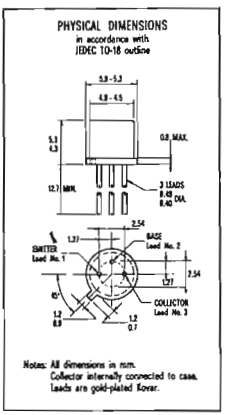
BSX 36

HIGH-CURRENT SWITCH

PNP DIFFUSED SILICON PLANAR EPITAXIAL TRANSISTOR

GENERAL DESCRIPTION - The BSX36 is a PNP silicon PLANAR II epitaxial transistor specially suitable for digital and analogue applications. Its high current gain high V_{CEO} (sust), low noise figure and low saturation voltage, make it ideal for line and relay drivers, memory applications and low noise amplifiers.



ABSOLUTE MAXIMUM RATINGS (Note 1)

Maximum Temperatures

Storage Temperature	-65°C to + 200°C
Operating Junction Temperature	+200°C Maximum

Maximum Power Dissipations

Total Dissipation at 25°C Case Temperature (Notes 2 and 3)	1.2 Watt
at 25°C Ambient Temperature (Notes 2 and 3)	0.36 Watt

Maximum Voltages and Current

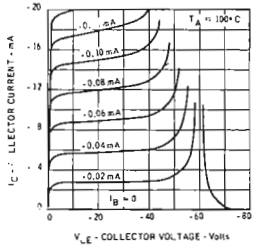
V_{CBO}	Collector to Base Voltage	-40 Volts
V_{CEO}	Collector to Emitter Voltage (Note 4)	-40 Volts
V_{EBO}	Emitter to Base Voltage	-5 Volts
I_C	DC Collector Current	500 mA

ELECTRICAL CHARACTERISTICS (25°C free air temperature unless otherwise noted)

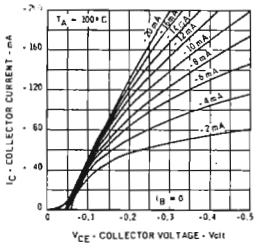
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS	
h_{FE}	DC Current Gain		50			I_C = 10 µA	V_{CE} = - 10 V
h_{FE}	DC Current Gain		75			I_C = 1 mA	V_{CE} = - 10 V
h_{FE}	DC Pulse Current Gain (Note 5)	40	100			I_C = 10 mA	V_{CE} = - 10 V
h_{FE}	DC Pulse Current Gain (Note 5)		100			I_C = 50 mA	V_{CE} = - 10 V
h_{FE}	DC Pulse Current Gain (Note 5)		85			I_C = 150 mA	V_{CE} = - 10 V
V_{BE} (sat)	Base-Emitter Saturation Voltage (Note 5)		-0.92	-1.1	V	I_C = 50 mA	I_B = 5 mA
V_{BE} (sat)	Base-Emitter Saturation Voltage (Note 5)		-1	-1.4	V	I_C = 150 mA	I_B = 15 mA
V_{BE} (sat)	Base-Emitter Saturation Voltage (Note 5)			-2.2	V	I_C = 500 mA	I_B = 50 mA
V_{CE} (sat)	Collector-Emitter Saturation Voltage (Note 5)		-0.08	-0.3	V	I_C = 50 mA	I_B = 5 mA
V_{CE} (sat)	Collector-Emitter Saturation Voltage (Note 5)		-0.18	-0.5	V	I_C = 150 mA	I_B = 15 mA
V_{CE} (sat)	Collector-Emitter Saturation Voltage (Note 5)		-0.6	-1.8	V	I_C = 500 mA	I_B = 50 mA
I_{CBO}	Collector Cutoff Current		0.2	15	nA	V_{CB} = 25 V	I_E = 0
I_{CBO} (125°C)	Collector Cutoff Current			15	µA	V_{CB} = 25 V	I_E = 0
BV_{CBO}	Collector to Base Breakdown Voltage	-40			V	I_C = 10 µA	I_E = 0
BV_{EBO}	Emitter to Base Breakdown Voltage	-5			V	I_E = 10 µA	I_C = 0
V_{CEO} (sust)	Collector to Emitter Sustaining Voltage (Notes 4 and 5)	-40			V	I_C = 10 mA	I_B = 0
h_{fe}	High Frequency Current Gain (f = 100 Mc/s)	1	2			I_C = 50 mA	V_{CE} = - 20 V
C_{ob}	Output Capacitance		6	8	pF	I_C = 0	V_{CB} = - 10 V
C_{TE}	Emitter Transition Capacitance			25	pF	I_C = 0	V_{EB} = - 0.5 V
NF	Noise Figure (Note 6)		1		dB	I_C = 30 µA	V_{CE} = - 5 V
t_{on}	Turn On Time		17	40	nsec	I_C = 300 mA	I_{B1} = 30 mA
t_{off}	Turn Off Time		18	100	nsec	I_C = 300 mA	I_{B1} = 30 mA I_{B2} = - 30 mA

TYPICAL ELECTRICAL CHARACTERISTICS

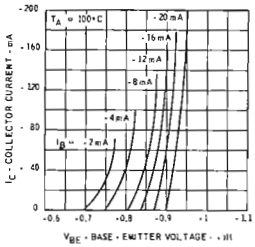
COLLECTOR CHARACTERISTICS*



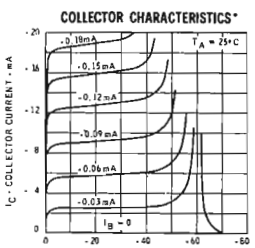
COLLECTOR CHARACTERISTICS*



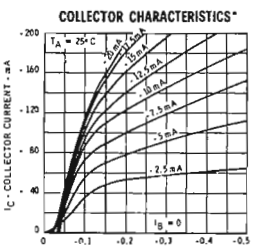
BASE CHARACTERISTICS*



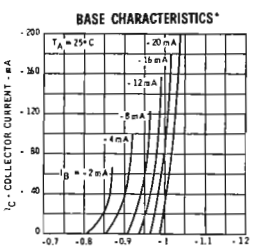
COLLECTOR CHARACTERISTICS*



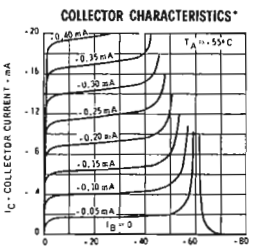
COLLECTOR CHARACTERISTICS*



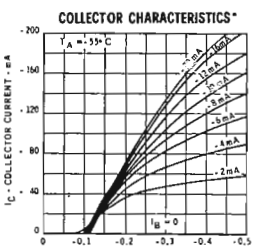
BASE CHARACTERISTICS*



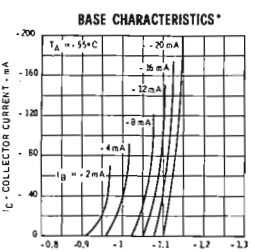
COLLECTOR CHARACTERISTICS*



COLLECTOR CHARACTERISTICS*



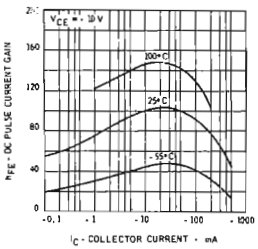
BASE CHARACTERISTICS*



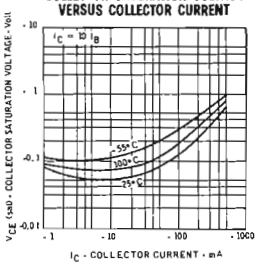
*Single family characteristics on Transistor Curve Tracer.

TYPICAL ELECTRICAL CHARACTERISTICS

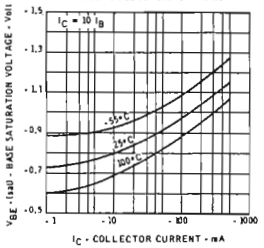
DC PULSE CURRENT GAIN VERSUS COLLECTOR CURRENT



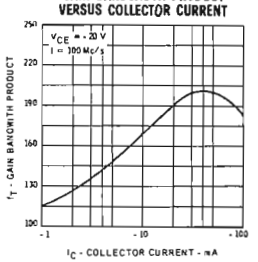
COLLECTOR SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



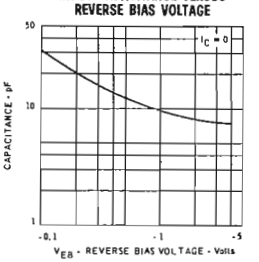
BASE SATURATION VOLTAGE VERSUS COLLECTOR CURRENT



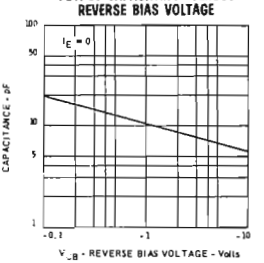
GAIN BANDWIDTH PRODUCT VERSUS COLLECTOR CURRENT



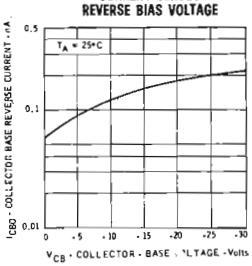
INPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



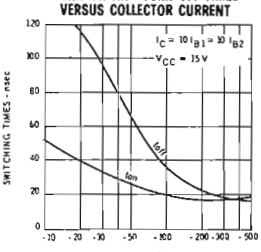
OUTPUT CAPACITANCE VERSUS REVERSE BIAS VOLTAGE



COLLECTOR-BASE REVERSE CURRENT VERSUS REVERSE BIAS VOLTAGE



TURN ON AND TURN OFF TIMES VERSUS COLLECTOR CURRENT



NOTES:

(1) These ratings are limiting values above which the serviceability of any individual semiconductor device may be impaired.

(2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

(3) These ratings give a maximum junction temperature of 200°C and junction-to-case thermal resistance of 146°C/watt (derating factor of 6.86 mW/°C); junction-to-ambient thermal resistance of 486°C/watt (derating factor of 2.06mW/°C).

(4) These ratings refer to a high-current point where collector-to-emitter voltage is lowest. For more information send for SGS-AR 5.

(5) Pulse Conditions: length = 300μsec; duty cycle = 1%.

(6) f = 1 Kc/s; R_G = 10 KΩ.