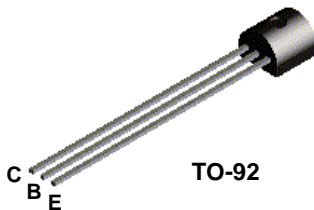
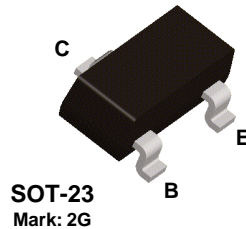


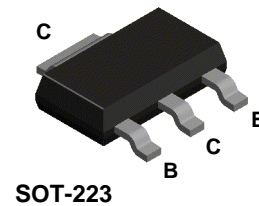
**MPSA56**



**MMBTA56**



**PZTA56**



**PNP General Purpose Amplifier**

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 73.

**Absolute Maximum Ratings\***

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CES</sub>	Collector-Emitter Voltage	80	V
V <sub>CBO</sub>	Collector-Base Voltage	80	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.0	V
I <sub>C</sub>	Collector Current - Continuous	500	mA
T <sub>J</sub> , T <sub>stg</sub>	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**

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max			Units
		MPSA56	*MMBTA56	**PZTA56	
P <sub>D</sub>	Total Device Dissipation Derate above 25°C	625	350	1,000	mW
		5.0	2.8	8.0	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3			°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction to Ambient	200	357	125	°C/W

\*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

\*\*Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm<sup>2</sup>.

# PNP General Purpose Amplifier

(continued)

## Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
<b>OFF CHARACTERISTICS</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 1.0 \text{ mA}, I_B = 0$	80		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \text{ } \mu\text{A}, I_E = 0$	80		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \text{ } \mu\text{A}, I_C = 0$	4.0		V
$I_{CEO}$	Collector-Cutoff Current	$V_{CE} = 60 \text{ V}, I_B = 0$		0.1	$\mu\text{A}$
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 80 \text{ V}, I_E = 0$		0.1	$\mu\text{A}$

## 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

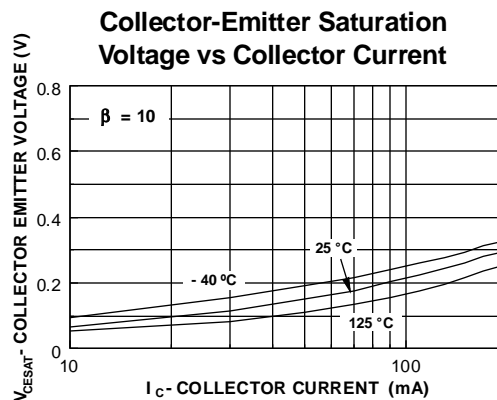
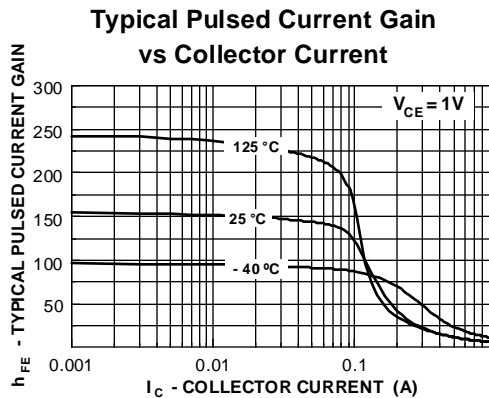
$f_T$	Current Gain - Bandwidth Product	$I_C = 100 \text{ mA}, V_{CE} = 1.0 \text{ V},$ $f = 100 \text{ MHz}$	50		MHz
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\*Pulse Test: Pulse Width  $\leq 300 \text{ } \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## Spice Model

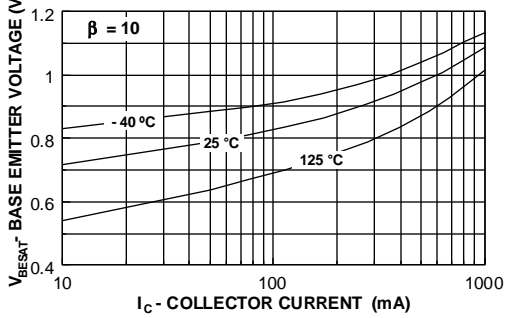
PNP (Is=12.27p Xti=3 Eg=1.11 Vaf=100 Bf=91.63 Ne=1.531 Ise=12.27p Ikf=1.009 Xtb=1.5 Br=1.287 Nc=2 Isc=0 Ikr=0 Rc=.6 Cjc=48.28p Mjc=.5615 Vjc=.75 Fc=.5 Cje=106.7p Mje=.5168 Vje=.75 Tr=496.3n Tf=865.8p Itf=.2 Vtf=2 Xtf=.8 Rb=10)

## Typical Characteristics

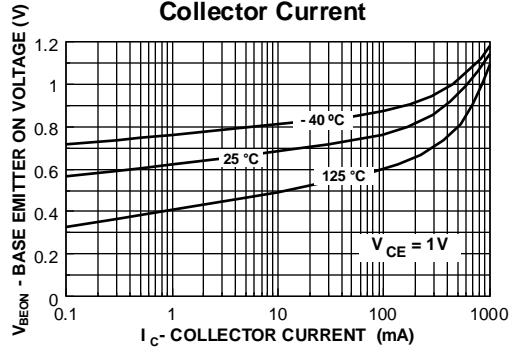


Typical Characteristics (continued)

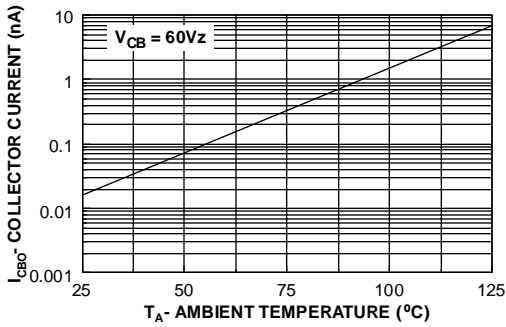
Base-Emitter Saturation Voltage vs Collector Current



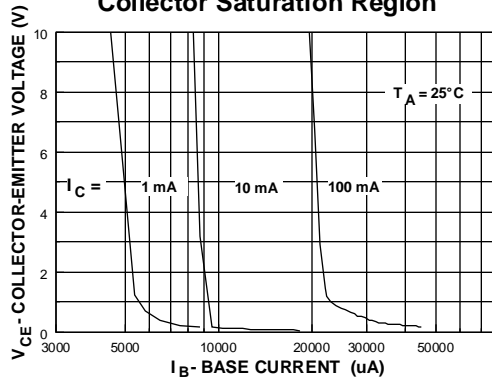
Base Emitter ON Voltage vs Collector Current



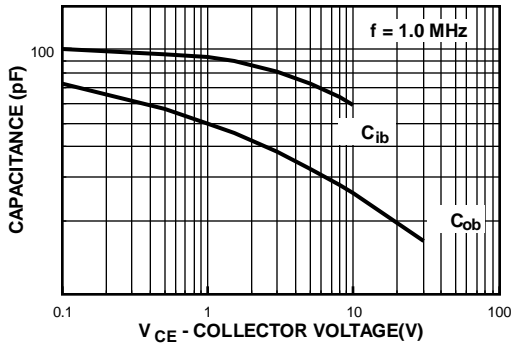
Collector-Cutoff Current vs. Ambient Temperature



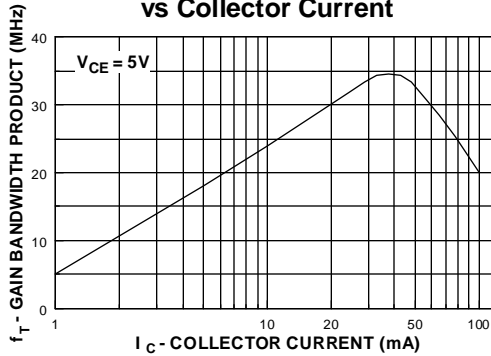
Collector Saturation Region



Input and Output Capacitance vs Reverse Voltage



Gain Bandwidth Product vs Collector Current



Typical Characteristics (continued)

