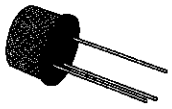
SGS-THOMSON MICROELECTRONICS

BSX26

HIGH-SPEED SATURATED SWITCH

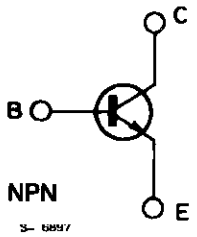
DESCRIPTION

The BSX26 is a silicon planar epitaxial NPN transistor in Jedec TO-18 metal case. It is designed for switching applications up to 500 mA.



TO-18

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	40	V
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	40	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	15	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	4	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

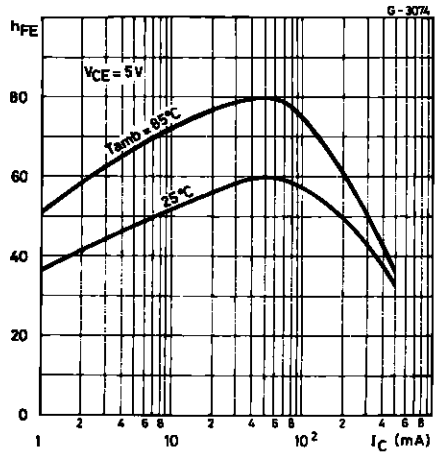
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	146	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

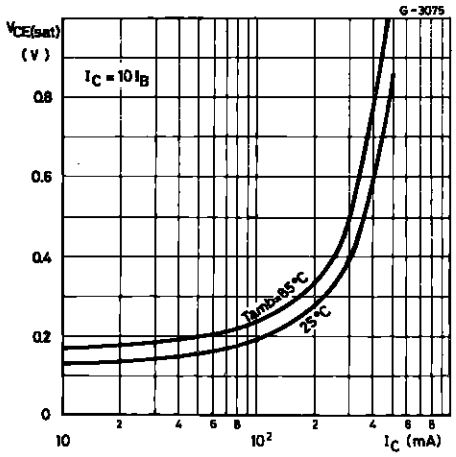
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 20 V V_{CE} = 20 V T_{amb} = 85 °C			0.5 15	µA µA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 µA	40			V
$V_{(BR)CES}$	Collector-emitter Breakdown Voltage (V_{BE} = 0)	I_C = 100 µA	40			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	15			V
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 100 µA	4			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 30 mA I_B = 3 mA I_C = 100 mA I_B = 10 mA I_C = 300 mA I_B = 30 mA I_C = 30 mA I_B = 3 mA T_{amb} = 85 °C		0.16 0.18 0.39 0.18	0.18 0.28 0.5 0.3	V V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 30 mA I_B = 3 mA I_C = 100 mA I_B = 10 mA I_C = 300 mA I_B = 30 mA	0.75	0.82 0.97 1.3	0.95 1.2 1.7	V V V
h_{FE}*	DC Current Gain	I_C = 30 mA V_{CE} = 0.4 V I_C = 100 mA V_{CE} = 0.5 V I_C = 300 mA V_{CE} = 1 V	30 25 15	60 55	120	
f_T	Transition Frequency	I_C = 30 mA V_{CE} = 10 V f = 100 MHz	350	550		MHz
C_{EBO}	Emitter-base Capacitance	I_C = 0 V_{EB} = 0.5 V f = 1 MHz		6.5	8	pF
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 5 V f = 1 MHz		3.3	5	pF
t_s	Storage Time	I_C = 10 mA V_{CC} = 10 V I_{B1} = – I_{B2} = 10 mA		8	18	ns
t_{on}**	Turn-on Time	I_C = 300 mA V_{CC} = 15 V I_{B1} = 30 mA		9	15	ns
t_{off}**	Turn-off Time	I_C = 300 mA V_{CC} = 15 V I_{B1} = – I_{B2} = 30 mA		15	25	ns

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

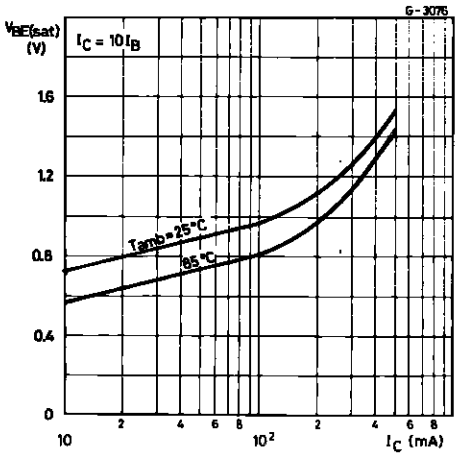
DC Current Gain.



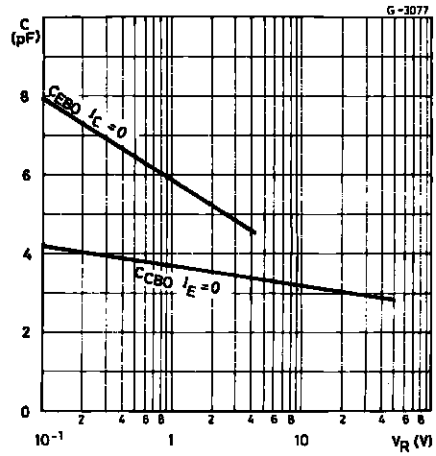
Collector-emitter Saturation Voltage.



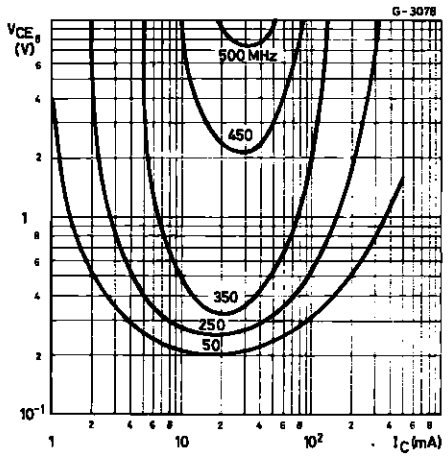
Base-emitter Saturation Voltage.



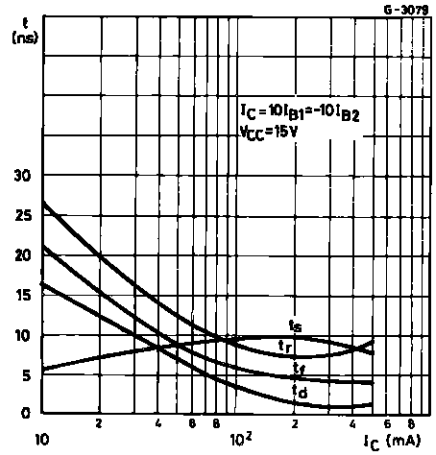
Emitter-base and Collector-base Capacitances.



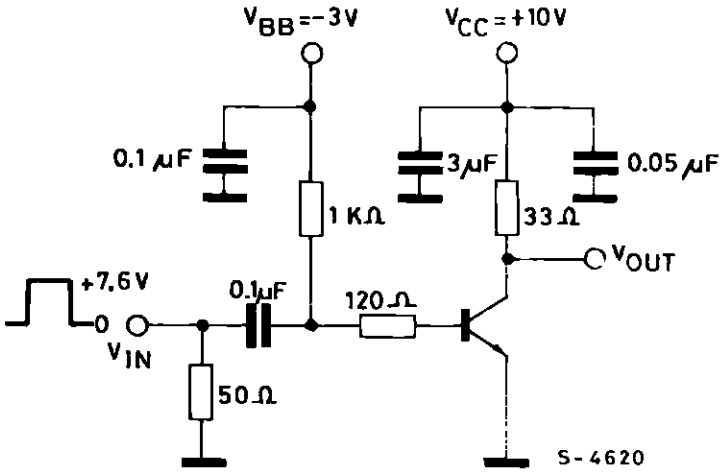
Contours of Constant Transition Frequency.



Switching Characteristics.



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

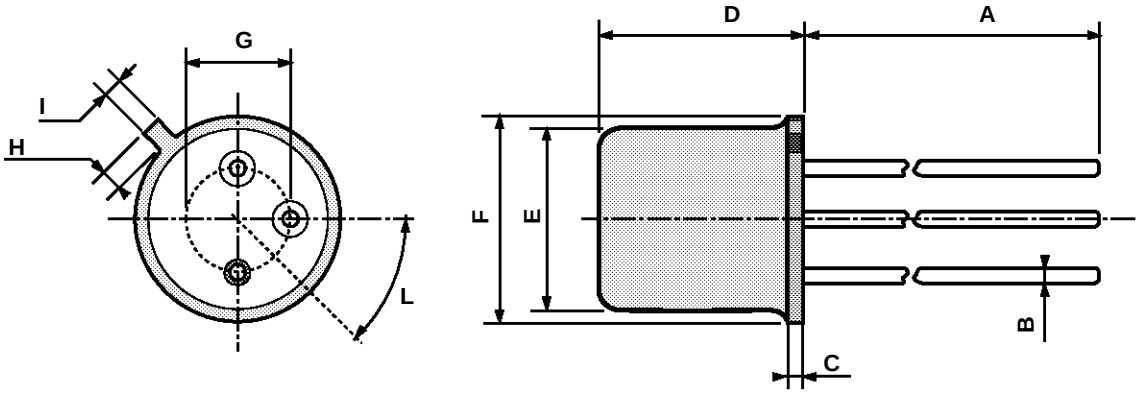


PULSE GENERATOR :
t_r, t_f < 1.0ns
PW ≥ 240ns
Z_{IN} = 50Ω

TO OSCILLOSCOPE :
t_r < 1.0ns
Z_{IN} ≈ 100KΩ

TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45^o			45^o		



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