BCX25
BCX27
BCX29

CASE 29-02, STYLE 17
TO-92 (TO-226AA)

HIGH VOLTAGE TRANSISTORS

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	BCX 25	BCX 27	BCX 29	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	100	Vdc
Collector-Base Voltage	V_{CBO}	60	80	100	Vdc
Emitter-Base Voltage	V_{EBO}	5.0			Vdc
Collector Current – Continuous	I_C	200			mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	350 2.8			mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.0 8.0			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	$R_{\theta JC}$	125	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JC}$	357	°C/W

Refer to MPS8098 for graphs.

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage* (I_C = 10 mAdc, I_B = 0) BCX25 BCX27 BCX29	$V_{(BR)CEO}$	 60 80 100			Vdc
Collector-Base Breakdown Voltage (I_C = 100 μAdc, I_E = 0) BCX25 BCX27 BCX29	$V_{(BR)CBO}$	 45 80 100			Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)	$V_{(BR)EBO}$	5.0			Vdc
Collector Cutoff Current V_{CB} = 40 Vdc – I_E = 0 BCX25 V_{CB} = 60 Vdc – I_E = 0 BCX27 V_{CB} = 80 Vdc – I_E = 0 BCX29	I_{CBO}			 100 100 100	nAdc
ON CHARACTERISTICS*					
DC Current Gain (I_C = 1 mAdc, V_{CE} = 5.0 Vdc) (I_C = 10 mAdc, V_{CE} = 5.0 Vdc) (I_C = 100 mAdc, V_{CE} = 5.0 Vdc)	h_{FE}	 50 70 50	 150 250 300	 400	
Collector-Emitter Saturation Voltage (I_C = 100 mAdc, I_B = 10 mAdc)	$V_{CE(sat)}$		0.1	0.25	Vdc
Base-Emitter Saturation Voltage (I_C = 100 mAdc, I_B = 10 mAdc)	$V_{BE(sat)}$		0.85		Vdc
Base-Emitter On Voltage (I_C = 10 mAdc, V_{CE} = 5.0 Vdc)	$V_{BE(on)}$		0.68	1.0	Vdc

* Pulse test–Pulse width ≤ 300 μs – Duty cycle 2%

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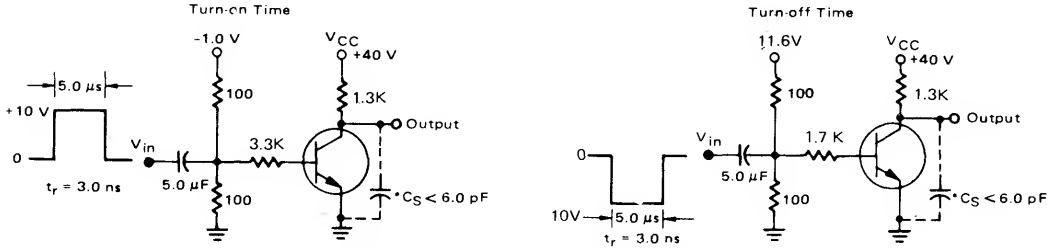
ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
SMALL SIGNAL CHARACTERISTICS					
Current Gain–Bandwidth Product (I_C = 50 mAdc, V_{CE} = 5.0 Vdc, f = 100 MHz)	f_T	100	250		MHz
Output Capacitance - Common Base (V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz)	C_{ob}		3.0	6.0	pF
Input Capacitance - Common Base (V_{CB} = 0.5 Vdc, I_C = 0, f = 1.0 MHz)	C_{ib}		16	25	pF
Noise Figure (I_C = 200 μAdc, V_{CE} = 5.0 Vdc, R_S = 2.0 Kohm, f = 1.0 KHz, BW = 200 Hz)	N_F		2.0		dB
Input Impedance (I_C = 10 mAdc, V_{CE} = 2.0 Vdc, f = 1.0 KHz)	h_{ie}		1.3		Kohm
Voltage Feedback Ratio (I_C = 10 mAdc, V_{CE} = 2.0 Vdc, f = 1.0 KHz)	h_{re}		$1.6 \cdot 10^{-4}$		
Small-Signal Current Gain (I_C = 10 mAdc, V_{CE} = 2.0 Vdc, f = 1.0 KHz)	h_{fe}		360		
Output Admittance (I_C = 10 mAdc, V_{CE} = 2.0 Vdc, f = 1.0 KHz)	h_{oe}		55		μmho
Turn - On delay Time ($V_{BE(off)}$ = 0.5 V, I_{B1} = 3 mA) (V_{CC} = 40 Vdc, I_C = 30 mAdc (see Figure 1)	t_d		19		ns
Rise Time ($V_{BE(off)}$ = 0.5 V, I_{B1} = 3 mA) (V_{CC} = 40 Vdc, I_C = 30 mAdc (see Figure 1)	t_r		40		ns
Storage Time (I_{B1} = I_{B2} = 3 mA) (V_{CC} = 40 Vdc, I_C = 30 mAdc (see Figure 1)	t_s		900		ns
Fall Time (I_{B1} = I_{B2} = 3 mA) (V_{CC} = 40 Vdc, I_C = 30 mAdc (see Figure 1)	t_f		100		ns

FIGURE 1 – SWITCHING TIME TEST CIRCUITS



*Total Shunt Capacitance of Test Jig and Connectors

FIGURE 2 – SWITCHING TIMES