

BSW66A; BSW67A; BSW68A NPN switching transistors

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

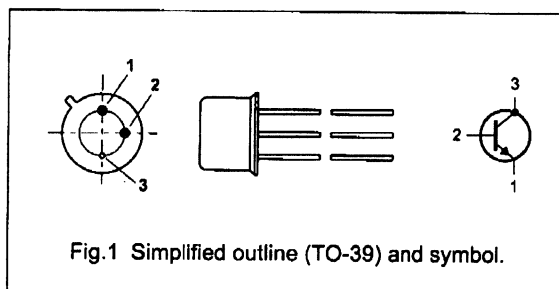


Fig. 1 Simplified outline (TO-39) and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V _{CBO}	collector-base voltage	open emitter				
	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} ≤ 25 °C	-	-	5	W
h _{FE}	DC current gain	I _C = 10 mA; V _{CE} = 5 V	30	-	-	
		I _C = 500 mA; V _{CE} = 5 V	30	-	-	
f _T	transition frequency	I _C = 100 mA; V _{CE} = 20 V; f = 100 MHz	-	130	-	MHz
t _{off}	turn-off time	I _{Con} = 500 mA; I _{Bon} = 50 mA; I _{Boff} = -50 mA	-	900	-	ns



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NPN switching transistors

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CB0}	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

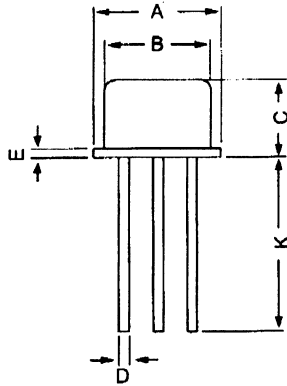
NPN switching transistors

CHARACTERISTICS

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

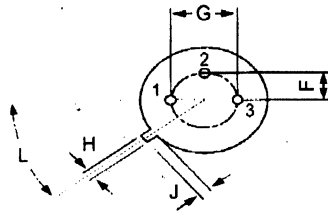
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current BSW66A	$I_E = 0; V_{CB} = 50\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 50\text{ V}; T_j = 150\text{ °C}$	–	–	50	μA
		$I_E = 0; V_{CB} = 100\text{ V}$	–	–	100	μA
I_{CBO}	collector cut-off current BSW67A	$I_E = 0; V_{CB} = 60\text{ V}$	–	–	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	$I_E = I_B = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	–	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

TO-39 Metal Can Package



All dimensions are in mm

DIM	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 DEG	48 DEG



PIN CONFIGURATION
 1. EMITTER
 2. BASE
 3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-39	500 pcs/polybag	640 gm/500 pcs	3" x 7.5" x 7.5"	20K	17" x 18" x 13.5"	32K	40 kgs