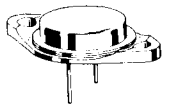
MP1612, A, B (GERMANIUM)

V_{CB} = 100-160 V
I_C = 20 A
P_D = 85 W



CASE 3
(TO-3)

High-current, germanium PNP power transistor developed specially for high-speed, high-frequency, applications such as television horizontal deflection circuits.

MAXIMUM RATINGS

Rating	Symbol	MP1612	MP1612A	MP1612B	Unit
Collector-Base Voltage	V_{CB}	100	140	160	Volts
Collector-Emitter Voltage	V_{CEO}	50	75	100	Volts
Emitter-Base Voltage	V_{EB}	2.5	2.5	2.5	Volts
Collector Current (Continuous)	I_C	20	20	20	Amp
Base Current (Continuous)	I_B	5	5	5	Amp
Power Dissipation	P_D	85	85	85	Watts
Operating Junction Temperature Range	T_J	-65 to +110			°C

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

Characteristic		Symbol	Min	Max	Unit
Collector-Base Cutoff Current		I_{CBO}			mA
(V_{CB} = 80 V, I_E = 0)	MP1612		—	10	
(V_{CB} = 120 V, I_E = 0)	MP1612A		—	10	
(V_{CB} = 140 V, I_E = 0)	MP1612B		—	10	
Collector-Emitter Current		I_{CES}			mA
(V_{CE} = 100 V, V_{BE} = 0)	MP1612		—	20	
(V_{CE} = 140 V, V_{BE} = 0)	MP1612A		—	20	
(V_{CE} = 160 V, V_{BE} = 0)	MP1612B		—	20	
Collector-Emitter Cutoff Current		I_{CEX}			mA
(V_{CE} = 50 V, V_{BE} = 0.2 V, T_C = +85°C)	MP1612		—	40	
(V_{CE} = 75 V, V_{BE} = 0.2 V, T_C = +85°C)	MP1612A		—	40	
(V_{CE} = 100 V, V_{BE} = 0.2 V, T_C = +85°C)	MP1612B		—	40	
Emitter-Base Breakdown Voltage		BV_{EBO}			Vdc
(I_E = 50 mAdc, I_C = 0)			2.5	—	
Collector-Emitter Sustaining Voltage		$BV_{CEO(sus)}$			Volts
(I_E = 100 mA, I_B = 0)	MP1612		50	—	
	MP1612A		75	—	
	MP1612B		100	—	
DC Current Gain		h_{FE}			—
(I_C = 5.0 A, V_{CB} = 2 V)			40	—	
(I_C = 10 A, V_{CB} = 2 V)			25	100	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C = 10 Adc, I_B = 1.0 Adc)			—	0.30	
(I_C = 20 Adc, I_B = 2.0 Adc)			—	0.5	
Fall Time (Figure 5)		t_f			μs
(I_C = 5 Adc, I_{B1} = 0.5 Adc, I_{B2} = 1.0 Adc)			—	1.25	
(I_C = 10 Adc, I_{B1} = 0.5 Adc, I_{B2} = 1.0 Adc)			—	1.5	

MP1612, A, B (continued)

SAFE OPERATING AREAS

FIGURE 1 — MP1612

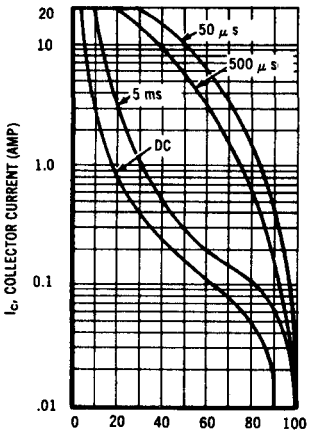


FIGURE 2 — MP1612A

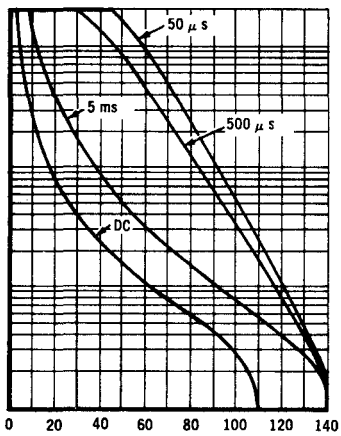
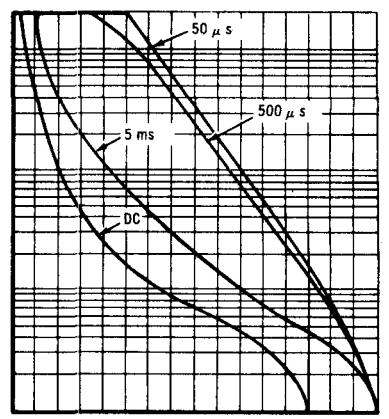
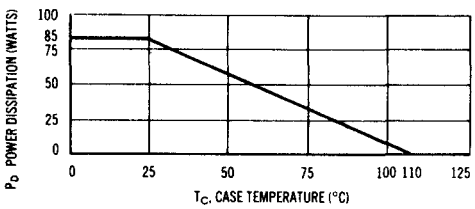


FIGURE 3 — MP1612B



The Safe Operating Area Curves indicate the I_C-V_{CE} limits below which the devices will not go into secondary breakdown. As secondary breakdown is independent of temperature and duty cycle, these curves can be used as long as the average power derating curve (Figure 4) is also taken into consideration to insure operation below the maximum junction temperature.

FIGURE 4 — POWER – TEMPERATURE DERATING CURVE



THESE TRANSISTORS ARE ALSO SUBJECT TO SAFE AREA CURVES AS INDICATED BY FIGURES 1, 2, 3.

FIGURE 5 — FALL TIME TEST CIRCUIT

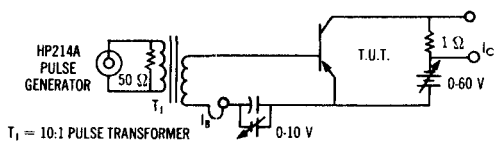


FIGURE 6 — BASE TURN-OFF CURRENT versus FALL TIME