



## MPSA42 THRU MPSA43

### Features

- Through Hole Package
- 150°C Junction Temperature
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Halogen free available upon request by adding suffix "-HF"

### Mechanical Data

- Case: TO-92, Molded Plastic
- Marking:

MPSA42 ----A42

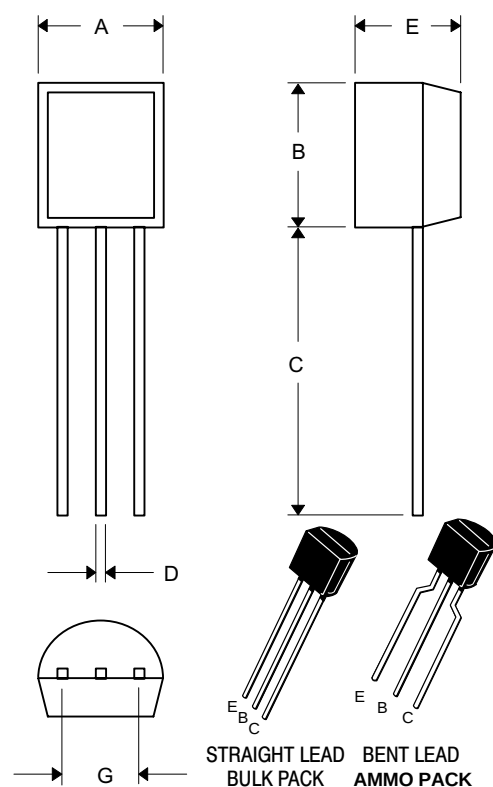
MPSA43 ----MPSA43

### Maximum Ratings @ 25°C Unless Otherwise Specified

| Charateristic                               | Symbol          | Value      | Unit        |
|---------------------------------------------|-----------------|------------|-------------|
| Collector-Emitter Voltage MPSA42<br>MPSA43  | $V_{CEO}$       | 300<br>200 | V           |
| Collector-Base Voltage MPSA42<br>MPSA43     | $V_{CBO}$       | 300<br>200 | V           |
| Emitter-Base Voltage MPSA42<br>MPSA43       | $V_{EBO}$       | 5.0        | V           |
| Collector Current(DC)                       | $I_C$           | 300        | mA          |
| Power Dissipation@ $T_A=25^\circ\text{C}$   | $P_d$           | 625<br>5.0 | mW<br>mW/°C |
| Power Dissipation@ $T_C=25^\circ\text{C}$   | $P_d$           | 1.5<br>12  | W<br>mW/°C  |
| Thermal Resistance, Junction to Ambient Air | $R_{\theta JA}$ | 200        | °C/W        |
| Thermal Resistance, Junction to Case        | $R_{\theta JC}$ | 83.3       | °C/W        |
| Operating & Storage Temperature             | $T_j, T_{STG}$  | -55~150    | °C          |

## NPN Silicon High Voltage Transistor 625mW

### TO-92



### DIMENSIONS

| DIM | INCHES |      | MM    |      | NOTE          |
|-----|--------|------|-------|------|---------------|
|     | MIN    | MAX  | MIN   | MAX  |               |
| A   | .175   | .185 | 4.45  | 4.70 |               |
| B   | .175   | .185 | 4.45  | 4.70 |               |
| C   | .500   | ---  | 12.70 | ---  |               |
| D   | .016   | .020 | 0.41  | 0.63 |               |
| E   | .135   | .145 | 3.43  | 3.68 |               |
| G   | .095   | .105 | 2.42  | 2.67 | Straight Lead |
|     | .173   | .220 | 4.40  | 5.60 | Bent Lead     |

\* For ammo packing detailed specification, click here to visit our website of product packaging for details.

# MPSA42 thru MPSA43

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

### OFF CHARACTERISTICS

|                                                                                                                    |                  |               |            |             |               |
|--------------------------------------------------------------------------------------------------------------------|------------------|---------------|------------|-------------|---------------|
| Collector–Emitter Breakdown Voltage <sup>(1)</sup><br>( $I_C = 1.0\text{ mA}$ , $I_B = 0$ )                        | MPSA42<br>MPSA43 | $V_{(BR)CEO}$ | 300<br>200 | —<br>—      | Vdc           |
| Collector–Base Breakdown Voltage<br>( $I_C = 100\text{ }\mu\text{A}$ , $I_E = 0$ )                                 | MPSA42<br>MPSA43 | $V_{(BR)CBO}$ | 300<br>200 | —<br>—      | Vdc           |
| Emitter–Base Breakdown Voltage<br>( $I_E = 10\text{ }\mu\text{A}$ , $I_C = 0$ )                                    |                  | $V_{(BR)EBO}$ | 5.0        | —           | Vdc           |
| Collector Cutoff Current<br>( $V_{CB} = 200\text{ Vdc}$ , $I_E = 0$ )<br>( $V_{CB} = 160\text{ Vdc}$ , $I_E = 0$ ) | MPSA42<br>MPSA43 | $I_{CBO}$     | —<br>—     | 0.25<br>0.1 | $\mu\text{A}$ |
| Emitter Cutoff Current<br>( $V_{EB} = 3.0\text{ Vdc}$ , $I_C = 0$ )<br>( $V_{EB} = 4.0\text{ Vdc}$ , $I_C = 0$ )   | MPSA42<br>MPSA43 | $I_{EBO}$     | —<br>—     | 0.25<br>0.1 | $\mu\text{A}$ |

### ON CHARACTERISTICS<sup>(1)</sup>

|                                                                                                                                                                                       |                  |               |                |            |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------|----------------|------------|-----|
| DC Current Gain<br>( $I_C = 1.0\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 10\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 50\text{ mA}$ , $V_{CE} = 10\text{ Vdc}$ ) |                  | $h_{FE}$      | 25<br>80<br>25 | —<br>—     | 250 |
| Collector–Emitter Saturation Voltage<br>( $I_C = 20\text{ mA}$ , $I_B = 2.0\text{ mA}$ )                                                                                              | MPSA42<br>MPSA43 | $V_{CE(sat)}$ | —<br>—         | 0.5<br>0.4 | Vdc |
| Base–Emitter Saturation Voltage<br>( $I_C = 20\text{ mA}$ , $I_B = 2.0\text{ mA}$ )                                                                                                   |                  | $V_{BE(sat)}$ | —              | 0.9        | Vdc |

### SMALL–SIGNAL CHARACTERISTICS

|                                                                                                              |                  |          |        |            |     |
|--------------------------------------------------------------------------------------------------------------|------------------|----------|--------|------------|-----|
| Current–Gain — Bandwidth Product<br>( $I_C = 10\text{ mA}$ , $V_{CE} = 5\text{ Vdc}$ , $f = 30\text{ MHz}$ ) |                  | $f_T$    | 50     | —          | MHz |
| Collector–Base Capacitance<br>( $V_{CB} = 20\text{ Vdc}$ , $I_E = 0$ , $f = 1.0\text{ MHz}$ )                | MPSA42<br>MPSA43 | $C_{cb}$ | —<br>— | 3.0<br>4.0 | pF  |

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

# MPSA42 thru MPSA43

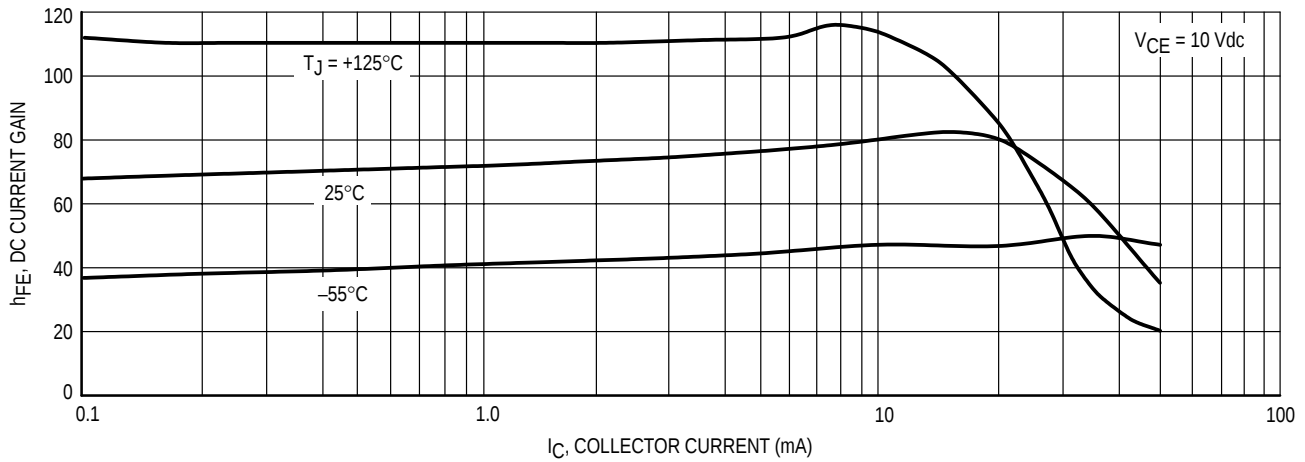


Figure 1. DC Current Gain

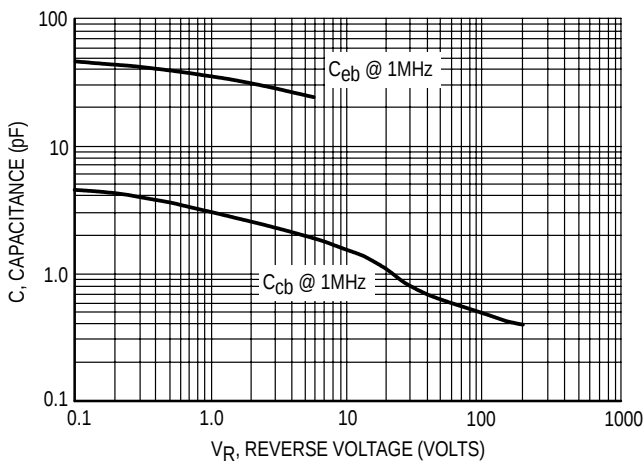


Figure 2. Capacitance

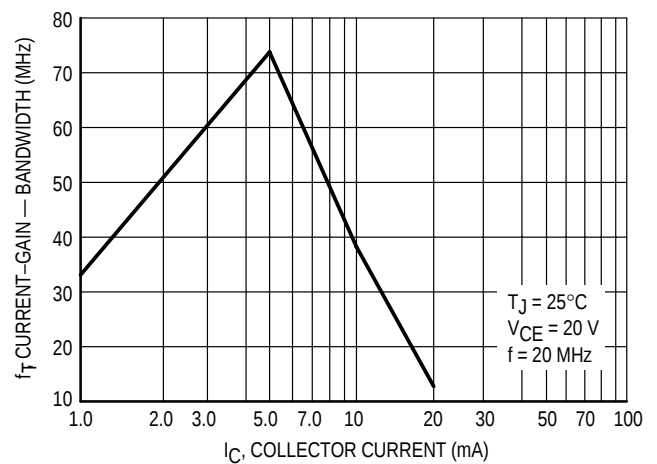


Figure 3. Current-Gain - Bandwidth

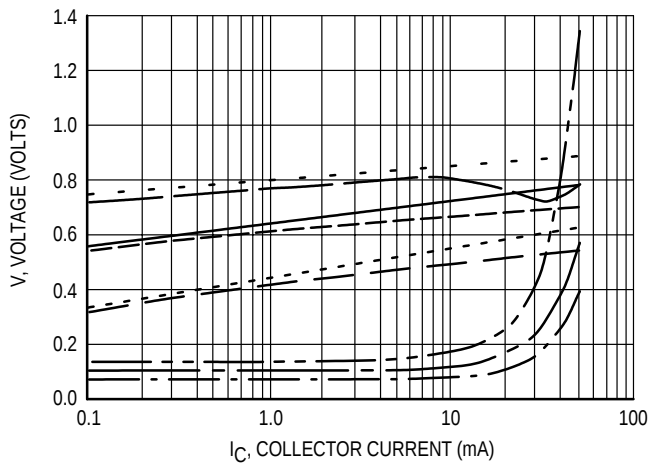


Figure 4. "ON" Voltages

- $V_{CE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{CE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $25^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $125^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(sat)}$  @  $-55^\circ\text{C}$ ,  $I_C/I_B = 10$
- $V_{BE(on)}$  @  $25^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$
- $V_{BE(on)}$  @  $125^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$
- $V_{BE(on)}$  @  $-55^\circ\text{C}$ ,  $V_{CE} = 10 \text{ V}$

## Ordering Information :

| Device         | Packing                     |
|----------------|-----------------------------|
| Part Number-AP | Ammo Packing: 20Kpcs/Carton |
| Part Number-BP | Bulk: 100Kpcs/Carton        |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-AP-HF

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