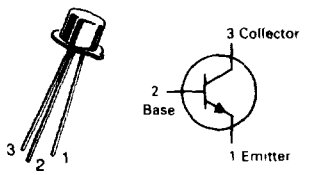
BSS71 thru BSS73

CASE 22-03, STYLE 1
TO-18 (TO-206AA)



HIGH VOLTAGE TRANSISTORS
NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	BSS 71	BSS 72	BSS 73	Unit
Collector-Emitter Voltage	V_{CEO}	200	250	300	Vdc
Collector-Base Voltage	V_{CBO}	200	250	300	Vdc
Emitter-Base Voltage	V_{EBO}	6.0			Vdc
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	$R_{\theta JC}$	70	°C/W

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage(1) (I_C = 10 mA, I_B = 0)	BSS71 BSS72 BSS73	$V_{(BR)CEO}$	 200 250 300	 — — —	 — — —	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	BSS71 BSS72 BSS73	$V_{(BR)CBO}$	 200 250 300	 — — —	 — — —	Vdc
Emitter Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	BSS71 BSS72 BSS73	$V_{(BR)EBO}$	 6 6 6	 — — —	 — — —	Vdc
Collector Cutoff Current (V_{CB} = 150 V, I_E = 0) (V_{CB} = 200 V, I_E = 0) (V_{CB} = 250 V, I_E = 0)	 BSS71 BSS72 BSS73	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)	 BSS71 BSS72 BSS73	I_{CEO}	 — — —	 — — —	 500 500 500	nA
Emitter-Cutoff Current **(V_{EB} = 5.0 Vdc, I_C = 0)**	ALL	I_{EBO}	—	—	50	nA
ON CHARACTERISTICS						
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)(1)** **(I_C = 30 mA, V_{CE} = 10 V)(1)** **(I_C = 100 mA, V_{CE} = 10 V)(1)**	 BSS71 ALL ALL ALL BSS73	h_{FE}	 20 30 50 40 —	 40 45 120 140 35	 — — — 250 —	—
Collector-Emitter Saturation Voltage(1) (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)	 ALL ALL ALL BSS73	$V_{CE(sat)}$	 — — — —	 0.15 0.25 0.35 0.25	 0.3 0.4 0.5 —	Vdc
Base-Emitter Saturation Voltage(1) (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)	 ALL ALL ALL BSS73	$V_{BE(sat)}$	 — — — —	 0.7 0.8 0.85 0.9	 0.8 0.9 1.0 —	Vdc

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

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

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

FIGURE 1 – DC CURRENT GAIN

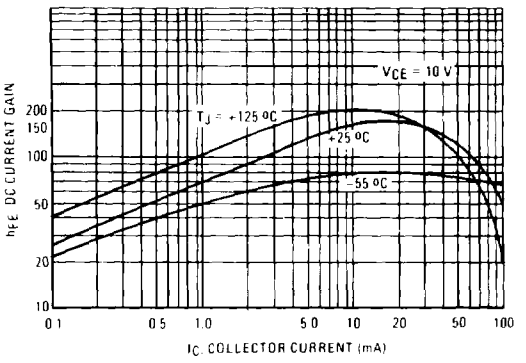


FIGURE 2 – CAPACITANCES

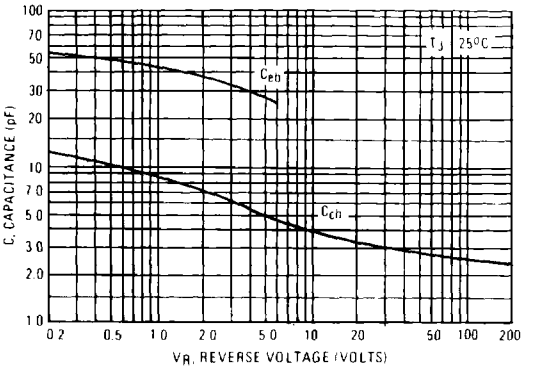


FIGURE 3 – CURRENT-GAIN – BANDWIDTH PRODUCT

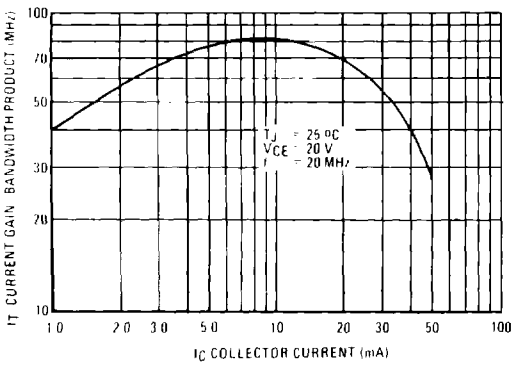


FIGURE 4 – ACTIVE-REGION SAFE OPERATING AREA

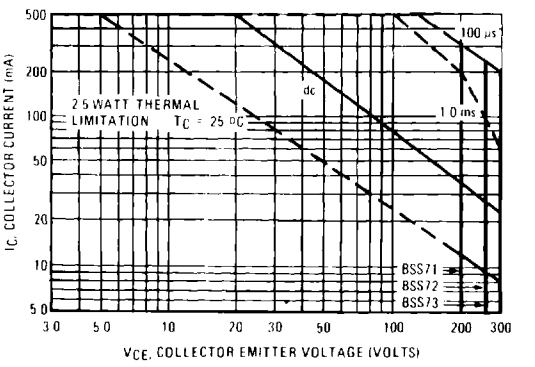


FIGURE 5 – "ON" VOLTAGES

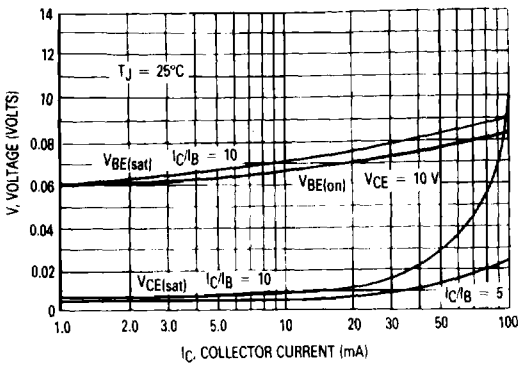


FIGURE 6 – TEMPERATURE COEFFICIENTS

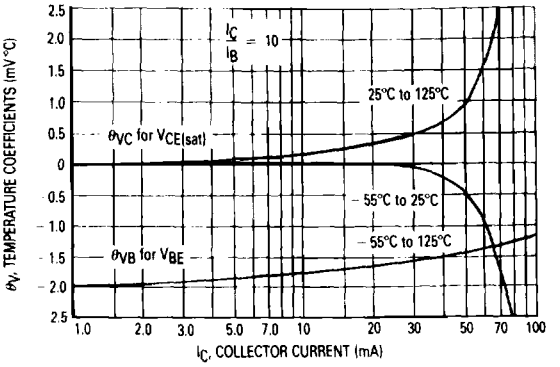


FIGURE 7 – TURN ON TIME

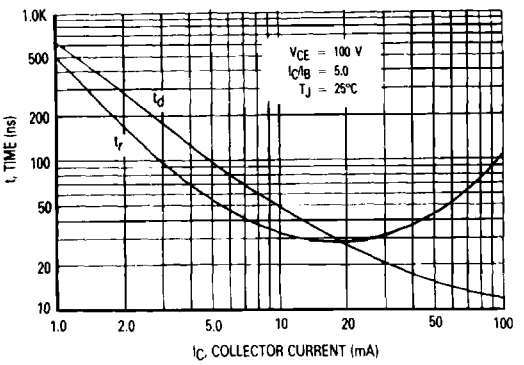


FIGURE 8 – TURN-OFF TIME

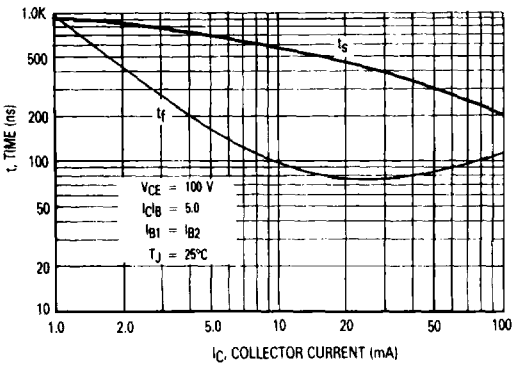
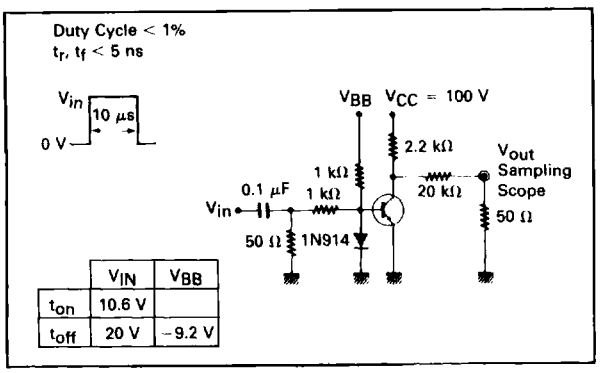


FIGURE 9 – SWITCHING TIME TEST CIRCUIT



	V_{IN}	V_{BB}
t_{on}	10.6 V	
t_{off}	20 V	−9.2 V