

MPS6531



NPN General Purpose Amplifier

This device is designed for use as a medium power amplifier and switch requiring collector currents to 500 mA. Sourced from Process 19. See PN2222A for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------------------------------|--|-------------|-------|
| V _{CEO} | Collector-Emitter Voltage | 40 | V |
| V _{CB0} | Collector-Base Voltage | 60 | V |
| V _{EBO} | Emitter-Base Voltage | 5.0 | V |
| I _C | Collector Current - Continuous | 1.0 | A |
| T _J , T _{stg} | 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 |
|------------------|---|---------|-------|
| | | MPS6531 | |
| P _D | Total Device Dissipation Derate above 25°C | 625 | mW |
| | | 5.0 | mW/°C |
| R _{θJC} | Thermal Resistance, Junction to Case | 83.3 | °C/W |
| R _{θJA} | Thermal Resistance, Junction to Ambient | 200 | °C/W |

NPN General Purpose Amplifier

(continued)

MPS6531

Electrical Characteristics

TA = 25°C unless otherwise noted

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

OFF CHARACTERISTICS

| | | | | | |
|---------------|--------------------------------------|---|-----|-----------|---------------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C = 10 \text{ mA}, I_B = 0$ | 40 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 10 \text{ } \mu\text{A}, I_E = 0$ | 60 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 10 \text{ } \mu\text{A}, I_C = 0$ | 5.0 | | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 40 \text{ V}, I_E = 0$ $V_{CB} = 40 \text{ V}, I_E = 0, T_A = 60 \text{ }^\circ\text{C}$ | | 50 2.0 | nA μA |

ON CHARACTERISTICS*

| | | | | | |
|---------------|--------------------------------------|--|----------------|-----|---|
| h_{FE} | DC Current Gain | $V_{CE} = 1.0 \text{ V}, I_C = 10 \text{ mA}$ $V_{CE} = 1.0 \text{ V}, I_C = 100 \text{ mA}$ $V_{CE} = 10 \text{ V}, I_C = 500 \text{ mA}$ | 60 90 50 | 270 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ | | 0.3 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$ | | 1.0 | V |

SMALL SIGNAL CHARACTERISTICS

| | | | | | |
|----------|--------------------|--|--|-----|----|
| C_{ob} | Output Capacitance | $V_{CB} = 10 \text{ V}, f = 100 \text{ kHz}$ | | 5.0 | pF |
|----------|--------------------|--|--|-----|----|

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