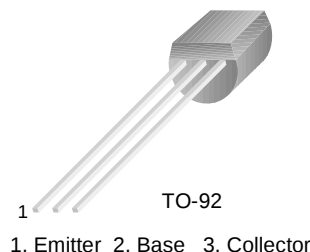


# MPSA43

## NPN High Voltage Amplifier

- This device is designed for application as a video output to drive color CRT and other high voltage applications.
- Sourced from process 48.
- See MPSA42 for characteristics.



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

| Symbol         | Parameter                                        | Value      | Units            |
|----------------|--------------------------------------------------|------------|------------------|
| $V_{CES}$      | Collector-Emitter Voltage                        | 200        | V                |
| $V_{CBO}$      | Collector-Base Voltage                           | 200        | V                |
| $V_{EBO}$      | Emitter-Base Voltage                             | 6.0        | V                |
| $I_C$          | Collector Current - Continuous                   | 200        | mA               |
| $T_J, T_{STG}$ | Operating and Storage Junction Temperature Range | -55 ~ +150 | $^\circ\text{C}$ |

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

### NOTES:

- These ratings are based on a maximum junction temperature of 150 degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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

| Symbol                                | Parameter                             | Test Condition                                                                                                                    | Min.           | Max. | Units         |
|---------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------|------|---------------|
| <b>Off Characteristics</b>            |                                       |                                                                                                                                   |                |      |               |
| $V_{(BR)CEO}$                         | Collector-Emitter Breakdown Voltage * | $I_C = 1.0\text{mA}, I_B = 0$                                                                                                     | 200            |      | V             |
| $V_{(BR)CBO}$                         | Collector-Base Breakdown Voltage      | $I_C = 100\mu\text{A}, I_E = 0$                                                                                                   | 200            |      | V             |
| $V_{(BR)EBO}$                         | Emitter-Base Breakdown Voltage        | $I_C = 100\mu\text{A}, I_C = 0$                                                                                                   | 6.0            |      | V             |
| $I_{CBO}$                             | Collector Cutoff Current              | $V_{CB} = 160\text{V}, I_E = 0$                                                                                                   |                | 0.1  | $\mu\text{A}$ |
| $I_{EBO}$                             | Emitter Cutoff Current                | $V_{EB} = 4.0\text{V}, I_C = 0$                                                                                                   |                | 0.1  | $\mu\text{A}$ |
| <b>On Characteristics *</b>           |                                       |                                                                                                                                   |                |      |               |
| $h_{FE}$                              | DC Current Gain                       | $I_C = 1.0\text{mA}, V_{CE} = 10\text{V}$<br>$I_C = 10\text{mA}, V_{CE} = 10\text{V}$<br>$I_C = 30\text{mA}, V_{CE} = 10\text{V}$ | 25<br>40<br>50 | 200  |               |
| $V_{CE(sat)}$                         | Collector-Emitter Saturation Voltage  | $I_C = 20\text{mA}, I_B = 2.0\text{mA}$                                                                                           |                | 0.4  | V             |
| $V_{BE(sat)}$                         | Base-Emitter Saturation Voltage       | $I_C = 20\text{mA}, I_B = 2.0\text{mA}$                                                                                           |                | 0.9  | V             |
| <b>Small Signal Characteristics *</b> |                                       |                                                                                                                                   |                |      |               |
| $f_T$                                 | 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            | $V_{CB} = 20\text{V}, I_E = 0, f = 1.0\text{MHz}$                                                                                 |                | 4.0  | pF            |

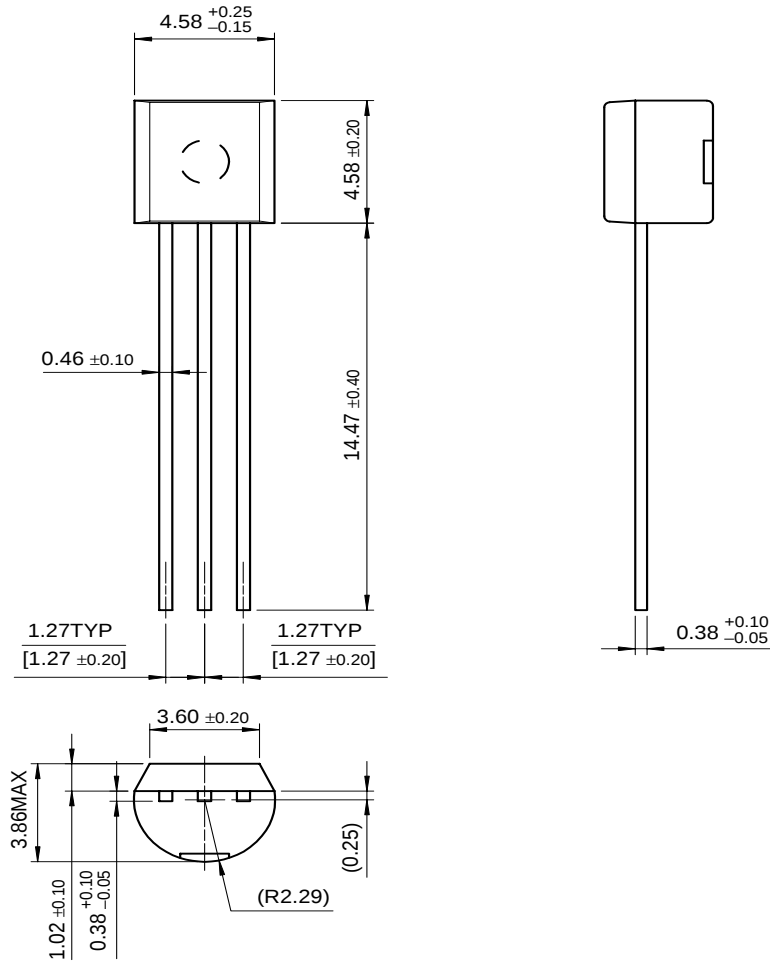
\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol          | Parameter                                                   | Max.       | Units                      |
|-----------------|-------------------------------------------------------------|------------|----------------------------|
| $P_D$           | Total Device Dissipation<br>Derate above $25^\circ\text{C}$ | 625<br>5.0 | mW<br>mW/ $^\circ\text{C}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case                        | 83.3       | $^\circ\text{C/W}$         |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient                     | 200        | $^\circ\text{C/W}$         |

# Package Dimensions

## TO-92



Dimensions in Millimeters

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|--------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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