

NPN switching transistors

BSW66A; BSW67A; BSW68A

FEATURES

- High current (max. 1 A)
- High voltage (max. 150 V).

APPLICATIONS

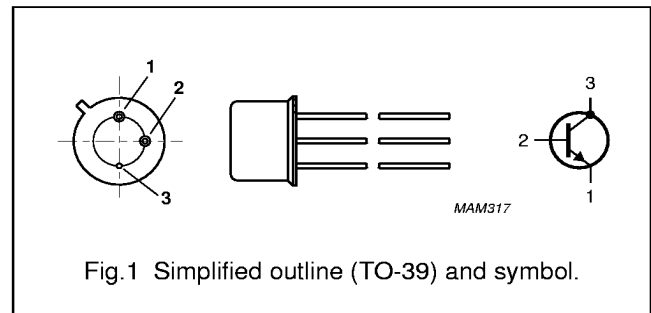
- General purpose switching and amplification
- Industrial applications.

DESCRIPTION

NPN transistor in a TO-39 metal package.

PINNING

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



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter				
	BSW66A		–	–	100	V
	BSW67A		–	–	120	V
V_{CEO}	collector-emitter voltage	open base				
	BSW66A		–	–	100	V
	BSW67A		–	–	120	V
	BSW68A		–	–	150	V
I_C	collector current (DC)		–	–	1	A
P_{tot}	total power dissipation	$T_{case} \leq 25\text{ }^\circ\text{C}$	–	–	5	W
h_{FE}	DC current gain	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	30	–	–	
		$I_C = 500\text{ mA}; V_{CE} = 5\text{ V}$	30	–	–	
f_T	transition frequency	$I_C = 100\text{ mA}; V_{CE} = 20\text{ V}; f = 100\text{ MHz}$	–	130	–	MHz
t_{off}	turn-off time	$I_{Con} = 500\text{ mA}; I_{Bon} = 50\text{ mA}; I_{Boff} = -50\text{ mA}$	–	900	–	ns

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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			
	BSW66A		–	100	V
	BSW67A		–	120	V
	BSW68A		–	150	V
V _{CEO}	collector-emitter voltage	open base			
	BSW66A		–	100	V
	BSW67A		–	120	V
	BSW68A		–	150	V
V _{EBO}	emitter-base voltage	open collector	–	6	V
I _C	collector current (DC)		–	1	A
I _{CM}	peak collector current	t _p ≤ 20 ms	–	2	A
I _{BM}	peak base current		–	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	–	800	mW
		T _{case} ≤ 25 °C	–	5	W
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	200	°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	free air	220	K/W
R _{th j-c}	thermal resistance from junction to case		35	K/W

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CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current BSW66A	$I_E = 0; V_{CB} = 50\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 50\text{ V}; T_j = 150\text{ °C}$	–	–	50	μA
		$I_E = 0; V_{CB} = 100\text{ V}$	–	–	100	μA
I_{CBO}	collector cut-off current BSW67A	$I_E = 0; V_{CB} = 60\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 60\text{ V}; T_j = 150\text{ °C}$	–	–	50	μA
		$I_E = 0; V_{CB} = 120\text{ V}$	–	–	100	μA
I_{CBO}	collector cut-off current BSW68A	$I_E = 0; V_{CB} = 75\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 75\text{ V}; T_j = 150\text{ °C}$	–	–	50	μA
		$I_E = 0; V_{CB} = 150\text{ V}$	–	–	100	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 3\text{ V}$	–	–	100	nA
		$I_C = 0; V_{EB} = 6\text{ V}$	–	–	100	μA
h_{FE}	DC current gain	$V_{CE} = 5\text{ V}$				
		$I_C = 10\text{ mA}$	30	–	–	
		$I_C = 100\text{ mA}$	40	–	–	
		$I_C = 500\text{ mA}$	30	–	–	
		$I_C = 1\text{ A}$	10	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	–	–	150	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	400	mV
		$I_C = 1\text{ A}; I_B = 150\text{ mA}$	–	–	1	V
V_{BEsat}	base-emitter saturation voltage	$I_C = 100\text{ mA}; I_B = 10\text{ mA}$	–	–	900	mV
		$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	1.1	V
		$I_C = 1\text{ A}; I_B = 150\text{ mA}$	–	–	1.4	V
C_c	collector capacitance	$I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	–	20	pF
C_e	emitter capacitance	$I_C = I_c = 0; V_{EB} = 0; f = 1\text{ MHz}$	–	–	300	pF
f_T	transition frequency	$I_C = 100\text{ mA}; V_{CE} = 20\text{ V}; f = 100\text{ MHz}$	–	130	–	MHz
Switching times (between 10% and 90% levels)						
t_{on}	turn-on time	$I_{Con} = 500\text{ mA}; I_{Bon} = 50\text{ mA};$	–	500	–	ns
t_{off}	turn-off time	$I_{Boff} = -50\text{ mA}$	–	900	–	ns

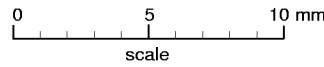
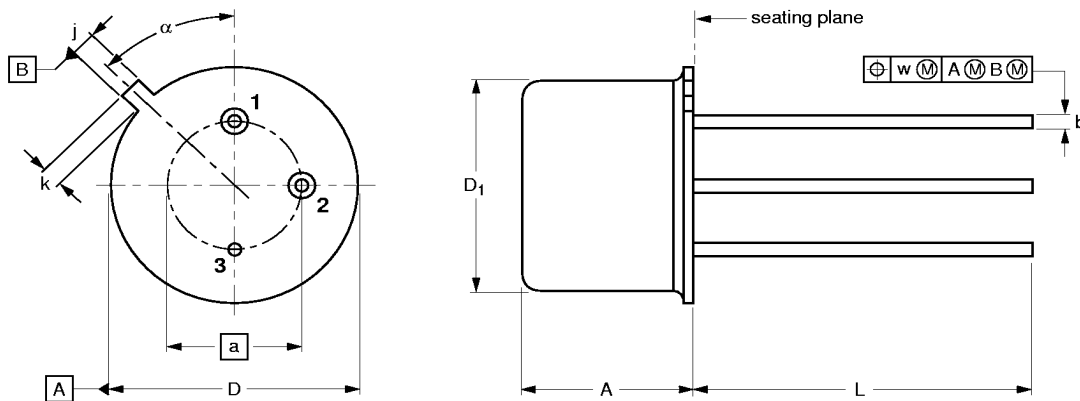
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PACKAGE OUTLINE

Metal-can cylindrical single-ended package; 3 leads

SOT5/11



DIMENSIONS (mm are the original dimensions)

UNIT	A	a	b	D	D ₁	j	k	L	w	α
mm	6.60 6.35	5.08	0.48 0.41	9.39 9.08	8.33 8.18	0.85 0.75	0.95 0.75	14.2 12.7	0.2	45°

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT5/11		TO-39				97-04-11