

# PNP Silicon Power Transistor

The MJE9780 is designed for vertical output of 14–inch to 17–inch televisions and CRT monitors, as well as other applications requiring a 150 volt PNP transistor.

Features:

- Standard TO–220AB Package
- Gain Range of 50 – 200 at 500 mAdc/10 volts

### MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise noted)

| Rating  | Symbol                            | MJE9780     | Unit  |
|---|-----------------------------------|-------------|-------|
| Collector–Emitter Sustaining Voltage            | V <sub>CEO</sub>                  | 150         | Vdc   |
| Collector–Base Voltage                          | V <sub>CBO</sub>                  | 200         | Vdc   |
| Emitter–Base Voltage                            | V <sub>EBO</sub>                  | 6.0         | Vdc   |
| Collector Current — Continuous                  | I <sub>C</sub>                    | 3.0         | Adc   |
| — Peak  | I <sub>CM</sub>                   | 5.0         |       |
| Total Power Dissipation (T <sub>A</sub> = 25°C) | P <sub>D</sub>                    | 2.0         | Watts |
| Derate above 25°C                               |                                   | 0.016       | W/°C  |
| Total Power Dissipation                         | P <sub>D</sub>                    | 40          | Watts |
| Derate above 25°C                               |                                   | 0.32        | W/°C  |
| Operating and Storage Temperature               | T <sub>J</sub> , T <sub>stg</sub> | – 55 to 150 | °C    |

### THERMAL CHARACTERISTICS

|   |                  |      |      |
|---|------------------|------|------|
| Thermal Resistance — Junction to Case   | R <sub>θJC</sub> | 3.12 | °C/W |
| — Junction to Ambient   | R <sub>θJA</sub> | 62.5 |      |
| Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds | T <sub>L</sub>   | 260  | °C   |

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

| Characteristics | Symbol | Min | Typ | Max | Unit |
|-----------------|--------|-----|-----|-----|------|
|-----------------|--------|-----|-----|-----|------|

### OFF CHARACTERISTICS\*

|   |                       |     |   |    |      |
|---|-----------------------|-----|---|----|------|
| Collector–Emitter Sustaining Voltage (I <sub>C</sub> = 50 mA, I <sub>B</sub> = 0) | V <sub>CEO(sus)</sub> | 150 | — | —  | Vdc  |
| Collector–Base Voltage (I <sub>C</sub> = 5.0 mAdc)                                | V <sub>CBO</sub>      | 200 | — | —  | Vdc  |
| Emitter–Base Voltage (I <sub>B</sub> = 5.0 mAdc)                                  | V <sub>EBO</sub>      | 6.0 | — | —  | Vdc  |
| Emitter Cutoff Current (V <sub>EB</sub> = 5.0 Vdc, I <sub>C</sub> = 0)            | I <sub>EBO</sub>      | —   | — | 10 | μAdc |
| Collector Cutoff Current (V <sub>CB</sub> = 150 Vdc, I <sub>E</sub> = 0)          | I <sub>CBO</sub>      | —   | — | 10 | μAdc |

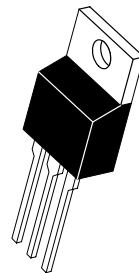
\* Indicates Pulse Test: P.W. = 300 μsec max, Duty Cycle = 2%.

(continued)

## MJE9780\*

\*ON Semiconductor Preferred Device

**PNP SILICON POWER  
TRANSISTOR  
3.0 AMPERES  
150 VOLTS**



**CASE 221A–09  
TO–220AB**

Preferred devices are ON Semiconductor recommended choices for future use and best overall value.

# MJE9780

## ELECTRICAL CHARACTERISTICS — continued ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

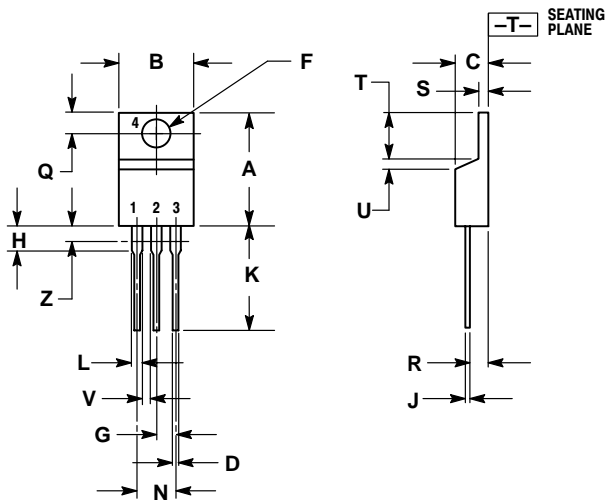
| Characteristics  | Symbol        | Min      | Typ    | Max      | Unit |
|--|---------------|----------|--------|----------|------|
| <b>ON CHARACTERISTICS*</b>   |               |          |        |          |      |
| Collector–Emitter Saturation Voltage<br>( $I_C = 500\text{ mAdc}$ , $I_B = 50\text{ mAdc}$ )                                       | $V_{CE(sat)}$ | —        | —      | 0.8      | Vdc  |
| Base–Emitter On Voltage<br>( $I_C = 500\text{ mAdc}$ , $V_{CE} = 4.0\text{ Vdc}$ )   | $V_{BE(on)}$  | —        | —      | 1.5      | Vdc  |
| DC Current Gain<br>( $I_C = 50\text{ mAdc}$ , $V_{CE} = 10\text{ Vdc}$ )<br>( $I_C = 500\text{ mAdc}$ , $V_{CE} = 10\text{ Vdc}$ ) | $h_{FE}$      | 60<br>50 | —<br>— | —<br>200 | —    |
| <b>DYNAMIC CHARACTERISTICS</b>   |               |          |        |          |      |
| Current Gain Bandwidth Product<br>( $I_C = 500\text{ mAdc}$ , $V_{CE} = 10\text{ Vdc}$ , $f = 1.0\text{ MHz}$ )                    | $f_T$         | —        | 5.0    | —        | MHz  |

\* Indicates Pulse Test: P.W. = 300  $\mu\text{sec}$  max, Duty Cycle = 2%.

# MJE9780

## PACKAGE DIMENSIONS

TO-220AA  
CASE 221A-09  
ISSUE AA



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.570  | 0.620 | 14.48       | 15.75 |
| B   | 0.380  | 0.405 | 9.66        | 10.28 |
| C   | 0.160  | 0.190 | 4.07        | 4.82  |
| D   | 0.025  | 0.035 | 0.64        | 0.88  |
| F   | 0.142  | 0.147 | 3.61        | 3.73  |
| G   | 0.095  | 0.105 | 2.42        | 2.66  |
| H   | 0.110  | 0.155 | 2.80        | 3.93  |
| J   | 0.018  | 0.025 | 0.46        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.15        | 1.52  |
| N   | 0.190  | 0.210 | 4.83        | 5.33  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.15        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.47  |
| U   | 0.000  | 0.050 | 0.00        | 1.27  |
| V   | 0.045  | ---   | 1.15        | ---   |
| Z   | ---    | 0.080 | ---         | 2.04  |

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