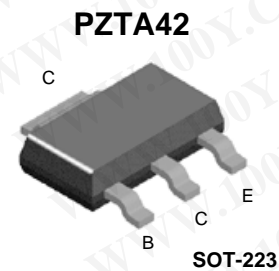


MPSA42 / MMBTA42 / PZTA42

NPN High Voltage Amplifier

Features

- This device is designed for application as a video output to drive color CRT and other high voltage applications.
- Sourced from Process 48.



Absolute Maximum Ratings* $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	300	V
V_{CBO}	Collector-Base Voltage	300	V
V_{EBO}	Emitter-Base Voltage	6	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
		MPSA42	*MMBTA42	**PZTA42	
P_D	Total Device Dissipation Derate above 25°C	625	240	1000	mW
		5.0	1.92	8.0	$\text{mW}/^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3			$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	515	125	$^\circ\text{C}/\text{W}$

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

** 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. 6 cm^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*	$I_C = 1.0\text{ mA}, I_B = 0$	300		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\ \mu\text{A}, I_E = 0$	300		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100\ \mu\text{A}, I_C = 0$	6		V
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 200\text{ V}, I_E = 0$		0.1	μA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 6\text{ V}, I_C = 0$		0.1	μA
On Characteristics*					
h_{FE}	DC Current Gain	$V_{CE} = 10\text{ V}, I_C = 1.0\text{ mA}$ $V_{CE} = 10\text{ V}, I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}, I_C = 30\text{ mA}$	25 40 40		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 20\text{ mA}, I_B = 2.0\text{ mA}$		0.5	V
$V_{BE(sat)}$	Base-Emitter On Voltage	$I_C = 20\text{ mA}, I_B = 2.0\text{ mA}$		0.9	V
Small Signal Characteristics					
f_T	Current Gain Bandwidth Product	$I_C = 10\text{ mA}, V_{CE} = 20\text{ V}, f = 100\text{ MHz}$	50		MHz
C_{cb}	Collector-Base Capacitance	$V_{CB} = 20\text{ V}, I_E = 0, f = 1.0\text{ MHz}$		3.0	pF

* Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycles $\leq 2\%$

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Typical Performance Characteristics

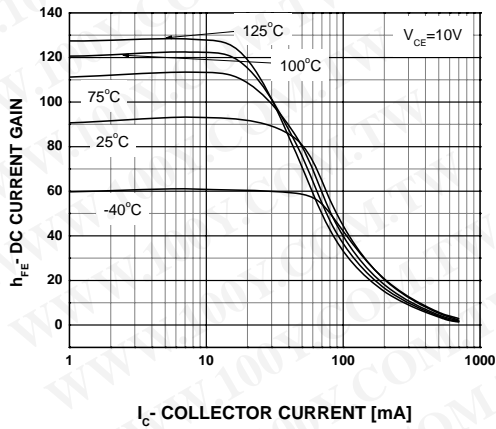


Figure 1. DC Current Gain vs Collector Current

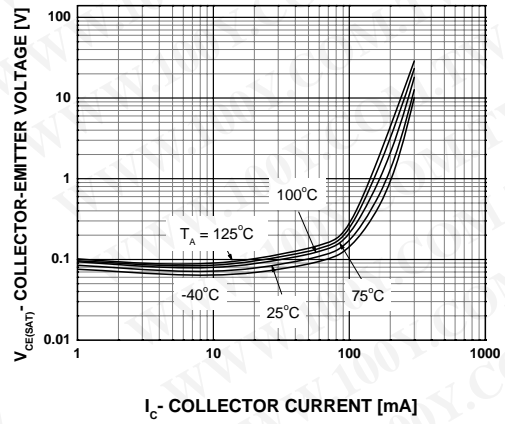


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

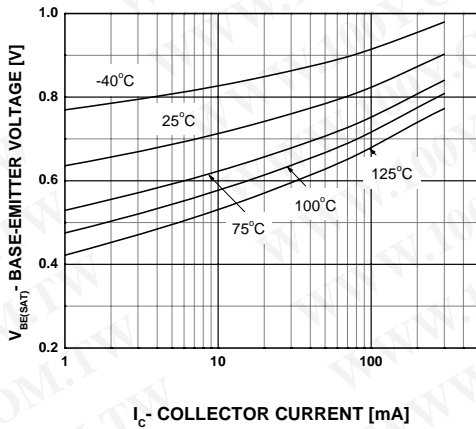


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

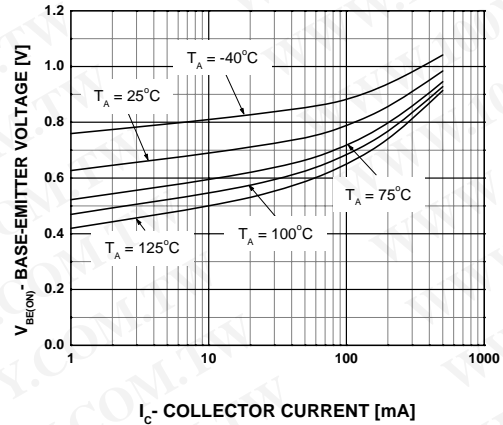


Figure 4. Base-Emitter ON Voltage vs Collector Current

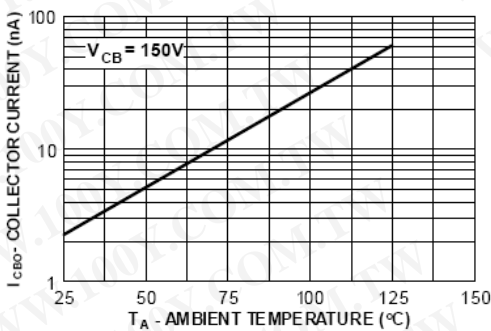


Figure 5. Collector-Cutoff Current vs Ambient Temperature

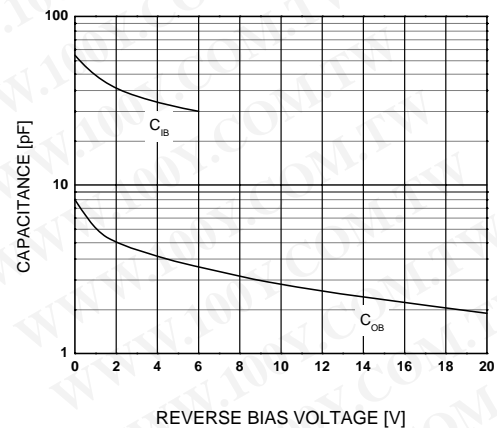


Figure 6. Collector-Base and Emitter-Base Capacitance vs Reverse Bias Voltage

Typical Performance Characteristics (Continued)

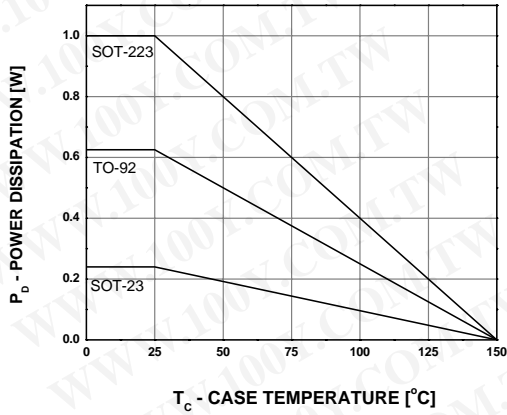


Figure 7. Power Dissipation vs Ambient Temperature





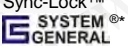
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