

T-37-15

Silicon planar epitaxial transistors

BSS44/BSS46

DESCRIPTION

The BSS44 and BSS46 are pnp silicon planar epitaxial transistors in a TO-39 metal envelope. They are intended for use in switching applications.

PINNING - TO-39

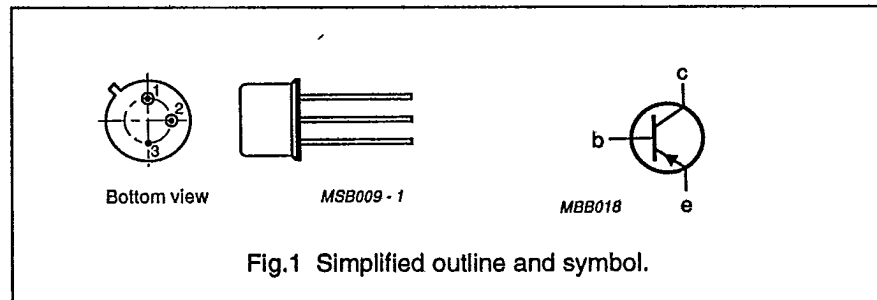
Collector connected to case.

PIN	DESCRIPTION
1	emitter
2	base
3	collector

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$-V_{CBO}$	collector-base voltage	open emitter	-	65	V
	BSS44			85	V
$-V_{CEO}$	collector-emitter voltage	open base	-	60	V
	BSS44			80	V
$-I_C$	collector current		-	5	A
P_{tot}	total power dissipation	$T_{case} = 25\text{ }^\circ\text{C}$	-	5	W
T_j	junction temperature		-	200	$^\circ\text{C}$
h_{FE}	current gain	$-V_{CE} = 2\text{ V};$ $-I_C = 500\text{ mA}$	30	-	
			BSS44	25	-
	BSS46	$-V_{CE} = 2\text{ V};$ $-I_C = 2\text{ A}$	40	-	
			BSS44	30	-
f_T	transition frequency	$-V_{CB} = 5\text{ V};$ $-I_E = 500\text{ mA}$	70	-	MHz

PIN CONFIGURATION



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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$-V_{CBO}$	collector-base voltage	open emitter			
	BSS44		-	65	V
	BSS46		-	85	V
$-V_{CEO}$	collector-emitter voltage	open base			
	BSS44		-	60	V
	BSS46		-	80	V
$-V_{EBO}$	emitter-base voltage	open collector	-	6	V
$-I_C$	collector current		-	5	A
P_{tot}	total power dissipation	up to $T_{case} = 25\text{ °C}$	-	5	W
		up to $T_{amb} = 25\text{ °C}$	-	870	mW
T_{stg}	storage temperature range		-65	200	°C
T_j	junction temperature		-	200	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j-a}$	from junction to ambient	200	K/W
$R_{th\ j-c}$	from junction to case	35	K/W

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$-I_{CES}$	collector-emitter cut-off current, BSS44	$-V_{BE} = 0;$ $-V_{CE} = 60\text{ V}$	-	-	500	nA
		$-V_{BE} = 0;$ $-V_{CE} = 60\text{ V};$ $T_{amb} = 100\text{ °C}$	-	-	200	μA
$-I_{CBO}$	collector-base cut-off current, BSS46	$I_E = 0;$ $-V_{CB} = 60\text{ V}$	-	-	500	nA
		$I_E = 0;$ $-V_{CB} = 60\text{ V};$ $T_{amb} = 100\text{ °C}$	-	-	200	μA
$-I_{EBO}$	emitter-base cut-off current	$I_C = 0;$ $-V_{EB} = 5\text{ V}$	-	-	100	nA
$-V_{(BR)CBO}$	collector-base breakdown voltage	$-I_C = 5\text{ mA};$ $I_E = 0$				
	BSS44		65	-	-	V
	BSS46		85	-	-	V
$-V_{(BR)CEO}$	collector-emitter breakdown voltage	$-I_C = 100\text{ mA};$ $I_B = 0$				
	BSS44		60	-	-	V
	BSS46		80	-	-	V

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$-V_{(BR)EBO}$	emitter-base breakdown voltage	$-I_E = 100 \mu\text{A};$ $I_C = 0$	6	-	-	V
$-V_{CEsat}$	collector-emitter saturation voltage	$-I_B = 50 \text{ mA};$ $-I_C = 500 \text{ mA}$	-	0.1	-	V
	BSS44 BSS46	$-I_B = 0.5 \text{ mA};$ $-I_C = 5 \text{ A}$	-	-	1 1.4	V V
$-V_{BEsat}$	base-emitter saturation voltage	$-I_B = 50 \text{ mA};$ $-I_C = 500 \text{ mA}$	-	0.8	-	V
		$-I_B = 0.5 \text{ mA};$ $-I_C = 5 \text{ A}$	-	-	1.8	V
h_{FE}	DC current gain	$-V_{CE} = 2 \text{ V};$ $-I_C = 500 \text{ mA}$	30	-	-	
	BSS44 BSS46		25	-	-	
	BSS44 BSS46	$-V_{CE} = 2 \text{ V};$ $-I_C = 2 \text{ A}$	40 30	- -	- -	
		$-V_{CE} = 2 \text{ V};$ $-I_C = 5 \text{ A}$	-	45	-	
f_T	transition frequency	$-V_{CE} = 5 \text{ V};$ $-I_C = 500 \text{ mA};$ $f = 30 \text{ MHz}$	70	-	-	MHz
C_{ob}	output capacitance	$-V_{CB} = 10 \text{ V};$ $I_E = 0;$ $f = 1 \text{ MHz}$	-	90	-	pF
C_b	input capacitance	$-V_{EB} = 0.5 \text{ V};$ $I_C = 0;$ $f = 1 \text{ MHz}$	-	700	-	pF
Switching times						
t_{on}	turn-on time, BSS44	$-I_C = 500 \text{ A};$ $I_{B on} = I_{B off} = 50 \text{ mA}$	-	80	-	ns
	turn-on time, BSS46	$-I_C = 1 \text{ A};$ $I_{B on} = I_{B off} = 50 \text{ mA}$	-	-	0.3	μs
t_{off}	turn-off time, BSS44	$-I_C = 500 \text{ A};$ $I_{B on} = I_{B off} = 50 \text{ mA}$	-	530	-	ns
	turn-off time, BSS46	$-I_C = 1 \text{ A};$ $I_{B on} = I_{B off} = 50 \text{ mA}$	-	-	1	μs

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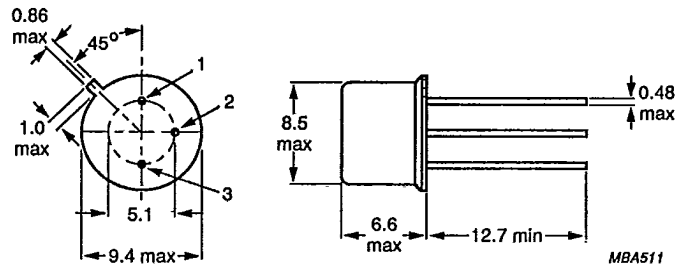
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PACKAGE OUTLINE



Dimensions in mm.

Fig.2 TO-39.

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DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	