# KSD13003ER
# KSU13003ER

SemiHow
Know-How for Semiconductor

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## High Voltage Switch Mode Application

- High Voltage, High Speed Switching
- Suitable for Switching regulator, Inverters motor controls
- 150℃ Max. Operating temperature
- 8KV ESD proof at HBM (C=100pF, R=1.5kΩ)

1.5 Amperes
NPN Silicon Power Transistor
25 Watts

TO-252 / TO-251
1. Emitter
2. Collector
3. Base

**D-PAK** **I-PAK**

**KSD13003ER** **KSU13003ER**

## Absolute Maximum Ratings TC=25℃ unless otherwise noted

| CHARACTERISTICS | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 700 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 400 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 9 | V |
| Collector Current(DC) | $I_C$ | 1.5 | A |
| Collector Current(Pulse) | $I_{CP}$ | 3 | A |
| Base Current | $I_B$ | 0.75 | A |
| Collector Dissipation(Tc=25℃) | $P_C$ | 25 | W |
| Storage Temperature | $T_{STG}$ | -65~150 | ℃ |
| Max. Operating Junction Temperature | $T_J$ | 150 | ℃ |

## Electrical Characteristics TC=25℃ unless otherwise noted

| CHARACTERISTICS | SYMBOL | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector-Base Breakdown Voltage | $V_{CBO}$ | $I_C$=500μA, $I_E$=0 | 700 | | | V |
| Collector-Emitter Breakdown Voltage | $V_{CEO}$ | $I_C$=1mA, $I_B$=0 | 400 | | | V |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB}$=9V,$I_C$=0 | | | 10 | μA |
| *DC Current Gain | $h_{FE1}$<br>$h_{FE2}$ | $V_{CE}$=10V,$I_C$=400mA<br>$V_{CE}$=10V,$I_C$=1.5A | 9<br>3 | | 38 | |
| *Collector-Emitter Saturation Voltage | $V_{CE}$(sat) | $I_C$=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>1.0<br>3.0 | V<br>V<br>V |
| *Base-Emitter Saturation Voltage | $V_{BE}$(sat) | $I_C$=0.5A,$I_B$=0.1A<br>$I_C$=1A,$I_B$=0.25A | | | 1.0<br>1.2 | V<br>V |
| Output Capacitance | $C_{ob}$ | $V_{CB}$=10V, f=0.1MHz | | 21 | | pF |
| Current Gain Bandwidth Product | $f_T$ | $V_{CE}$=10V,$I_C$=0.1A | 4 | | | MHz |
| Turn on Time | $t_{on}$ | Vcc=125V, Ic=2A<br>$I_{B1}$=0.2A, $I_{B2}$= -0.2A<br>$R_L$=125Ω | | | 1.1 | μs |
| Storage Time | $t_{stg}$ | | | | 4.0 | μs |
| Fall Time | $t_F$ | | | | 0.7 | μs |

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Note.

| | | |
|---|---|---|
| **hFE1 Classification** | R | 15 ~ 25 |
| | O | 20 ~ 30 |
| | Y | 25 ~ 35 |

Package Mark information.

| | | |
|---|---|---|
| **S ER<br>13003<br>YWW Z** | S | SemiHow Symbol |
| | YWW | Y; year code, WW; week code |
| | Z | hFE1 Classification |

## Typical Characteristics

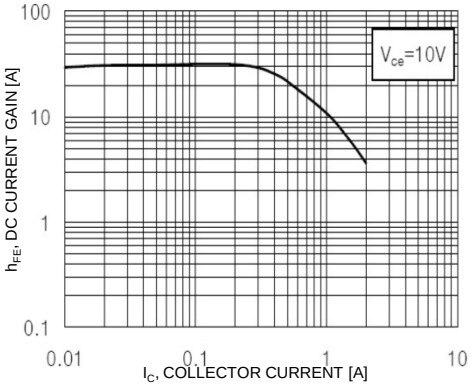



**Figure 1. DC Current Gain**

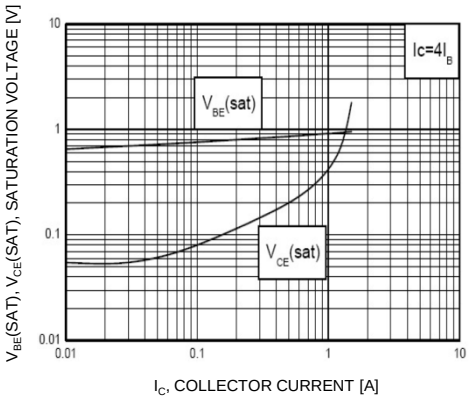



**Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage**

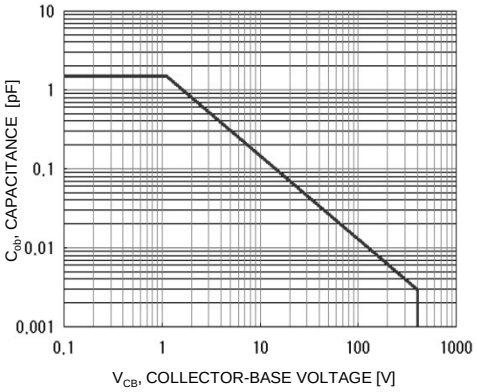



**Figure 3. Forward Biased Safe Operating Area**

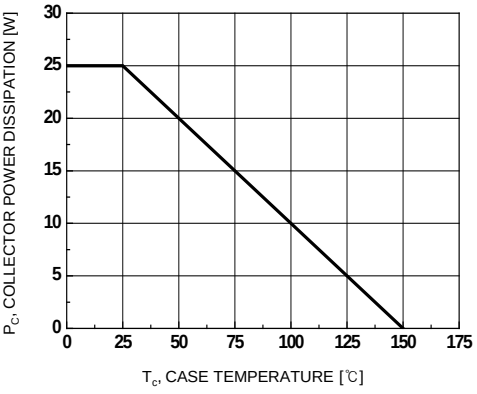
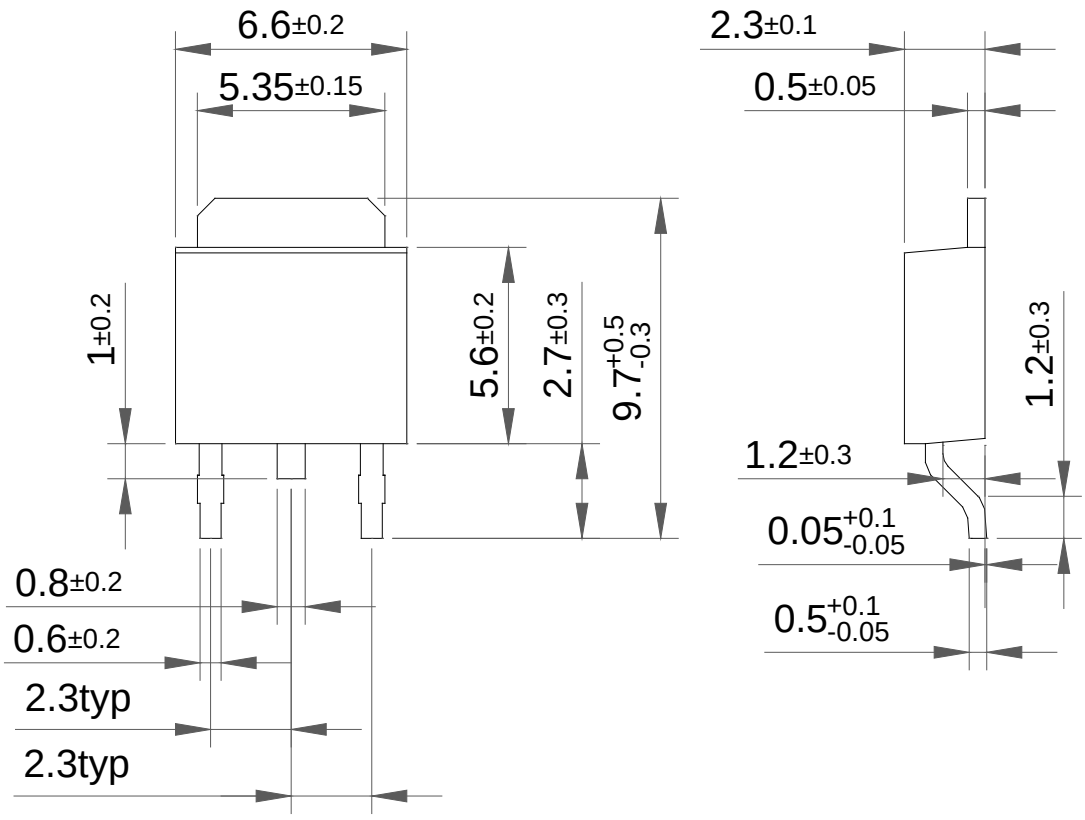



**Figure 4. Power Derating**

**Package Dimension**

# TO-252



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