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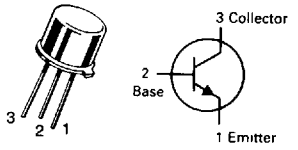
BSS78

CASE 79-04, STYLE 1
TO-39 (TO-205AD)



HIGH VOLTAGE TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	250	Vdc
Collector-Base Voltage	V_{CBO}	250	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current — Continuous	I_C	1.0	Adc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	0.8 4.57	Watt mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	5.0 28.6	Watts 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	$R_{\theta JC}$	35	°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)	$V_{(BR)CEO}$	250	—	—	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	$V_{(BR)CBO}$	250	—	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	$V_{(BR)EBO}$	6.0	—	—	Vdc
Collector Cutoff Current (V_{CB} = 200 V, I_E = 0)	I_{CBO}	—	—	50	nA
Collector-Emitter Cutoff Current (V_{CE} = 200 V, I_B = 0)	I_{CEO}	—	—	500	nA
Emitter-Base Cutoff Current (V_{EB} = 5.0 Vdc, I_C = 0)	I_{EBO}	—	—	50	nA
ON CHARACTERISTICS					
DC Current Gain (I_C = 0.1 mA, V_{CE} = 1.0 V) (I_C = 1.0 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)	h_{FE}	 20 30 50 40 —	 40 45 120 140 35	 — — — 250 —	—
Collector-Emitter Saturation Voltage(1) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 30 mAdc, I_B = 3.0 mAdc) (I_C = 50 mAdc, I_B = 5.0 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 —	Vdc
Base-Emitter Saturation Voltage(1) (I_C = 10 mAdc, I_B = 1.0 mAdc) (I_C = 30 mAdc, I_B = 3.0 mAdc) (I_C = 50 mAdc, I_B = 5.0 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 —	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

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