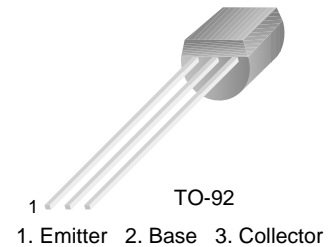


# MPS6513

## NPN General Purpose Amplifier

- This device is designed as a general purpose amplifier and switch.
- The useful dynamic range extends to 100mA as a switch and to 100MHz as an amplifier.
- Sourced from Procs 23.



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

| Symbol         | Parameter  | Value     | Units            |
|----------------|--|-----------|------------------|
| $V_{CBO}$      | Collector-Base Voltage                           | 40        | V                |
| $V_{CEO}$      | Collector-Emitter Voltage                        | 30        | V                |
| $V_{EBO}$      | Emitter-Base Voltage                             | 4         | V                |
| $I_C$          | Collector Current (DC)                           | 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:

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

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

| Symbol          | Parameter                               | Max. | Units                     |
|-----------------|---|------|---------------------------|
| $P_D$           | Total Device Dissipation                | 625  | mW                        |
|                 | Derate above $25^\circ\text{C}$         | 5.0  | 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  | $^\circ\text{C}/\text{W}$ |

\*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06".

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

| Symbol        | Parameter                            | Test Condition   | Min.     | Typ. | Max.        | Units         |
|---------------|--------------------------------------|--|----------|------|-------------|---------------|
| $BV_{CBO}$    | Collector-Base Voltage               | $I_C = 10 \mu\text{A}$   | 40       |      |             | V             |
| $BV_{CEO}$    | Collector-Emitter Voltage            | $I_C = 0.5 \text{ mA}$   | 30       |      |             | V             |
| $BV_{EBO}$    | Emitter-Base Voltage                 | $I_E = 10 \mu\text{A}$   | 4        |      |             | V             |
| $I_{CBO}$     | Collector-Base Cut-off Current       | $V_{CB} = 30 \text{ V}, T = 25^\circ\text{C}$<br>$T = 60^\circ\text{C}$              |          |      | 0.05<br>1.0 | $\mu\text{A}$ |
| $h_{FE}$      | DC Current Gain                      | $V_{CE} = 10\text{V}, I_C = 2\text{mA}$<br>$V_{CE} = 10\text{V}, I_C = 100\text{mA}$ | 90<br>60 |      | 180         |               |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 50 \text{ mA}, I_B = 5 \text{ mA}$  |          |      | 0.5         | V             |
| $C_{ob}$      | Output Capacitance                   | $V_{CB} = 5\text{V}, f = 1.0 \text{ MHz}$  |          |      | 3.5         | pF            |



#### NOTES:

1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3. These ratings are based on a maximum junction temperature of 150degrees C.



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