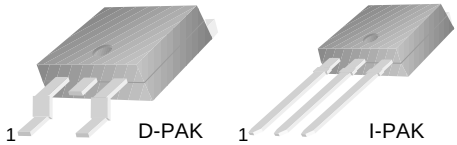
FAIRCHILD SEMICONDUCTOR™

# KSH13003

## High Voltage Power Transistor
## D-PACK for Surface Mount Applications

- High speed Switching
- Suitable for Switching Regulator Motor Control
- Straight Lead (I.PACK, I Suffix)
- Lead Formed for Surface Mount Applications (No Suffix)




1.Base 2.Collector 3.Emitter

## NPN Epitaxial Silicon Transistor

### Absolute Maximum Ratings $T_C$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 700 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 400 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 9 | V |
| $I_C$ | Collector Current (DC) | 1.5 | A |
| $I_{CP}$ | Collector Current (Pulse) | 3 | A |
| $I_B$ | Base Current | 0.75 | A |
| $P_C$ | Collector Dissipation ($T_C$=25°C) | 40 | W |
| $T_J$ | Junction Temperature | 150 | °C |
| $T_{STG}$ | Storage Temperature | - 65 ~ 150 | °C |

### Electrical Characteristics $T_C$=25°C unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{CEO}$(sus) | * Collector-Emitter Breakdown Voltage | $I_C$ = 5mA, $I_B$ = 0 | 400 | | | V |
| $I_{EBO}$ | Emitter Cut-off Current | $V_{EB}$ = 9V, $I_C$ = 0 | | | 10 | μA |
| $h_{FE}$ | * DC Current Gain | $V_{CE}$ = 2V, $I_C$ = 0.5A<br>$V_{CE}$ = 2V, $I_C$ = 1A | 8<br>5 | | 40 | |
| $V_{CE}$(sat) | * Collector-Emitter Saturation Voltage | $I_C$ = 0.5A, $I_B$ = 0.1A<br>$I_C$ = 1A, $I_B$ = 0.25A<br>$I_C$ = 1.5A, $I_B$ = 0.5A | | | 0.5<br>1<br>3 | V<br>V<br>V |
| $V_{BE}$(sat) | * Base-Emitter Saturation Voltage | $I_C$ = 0.5A, $I_B$ = 0.1A<br>$I_C$ = 1A, $I_B$ = 0.25A | | | 1<br>1.2 | V<br>V |
| $C_{ob}$ | Output Capacitance | $V_{CB}$ = 10V, f = 0.1MHz | | 21 | | pF |
| $f_T$ | Current Gain Bandwidth Product | $V_{CE}$ = 10V, $I_C$ = 0.1A | 4 | | | MHz |
| $t_{ON}$ | Turn ON time | $V_{CC}$ = 125V, $I_C$ = 1A<br>$I_B1$ = 0.2A, $I_B2$ = - 0.2A | | | 1.1 | μs |
| $t_{STG}$ | Storage time | | | | 4.0 | μs |
| $t_F$ | Fall Time | | | | 0.7 | μs |

* Pulse Test: Pulse Width=5ms, Duty Cycle≤10%

# Typical Characteristics

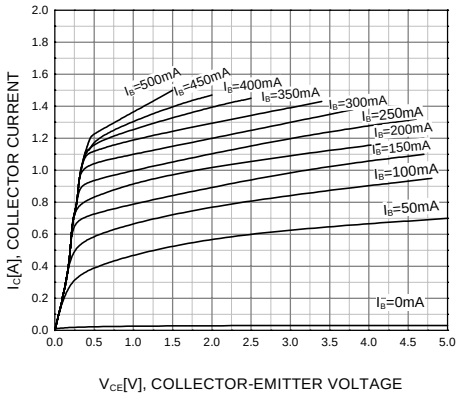



**Figure 1. Static Characteristic**

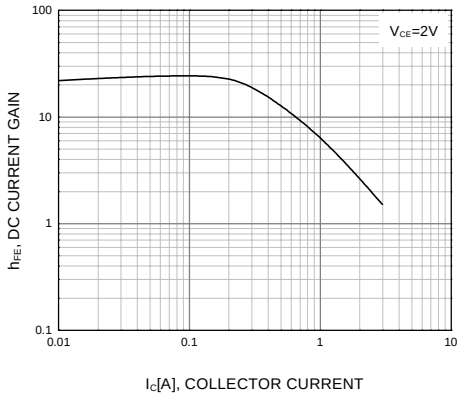



**Figure 2. DC current Gain**

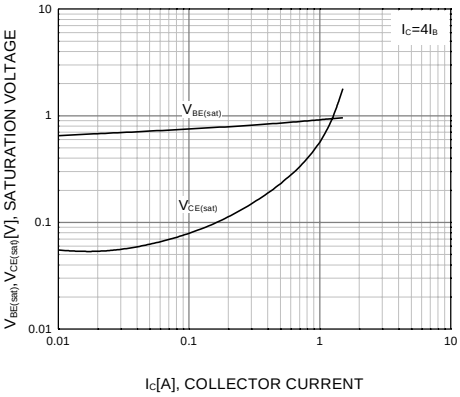



**Figure 3. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage**

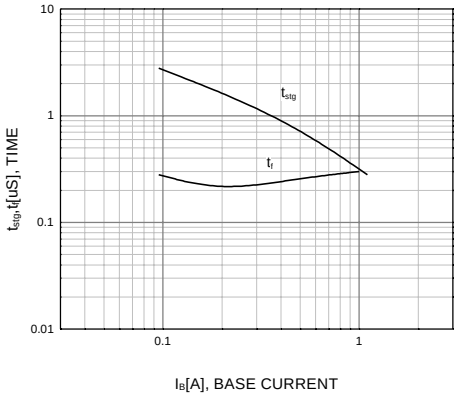



**Figure 4. Switching Time**

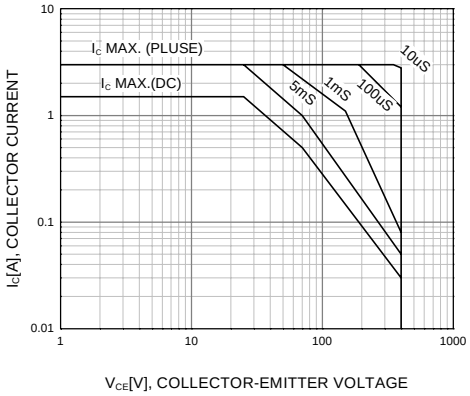



**Figure 5. Safe Operating Area**

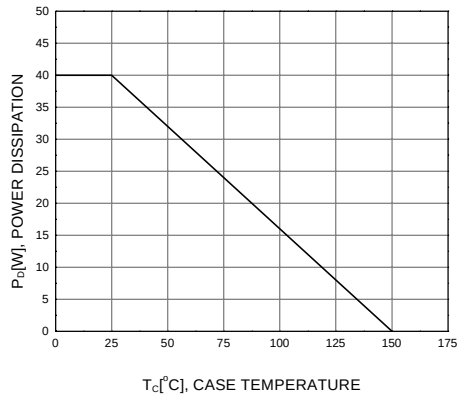
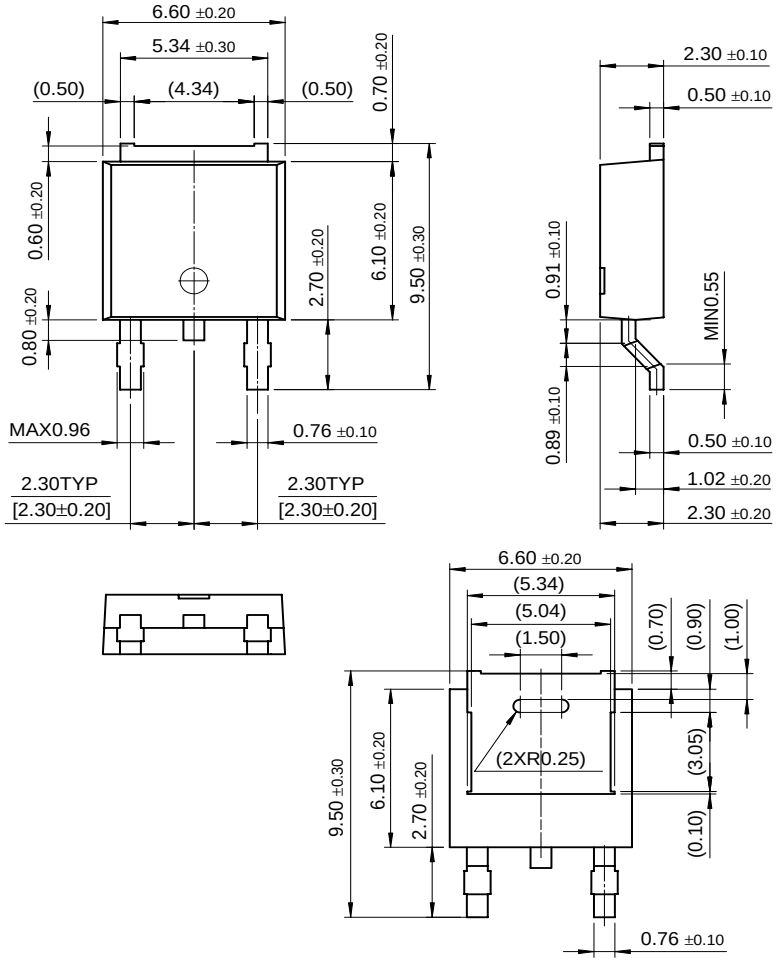



**Figure 6. Power Derating**

## Package Demensions

D-PAK




Dimensions in Millimeters

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|---|---|---|
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