR41 and BSR43.

MARKING

TYPE NUMBER	MARKING CODE
BSR30	BR1
BSR31	BR2
BSR33	BR4

PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base

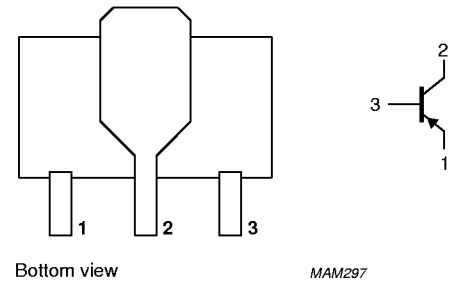


Fig.1 Simplified outline (SOT89) and symbol.

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			
	BSR30; BSR31		–	−70	V
	BSR33		–	−90	V
V_{CEO}	collector-emitter voltage	open base			
	BSR30; BSR31		–	−60	V
	BSR33		–	−80	V
V_{EBO}	emitter-base voltage	open collector	–	−5	V
I_C	collector current (DC)		–	−1	A
I_{CM}	peak collector current		–	−2	A
I_{BM}	peak base current		–	−200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	1.35	W
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		−65	+150	°C

Note

1. Device mounted on a printed-circuit board, single sided copper, tinplated, mounting pad for collector 6 cm^2. For other mounting conditions, see *"Thermal considerations for SOT89 in the General Part of associated Handbook"*.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	93	K/W
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point		13	K/W

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 6 cm^2. For other mounting conditions, see *"Thermal considerations for SOT89 in the General Part of associated Handbook".*

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

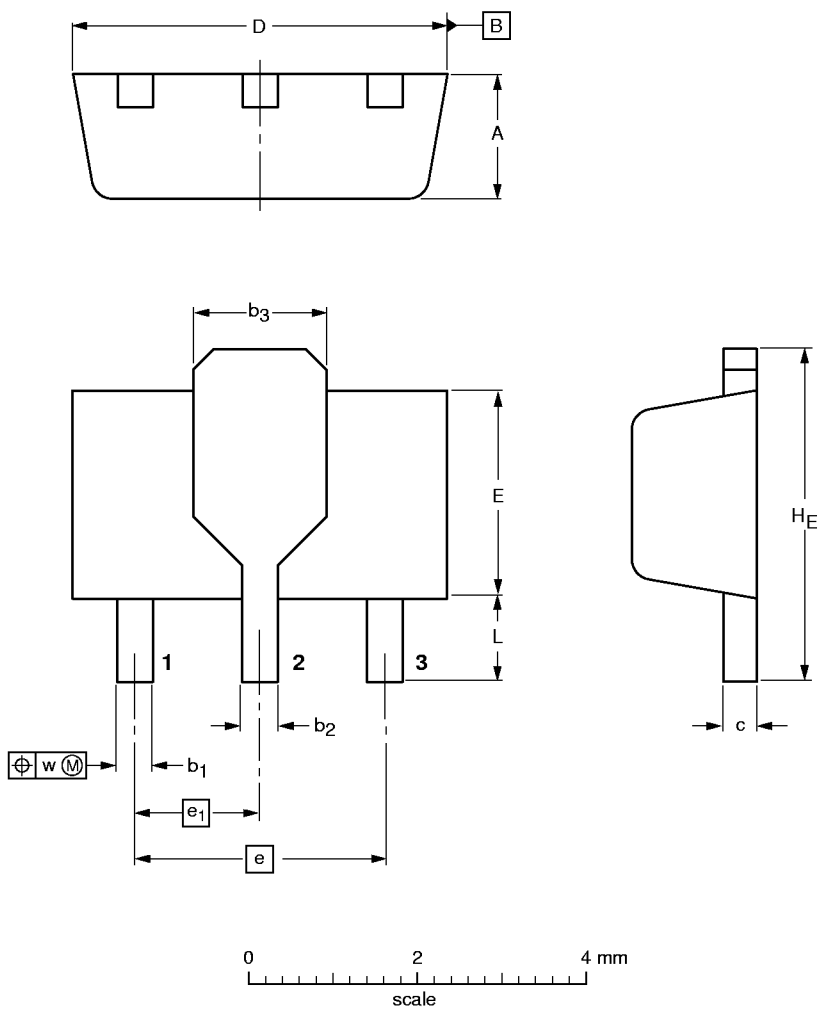
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = –60 V	–	–100	nA
		I_E = 0; V_{CB} = –60 V; T_j = 150 °C	–	–50	μA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = –5 V	–	–100	nA
h_{FE}	DC current gain BSR30 BSR31; BSR33	I_C = –100 μA; V_{CE} = –5 V; note 1	 10 30	 – –	
	DC current gain BSR30 BSR31; BSR33	I_C = –100 mA; V_{CE} = –5 V; note 1	 40 100	 120 300	
	DC current gain BSR30 BSR31; BSR33	I_C = –500 mA; V_{CE} = –5 V; note 1	 30 50	 – –	
V_{CEsat}	collector-emitter saturation voltage	I_C = –150 mA; I_B = –15 mA; note 1	–	–0.25	V
		I_C = –500 mA; I_B = –50 mA; note 1	–	–0.5	V
V_{BEsat}	base-emitter saturation voltage	I_C = –150 mA; I_B = –15 mA; note 1	–	–1	V
		I_C = –500 mA; I_B = –50 mA; note 1	–	–1.2	V
f_T	transition frequency	I_C = –50 mA; V_{CE} = –10 V; f = 100 MHz	100	–	MHz

Note

1. Pulse test: t_p = 300 μs; δ < 0.01.

PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 3 leads **SOT89**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_1	b_2	b_3	c	D	E	e	e_1	H_E	L min.	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.37	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	0.8	0.13

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT89						97-02-28