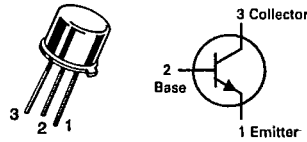


MAXIMUM RATINGS

Rating	Symbol	BSX 59	BSX 60	Unit
Collector-Emitter Voltage	V_{CEO}	45	30	Vdc
Collector-Emitter Voltage	V_{CES}	60	60	Vdc
Collector-Base Voltage	V_{CBO}	70	70	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current - Continuous	I_C	1		Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.8 4.57		Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	3.5 20		Watt mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

BSX59
BSX60
CASE 79-04, STYLE 1
TO-39 (TO-205AD)
**SWITCHING TRANSISTORS**

NPN SILICON

Refer to 2N3725 for graphs.

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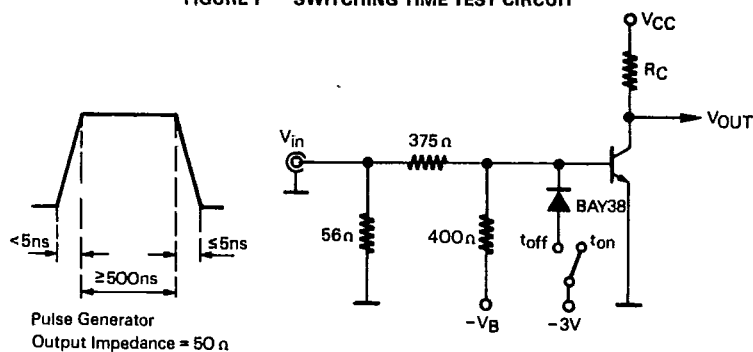
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 10\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	45 30		V
Collector-Base Breakdown Voltage ($I_C = 10\text{ }\mu\text{A}$, $I_E = 0$)	$V_{(BR)CBO}$	70		V
Collector Cutoff Current ($V_{CB} = 40\text{ V}$, $I_E = 0$) ($V_{CB} = 40\text{ V}$, $I_E = 0$, $T_J = 150^\circ\text{C}$)	I_{CBO}		500 300	nA μA
Emitter Cutoff Current ($V_{EB} = 4.0\text{ V}$, $I_C = 0$) ($V_{EB} = 4.0\text{ V}$, $I_E = 0$, $T_J = 150^\circ\text{C}$)	I_{EBO}		300 50	nA μA
Collector Cutoff Current ($V_{CE} = 40\text{ V}$, $-V_{BE} = 4.0\text{ V}$) ($V_{CE} = 40\text{ V}$, $-V_{BE} = 4.0\text{ V}$, $T_J = 150^\circ\text{C}$)	I_{CEX}		500 300	nA μA
Emitter Cutoff Current ($V_{CE} = 40\text{ V}$, $-V_{BE} = 4.0\text{ V}$) ($V_{CE} = 40\text{ V}$, $-V_{BE} = 4.0\text{ V}$, $T_J = 150^\circ\text{C}$)	I_{BEX}		500 300	nA μA
ON CHARACTERISTICS				
Collector-Emitter Saturation Voltage ($I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$) ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$) ($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	$V_{CE(sat)}$		0.3 0.5 1.0	V
Base-Emitter Saturation Voltage ($I_C = 150\text{ mA}$, $I_B = 15\text{ mA}$) ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$) ($I_C = 1.0\text{ A}$, $I_B = 100\text{ mA}$)	$V_{BE(sat)}$		1.0 1.2 1.3 1.8	V
DC Current Gain ($I_C = 150\text{ mA}$, $V_{CE} = 1.0\text{ V}$) ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ V}$) ($I_C = 1.0\text{ A}$, $V_{CE} = 5.0\text{ V}$)	h_{FE}	30 25 30 20 25	90	
SMALL SIGNAL CHARACTERISTICS				
Small Signal Current Gain ($I_C = 50\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$)	h_{fe}	2.5		
Input Capacitance ($-V_{BE} = 0.5\text{ V}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ib}		60	pF

T-35-19

ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Output Capacitance ($V_{CB} = 10\text{ V}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{ob}		10	pF
Turn On Time (See Figure 1) ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$, $-V_{BE} = 2.0\text{ V}$) ($V_{CC} = 50\text{ V}$) [BSX59] ($V_{CC} = 30\text{ V}$) [BSX60]	t_{on}		35 40	ns
Turn Off Time (See Figure 1) ($I_C = 500\text{ mA}$, $I_{B1} = I_{B2} = 50\text{ mA}$) ($V_{CC} = 50\text{ V}$) [BSX59] ($V_{CC} = 30\text{ V}$) [BSX60]	t_{off}		60 70	ns

FIGURE 1 — SWITCHING TIME TEST CIRCUIT

Measure-ment	V_{CC} R_C	BSX59 BSX61	BSX60	V Ω
		50 100	30 60	
t_{on}	$-V_B$ V_{in}	4.0	24.75	V V
t_{off}	$-V_B$ V_{in}	16.7	37.5	V V

