

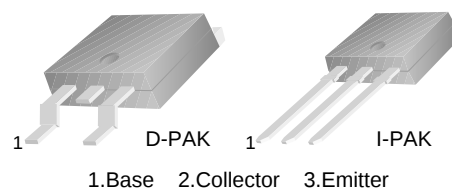


March 2009

# MJD44H11

## NPN Epitaxial Silicon Transistor

- General Purpose Power and Switching Such as Output or Driver Stages in Applications
- D-PAK for Surface Mount Applications
- Load Formed for Surface Mount Application (No Suffix)
- Straight Lead (I-PAK, "- I" Suffix)
- Electrically Similar to Popular MJE44H
- Fast Switching Speeds
- Low Collector Emitter Saturation Voltage



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

| Symbol    | Parameter                 | Value      | Units            |
|-----------|---------------------------|------------|------------------|
| $V_{CEO}$ | Collector-Emitter Voltage | 80         | V                |
| $V_{EBO}$ | Emitter-Base Voltage      | 5          | V                |
| $I_C$     | Collector Current (DC)    | 8          | A                |
| $I_{CP}$  | Collector-Current (Pulse) | 16         | A                |
| $T_J$     | Junction Temperature      | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature       | - 65 ~ 150 | $^\circ\text{C}$ |

### Thermal Characteristics $T_a = 25^\circ\text{C}$ unless otherwise noted

| Symbol          | Parameter                               | Max.                             | Units              |
|-----------------|-----------------------------------------|----------------------------------|--------------------|
| $P_D$           | Total Device Dissipation                | $T_c = 25^\circ\text{C}$<br>20   | W                  |
|                 |                                         | $T_a = 25^\circ\text{C}$<br>1.75 |                    |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case    | 6.25                             | $^\circ\text{C/W}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 71.4                             | $^\circ\text{C/W}$ |

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

| Symbol         | Parameter                             | Test Condition                                                                 | Min.     | Typ. | Max. | Units         |
|----------------|---------------------------------------|--------------------------------------------------------------------------------|----------|------|------|---------------|
| $V_{CEO(sus)}$ | *Collector-Emitter Sustaining Voltage | $I_C = 30\text{mA}, I_B = 0$                                                   | 80       |      |      | V             |
| $I_{CEO}$      | Collector Cut-off Current             | $V_{CE} = 80\text{V}, I_B = 0$                                                 |          |      | 10   | $\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-off Current               | $V_{BE} = 5\text{V}, I_C = 0$                                                  |          |      | 50   | $\mu\text{A}$ |
| $h_{FE}$       | *DC Current Gain                      | $V_{CE} = 1\text{V}, I_C = 2\text{A}$<br>$V_{CE} = 1\text{V}, I_C = 4\text{A}$ | 60<br>40 |      |      |               |
| $V_{CE(sat)}$  | *Collector-Emitter Saturation Voltage | $I_C = 8\text{A}, I_B = 0.4\text{A}$                                           |          |      | 1    | V             |
| $V_{BE(on)}$   | *Base-Emitter On Voltage              | $I_C = 8\text{A}, I_B = 0.8\text{A}$                                           |          |      | 1.5  | V             |
| $f_T$          | Current Gain Bandwidth Product        | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}$                                       |          | 50   |      | MHz           |
| $C_{ob}$       | Output Capacitance                    | $V_{CB} = 10\text{V}, f = 1\text{MHz}$                                         |          | 130  |      | pF            |
| $t_{ON}$       | Turn On Time                          | $I_C = 5\text{A}$<br>$I_{B1} = -I_{B2} = 0.5\text{A}$                          |          | 300  |      | ns            |
| $t_{STG}$      | Storage Time                          |                                                                                |          | 500  |      | ns            |
| $t_F$          | Fall Time                             |                                                                                |          | 140  |      | ns            |

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

## Typical Performance Characteristics

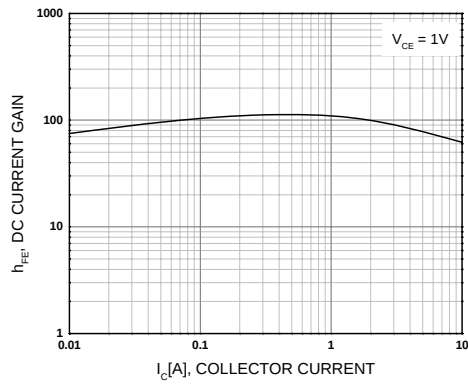


Figure 1. DC current Gain

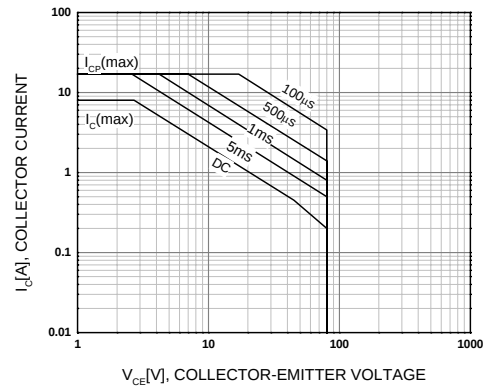


Figure 2. Safe Operating Area

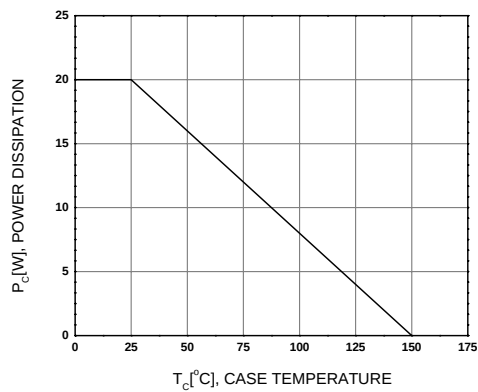


Figure 3. Power Derating



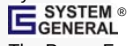


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