

## MPS6523



### PNP General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300 mA. Sourced from Process 68. See PN200 for characteristics.

#### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

| Symbol                            | Parameter  | Value       | Units |
|-----------------------------------|--|-------------|-------|
| V <sub>CEO</sub>                  | Collector-Emitter Voltage                        | 25          | V     |
| V <sub>CB0</sub>                  | Collector-Base Voltage                           | 45          | V     |
| V <sub>EBO</sub>                  | Emitter-Base Voltage                             | 4.0         | V     |
| I <sub>C</sub>                    | Collector Current - Continuous                   | 500         | mA    |
| T <sub>J</sub> , T <sub>stg</sub> | Operating and Storage Junction Temperature Range | -55 to +150 | °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

TA = 25°C unless otherwise noted

| Symbol           | Characteristic                                | Max     | Units |
|------------------|---|---------|-------|
|                  |   | MPS6523 |       |
| P <sub>D</sub>   | Total Device Dissipation<br>Derate above 25°C | 625     | mW    |
|                  |   | 5.0     | mW/°C |
| R <sub>θJC</sub> | Thermal Resistance, Junction to Case          | 83.3    | °C/W  |
| R <sub>θJA</sub> | Thermal Resistance, Junction to Ambient       | 200     | °C/W  |

# PNP General Purpose Amplifier

(continued)

MPS6523

## Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|--------|-----------|-----------------|-----|-----|-------|
|--------|-----------|-----------------|-----|-----|-------|

### OFF CHARACTERISTICS

|               |                                      |   |     |           |                     |
|---------------|--------------------------------------|---|-----|-----------|---------------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C = 0.5 \text{ mA}, I_B = 0$   | 25  |           | V                   |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage       | $I_E = 10 \text{ } \mu\text{A}, I_C = 0$  | 4.0 |           | V                   |
| $I_{CBO}$     | Collector Cutoff Current             | $V_{CB} = 20 \text{ V}, I_E = 0$<br>$V_{CB} = 20 \text{ V}, I_E = 0, T_A = 60 \text{ }^\circ\text{C}$ |     | 50<br>1.0 | nA<br>$\mu\text{A}$ |

### ON CHARACTERISTICS\*

|               |                                      |  |            |     |   |
|---------------|--------------------------------------|--|------------|-----|---|
| $h_{FE}$      | DC Current Gain                      | $V_{CE} = 10 \text{ V}, I_C = 100 \text{ } \mu\text{A}$<br>$V_{CE} = 10 \text{ V}, I_C = 2.0 \text{ mA}$ | 150<br>300 | 600 |   |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$  |            | 0.5 | V |

### SMALL SIGNAL CHARACTERISTICS

|          |                    |   |  |     |    |
|----------|--------------------|---|--|-----|----|
| $C_{ob}$ | Output Capacitance | $V_{CB} = 10 \text{ V}, f = 100 \text{ kHz}$  |  | 4.0 | pF |
| NF       | Noise Figure       | $V_{CE} = 5.0 \text{ V}, I_C = 10 \text{ } \mu\text{A},$<br>$R_S = 10 \text{ k}\Omega,$<br>$B_W = 10 \text{ Hz to } 15.7 \text{ kHz}$ |  | 3.0 | dB |

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