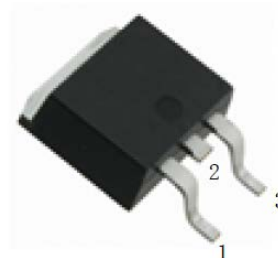


# MJD122R-HAF

## NPN Silicon Power Darlington Transistor

### Features

- Halogen and Antimony Free(HAF), RoHS compliant



1.Base 2.Collector 3.Emitter  
TO-252 Plastic Package

### Absolute Maximum Ratings

| Parameter  | Symbol                           | Rating        | Unit             |   |
|--|----------------------------------|---------------|------------------|---|
| Collector Base Voltage                           | $V_{CBO}$                        | 100           | V                |   |
| Collector Emitter Voltage                        | $V_{CEO}$                        | 100           | V                |   |
| Emitter Base Voltage                             | $V_{EBO}$                        | 5             | V                |   |
| Collector Current                                | $I_C$                            | 8             | A                |   |
| Peak Collector Current                           | $I_{CM}$                         | 16            | A                |   |
| Base Current                                     | $I_B$                            | 120           | mA               |   |
| Total Dissipation                                | $T_C = 25\text{ }^\circ\text{C}$ | $P_{tot}$     | 20               | W |
| Total Dissipation <sup>1)</sup>                  | $T_a = 25\text{ }^\circ\text{C}$ | $P_{tot}$     | 1.75             | W |
| Operating Junction and Storage Temperature Range | $T_j, T_{stg}$                   | - 65 to + 150 | $^\circ\text{C}$ |   |

### Thermal Characteristics

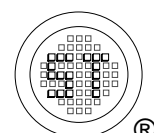
| Parameter   | Symbol          | Max. | Unit               |
|---|-----------------|------|--------------------|
| Thermal Resistance from Junction to Case                  | $R_{\theta JC}$ | 6.25 | $^\circ\text{C/W}$ |
| Thermal Resistance from Junction to Ambient <sup>1)</sup> | $R_{\theta JA}$ | 71.4 | $^\circ\text{C/W}$ |

<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

# MJD122R-HAF

## Characteristics at $T_j = 25^\circ\text{C}$ unless otherwise specified

| Parameter  | Symbol               | Min.        | Max.       | Unit          |
|--|----------------------|-------------|------------|---------------|
| DC Current Gain<br>at $V_{CE} = 4\text{ V}$ , $I_C = 4\text{ A}$<br>at $V_{CE} = 4\text{ V}$ , $I_C = 8\text{ A}$                    | $h_{FE}$<br>$h_{FE}$ | 1000<br>100 | 12000<br>- | -<br>-        |
| Collector Emitter Breakdown Voltage<br>at $I_C = 30\text{ mA}$   | $V_{(BR)CEO}$        | 100         | -          | V             |
| Collector Emitter Cutoff Current<br>at $V_{CE} = 50\text{ V}$  | $I_{CEO}$            | -           | 10         | $\mu\text{A}$ |
| Collector Cutoff Current<br>at $V_{CB} = 100\text{ V}$   | $I_{CBO}$            | -           | 10         | $\mu\text{A}$ |
| Emitter Base Cutoff Current<br>at $V_{EB} = 5\text{ V}$  | $I_{EBO}$            | -           | 2          | mA            |
| Collector Emitter Saturation Voltage<br>at $I_C = 4\text{ A}$ , $I_B = 16\text{ mA}$<br>at $I_C = 8\text{ A}$ , $I_B = 80\text{ mA}$ | $V_{CE(sat)}$        | -<br>-      | 2<br>4     | V             |
| Base Emitter Saturation Voltage<br>at $I_C = 8\text{ A}$ , $I_B = 80\text{ mA}$  | $V_{BE(sat)}$        | -           | 4.5        | V             |
| Base-Emitter On Voltage<br>at $V_{CE} = 4\text{ V}$ , $I_C = 4\text{ A}$   | $V_{BE(on)}$         | -           | 2.8        | V             |
| Current Gain Bandwidth Product<br>at $V_{CE} = 4\text{ V}$ , $I_C = 3\text{ A}$ , $f = 1\text{ MHz}$                                 | $f_T$                | 4           | -          | MHz           |
| Collector Base Capacitance<br>at $V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 0.1\text{ MHz}$   | $C_{cb}$             | -           | 200        | pF            |



## Electrical Characteristics Curves

Fig. 1 Collector Current vs. Base Emitter Voltage

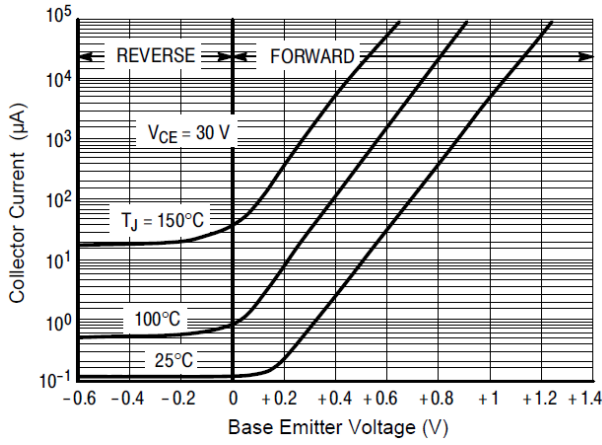


Fig. 2 V<sub>CE</sub> vs. I<sub>B</sub>

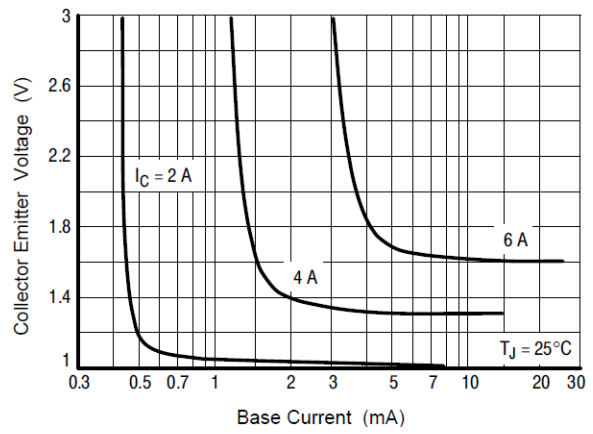


Fig. 3 Power Dissipation vs. Temperature

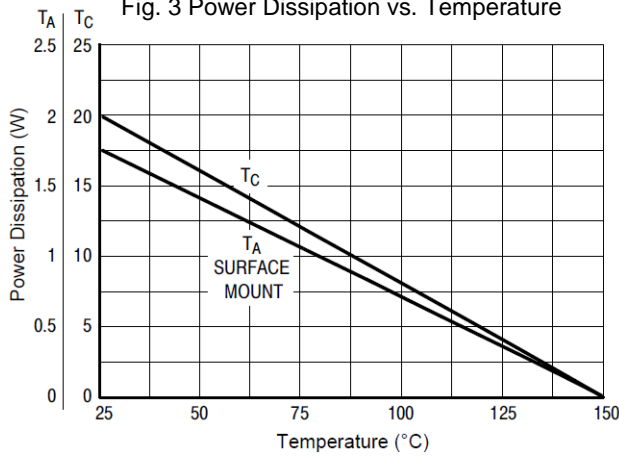
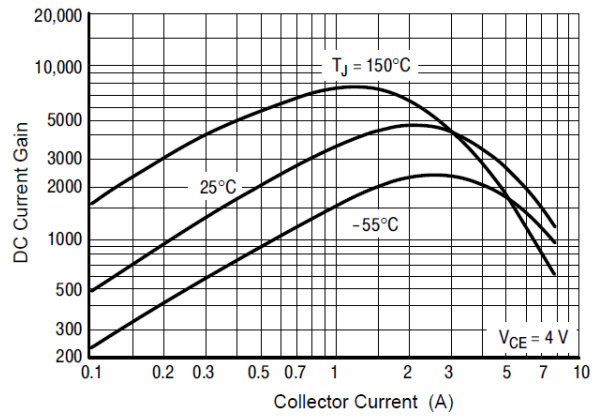


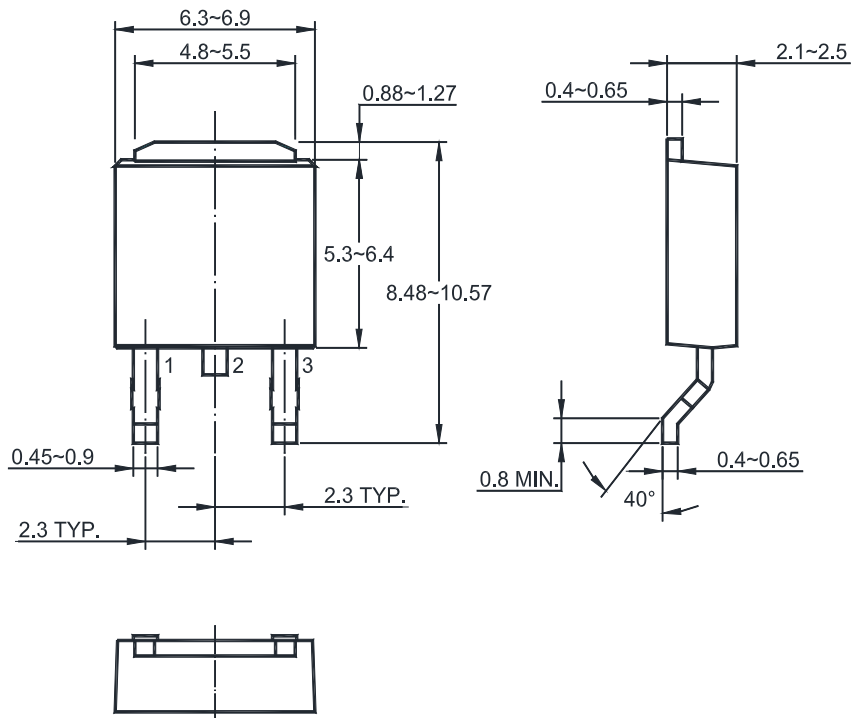
Fig. 4 DC Current Gain vs. Collector Current



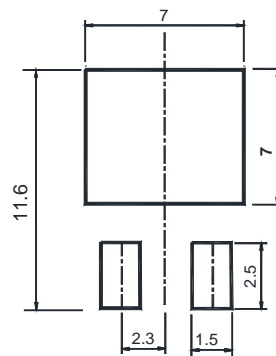
# MJD122R-HAF

## Package Outline (Dimensions in mm)

TO-252



## Recommended Soldering Footprint



## Packing information

| Package | Tape Width (mm) | Pitch   |               | Reel Size |      | Per Reel Packing Quantity |
|---------|-----------------|---------|---------------|-----------|------|---------------------------|
|         |                 | mm      | inch          | mm        | inch |                           |
| TO-252  | 12              | 8 ± 0.1 | 0.315 ± 0.004 | 330       | 13   | 2,500                     |

## Marking information

" MJD122R " = Part No.

" \*\*\*\*\* " = Date Code Marking

Font type: Arial

