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SEMICONDUCTOR®

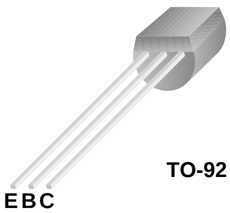
March 2011

MPSA06 / MMBTA06 / PZTA06
NPN General Purpose Amplifier

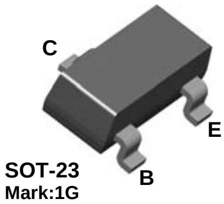
Features

- This device is designed for general purpose amplifier applications at collector currents to 300mA.
- Sourced from Process 33.

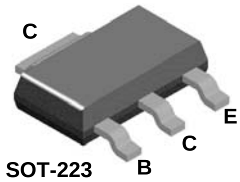
MPSA06



MMBTA06



PZTA06



Absolute Maximum Ratings * T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	80	V
V_{CBO}	Collector-Base Voltage	80	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Collector Current - Continuous	500	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	- 55 to +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

1) These ratings are based on a maximum junction temperature of 150 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Max.			Units
		MPSA06	*MMBTA06	**PZTA06	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	1,000 8.0	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3			°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	357	125	°C/W

* Device mounted on FR-4 PCB 1.6” × 1.6” × 0.06”.

** Device mounted on FR-4 PCB 36mm × 18mm × 1.5mm; mounting pad for the collector lead min. 6cm^2.

Electrical Characteristics T_a = 25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 1.0mA, I_B = 0	80		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100μA, I_C = 0	4.0		V
I_{CEO}	Collector-Cutoff Current	V_{CE} = 60V, I_B = 0		0.1	μA
I_{CBO}	Collector-Cutoff Current	V_{CB} = 80V, I_E = 0		0.1	μA
On Characteristics					
h_{FE}	DC Current Gain	I_C = 10mA, V_{CE} = 1.0V I_C = 100mA, V_{CE} = 1.0V	100 100		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 100mA, I_B = 10mA		0.25	V
$V_{BE(on)}$	Base-Emitter On Voltage	I_C = 100mA, V_{CE} = 1.0V		1.2	V
Small Signal Characteristics					
f_T	Current Gain - Bandwidth Product	I_C = 10mA, V_{CE} = 2.0V, f = 100MHz	100		MHz

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

Typical Performance Characteristics

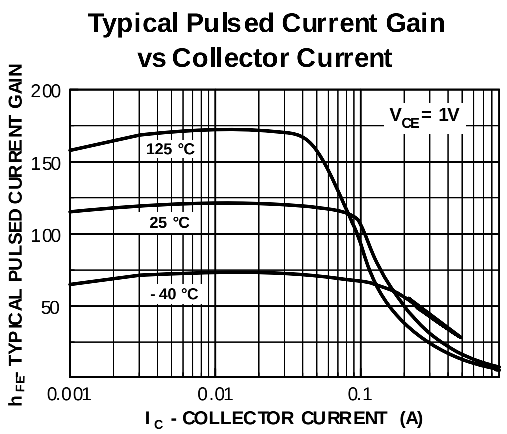


Figure 1. Typical Pulsed Current Gain vs Collector Current

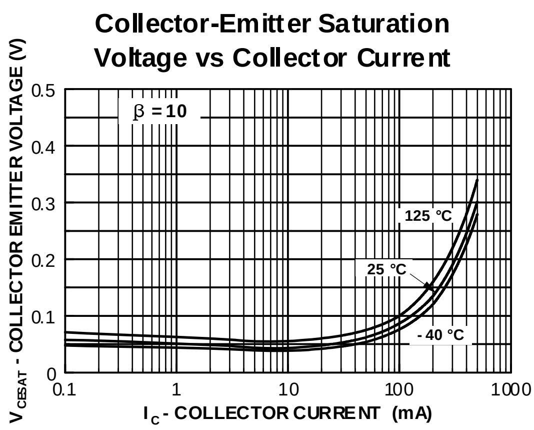


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

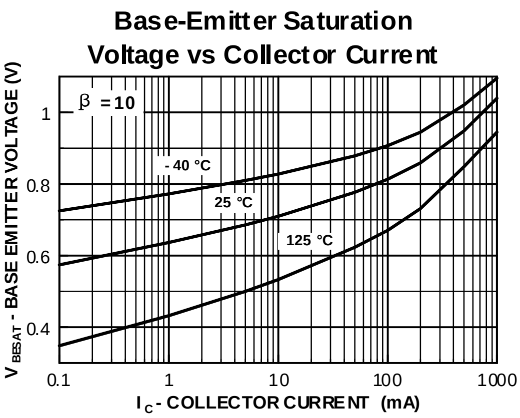


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

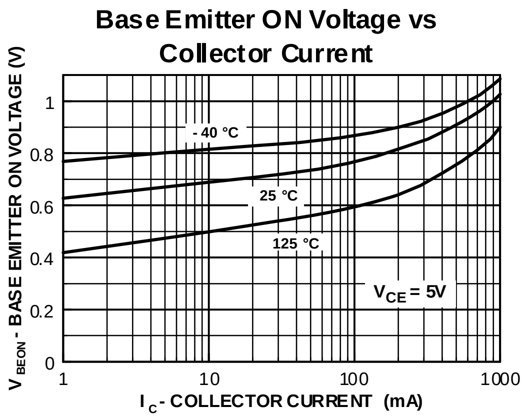


Figure 4. Base-Emitter On Voltage vs Collector Current

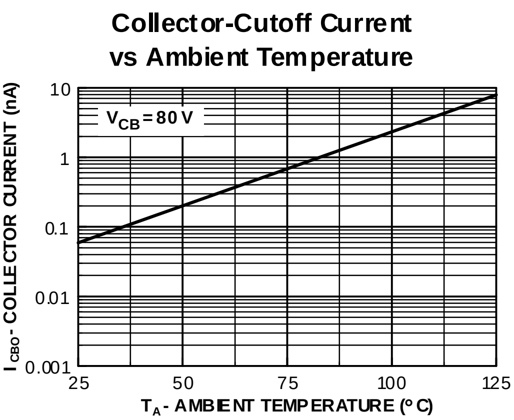


Figure 5. Collector Cutoff Current vs Ambient Temperature

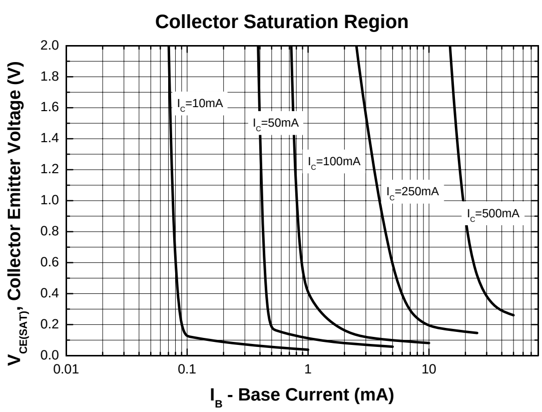


Figure 6. Collector Saturation Region

Typical Performance Characteristics (continued)

Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

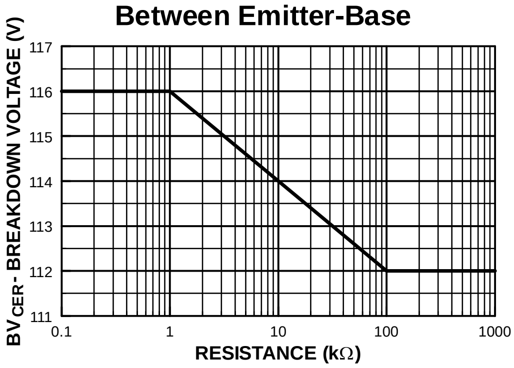


Figure 7. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

Input and Output Capacitance vs Reverse Voltage

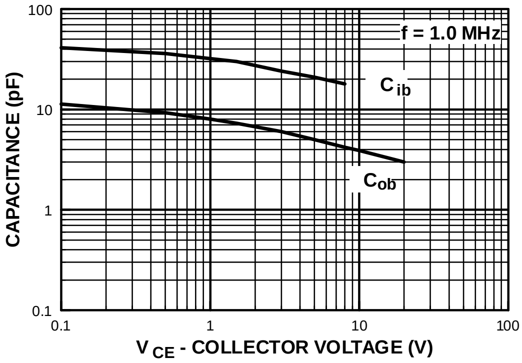


Figure 8. Input and Output Capacitance vs Reverse Voltage

Gain Bandwidth Product vs Collector Current

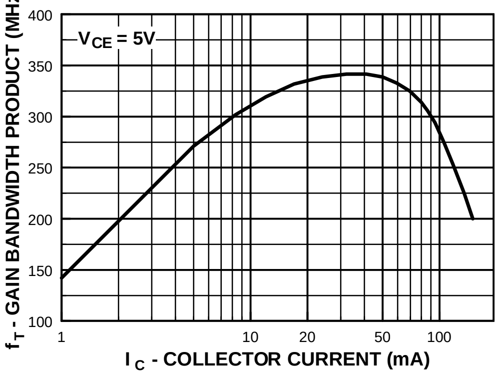


Figure 9. Gain Bandwidth Product vs Collector Current

Power Dissipation vs Ambient Temperature

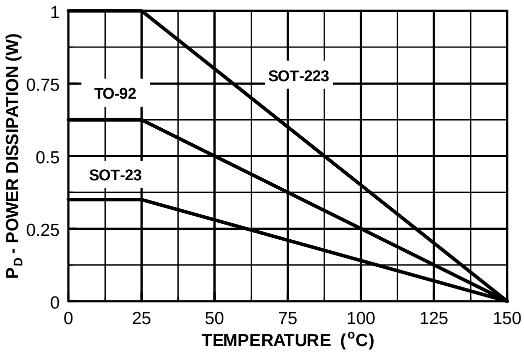


Figure 10. Power Dissipation vs Ambient Temperature

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