

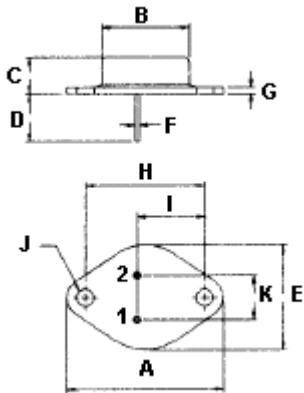
# MJ2501 & MJ3001

10A, 150W, 80V



## Features:

- Medium-power complementary Silicon Transistors for use as output devices in complementary general purpose amplifier applications.
- High DC Current Gain  
 $h_{FE} = 1000$  (Typical) at  $I_C = 5.0A$ .
- Monolithic construction with built Base-Emitter Shunt Resistors.



Pin 1. Base  
2. Emitter  
Collector(Case)

| Dimensions | Minimum | Maximum |
|------------|---------|---------|
| A          | 38.75   | 39.96   |
| B          | 19.28   | 22.23   |
| C          | 7.96    | 9.28    |
| D          | 11.18   | 12.19   |
| E          | 25.20   | 26.67   |
| F          | 0.92    | 1.09    |
| G          | 1.38    | 1.62    |
| H          | 29.90   | 30.40   |
| I          | 16.64   | 17.30   |
| J          | 3.88    | 4.36    |
| K          | 10.57   | 11.16   |

Dimensions : Millimetres

| PNP                                                                                            | NPN    |
|------------------------------------------------------------------------------------------------|--------|
| MJ2501                                                                                         | MJ3001 |
| 10 Ampere<br>Darlington<br>Power Transistors<br>Complementary Silicon<br>80 Volts<br>150 Watts |        |
|                                                                                                |        |
| TO-3                                                                                           |        |

## Maximum Ratings

| Characteristic                                                             | Symbol         | MJ2501/MJ3001 | Unit               |
|----------------------------------------------------------------------------|----------------|---------------|--------------------|
| Collector-Emitter Voltage                                                  | $V_{CEO}$      | 80            | V                  |
| Collector-Emitter Voltage                                                  | $V_{CEX}$      |               |                    |
| Emitter-Base Voltage                                                       | $V_{EBO}$      | 5.0           |                    |
| Collector Current-Continuous<br>-Peak                                      | $I_C$          | 10<br>12      | A                  |
| Base Current                                                               | $I_B$          | 0.2           |                    |
| Total Power Dissipation at $T_C = 25^\circ C$<br>Derate above $25^\circ C$ | $P_D$          | 150<br>0.857  | W<br>W/ $^\circ C$ |
| Operating and Storage Junction Temperature Range                           | $T_J, T_{STG}$ | -55 to +200   | $^\circ C$         |



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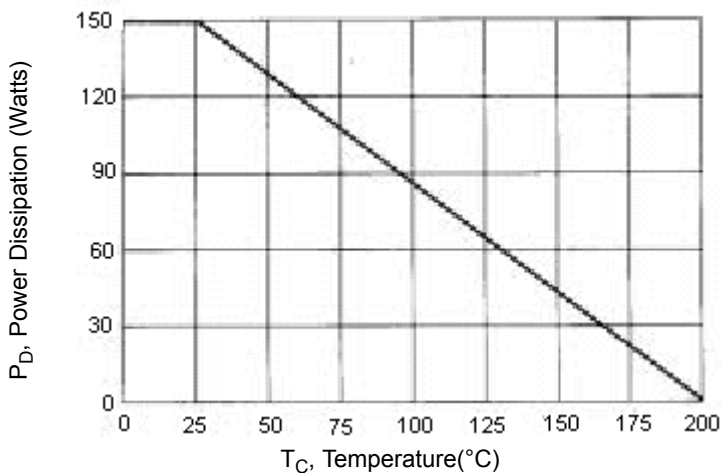
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## Thermal Characteristics

| Characteristic                      | Symbol          | Maximum | Unit                 |
|-------------------------------------|-----------------|---------|----------------------|
| Thermal Resistance Junction to Case | $R_{\theta jc}$ | 1.17    | $^{\circ}\text{C/W}$ |

Figure - 1 Power Derating



## Electrical Characteristics ( $T_C = 25^{\circ}\text{C}$ unless otherwise noted)

| Characteristic                                                                                                                                                           | Symbol                | Minimum | Maximum    | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------|------------|------|
| OFF Characteristics                                                                                                                                                      |                       |         |            |      |
| Collector-Emitter Sustaining Voltage (1)<br>(I <sub>C</sub> = 200mA, I <sub>B</sub> = 0) MJ2501, MJ3001                                                                  | V <sub>CEO(sus)</sub> | 80      | -          | V    |
| Collector Cut off Current<br>(V <sub>CE</sub> = 80V, R <sub>BE</sub> = 1.0kΩ)<br>(V <sub>CE</sub> = 80V, R <sub>BE</sub> = 1.0kΩ, T <sub>C</sub> = 150°C) MJ2501, MJ3001 | I <sub>CER</sub>      | -       | 1.0<br>5.0 | mA   |
| Emitter Cut off Current<br>(V <sub>EB</sub> = 5.0V, I <sub>C</sub> = 0)                                                                                                  | I <sub>EBO</sub>      | -       | 2.0        |      |
| Collector Cut off Current<br>(V <sub>CE</sub> = 40V, I <sub>B</sub> = 0) MJ2501, MJ3001                                                                                  | I <sub>CER</sub>      | -       | 1.0        |      |
| ON Characteristics                                                                                                                                                       |                       |         |            |      |
| DC Current Gain<br>(I <sub>C</sub> = 5.0A, V <sub>CE</sub> = 3.0V)                                                                                                       | h <sub>FE</sub>       | 1000    | -          | -    |
| Collector-Emitter Saturation Voltage<br>(I <sub>C</sub> = 5.0A, I <sub>B</sub> = 20mA)<br>(I <sub>C</sub> = 10A, I <sub>B</sub> = 50mA)                                  | V <sub>CE(sat)</sub>  | -       | 2.0<br>4.0 | V    |
| Base - Emitter On Voltage<br>(I <sub>C</sub> = 5.0A, V <sub>CE</sub> = 3.0V)                                                                                             | V <sub>BE(sat)</sub>  | -       | 3.0        |      |

(1) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$



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## Specifications

| $I_{C(av)}$<br>maximum<br>(A) | $V_{CEO}$<br>maximum<br>(V) | $h_{FE}$<br>minimum | $I_C$<br>(A) | $P_{tot}$<br>at 25°C<br>(W) | Package | Type | Part Number |
|-------------------------------|-----------------------------|---------------------|--------------|-----------------------------|---------|------|-------------|
| 10                            | 80                          | 1000                | 5            | 150                         | TO-3    | PNP  | MJ2501      |
|                               |                             |                     |              |                             |         | NPN  | MJ3001      |

Order Multiple = 1



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