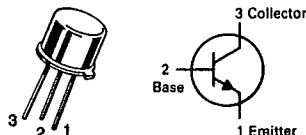


MAXIMUM RATINGS

Rating	Symbol	BSX45	BSX46	BSX47	Unit
Collector-Emitter Voltage	V _{CEO}	40	60	80	V _{dc}
Collector-Emitter Voltage	V _{CES}	80	100	120	V _{dc}
Emitter-Base Voltage	V _{EBO}	7			V _{dc}
Collector Current - Continuous	I _C	1			A _{dc}
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	1 5.71			Watt mW/°C
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	5 28.6			Watt mW/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R _{θJC}	35	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	200	°C/W

**BSX45-6, -10, -16
thru
BSX47-6, -10, -16**
**CASE 79-04, STYLE 1
TO-39 (TO-205AD)**
**AMPLIFIER TRANSISTORS****NPN SILICON**

Refer to 2N3019 for graphs.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage(1) (I _C = 30 mA _{dc} , I _B = 0)	BSX45 Series BSX46 Series BSX47 Series	V _{(BR)CEO}	40 60 80	V _{dc}
Collector-Emitter Breakdown Voltage (I _C = 100 μA _{dc} , V _{BE} = 0)	BSX45 Series BSX46 Series BSX47 Series	V _{(BR)CES}	80 100 120	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 100 μA _{dc} , I _C = 0)		V _{(BR)EBO}	7	V _{dc}
Emitter Cutoff Current (V _{BE} = 5.0 V _{dc} , I _C = 0)		I _{EBO}	10	nA _{dc}
Collector Cutoff Current (V _{CE} = 60 V, V _{BE} = 0) (V _{CE} = 80 V, V _{BE} = 0) (V _{CE} = 60 V, V _{BE} = 0, T _C = 150°C) (V _{CE} = 80 V, V _{BE} = 0, T _C = 150°C)	BSX45,46 Series BSX47 Series BSX45,46 Series BSX47 Series	I _{CES}	10 10 10 10	nA _{dc} μA _{dc}

ON CHARACTERISTICS

DC Current Gain (I _C = 0.1 mA _{dc} , V _{CE} = 1.0 V _{dc})	-6 -10 -16	h _{FE}	10 15 25	
(I _C = 100 mA _{dc} , V _{CE} = 1.0 V _{dc})(1)	-6 -10 -16		40 63 100	100 160 250
(I _C = 500 mA _{dc} , V _{CE} = 1.0 V _{dc})(1)	-6 -10 -16		15 25 35	
Base-Emitter On Voltage (I _C = 100 mA _{dc} , V _{CE} = 1.0 V _{dc}) (I _C = 500 mA _{dc} , V _{CE} = 1.0 V _{dc}) (I _C = 1 A, V _{CE} = 1.0 V _{dc})		V _{BE(on)}	0.75	1 1.5 2
Collector-Emitter Saturation Voltage (I _C = 1 A _{dc} , I _B = 100 mA _{dc})		V _{EC(sat)}	1	V _{dc}

SMALL SIGNAL CHARACTERISTICS

Transition Frequency (I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc} , f = 20 MHz)	f _T	50		MHz
Emitter-Base Capacitance (V _{BE} = 0.5 V, f = 1 MHz)	C _{ib}		80	pF

(1) Pulsed: Pulse Duration = 300 μs, Duty Cycle = 1%.

MOTOROLA SMALL-SIGNAL TRANSISTORS, FETs AND DIODES

T-29-23

T-29-23

ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
Collector-Base Capacitance (V _{CB} = 10 V, f = 1 MHz)	BSX45	C _{ob}		25	pF
	BSX46			20	
	BSX47			15	
Turn On Time	See Figure 1 (I _C = 100 mA dc)	t _{on}		200	ns
Turn Off Time	I _{B1} = -I _{B2} = 5 mA dc	t _{off}		850	

FIGURE 1 - SWITCHING TIME TEST CIRCUIT

