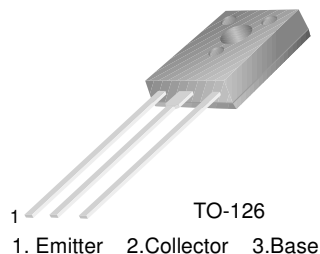


# MJE800/801/802/803

## Monolithic Construction With Built-in Base-Emitter Resistors

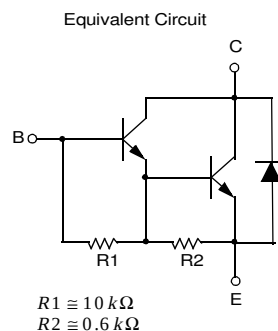
- High DC Current Gain :  $h_{FE} = 750$  (Min.) @  $I_C = 1.5$  and 2.0A DC
- Complement to MJE700/701/702/703



## NPN Epitaxial Silicon Darlington Transistor

### Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                                          | Value        | Units            |
|-----------|----------------------------------------------------|--------------|------------------|
| $V_{CBO}$ | Collector- Base Voltage                            | : MJE800/801 | 60 V             |
|           |                                                    | : MJE802/803 | 80 V             |
| $V_{CEO}$ | Collector-Emitter Voltage                          | : MJE800/801 | 60 V             |
|           |                                                    | : MJE802/803 | 80 V             |
| $V_{EBO}$ | Emitter-Base Voltage                               | 5            | V                |
| $I_C$     | Collector Current                                  | 4            | A                |
| $I_B$     | Base Current                                       | 0.1          | A                |
| $P_C$     | Collector Dissipation ( $T_C = 25^\circ\text{C}$ ) | 40           | W                |
| $T_J$     | Junction Temperature                               | 150          | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                                | - 55 ~ 150   | $^\circ\text{C}$ |



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

| Symbol        | Parameter                            | Test Condition                                                                                                                     | Min. | Max. | Units         |
|---------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------|------|---------------|
| $BV_{CEO}$    | Collector-Emitter Breakdown Voltage  | $I_C = 50\text{mA}$ , $I_B = 0$                                                                                                    | 60   |      | V             |
|               |                                      |                                                                                                                                    | 80   |      | V             |
| $I_{CEO}$     | Collector Cut-off Current            | $V_{CE} = 60\text{V}$ , $I_B = 0$<br>$V_{CE} = 80\text{V}$ , $I_B = 0$                                                             |      | 100  | $\mu\text{A}$ |
|               |                                      |                                                                                                                                    |      | 100  | $\mu\text{A}$ |
| $I_{CBO}$     | Collector Cut-off Current            | $V_{CB} = \text{Rated } BV_{CEO}$ , $I_E = 0$<br>$V_{CB} = \text{Rated } BV_{CEO}$ , $I_E = 0$<br>$T_C = 100^\circ\text{C}$        |      | 100  | $\mu\text{A}$ |
|               |                                      |                                                                                                                                    |      | 500  | $\mu\text{A}$ |
| $I_{EBO}$     | Emitter Cut-off Current              | $V_{BE} = 5\text{V}$ , $I_C = 0$                                                                                                   |      | 2    | mA            |
| $h_{FE}$      | DC Current Gain                      | : MJE800/802                                                                                                                       | 750  |      |               |
|               |                                      | : MJE801/803                                                                                                                       | 750  |      |               |
|               |                                      | : ALL DEVICES                                                                                                                      | 100  |      |               |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 1.5\text{A}$ , $I_B = 30\text{mA}$<br>$I_C = 2\text{A}$ , $I_B = 40\text{mA}$<br>$I_C = 4\text{A}$ , $I_B = 40\text{mA}$    |      | 2.5  | V             |
|               |                                      |                                                                                                                                    |      | 2.8  | V             |
|               |                                      |                                                                                                                                    |      | 3    | V             |
|               |                                      |                                                                                                                                    |      |      |               |
| $V_{BE(on)}$  | Base-Emitter ON Voltage              | $V_{CE} = 3\text{V}$ , $I_C = 1.5\text{A}$<br>$V_{CE} = 3\text{V}$ , $I_C = 2\text{A}$<br>$V_{CE} = 3\text{V}$ , $I_C = 4\text{A}$ |      | 2.5  | V             |
|               |                                      |                                                                                                                                    |      | 2.5  | V             |
|               |                                      |                                                                                                                                    |      | 3    | V             |
|               |                                      |                                                                                                                                    |      |      |               |

## Typical Characteristics

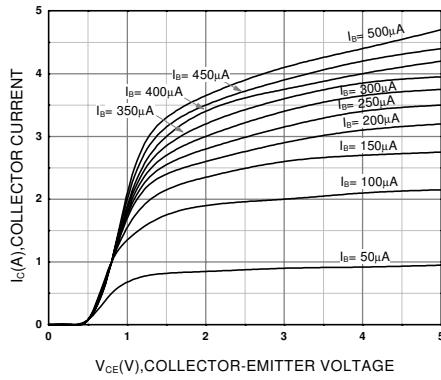


Figure 1. Static Characteristic

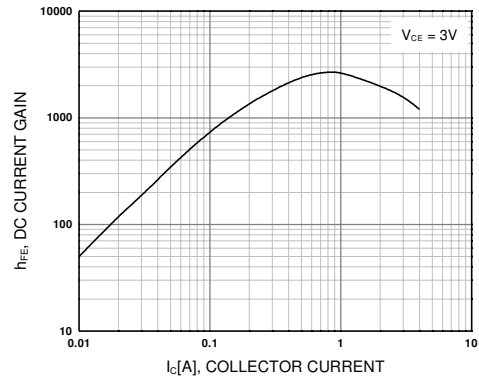


Figure 2. DC current Gain

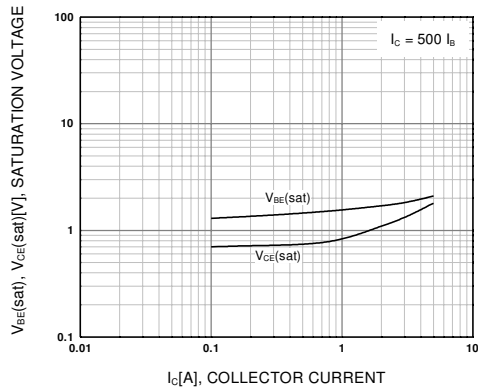


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

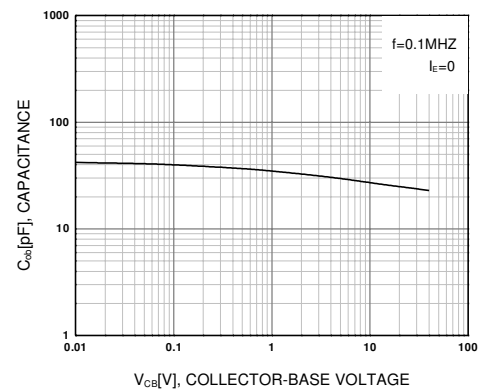


Figure 4. Collector Output Capacitance

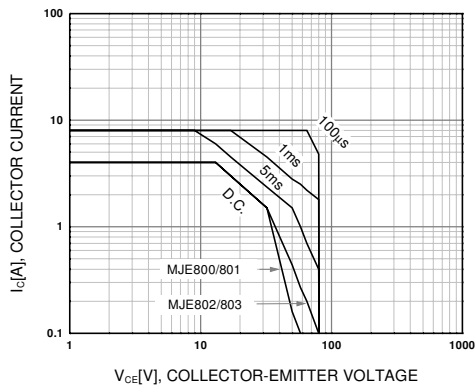


Figure 5. Safe Operating Area

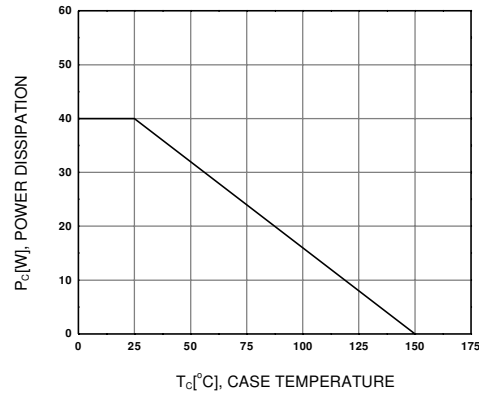


Figure 6. Power Derating

**MJE800/801/802/803**

Technical drawing of a mechanical part, showing three views: front view, side view, and top view.

**Front View Dimensions:**

- Top flange width:  $8.00 \pm 0.30$
- Top flange height:  $3.90 \pm 0.10$
- Central hole diameter:  $\varnothing 3.20 \pm 0.10$
- Overall height:  $14.20 \text{ MAX}$
- Bottom flange width:  $1.60 \pm 0.10$
- Bottom flange height:  $0.75 \pm 0.10$
- Overall height (excluding top flange):  $13.06 \pm 0.30$
- Bottom flange thickness:  $0.75 \pm 0.10$
- Bottom flange material:  $\frac{2.28 \text{ TYP}}{[2.28 \pm 0.20]}$
- Bottom flange label: #1

**Side View Dimensions:**

- Top flange width:  $3.25 \pm 0.20$
- Top flange height:  $11.00 \pm 0.20$
- Bottom flange width:  $1.75 \pm 0.20$
- Bottom flange height:  $16.10 \pm 0.20$
- Bottom flange material:  $\frac{2.28 \text{ TYP}}{[2.28 \pm 0.20]}$
- Bottom flange label: #1

**Top View Dimensions:**

- Top flange width:  $3.25 \pm 0.20$
- Bottom flange width:  $1.75 \pm 0.20$
- Bottom flange material:  $\frac{2.28 \text{ TYP}}{[2.28 \pm 0.20]}$
- Bottom flange label: #1

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| CROSSVOLT™           | HiSeC™              | QT Optoelectronics™ | UHC™       |
| DOMETM               | ISOPPLANAR™         | Quiet Series™       |            |
| E <sup>2</sup> CMOS™ | MICROWIRE™          | LILENT SWITCHER®    |            |
| EnSigna™             | OPTOLOGIC™          | SMART START™        |            |
| FACT™                | OPTOPLANAR™         | SuperSOT™-3         |            |
| FACT Quiet Series™   | PACMAN™             | SuperSOT™-6         |            |
| FAST®                | POP™                | SuperSOT™-8         |            |

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