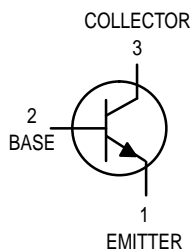
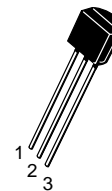


# Amplifier Transistor

## NPN Silicon



**MPS6507**



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

### 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 @ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 625<br>5.0  | mW<br>mW/ $^\circ\text{C}$    |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 1.5<br>12   | Watts<br>mW/ $^\circ\text{C}$ |
| Operating and Storage Junction<br>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 <sup>(2)</sup><br>( $I_C = 1.0$ mAdc, $I_B = 0$ )                                       | $V_{(BR)CEO}$ | 20     | —      | —         | Vdc               |
| Collector–Base Breakdown Voltage<br>( $I_C = 100$ $\mu$ Adc, $I_E = 0$ )  | $V_{(BR)CBO}$ | 30     | —      | —         | Vdc               |
| Emitter–Base Breakdown Voltage<br>( $I_E = 100$ $\mu$ Adc, $I_C = 0$ )  | $V_{(BR)EBO}$ | 3.0    | —      | —         | Vdc               |
| Collector Cutoff Current<br>( $V_{CB} = 15$ Vdc, $I_E = 0$ )<br>( $V_{CB} = 15$ Vdc, $I_E = 0$ , $T_A = 60^\circ\text{C}$ ) | $I_{CBO}$     | —<br>— | —<br>— | 50<br>1.0 | nAdc<br>$\mu$ Adc |

### ON CHARACTERISTICS

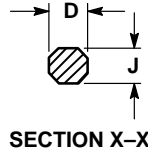
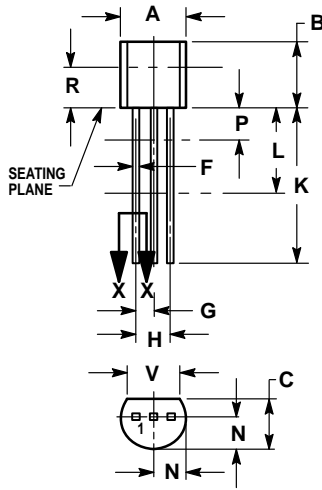
|  |          |    |    |   |   |
|--|----------|----|----|---|---|
| DC Current Gain <sup>(2)</sup><br>( $I_C = 2.0$ mAdc, $V_{CE} = 10$ Vdc) | $h_{FE}$ | 25 | 75 | — | — |
|--|----------|----|----|---|---|

### SMALL-SIGNAL CHARACTERISTICS

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

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

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. EMITTER
  2. BASE
  3. COLLECTOR

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