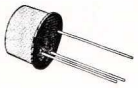
SGS-THOMSON
MICROELECTRONICS

BSX28

HIGH-SPEED SATURATED SWITCH

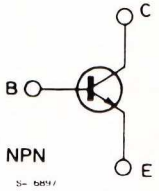
DESCRIPTION

The BSX28 is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case. It is designed specifically for high speed saturated switching applications.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	30	V
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	30	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	12	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	4.5	V
I_C	Collector Current	500	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C at $T_{case} \leq 100$ °C	0.36 1.2 0.68	W W W
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200	°C

THERMAL DATA

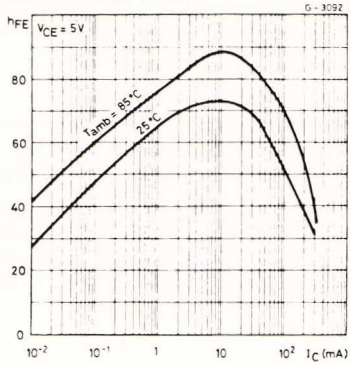
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	146	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

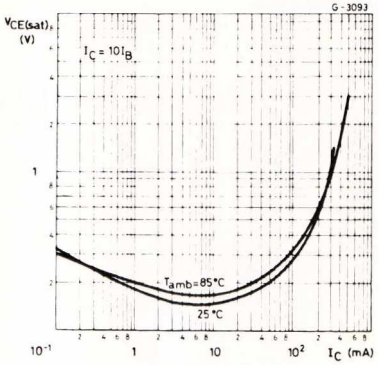
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 20 V V_{CE} = 20 V T_{amb} = 85 °C			0.4 10	μA μA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 10 μA	30			V
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage (V_{BE} = 0)	I_C = 10 μA	30			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	12			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 100 μA	4.5			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA I_C = 30 mA I_B = 3 mA I_C = 100 mA I_B = 10 mA I_C = 10 mA I_B = 1 mA T_{amb} = 85 °C		0.15 0.18 0.3 0.17	0.2 0.25 0.5 0.3	V V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA I_C = 30 mA I_B = 3 mA I_C = 100 mA I_B = 10 mA	0.72	0.8 0.9 1.1	0.87 1.15 1.6	V V V
h_{FE}*	DC Current Gain	I_C = 10 mA V_{CE} = 0.35 V I_C = 30 mA V_{CE} = 0.4 V I_C = 100 mA V_{CE} = 1 V	30 25 15	70 70 50	120	
f_T	Transition Frequency	I_C = 20 mA V_{CE} = 10 V f = 100 MHz	400	650		MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 5 V f = 1 MHz		2.3	4	pF
t_s	Storage Time	I_C = 10 mA V_{CC} = 10 V I_{B1} = − I_{B2} = 10 mA		6.5	13	ns
t_{on}	Turn-on Time	I_C = 30 mA V_{CC} = 2 V I_{B1} = 3 mA		9	15	ns
t_{off}	Turn-off Time	I_C = 30 mA V_{CC} = 2 V I_{B1} − I_{B2} = 3 mA		13	20	ns

* Pulsed : pulse duration = 300 ms, duty cycle = 1 %.

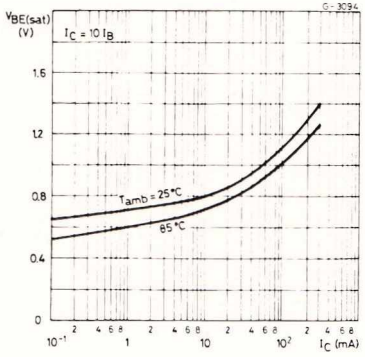
DC Current Gain.



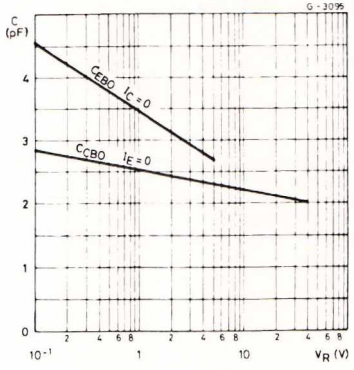
Collector-emitter Saturation Voltage.



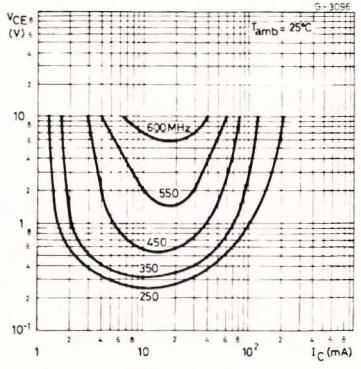
Base-emitter Saturation Voltage.



Emitter-base and Collector-base Capacitances.



Contours of Constant Transition Frequency.



Switching Characteristics.