

KSD13003E

KSU13003E

SemiHow
Know-How for Semiconductor

KSD13003E/KSU13003E

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. Base
2. Collector
3. Emitter

D-PAK



I-PAK



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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	μA
*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
*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
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	μs
Storage Time	t_{stg}				4.0	μs
Fall Time	t_F				0.7	μs

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

Typical Characteristics

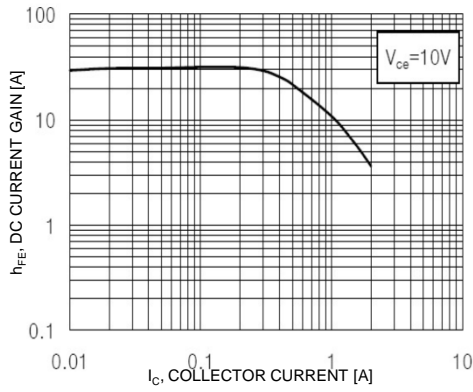


Figure 1. DC Current Gain

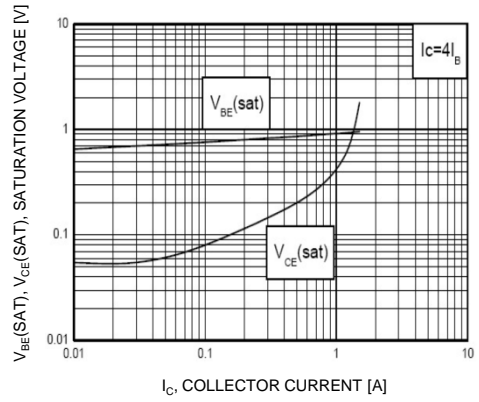


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

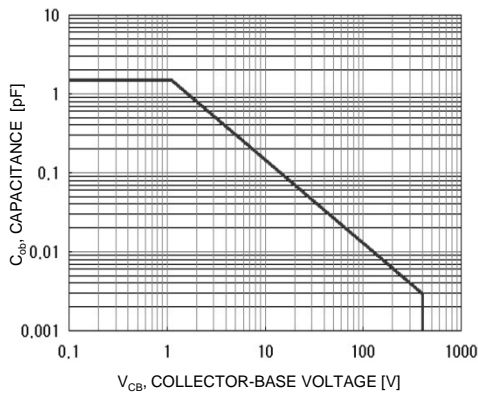


Figure 3. Forward Biased
Safe Operating Area

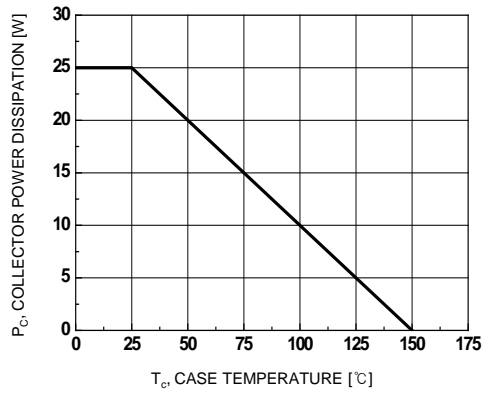
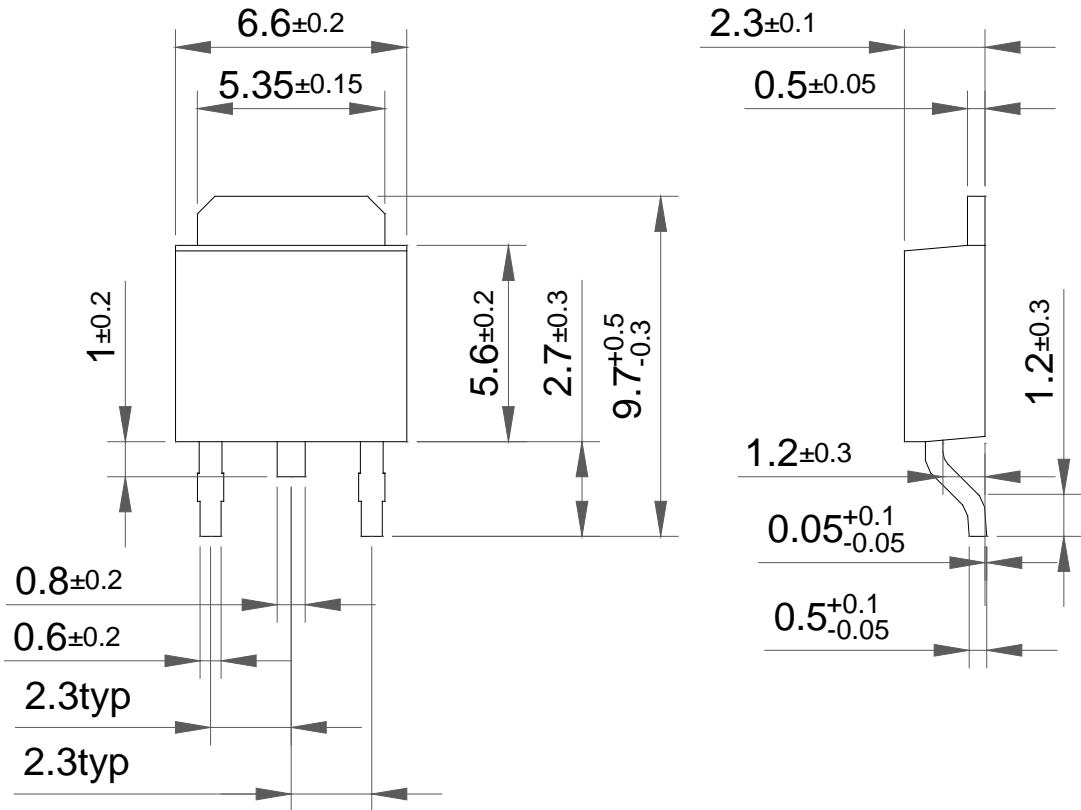


Figure 4. Power Derating

Package Dimension

TO-252



Package Dimension

TO-251

