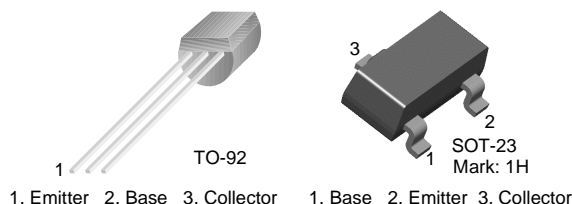


## MPSA05/MMBTA05

### NPN General Purpose Amplifier

- This device is designed for general purpose amplifier applications at collector currents to 300mA.
- Sourced from process 10.



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

| Symbol         | Parameter                        | Value      | Units            |
|----------------|----------------------------------|------------|------------------|
| $V_{CEO}$      | Collector-Emitter Voltage        | 60         | V                |
| $V_{CBO}$      | Collector-Base Voltage           | 60         | V                |
| $V_{EBO}$      | Emitter-Base Voltage             | 4.0        | V                |
| $I_C$          | Collector current - Continuous   | 500        | mA               |
| $T_J, T_{stg}$ | Junction and Storage Temperature | -55 ~ +150 | $^\circ\text{C}$ |

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

| Symbol                              | Parameter                             | Test Condition  | Min.       | Typ. | Max. | Units         |
|-------------------------------------|---------------------------------------|---|------------|------|------|---------------|
| <b>Off Characteristics</b>          |                                       |   |            |      |      |               |
| $V_{(BR)CEO}$                       | Collector-Emitter Breakdown Voltage * | $I_C = 1\text{mA}, I_B = 0$   | 60         |      |      | V             |
| $V_{(BR)EBO}$                       | Emitter-Base Breakdown Voltage        | $I_C = 100\mu\text{A}, I_E = 0$   | 4          |      |      | V             |
| $I_{CEO}$                           | Collector Cutoff Current              | $V_{CE} = 60\text{V}, I_B = 0$  |            |      | 0.1  | $\mu\text{A}$ |
| $I_{CBO}$                           | Emitter Cutoff Current                | $V_{CB} = 60\text{V}, I_E = 0$  |            |      | 0.1  | $\mu\text{A}$ |
| <b>On Characteristics</b>           |                                       |   |            |      |      |               |
| $h_{FE}$                            | DC Current Gain                       | $I_C = 10\text{mA}, V_{CE} = 1.0\text{V}$<br>$I_C = 100\text{mA}, V_{CE} = 1.0\text{V}$ | 100<br>100 |      |      |               |
| $V_{CE(sat)}$                       | Collector-Emitter Saturation Voltage  | $I_C = 100\text{mA}, I_B = 10\text{mA}$   |            |      | 0.25 | V             |
| $V_{BE(on)}$                        | Base-Emitter On Voltage               | $I_C = 100\text{mA}, V_{CE} = 1.0\text{V}$  |            |      | 1.2  | V             |
| <b>Small Signal Characteristics</b> |                                       |   |            |      |      |               |
| $f_T$                               | Current Gain Bandwidth Product        | $I_C = 10\text{mA}, V_{CE} = 2\text{V},$<br>$f = 100\text{MHz}$                         | 100        |      |      | MHz           |

\* 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                     |
|-----------------|---|--------|----------|---------------------------|
|                 |   | MPSA05 | *MMBTA05 |                           |
| $P_D$           | Total Device Dissipation                | 625    | 350      | mW                        |
|                 | Derate above $25^\circ\text{C}$         | 5      | 2.8      | mW/ $^\circ\text{C}$      |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case    | 83.3   |          | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 200    | 357      | $^\circ\text{C}/\text{W}$ |

\* Device mounted on FR-4 PCB  $1.6" \times 0.06"$

# Package Dimensions

## TO-92



Dimensions in Millimeters

Package Dimensions (Continued)

SOT-23



Dimensions in Millimeters

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