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March 2011

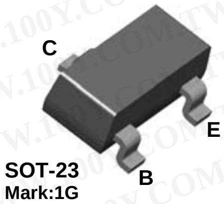
MPSA06 / MMBTA06 / PZTA06
NPN General Purpose Amplifier

Features

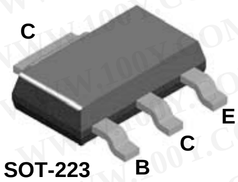
- This device is designed for general purpose amplifier applications at collector currents to 300mA.
- Sourced from Process 33.

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. $6cm^2$.

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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%

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Typical Performance Characteristics

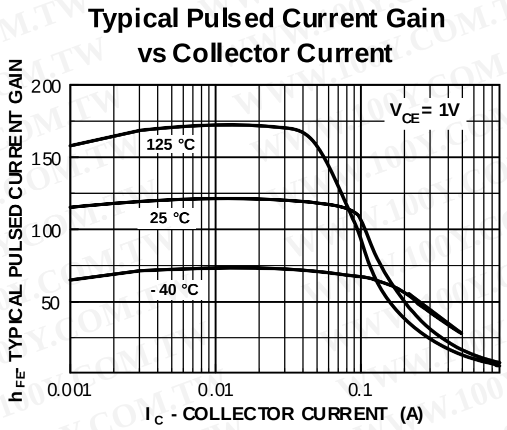

Figure 1. Typical Pulsed Current Gain vs Collector Current

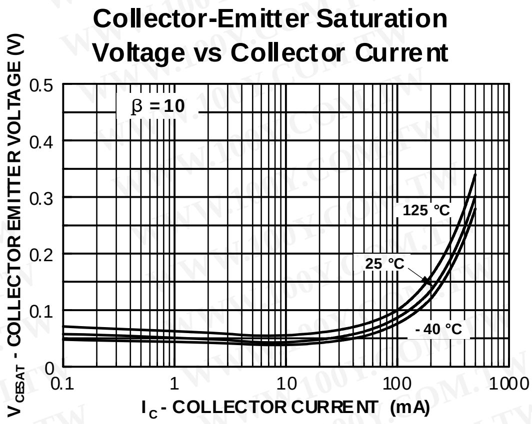

Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

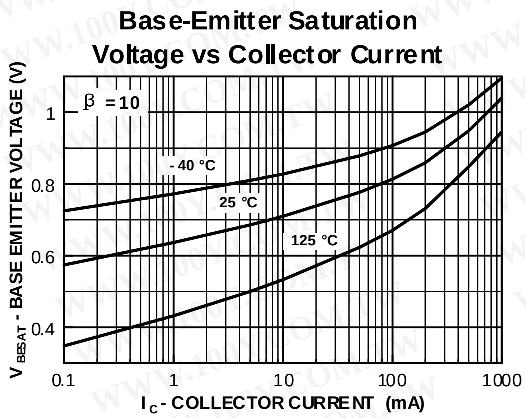

Figure 3. Base-Emitter Saturation Voltage vs Collector Current

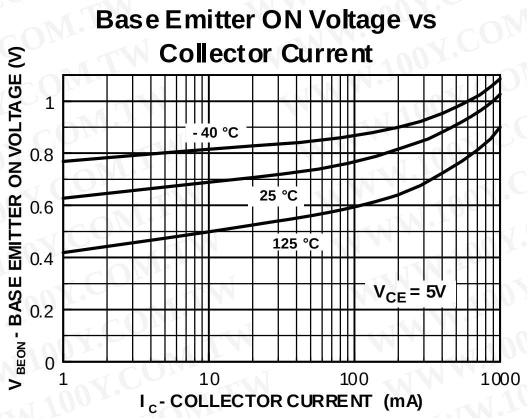

Figure 4. Base-Emitter On Voltage vs Collector Current

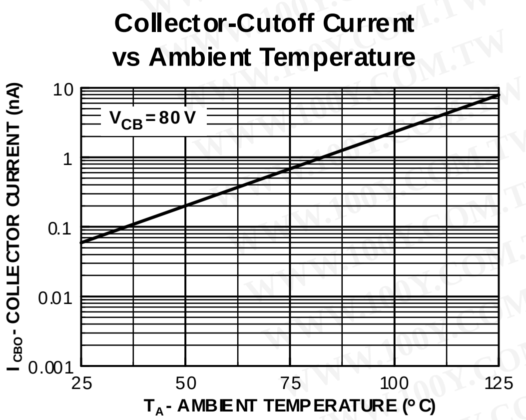

Figure 5. Collector Cutoff Current vs Ambient Temperature

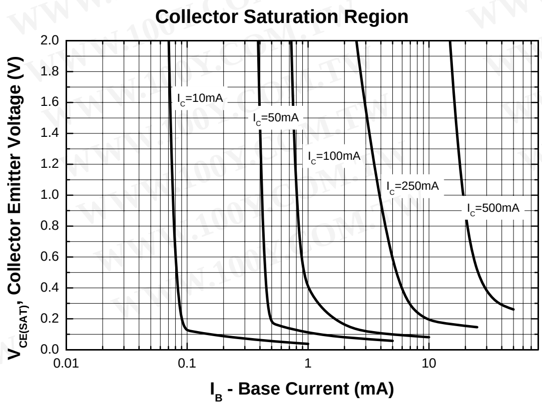

Figure 6. Collector Saturation Region

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Typical Performance Characteristics (continued)

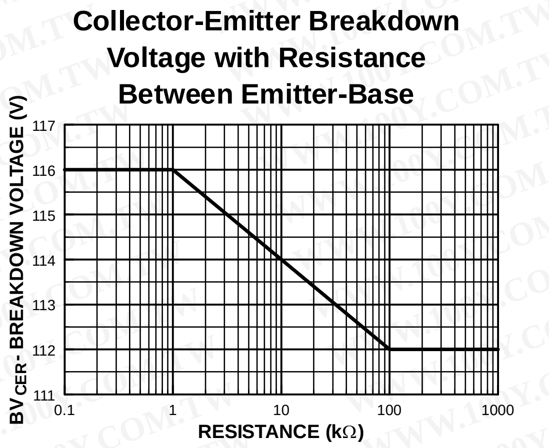

Figure 7. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

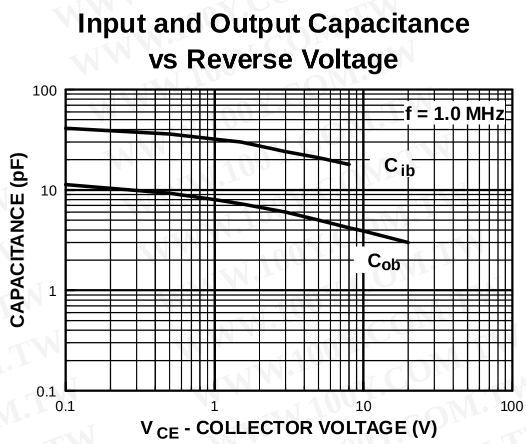

Figure 8. Input and Output Capacitance vs Reverse Voltage

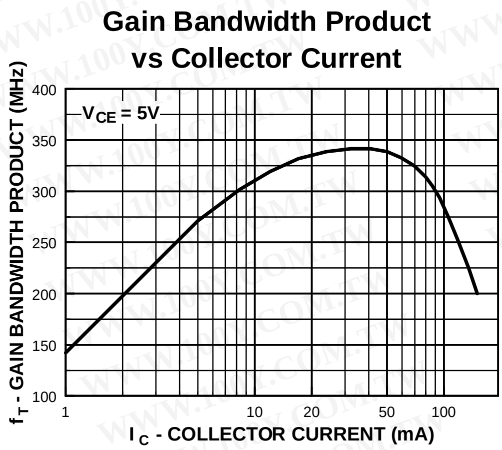

Figure 9. Gain Bandwidth Product vs Collector Current

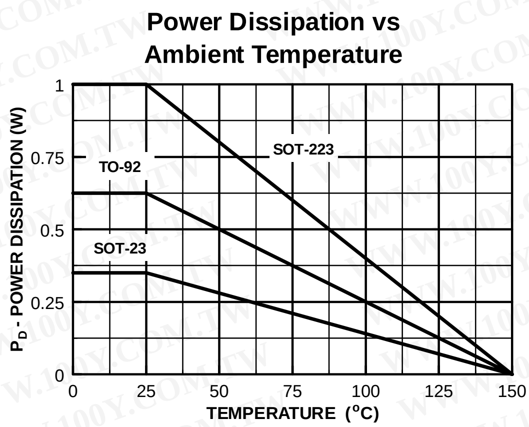

Figure 10. Power Dissipation vs Ambient Temperature

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