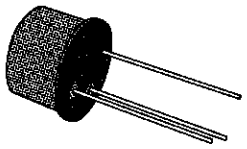
SGS-THOMSON MICROELECTRONICS

BSX32

HIGH-VOLTAGE, HIGH-CURRENT SWITCH

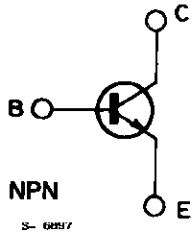
DESCRIPTION

The BSX32 is a silicon planar epitaxial NPN transistor in Jedec TO-39 metal case. It is designed for high voltage, high current switching applications.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	65	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	40	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	6	V
I_C	Collector Current	1	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.8 3.5	W W
T_{stg}, T_j	Storage and Junction Temperature	– 55 to 200	°C

THERMAL DATA

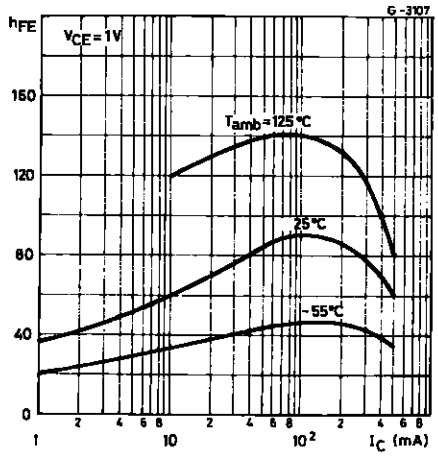
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	50	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	219	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C unless otherwise specified)

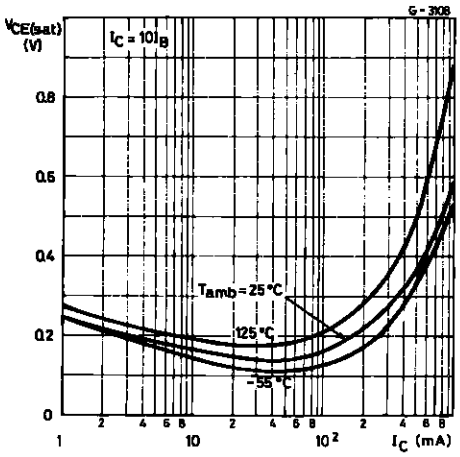
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 50 V		0.25	4	µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 µA	65			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	40			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 100 µA	6			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 100 mA I_B = 10 mA I_C = 500 mA I_B = 50 mA I_C = 1A I_B = 100 mA		0.17 0.36 0.6	0.25 0.5 0.85	V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 100 mA I_B = 10 mA I_C = 500 mA I_B = 50 mA I_C = 1 A I_B = 100 mA		0.8	0.9 1.5 2	V V V
h_{FE}*	DC Current Gain	I_C = 10 mA V_{CE} = 1 V I_C = 100 mA V_{CE} = 1 V I_C = 500 mA V_{CE} = 1 V I_C = 1 A V_{CE} = 5 V V_{CE} = 1 V T_{amb} = – 55 °C I_C = 100 mA I_C = 500 mA	30 60 25 20 30 15	60 90 60 60 45 35	150	
f_T	Transition Frequency	I_C = 50 mA V_{CE} = 10 V f = 100 MHz		400		MHz
C_{EBO}	Emitter-base Capacitance	I_C = 0 V_{EB} = 0.5 V f = 1 MHz		40	55	pF
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 10 V f = 1 MHz		6	10	pF
t_{on}**	Turn-on Time	I_C = 500 mA V_{CC} = 30 V I_{B1} = 50 mA		22	35	ns
t_{off}**	Turn-off Time	I_C = 500 mA V_{CC} = 30 V I_{B1} = – I_{B2} = 50 mA		40	60	ns

* Pulsed : pulse duration = 300 µs, duty cycle = 1 %.
** See test circuit.

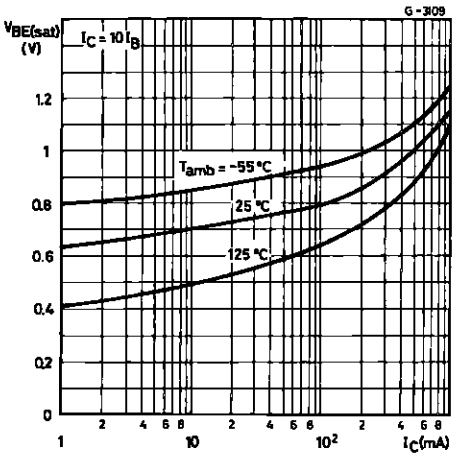
DC Current Gain.



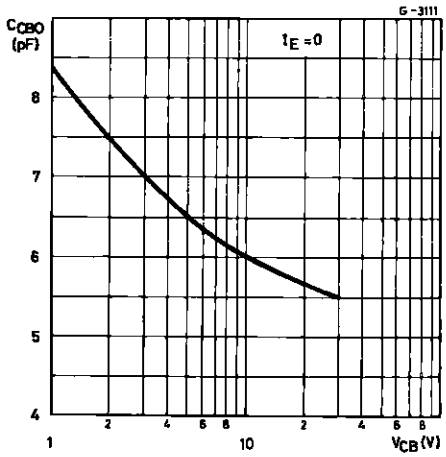
Collector-emitter Saturation Voltage.



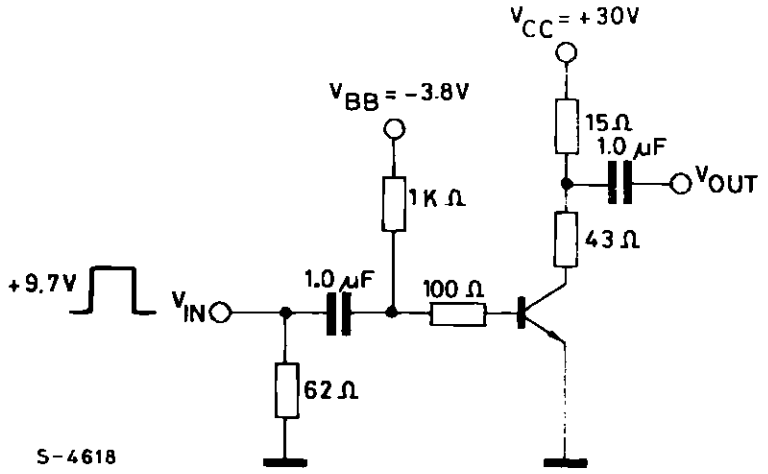
Base-emitter Saturation Voltage.



Collector-base Capacitance.



Test circuit for t_{on}, t_{off}.

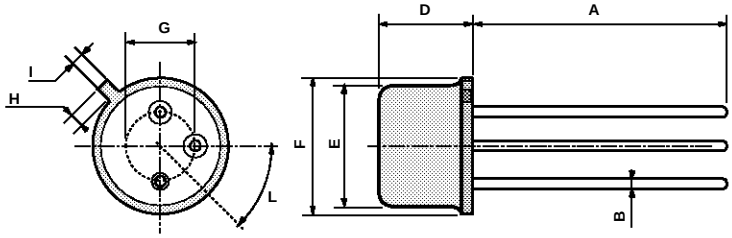


PULSE GENERATOR :
t_r, $t_f \leq 1.0$ ns
PW ≈ 1.0 µs
Z_{IN} = 50 Ω
DC < 2 %

TO OSCILLOSCOPE :
t_r < 1.0 ns
$Z_{IN} \geq 100$ KΩ

TO39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45^{o} (typ.)					



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