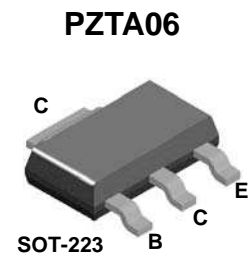
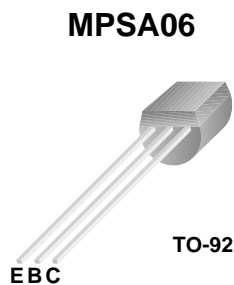


MPSA06 / MMBTA06 / PZTA06 NPN General Purpose Amplifier

Features

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



Absolute Maximum Ratings * $T_a = 25^\circ\text{C}$ 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 | $^\circ\text{C}$ |

* 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 $T_a = 25^\circ\text{C}$ unless otherwise noted

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

* Device mounted on FR-4 PCB $1.6'' \times 1.6'' \times 0.06''$.

** Device mounted on FR-4 PCB $36\text{mm} \times 18\text{mm} \times 1.5\text{mm}$; mounting pad for the collector lead min. 6cm^2 .

Electrical Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

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

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

Typical Performance Characteristics

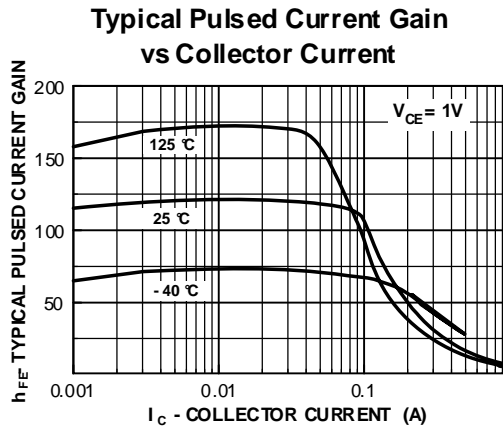


Figure 1. Typical Pulsed Current Gain vs Collector Current

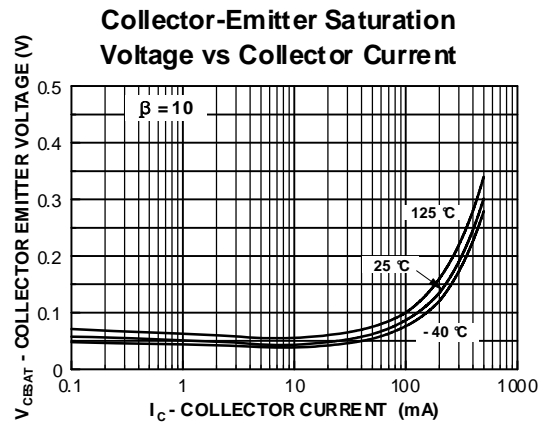


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

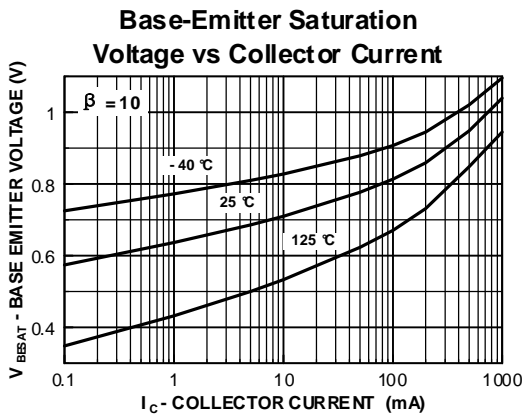


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

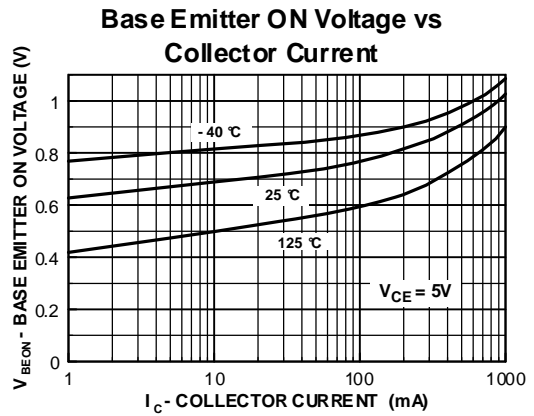


Figure 4. Base-Emitter On Voltage vs Collector Current

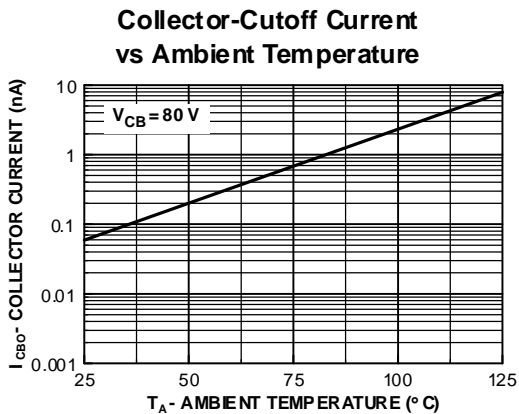


Figure 5. Collector Cutoff Current vs Ambient Temperature

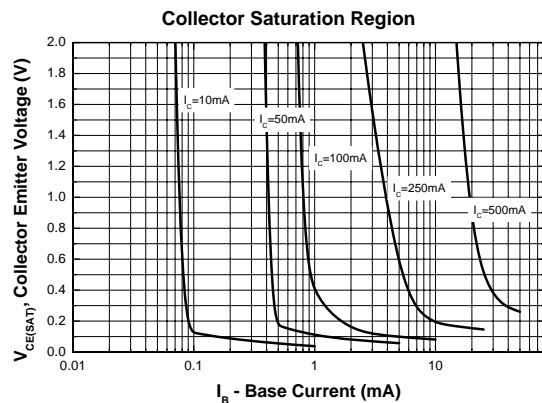


Figure 6. Collector Saturation Region

Typical Performance Characteristics (continued)

Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

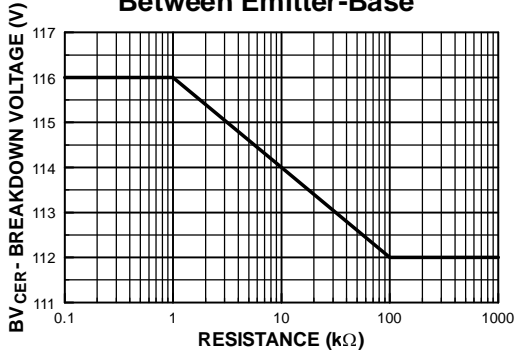


Figure 7. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

Input and Output Capacitance vs Reverse Voltage

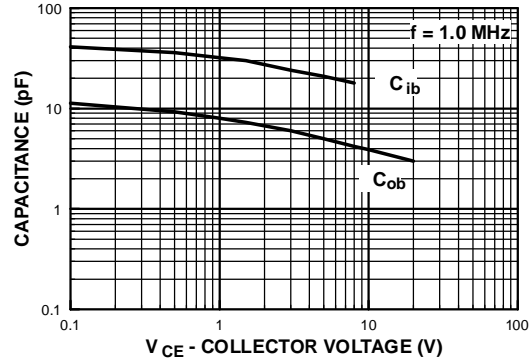


Figure 8. Input and Output Capacitance vs Reverse Voltage

Gain Bandwidth Product vs Collector Current

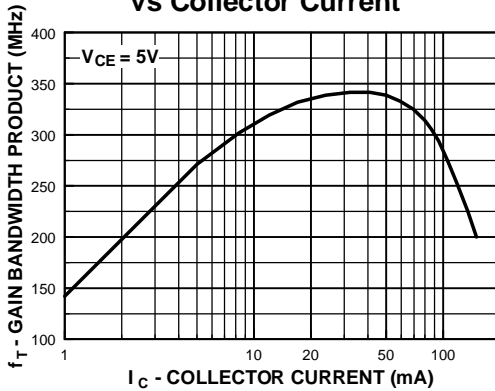


Figure 9. Gain Bandwidth Product vs Collector Current

Power Dissipation vs Ambient Temperature

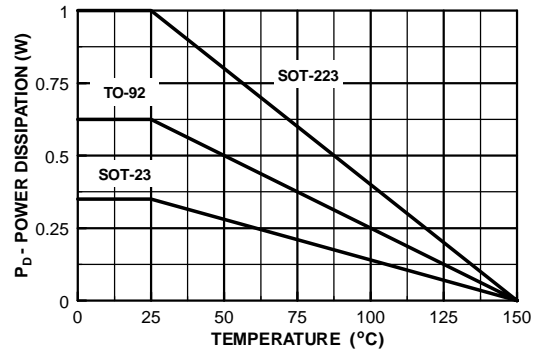







Figure 10. Power Dissipation vs Ambient Temperature



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