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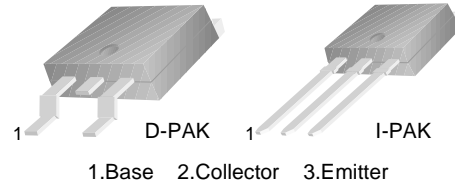
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MJD117

D-PAK for Surface Mount Applications

- High DC Current Gain
- Built-in a Damper Diode at E-C
- Lead Formed for Surface Mount Applications (No Suffix)
- Straight Lead (I-PAK, “ - I “ Suffix)
- Electrically Similar to Popular TIP117

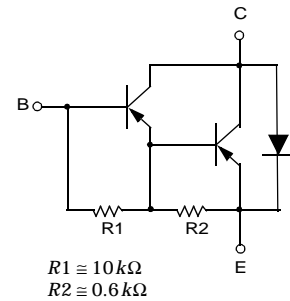


PNP Silicon Darlington Transistor

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

| Symbol | Parameter | Value | Units |
|-----------|--|------------|------------------|
| V_{CBO} | Collector-Base Voltage | - 100 | V |
| V_{CEO} | Collector-Emitter Voltage | - 100 | V |
| V_{EBO} | Emitter-Base Voltage | - 5 | V |
| I_C | Collector Current (DC) | - 2 | A |
| I_{CP} | Collector Current (Pulse) | - 4 | A |
| I_B | Base Current | - 50 | mA |
| P_C | Collector Dissipation ($T_C=25^\circ\text{C}$) | 20 | W |
| | Collector Dissipation ($T_a=25^\circ\text{C}$) | 1.75 | W |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature | - 65 ~ 150 | $^\circ\text{C}$ |

Equivalent Circuit



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

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|----------------------|---------------------------------------|---|--------------------|-------|---------------|
| V_{CEO} (sus) | *Collector-Emitter Sustaining Voltage | $I_C = - 30\text{mA}, I_B = 0$ | - 100 | | V |
| I_{CEO} | Collector Cut-off Current | $V_{CE} = - 50\text{V}, I_B = 0$ | | - 20 | μA |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = - 100\text{V}, I_E = 0$ | | - 20 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = - 5\text{V}, I_C = 0$ | | - 2 | mA |
| h_{FE} | *DC Current Gain | $V_{CE} = - 3\text{V}, V_{EB} = - 0.5\text{A}$ $V_{CE} = - 3\text{V}, V_{EB} = - 2\text{A}$ $V_{CE} = - 3\text{V}, I_C = - 4\text{A}$ | 500 1000 200 | 12K | |
| $V_{CE}(\text{sat})$ | *Collector-Emitter Saturation Voltage | $I_C = - 2\text{A}, I_B = - 8\text{mA}$ | | - 2 | V |
| | | $I_C = - 4\text{A}, I_B = - 40\text{mA}$ | | - 3 | V |
| $V_{BE}(\text{sat})$ | *Base-Emitter Saturation Voltage | $I_C = - 4\text{A}, I_B = - 40\text{mA}$ | | - 4 | V |
| $V_{BE}(\text{on})$ | *Base-Emitter ON Voltage | $V_{CE} = - 3\text{A}, I_C = - 2\text{A}$ | | - 2.8 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = - 10\text{V}, I_C = - 0.75\text{A}$ | 25 | | MHz |
| C_{ob} | Output Capacitance | $V_{CB} = - 10\text{V}, I_E = 0$ $f = 0.1\text{MHz}$ | | 200 | pF |

* Pulse Test: $PW \leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

Typical Characteristics

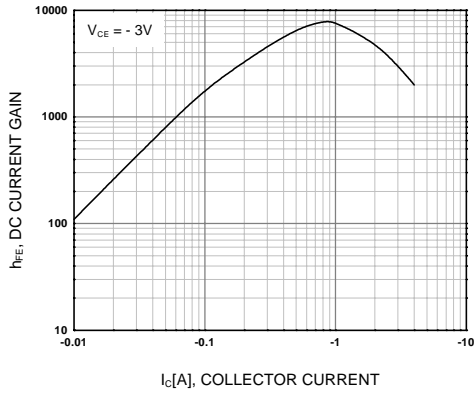


Figure 1. DC current Gain

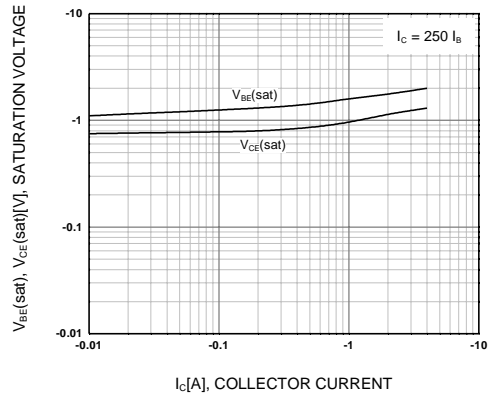


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

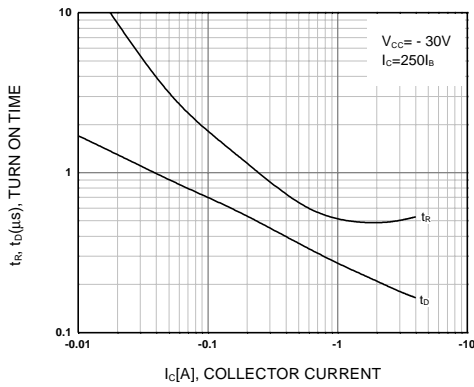


Figure 3. Collector Output Capacitance

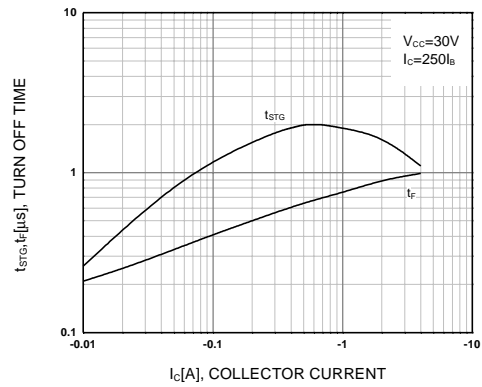


Figure 4. Turn On Time

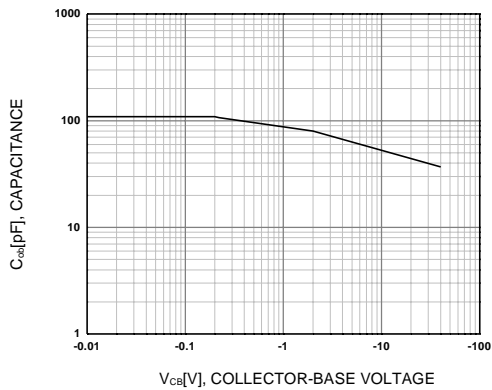


Figure 5. Turn Off Time

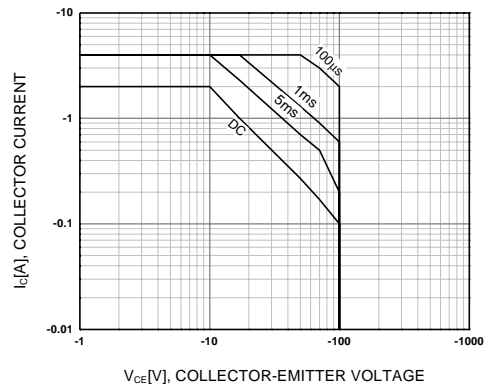


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

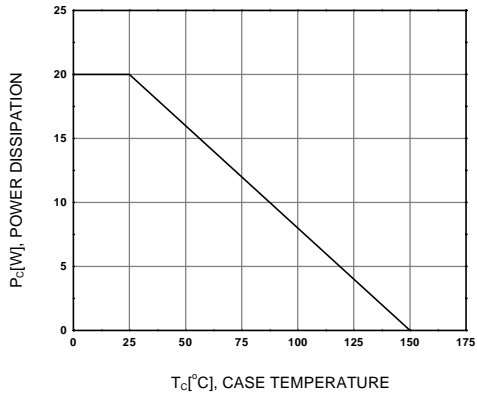
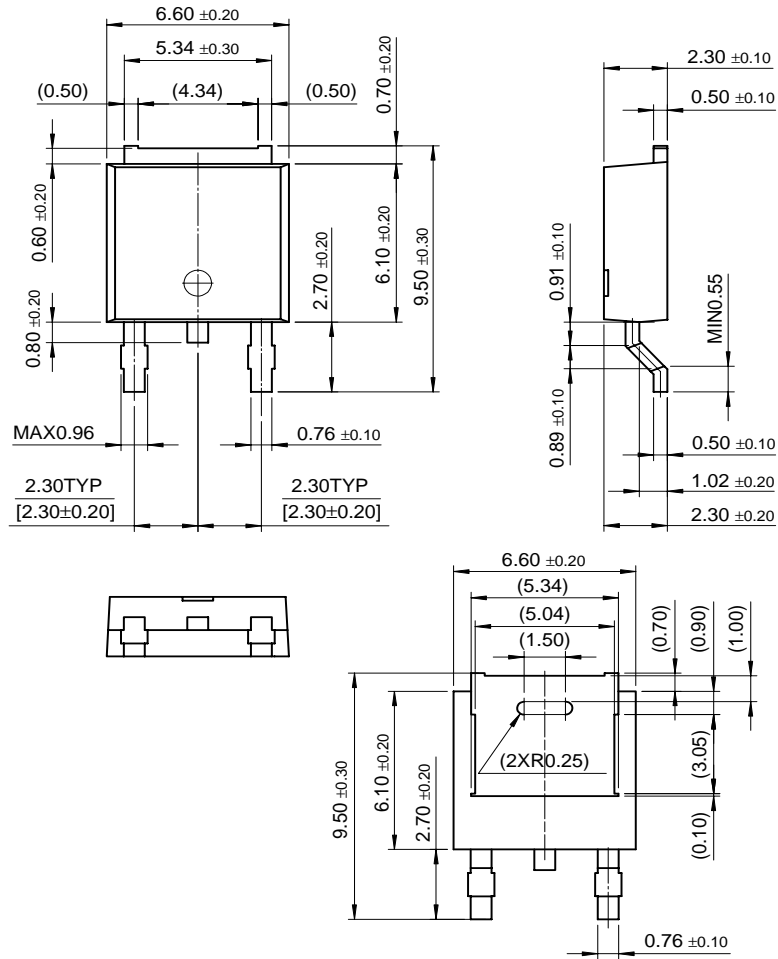


Figure 7. Power Derating

Package Dimensions

D-PAK



Dimensions in Millimeters

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