

# **KSD13003ER**

# **KSU13003ER**



# KSD13003ER/KSU13003ER

## High Voltage Switch Mode Application

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

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

1.5 Amperes  
 NPN Silicon Power Transistor  
 25 Watts

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( $T_C=25^\circ\text{C}$ )	$P_C$	25	W
Storage Temperature	$T_{STG}$	-65~150	$^\circ\text{C}$
Max. Operating Junction Temperature	$T_J$	150	$^\circ\text{C}$

TO-252 / TO-251

1. Emitter  
 2. Collector  
 3. Base

**D-PAK**

**I-PAK**



KSD13003ER K SU13003ER

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

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

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

Note.

hFE1 Classification	R	15 ~ 25
	O	20 ~ 30
	Y	25 ~ 35

Package Mark information.

S ER 13003 YWW Z	S	SemiHow Symbol
	YWW	Y; year code, WW; week code
	Z	hFE1 Classification

## Typical Characteristics

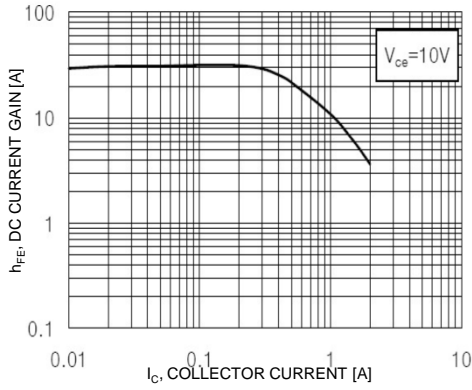


Figure 1. DC Current Gain

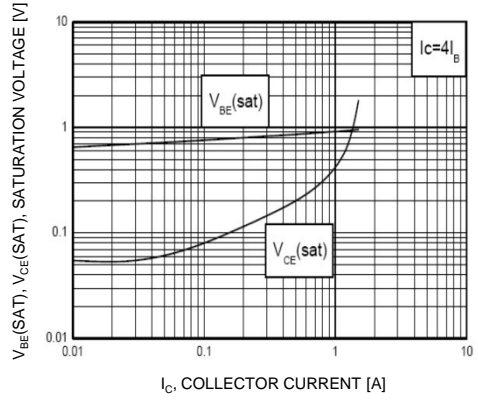


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

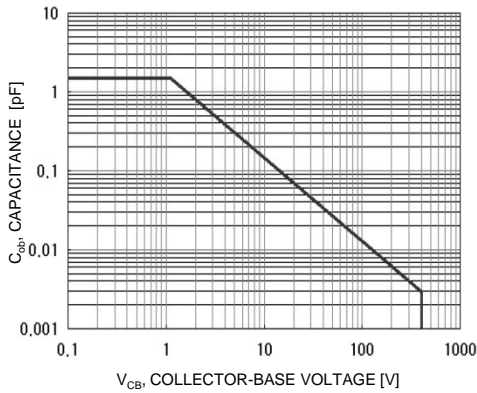


Figure 3. Forward Biased  
Safe Operating Area

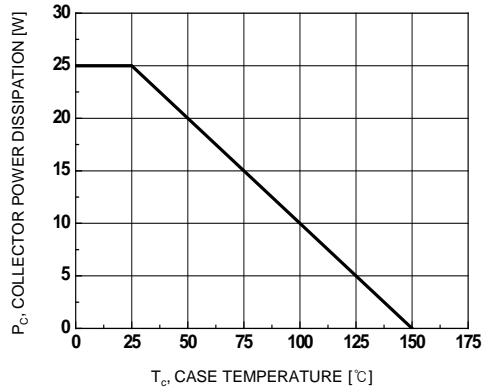
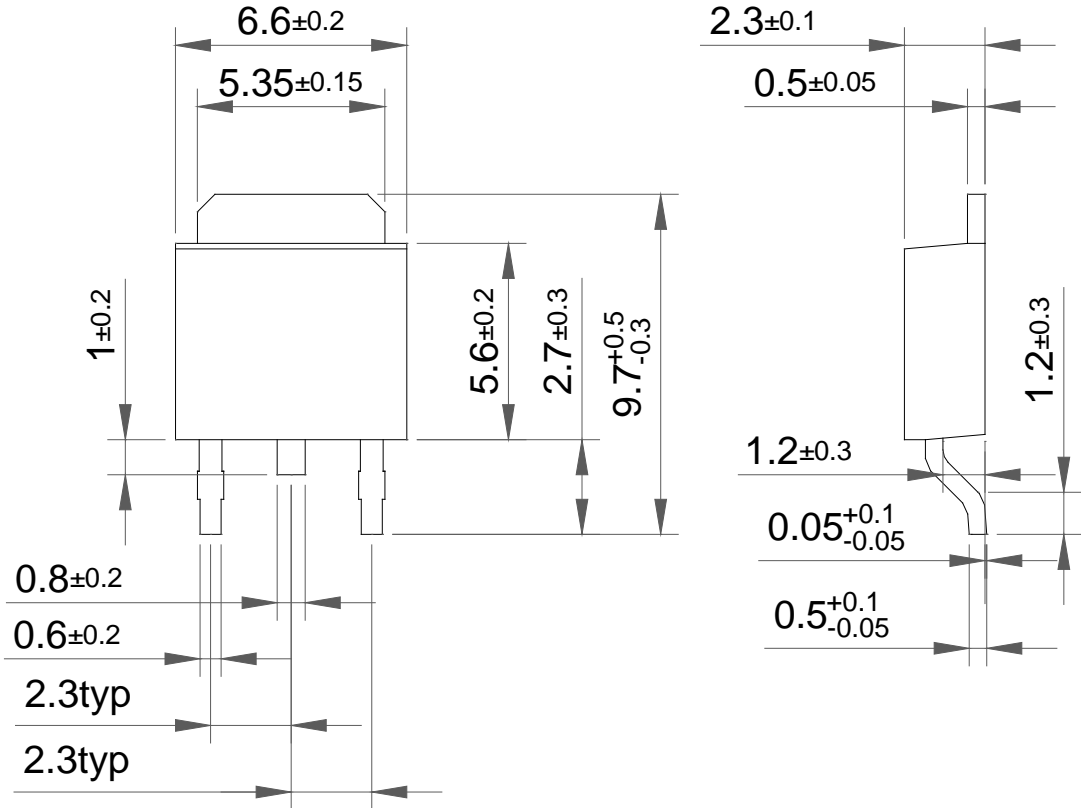


Figure 4. Power Derating

Package Dimension

TO-252



Package Dimension

TO-251

