FAIRCHILD SEMICONDUCTOR®

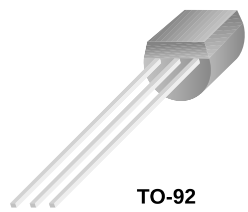
October 2009

MPSA42 / MMBTA42 / PZTA42
NPN High Voltage Amplifier

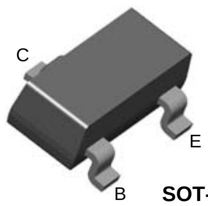
Features

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

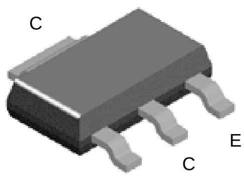
MPSA42



MMBTA42



PZTA42



Absolute Maximum Ratings* T_A = 25°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	°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
		MPSA42	*MMBTA42	**PZTA42	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	240 1.92	1000 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	515	125	°C/W

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

** Device mounted on FR-4 PCB 36 mm × 18 mm × 1.5 mm; mounting pad for the collector lead min. 6 cm^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 = 1.0 mA, I_B = 0	300		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 μA, I_E = 0	300		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100 μA, I_C = 0	6		V
I_{CBO}	Collector-Cutoff Current	V_{CB} = 200 V, I_E = 0		0.1	μA
I_{EBO}	Emitter-Cutoff Current	V_{EB} = 6 V, I_C = 0		0.1	μA
On Characteristics*					
h_{FE}	DC Current Gain	V_{CE} = 10 V, I_C = 1.0 mA V_{CE} = 10 V, I_C = 10 mA V_{CE} = 10 V, I_C = 30 mA	25 40 40		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 20 mA, I_B = 2.0 mA		0.5	V
$V_{BE(sat)}$	Base-Emitter On Voltage	I_C = 20 mA, I_B = 2.0 mA		0.9	V
Small Signal Characteristics					
f_T	Current Gain Bandwidth Product	I_C = 10mA, V_{CE} = 20V, f = 100MHz	50		MHz
Ccb	Collector-Base Capacitance	V_{CB} = 20 V, I_E = 0, f = 1.0 MHz		3.0	pF

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Performance Characteristics

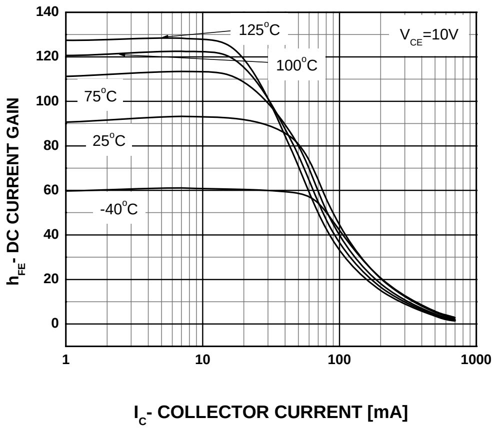


Figure 1. DC Current Gain vs Collector Current

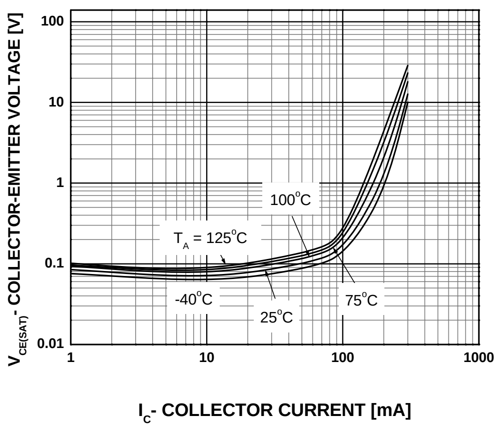


Figure 2. Collector-Emitter Saturation Voltage vs Collector Current

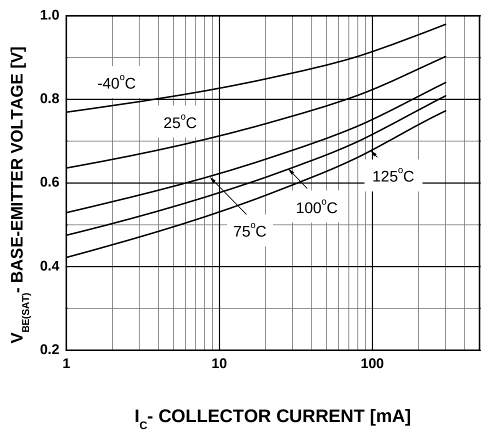


Figure 3. Base-Emitter Saturation Voltage vs Collector Current

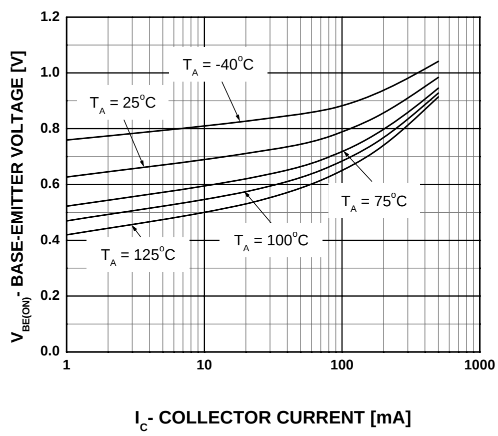


Figure 4. Base-Emitter ON Voltage vs Collector Current

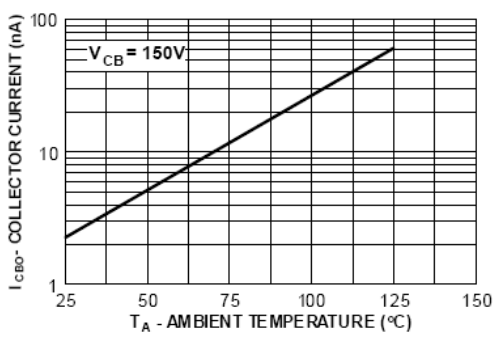


Figure 5. Collector-Cutoff Current vs Ambient Temperature

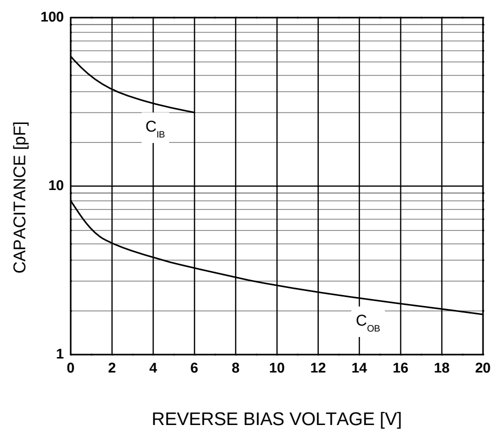


Figure 6. Collector-Base and Emitter-Base Capacitance vs Reverse Bias Voltage

Typical Performance Characteristics (Continued)

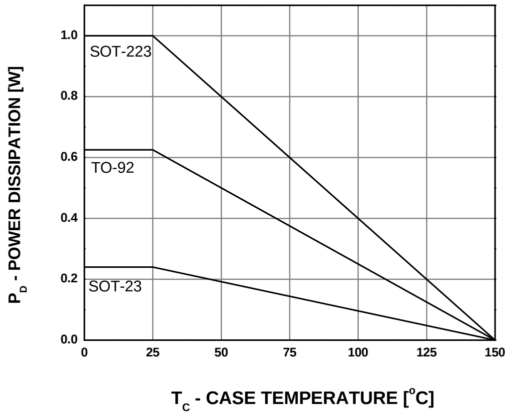


Figure 7. Power Dissipation vs Ambient Temperature

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