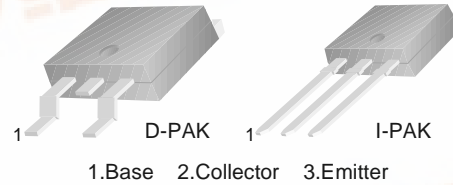




## KSH47/50

### High Voltage and High Reliability D-PAK for Surface Mount Applications

- Lead Formed for Surface Mount Application (No Suffix)
- Straight Lead (I-PAK, "- I" Suffix)
- Electrically Similar to Popular TIP47 and TIP50



### NPN Epitaxial Silicon Transistor

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

| Symbol    | Parameter  | Value      | Units            |
|-----------|--|------------|------------------|
| $V_{CBO}$ | Collector-Emitter Voltage                        |            |                  |
|           | : KSH47  | 350        | V                |
|           | : KSH50  | 500        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                        |            |                  |
|           | : KSH47  | 250        | V                |
|           | : KSH50  | 400        | V                |
| $V_{EBO}$ | Emitter-Base Voltage                             | 5          | V                |
| $I_C$     | Collector Current (DC)                           | 1          | A                |
| $I_{CP}$  | Collector Current (Pulse)                        | 2          | A                |
| $I_B$     | Base Current                                     | 0.6        | A                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 15         | W                |
|           | Collector Dissipation ( $T_a=25^\circ\text{C}$ ) | 1.56       | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 65 ~ 150 | $^\circ\text{C}$ |

#### 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 |  |          |      |       |
|                | : KSH47                                | $I_C = 30\text{mA}, I_B = 0$   | 250      |      | V     |
|                | : KSH50                                |  | 400      |      | V     |
| $I_{CEO}$      | Collector Cut-off Current              |  |          |      |       |
|                | : KSH47                                | $V_{CE} = 150\text{V}, I_B = 0$  |          | 0.2  | mA    |
|                | : KSH50                                | $V_{CE} = 300\text{V}, I_B = 0$  |          | 0.2  | mA    |
| $I_{CES}$      | Collector Cut-off Current              |  |          |      |       |
|                | : KSH47                                | $V_{CE} = 350, V_{EB} = 0$   |          | 0.1  | mA    |
|                | : KSH50                                | $V_{CE} = 500, V_{EB} = 0$   |          | 0.1  | mA    |
| $I_{EBO}$      | Emitter Cut-off Current                | $V_{BE} = 5\text{V}, I_C = 0$  |          | 1    | mA    |
| $h_{FE}$       | * DC Current Gain                      | $V_{CE} = 10\text{V}, I_C = 0.3\text{A}$<br>$V_{CE} = 10\text{V}, I_C = 1\text{A}$ | 30<br>10 | 150  |       |
| $V_{CE(sat)}$  | * Collector-Emitter Saturation Voltage | $I_C = 1\text{A}, I_B = 0.2\text{A}$   |          | 1    | V     |
| $V_{BE(sat)}$  | * Base-Emitter Saturation Voltage      | $V_{CE} = 10\text{A}, I_C = 1\text{A}$   |          | 1.5  | V     |
| $f_T$          | Current Gain Bandwidth Product         | $V_{CE} = 10\text{V}, I_C = 0.2\text{A}$   | 10       |      | MHz   |

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

KSH47/50

# Typical Characteristics

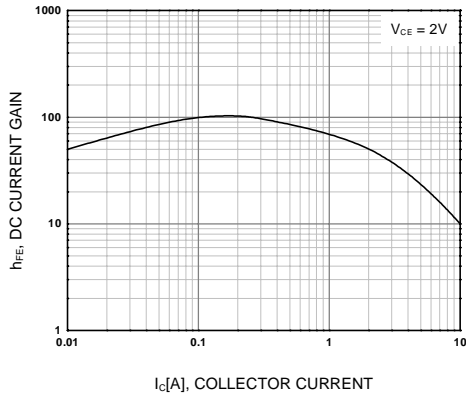


Figure 1. DC current Gain

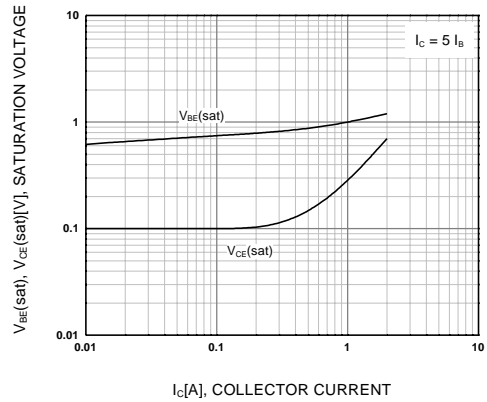


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

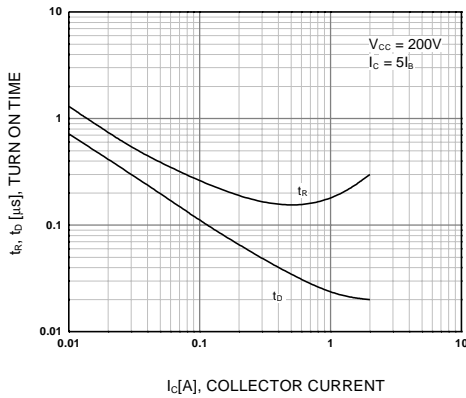


Figure 3. Turn On Time

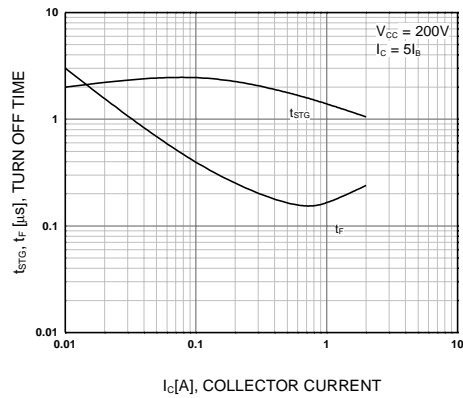


Figure 4. Turn Off Time

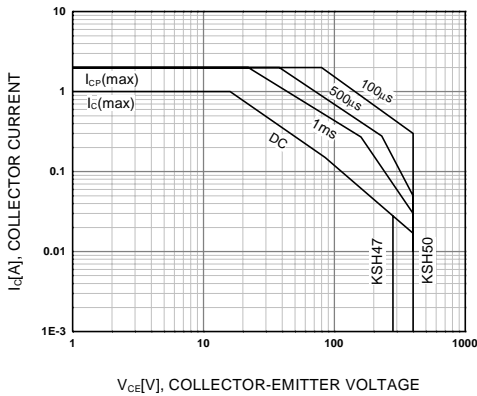


Figure 5. Safe Operating Area

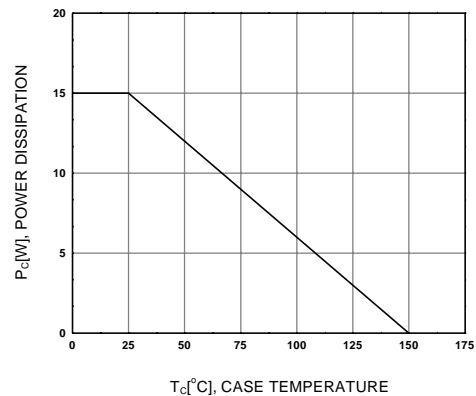
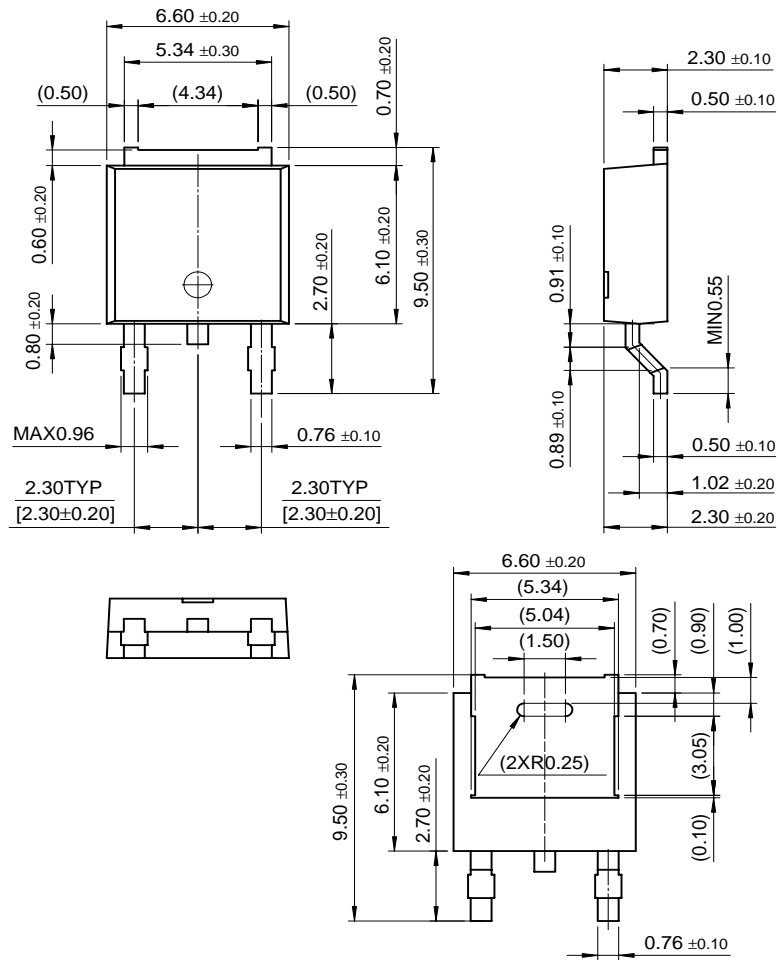


Figure 6. Power Derating

# Package Dimensions

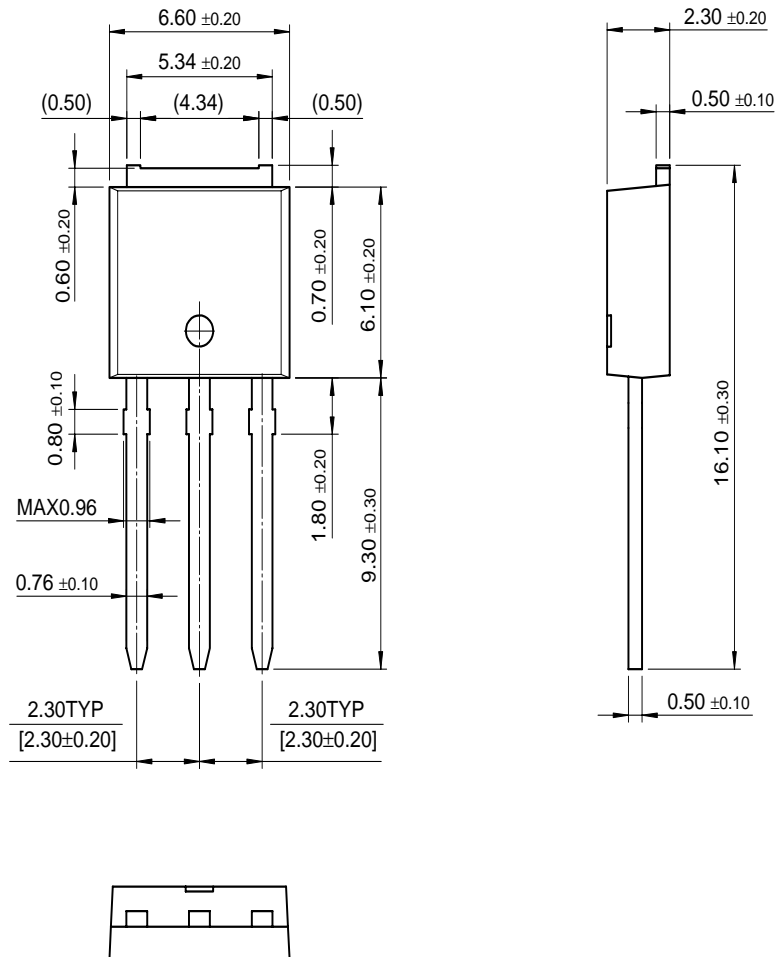
## D-PAK



Dimensions in Millimeters

Package Dimensions (Continued)

I-PAK



Dimensions in Millimeters

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| CoolFET™                             | FASTr™              | MicroFET™          | PowerTrench®        | SuperSOT™-6     |
| CROSSVOLT™                           | FRFET™              | MicroPak™          | QFET™               | SuperSOT™-8     |
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