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BF391
BF392
BF393

CASE 29-02, STYLE 1
TO-92 (TO-226AA)

HIGH VOLTAGE TRANSISTORS

NPN SILICON

Refer to MPSA42 for graphs.

MAXIMUM RATINGS

Rating	Symbol	BF 391	BF 392	BF 393	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		500		mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D		625 5.0		mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D		1.5 12		Watt mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}		−55 to +150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	83.3	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JC}$	200	°C/W

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

Characteristic		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (1) (I_C = 10 mAdc, I_B = 0)	 BF391 BF392 BF393	$V_{(BR)CEO}$	 200 250 300	 — — —	Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0)	 BF391 BF392 BF393	$V_{(BR)CBO}$	 200 250 300	 — — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 100 μAdc, I_C = 0)	 BF391 BF392 BF393	$V_{(BR)EBO}$	 6.0 6.0 6.0	 — — —	Vdc
Collector Cutoff Current (V_{CB} = 160 Vdc, I_E = 0) (V_{CB} = 200 Vdc, I_E = 0) (V_{CB} = 200 Vdc, I_E = 0)	 BF391 BF392 BF393	I_{CBO}	 — — —	 0.1 0.1 0.1	μAdc
Emitter Cutoff Current (V_{CB} = 4.0 Vdc, I_C = 0) (V_{CB} = 6.0 Vdc, I_C = 0) (V_{CB} = 6.0 Vdc, I_C = 0)	 BF391 BF392 BF393	I_{EBO}	 — — —	 0.1 0.1 0.1	μAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = 1.0 mAdc, V_{CE} = 10 Vdc) (I_C = 10 mAdc, V_{CE} = 10 Vdc)	 All Types All Types	h_{FE}	 25 40	 — —	—
Collector-Emitter Saturation Voltage (I_C = 20 mAdc, I_B = 2.0 mAdc)		$V_{CE(sat)}$		2.0	Vdc
Base-Emitter Saturation Voltage (I_C = 20 mA, I_B = 2.0 mA)		$V_{BE(sat)}$		2.0	Vdc
SMALL SIGNAL CHARACTERISTICS					
Current-Gain – Bandwidth Product (I_C = 10 mAdc, V_{CE} = 20 Vdc, f = 20 MHz)		f_T	50	—	MHz
Common Emitter Feedback Capacitance (V_{CB} = 60 Vdc, I_E = 0, f = 1.0 MHz)		C_{re}		1.6	pF

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