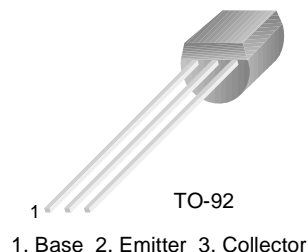


# MPSH34

MPSH34

## NPN General Purpose Amplifier

- This device is designed for common-emitter low noise amplifier and mixer applications with collector currents in the 100mA to 20mA range to 300MHz, and low frequency drift common-base VHF oscillator applications with high output levels for driving FET mixers.
- Sourced from process 47.
- See MPSH11 for characteristics.



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

| Symbol         | Parameter                        | Value      | Units            |
|----------------|----------------------------------|------------|------------------|
| $V_{CEO}$      | Collector-Emitter Voltage        | 40         | V                |
| $V_{CBO}$      | Collector-Base Voltage           | 40         | V                |
| $V_{EBO}$      | Emitter-Base Voltage             | 4.0        | V                |
| $I_C$          | Collector current - Continuous   | 50         | mA               |
| $T_J, T_{stg}$ | Junction and Storage Temperature | -55 ~ +150 | $^\circ\text{C}$ |

## 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 Sustaining Voltage * | $I_C = 1.0\text{mA}, I_B = 0$  | 40       |      | V     |
| $V_{(BR)CBO}$                       | Collector-Base Breakdown Voltage       | $I_C = 100\mu\text{A}, I_E = 0$  | 40       |      |       |
| $V_{(BR)EBO}$                       | Emitter-Base Breakdown Voltage         | $I_E = 10\mu\text{A}, I_C = 0$   | 4.0      |      | VV    |
| $I_{CBO}$                           | Collector Cutoff Current               | $V_{CB} = 30\text{V}, I_E = 0$   |          | 50   | nA    |
| <b>On Characteristics</b>           |  |  |          |      |       |
| $h_{FE}$                            | DC Current Gain                        | $V_{CE} = 2.0\text{V}, I_C = 20\text{mA}$<br>$V_{CE} = 15\text{V}, I_C = 7.0\text{mA}$ | 15<br>40 |      |       |
| $V_{CE(sat)}$                       | Collector-Emitter Saturation Voltage   | $I_C = 7.0\text{mA}, I_B = 2.0\text{mA}$   |          | 0.5  | V     |
| $V_{BE(on)}$                        | Base-Emitter On Voltage                | $V_{CE} = 15\text{V}, I_C = 7.0\text{mA}$  |          | 0.95 | V     |
| <b>Small Signal Characteristics</b> |  |  |          |      |       |
| $f_T$                               | Current Gain Bandwidth Product         | $I_C = 15\text{mA}, V_{CE} = 15\text{V},$<br>$f = 100\text{MHz}$                       | 500      |      | MHz   |
| $C_{cb}$                            | Collector-Base Capacitance             | $V_{CB} = 10\text{V}, I_E = 0, f = 1.0\text{MHz}$                                      |          | 0.32 | 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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