BSS77
BSS78

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

HIGH VOLTAGE TRANSISTOR

NPN SILICON

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MAXIMUM RATINGS

Rating	Symbol	BSS 77	BSS 78	Unit
Collector-Emitter Voltage	V_{CEO}	200	250	Vdc
Collector-Base Voltage	V_{CBO}	200	250	Vdc
Emitter-Base Voltage	V_{EBO}	6		Vdc
Collector Current – Continuous	I_C	1		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		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	$R_{\theta JC}$	35	°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)	BSS77 BSS78	$V_{(BR)CEO}$	 200 250	 — —	 — —	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	BSS77 BSS78	$V_{(BR)CBO}$	 200 250	 — —	 — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	BSS77 BSS78	$V_{(BR)EBO}$	 6 6	 — —	 — —	Vdc
Collector Cutoff Current (V_{CB} = 150 V, I_E = 0) (V_{CB} = 200 V, I_E = 0)	 BSS77 BSS78	I_{CBO}	 — —	 — —	 50 50	nA
Collector-Emitter Cutoff Current (V_{CE} = 150 V, I_B = 0) (V_{CE} = 200 V, I_B = 0)	 BSS77 BSS78	I_{CEO}	 — —	 — —	 500 500	nA
Emitter-Base Cutoff Current (V_{BE} = 5 Vdc, I_C = 0) (V_{BE} = 5 Vdc, I_C = 0)	 BSS77 BSS78	I_{EBO}	 — —	 — —	 50 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)	 Both types 	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)	 Both types 	$V_{CE(sat)}$	 — — — —	 0.15 0.25 0.35 0.25	 0.3 0.4 0.5 —	Vdc
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)	 Both types 	$V_{BE(sat)}$	 — — — —	 0.7 0.8 0.85 0.9	 0.8 0.9 1.0 —	Vdc

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

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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