

MPS6507

Amplifier Transistor NPN Silicon



ON Semiconductor®

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MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|----------------------------|
| Collector–Emitter Voltage | V_{CEO} | 20 | Vdc |
| Collector–Base Voltage | V_{CBO} | 30 | Vdc |
| Emitter–Base Voltage | V_{EBO} | 3.0 | Vdc |
| Collector Current — Continuous | I_C | 50 | mAdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 5.0 | mW mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.5 12 | W mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|-----------------------|------|---------------------------|
| Thermal Resistance, Junction–to–Ambient | $R_{\theta JA}^{(1)}$ | 200 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction–to–Case | $R_{\theta JC}$ | 83.3 | $^\circ\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | |
|--|---------------|--------|--------|-----------|-------------------------|
| Collector–Emitter Breakdown Voltage ⁽²⁾ ($I_C = 1.0 \text{ mAdc}, I_E = 0$) | $V_{(BR)CEO}$ | 20 | — | — | Vdc |
| Collector–Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}, I_E = 0$) | $V_{(BR)CBO}$ | 30 | — | — | Vdc |
| Emitter–Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}, I_C = 0$) | $V_{(BR)EBO}$ | 3.0 | — | — | Vdc |
| Collector Cutoff Current ($V_{CB} = 15 \text{ Vdc}, I_E = 0$) ($V_{CB} = 15 \text{ Vdc}, I_E = 0, T_A = 60^\circ\text{C}$) | I_{CBO} | — — | — — | 50 1.0 | nAdc μAdc |

ON CHARACTERISTICS

| | | | | | |
|---|----------|----|----|---|---|
| DC Current Gain ⁽²⁾ ($I_C = 2.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$) | h_{FE} | 25 | 75 | — | — |
|---|----------|----|----|---|---|

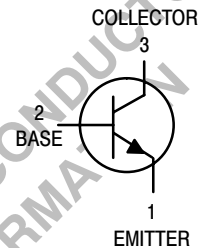
SMALL–SIGNAL CHARACTERISTICS

| | | | | | |
|---|-----------|-----|------|-----|-----|
| Current–Gain — Bandwidth Product ($I_C = 10 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz}$) | f_T | 700 | 800 | — | MHz |
| Output Capacitance ($V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 1.0 \text{ MHz}$) | C_{obo} | — | 1.25 | 2.5 | pF |
| Small–Signal Current Gain ($I_C = 2.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 20 \text{ MHz}$) | h_{fe} | 20 | — | — | — |

- $R_{\theta JA}$ is measured with the device soldered into a typical printed circuit board.
- Pulse Test: Pulse Width $\leq 300 \mu\text{s}$; Duty Cycle $\leq 2.0\%$.



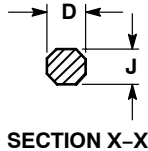
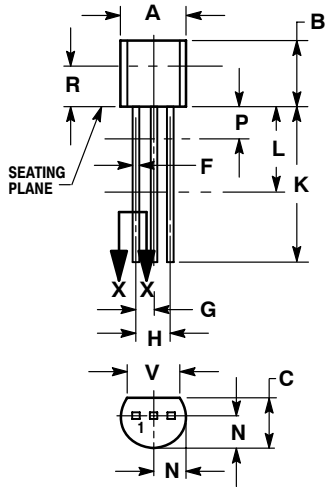
TO-92 (TO-226AA)
CASE 29-04
STYLE 1



MPS6507

PACKAGE DIMENSIONS

CASE 029-04 (TO-226AA) ISSUE AD



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.175 | 0.205 | 4.45 | 5.20 |
| B | 0.170 | 0.210 | 4.32 | 5.33 |
| C | 0.125 | 0.165 | 3.18 | 4.19 |
| D | 0.016 | 0.022 | 0.41 | 0.55 |
| F | 0.016 | 0.019 | 0.41 | 0.48 |
| G | 0.045 | 0.055 | 1.15 | 1.39 |
| H | 0.095 | 0.105 | 2.42 | 2.66 |
| J | 0.015 | 0.020 | 0.39 | 0.50 |
| K | 0.500 | --- | 12.70 | --- |
| L | 0.250 | --- | 6.35 | --- |
| N | 0.080 | 0.105 | 2.04 | 2.66 |
| P | --- | 0.100 | --- | 2.54 |
| R | 0.115 | --- | 2.93 | --- |
| V | 0.135 | --- | 3.43 | --- |

STYLE 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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