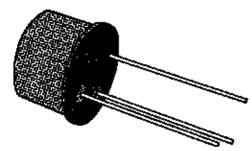
BSX88A

HIGH FREQUENCY, HIGH SPEED

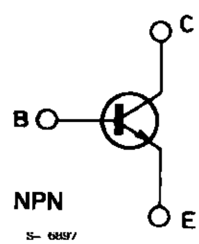
DESCRIPTION

The BSX88A is a silicon planar epitaxial NPN transistor specially designed as high speed saturated logic switch. It features 20 Volt. V_{CEO}, low saturation voltage and fast switching times from 10 to 300mA.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	40	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	20	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	5.5	V
I_C	Collector Current	500	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C at $T_{case} \leq 25$ °C	0.36 1.2	W W
T_{stg}, T_j	Storage and Junction Temperature	– 55 to 200	°C

THERMAL DATA

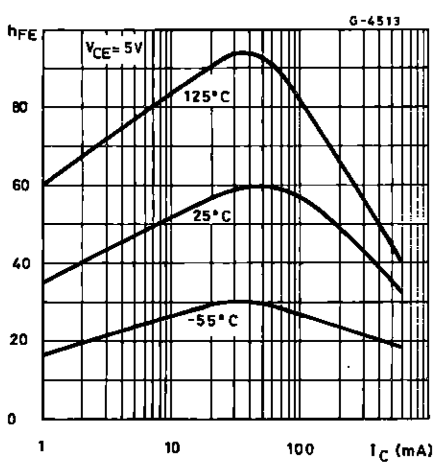
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	145	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	486	°C/W

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

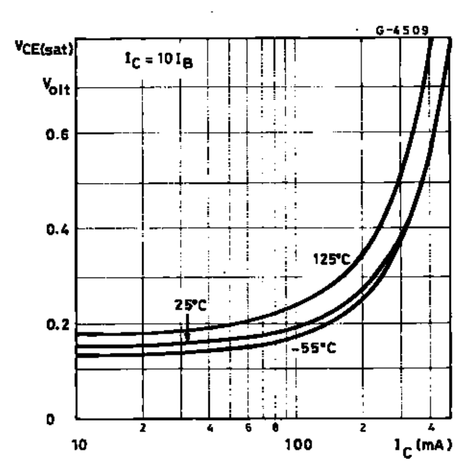
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{EB} = 0)	V_{CE} = 20 V			0.3	μA
$V_{(BR)CBO}$	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 μA	40			V
$V_{(BR)EBO}$	Emitter–base Breakdown Voltage (I_C = 0)	I_E = 100 μA	5.5			V
$V_{(BR)CEO}$*	Collector-emitter Breakdown Voltage (I_B = 0)	I_C = 10 mA	20			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA I_C = 100 mA I_B = 10 mA			0.18 0.39	V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 10 mA I_B = 1 mA I_C = 100 mA I_B = 10 mA	0.72	0.77	0.8 1.2	V V
h_{FE}*	DC Current Gain	I_C = 0.5 mA V_{CE} = 1 V I_C = 10 mA V_{CE} = 1 V I_C = 100 mA V_{CE} = 1 V	15 30 35	30 50 55		
h_{fe}	High Frequency Current Gain (f = 100 MHz)	I_C = 30 mA V_{CE} = 10 V	3.5	5.8		
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 0.5 V f = 1 MHz		3	5	pF
C_{EBO}	Emitter-base Capacitance	I_C = 0 V_{EB} = 0.5 V f = 1 MHz		7	8	pF
t_s **	Change Storage Time Constant	I_C = I_{B1} = I_{B2} = 10 mA			20	ns
t_{on}**	Turn-on Time	I_C = 10 mA I_{B1} = 3 mA V_{BE} = – 2 V			30	ns
t_{off}**	Turn-off Time	I_C = 10 mA I_{B1} = 3 mA V_{BE} = – 2 V			70	ns

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

DC Pulse Current Gain vs. Collector Current.

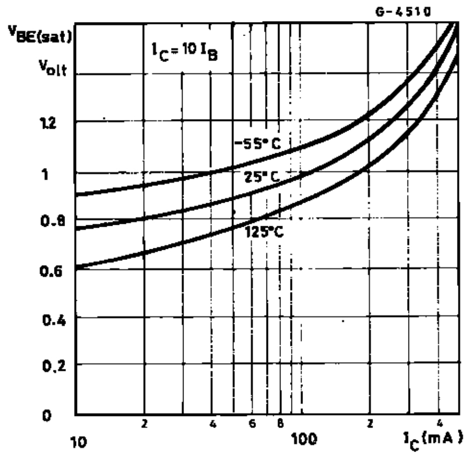


Collector Saturation Voltage vs. Collector Current.

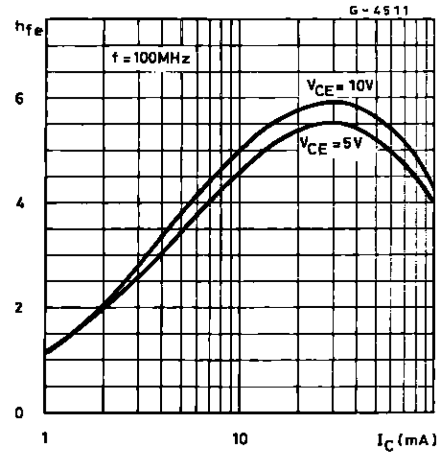


SGS-THOMSON MICROELECTRONICS

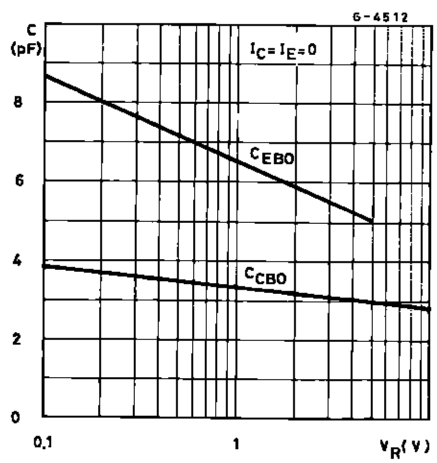
Base Saturation Voltage vs. Collector Current.



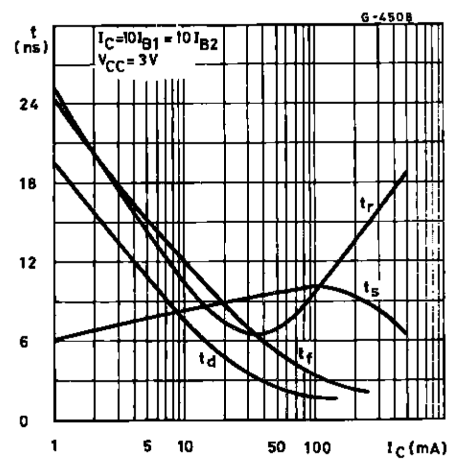
High Frequency Current Gain vs. Collector Current.



Input and Output Capacitance vs. Reverse Bias Voltage.

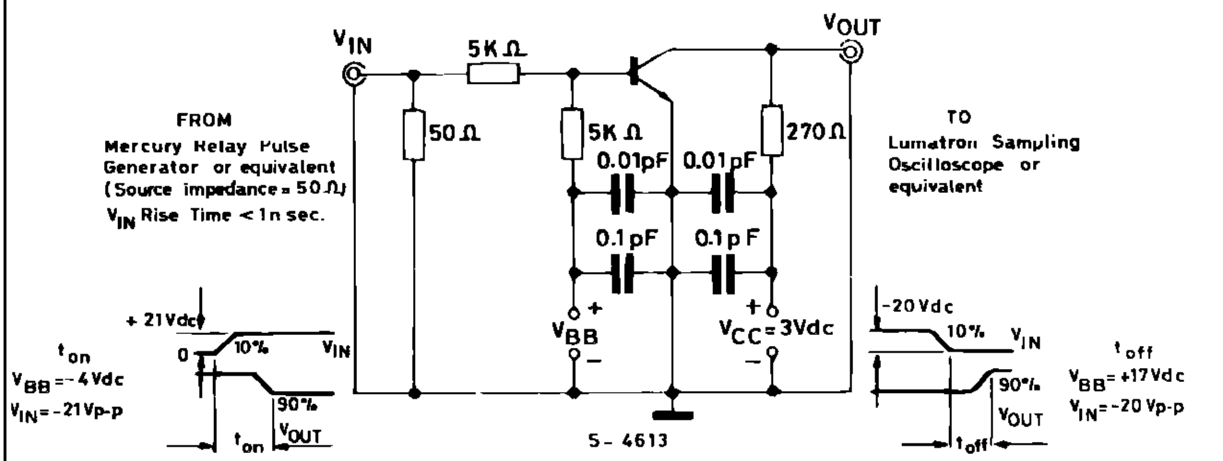


Switching Times vs. Collector Current.

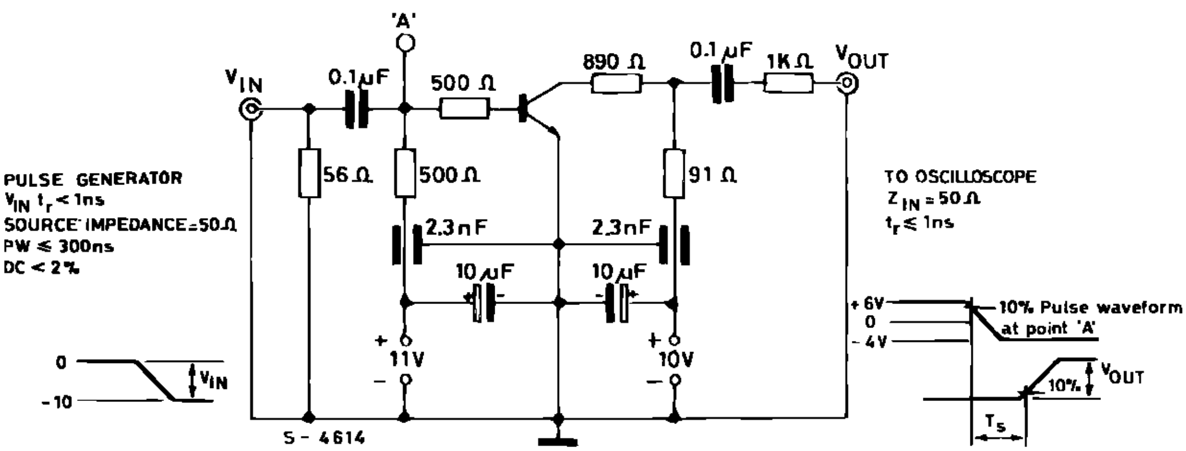


TEST CIRCUITS

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

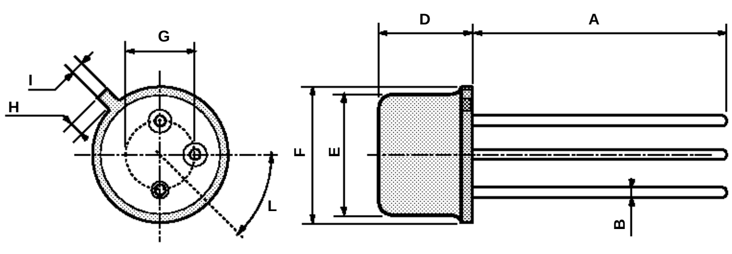


Test circuit for t_S.



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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