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MPSA13 & MPSA14 Silicon NPN Transistor Darlington, General Purpose Amplifier, Preamp, Driver TO-92 Type Package

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

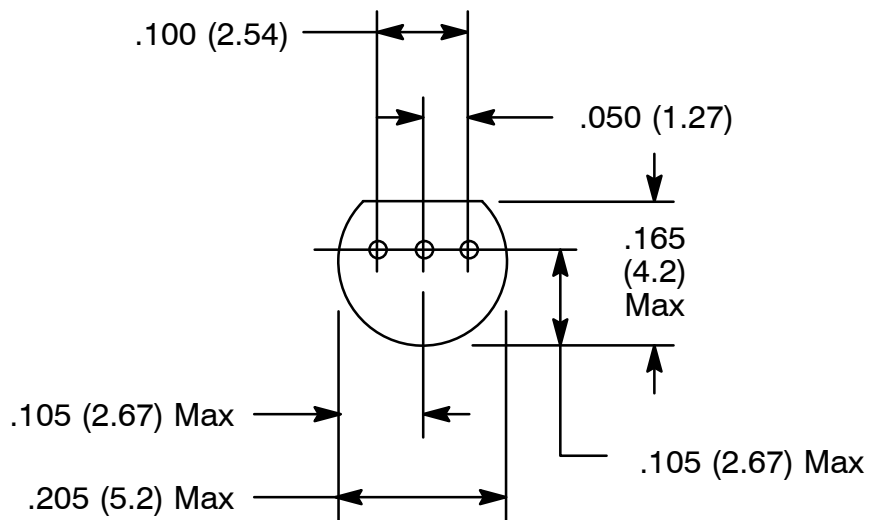
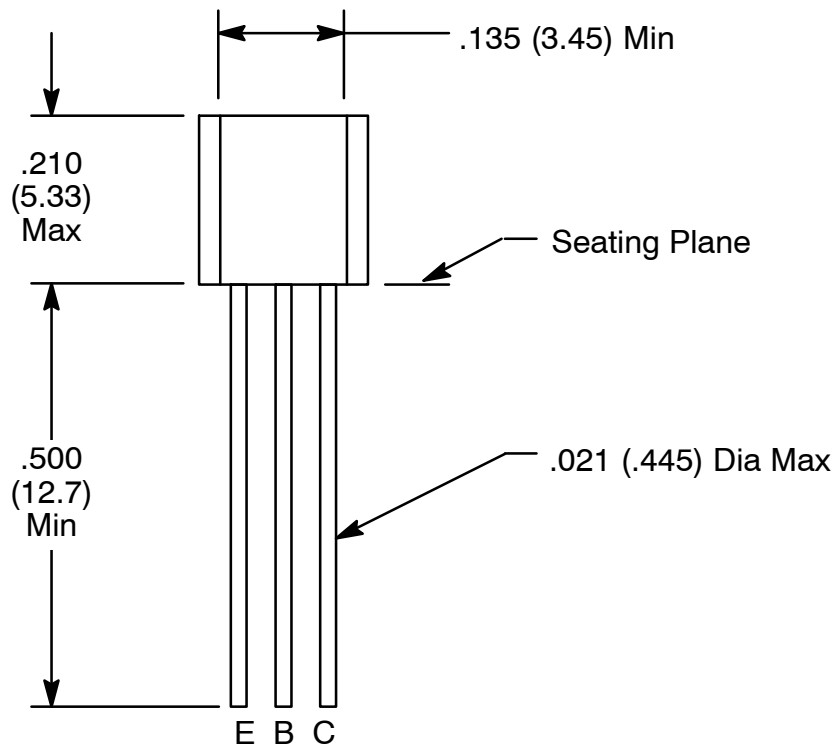
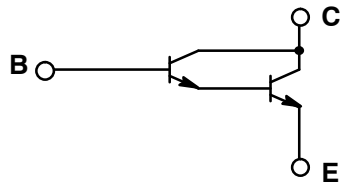
| | |
|---|-------------------------------------|
| Collector-Emitter Voltage, V_{CES} | 30V |
| Collector-Base Voltage, V_{CBO} | 30V |
| Emitter-Base Voltage, V_{EBO} | 10V |
| Continuous Collector Current, I_C | 500mA |
| Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D | 625mW |
| Derate Above 25°C | 5mW/ $^\circ\text{C}$ |
| Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D | 1.5W |
| Derate Above 25°C | 12mW/ $^\circ\text{C}$ |
| Operating Junction Temperature Range, T_J | -55° to $+150^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -55° to $+150^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Case, R_{thJC} | 83.3 $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient, R_{thJA} | 200 $^\circ\text{C}/\text{W}$ |

Electrical Characteristics: ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|--------------------------------------|---------------|--|--------|-----|-----|------|
| OFF Characteristics | | | | | | |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CES}$ | $I_C = 100\mu\text{A}$, $V_{BE} = 0$ | 30 | - | - | V |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 30\text{V}$, $I_E = 0$ | - | - | 100 | nA |
| Emitter Cutoff Current | I_{EBO} | $V_{BE} = 10\text{V}$, $I_C = 0$ | - | - | 100 | nA |
| ON Characteristics (Note 1) | | | | | | |
| DC Current Gain | h_{FE} | $I_C = 10\text{mA}$, $V_{CE} = 5\text{V}$ | 5,000 | - | - | |
| MPSA13 | | | 10,000 | - | - | |
| MPSA14 | | $I_C = 100\text{mA}$, $V_{CE} = 5\text{V}$ | 10,000 | - | - | |
| MPSA13 | | | 20,000 | - | - | |
| MPSA14 | | | | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 100\text{mA}$, $I_B = 0.1\text{mA}$ | - | - | 1.5 | V |
| Base-Emitter ON Voltage | $V_{BE(on)}$ | $I_C = 100\text{mA}$, $V_{CE} = 5\text{V}$ | - | - | 2.0 | V |
| Small-Signal Characteristics | | | | | | |
| Current Gain-Bandwidth Product | f_T | $I_C = 10\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$, Note 2 | 125 | - | - | MHz |

Note 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Note 2. $f_T = |h_{fe}| \cdot f_{test}$



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