

BSS71 BSS72 BSS73

CASE 79, STYLE 1
TO-18 (TO-206AA)

HIGH VOLTAGE TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	BSS	BSS	BSS	Unit
		71	72	73	
Collector-Emitter Voltage	V _{CEO}	200	250	300	V _{dc}
Collector-Base Voltage	V _{CBO}	200	250	300	V _{dc}
Emitter-Base Voltage	V _{EBQ}	6.0			V _{dc}
Collector Current - Continuous	I _C	0.5			Adc
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	0.5 2.86			Watt mW/°C
Total Device Dissipation @ T _C = 25°C Derate above 25°C	P _D	2.5 14.3			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}	70	°C/W

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I _C = 10 mA, I _B = 0)	V _{(BR)CEO}	200 250 300	—	—	V _{dc}
Collector-Base Breakdown Voltage (I _C = 100 μAdc, I _E = 0)	V _{(BR)CBO}	200 250 300	—	—	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 100 μAdc, I _C = 0)	V _{(BR)EBO}	6 6 6	—	—	V _{dc}
Collector Cutoff Current (V _{CB} = 150 V, I _E = 0) (V _{CB} = 200 V, I _E = 0) (V _{CB} = 250 V, I _E = 0)	I _{CBO}	— — —	—	50 50 50	nA
Collector-Emitter Cutoff Current (V _{CE} = 150 V, I _B = 0) (V _{CE} = 200 V, I _B = 0) (V _{CE} = 300 V, I _B = 0)	I _{CEO}	— — —	—	500 500 500	nA
Emitter-Cutoff Current (V _{BE} = 5 V _{dc} , I _C = 0)	I _{EBO}	—	—	50	nA

ON CHARACTERISTICS(1)

DC Current Gain (I _C = 0.1 mA, V _{CE} = 1 V) (I _C = 1 mA, V _{CE} = 10 V) (I _C = 10 mA, V _{CE} = 10 V) (I _C = 30 mA, V _{CE} = 10 V) (I _C = 100 mA, V _{CE} = 10 V)	h _{FE}	20 30 50 40 —	40 45 120 140 35	— — 250 —	—
Collector-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 1 mAdc) (I _C = 30 mAdc, I _B = 3 mAdc) (I _C = 50 mAdc, I _B = 5 mAdc) (I _C = 100 mAdc, I _B = 20 mAdc)	V _{CE(sat)}	— — — —	0.15 0.25 0.35 0.25	0.3 0.4 0.5 —	V _{dc}
Base-Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 1 mAdc) (I _C = 30 mAdc, I _B = 3 mAdc) (I _C = 50 mAdc, I _B = 5 mAdc) (I _C = 100 mAdc, I _B = 10 mAdc)	V _{BE(sat)}	— — — —	0.7 0.8 0.85 0.9	0.8 0.9 1.0 —	V _{dc}

* Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

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

Characteristic	Symbol	Min	Typ	Max	Unit
DYNAMIC CHARACTERISTICS					
Current Gain Bandwidth Product ($I_C = 20\text{ mAdc}$, $V_{CE} = 20\text{ Vdc}$, $f = 20\text{ MHz}$)	f_t	50	70	200	MHz
Output Capacitance ($I_E = 0$, $V_{CB} = 20\text{ Vdc}$, $f = 1\text{ MHz}$)	C_{ob}	—	3.5	—	pF
Input Capacitance ($I_C = 0$, $V_{EB} = 0.5\text{ Vdc}$, $f = 1\text{ MHz}$)	C_{ib}	—	45	—	pF
Turn On Time ($I_{B1} = 10\text{ mA}$, $I_C = 50\text{ mAdc}$, $V_{CC} = 100\text{ Vdc}$)	t_{on}	—	100	—	ns
Turn Off Time ($I_{B2} = 10\text{ mAdc}$, $I_C = 50\text{ mAdc}$, $V_{CC} = 100\text{ Vdc}$)	t_{off}	—	400	—	ns

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FIGURE 1 — DC CURRENT GAIN

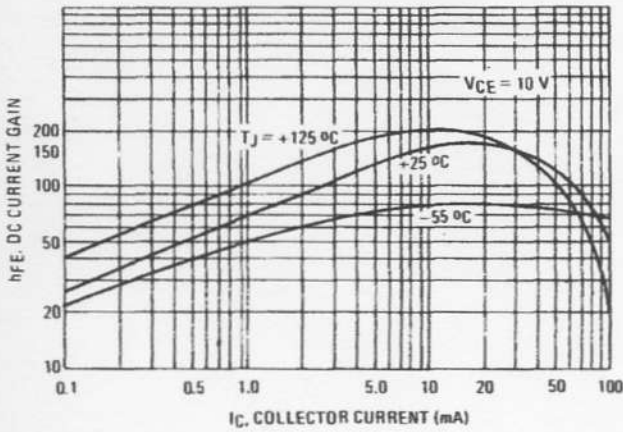


FIGURE 2 — CAPACITANCES

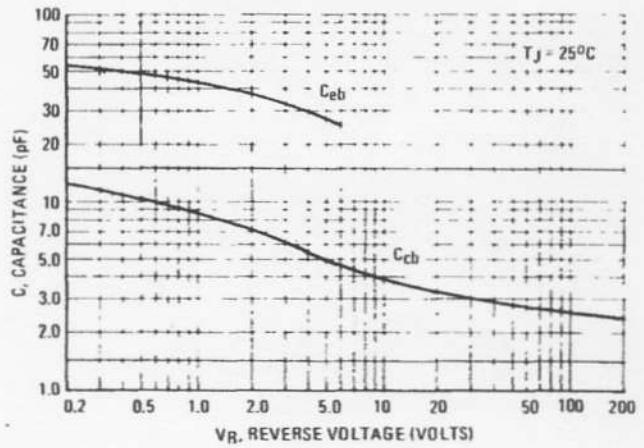


FIGURE 3 — CURRENT-GAIN — BANDWIDTH PRODUCT

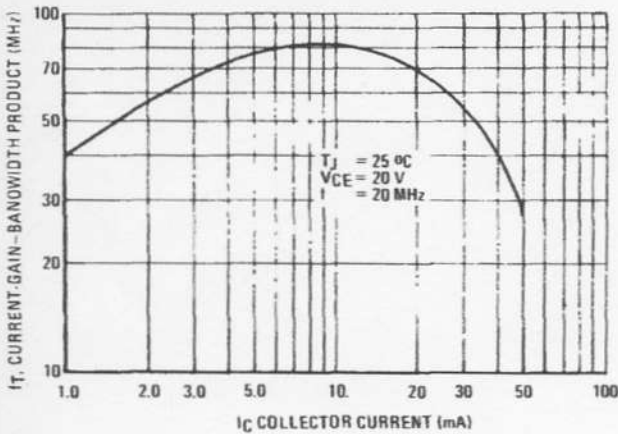
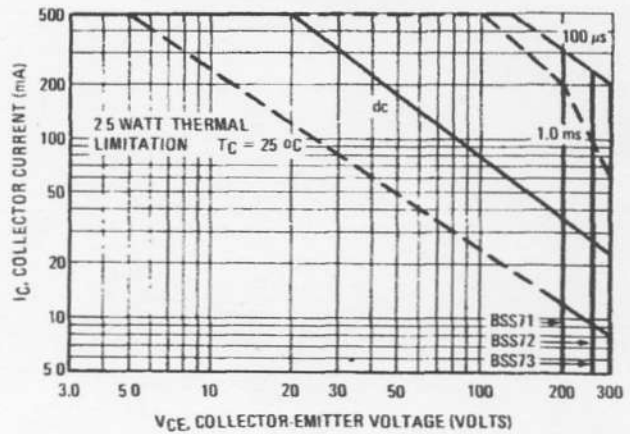


FIGURE 4 — ACTIVE-REGION SAFE OPERATING AREA



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FIGURE 5 - "ON" VOLTAGES

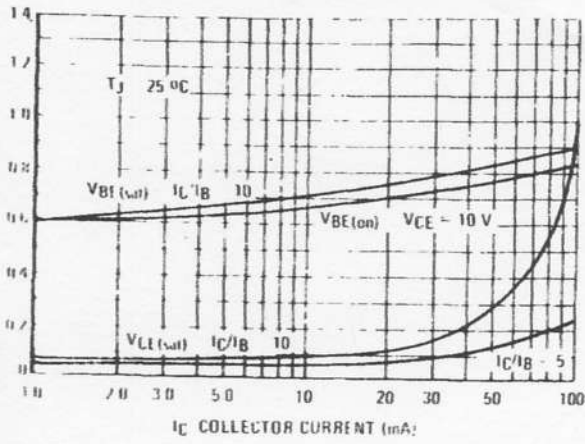


FIGURE 6 - TEMPERATURE COEFFICIENTS

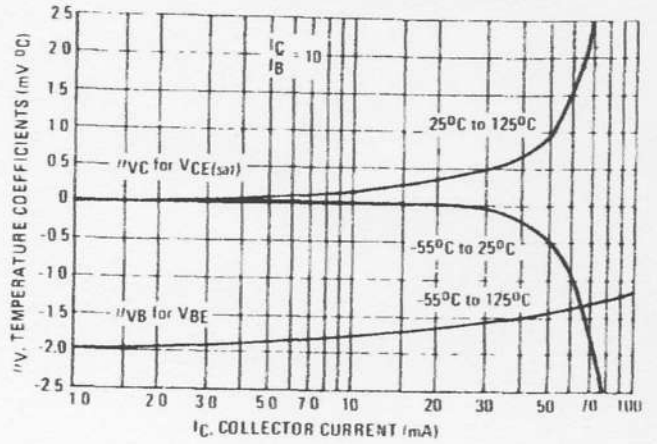


FIGURE 7 - TURN-ON TIME

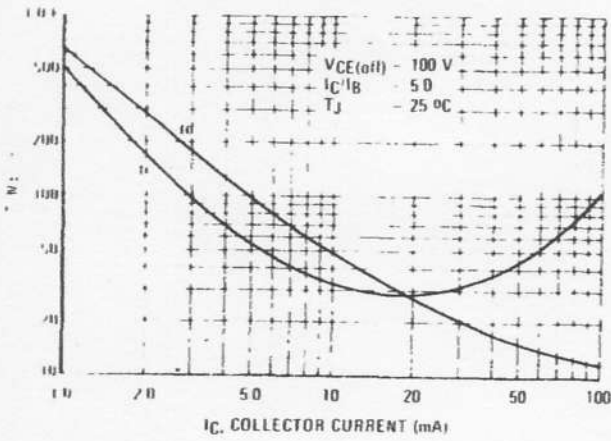


FIGURE 8 - TURN-OFF TIME

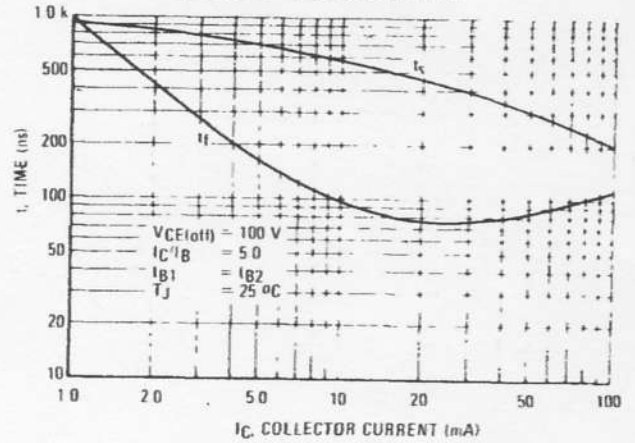


FIGURE 9 - SWITCHING TIME TEST CIRCUIT

