

KSB13003E KSU13003E / KSD13003E

NPN Silicon Power Transistor, $V_{CBO}=700V$, $V_{CEO}=400V$, $I_C=1.5A$

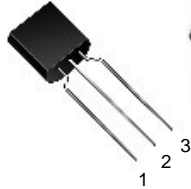
General Description

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

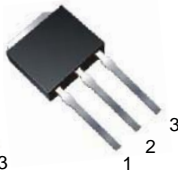
Features

- $V_{CBO} = 700V$
- $V_{CEO} = 400V$
- $V_{BEO} = 9V$
- $I_C = 1.5A$

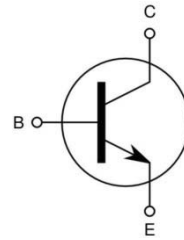
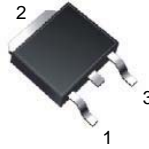
TO-92



TO-251



TO-252



Ordering Information

Ordering number	Package	Pin Assignment			Packing
		1	2	3	
KSB13003E	TO-92	B	C	E	Ammo
KSB13003ER	TO-92	E	C	B	Ammo
KSU13003E	TO-251	B	C	E	Tube
KSU13003ER	TO-251	E	C	B	Tube
KSD13003E	TO-252	B	C	E	Reel
KSD13003ER	TO-252	E	C	B	Reel

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NPN Silicon Power Transistor, V_{CBO}= 700V, V_{CEO}= 400V, I_C= 1.5A

Absolute Maximum Ratings TC=25°C unless otherwise noted

CHARACTERISTICS	SYMBOL	RATING		UNIT
		TO-92	TO-251(2)	
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°C)	P _C	1.1	25	W
Junction Temperature	T _J	150		°C
Storage Temperature	T _{STG}	-65~150		°C

Electrical Characteristics TC=25°C 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 =10mA, I _B =0	400			V
Emitter Cut-off Current	I _{EBO}	V _{EB} =9V, I _C =0			10	μA
*DC Current Gain	h _{FE1} h _{FE2}	V _{CE} =5V, I _C =0.2A V _{CE} =5V, I _C =1A	20 5		40	
*Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =0.5A, I _B =0.1A I _C =1A, I _B =0.25A I _C =1.5A, I _B =0.5A			0.5 1.0 3.0	V V V
*Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C =0.5A, I _B =0.1A I _C =1A, I _B =0.25A			1.2 1.4	V 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}	V _{CC} =125V, I _C =2A I _{B1} =0.2A, I _{B2} = -0.2A 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 Cycles≤2%

Typical Characteristics

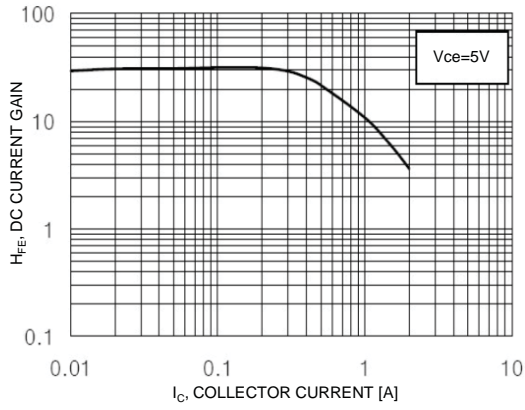
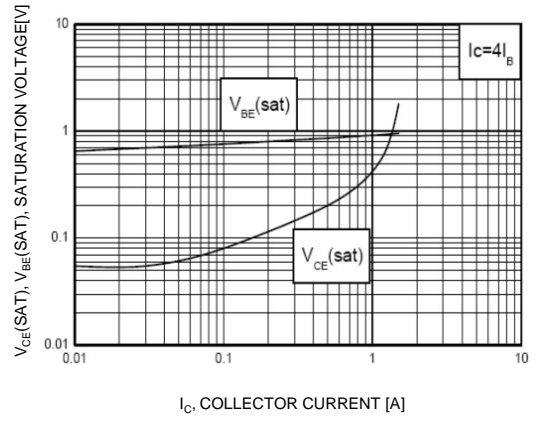


Figure 1. DC Current Gain



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

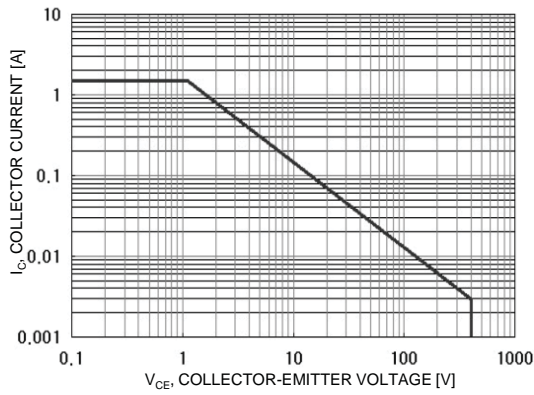


Figure 3. Safe Operating Area

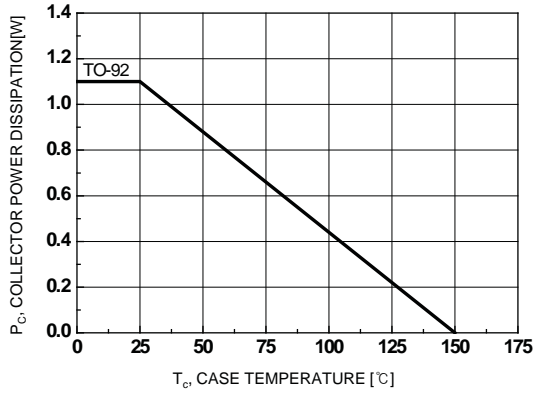


Figure 4. Power Derating

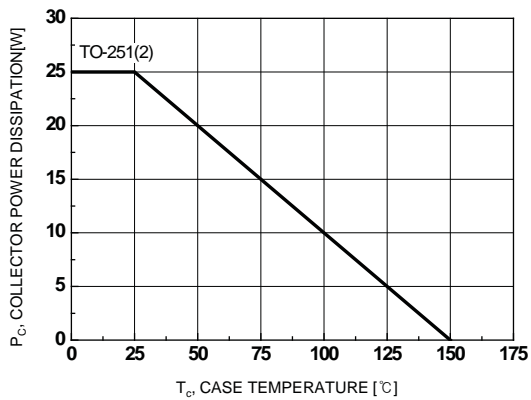
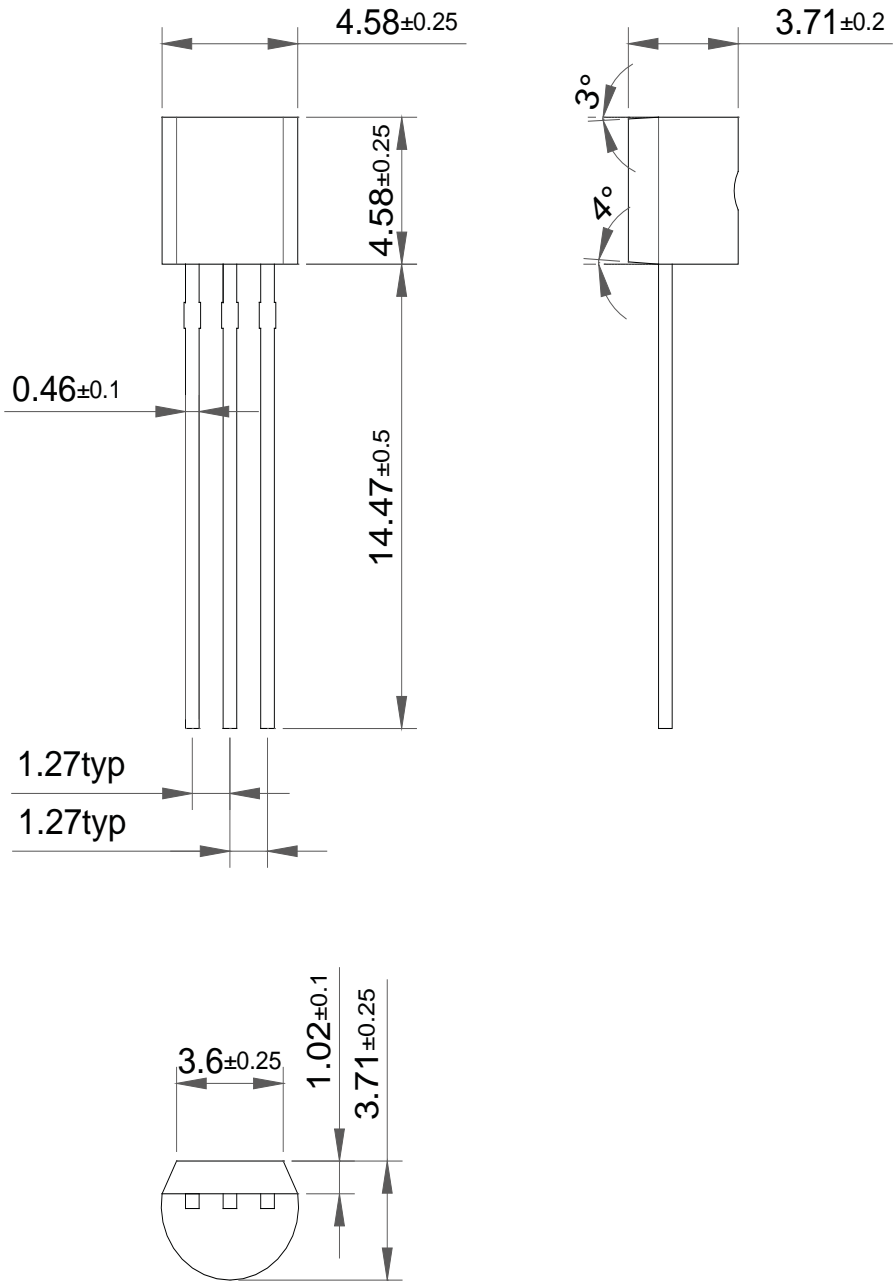


Figure 5. Power Derating

Package Dimension

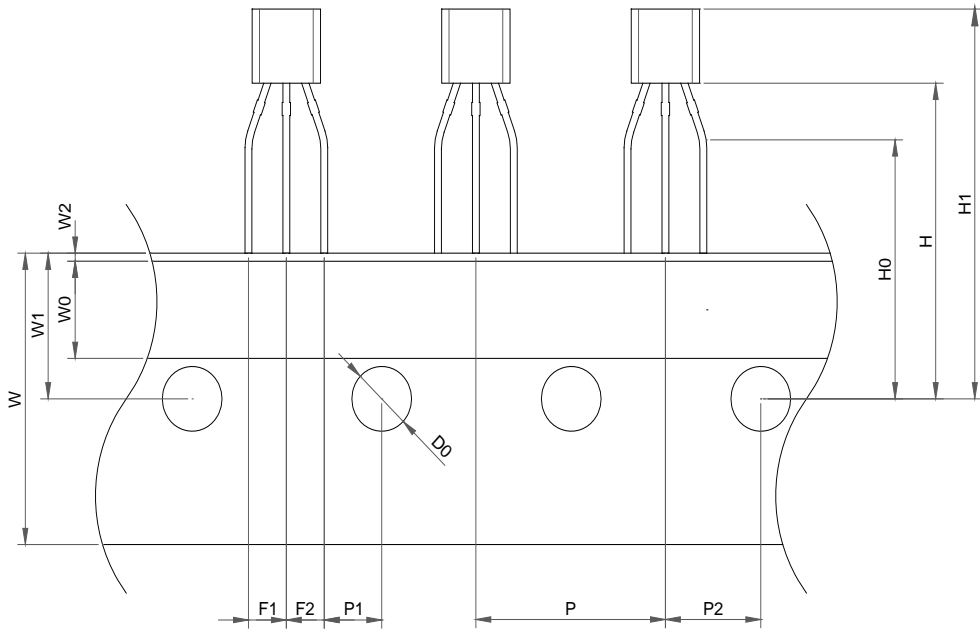
TO-92



Dimensions in Millimeters

Package Dimension

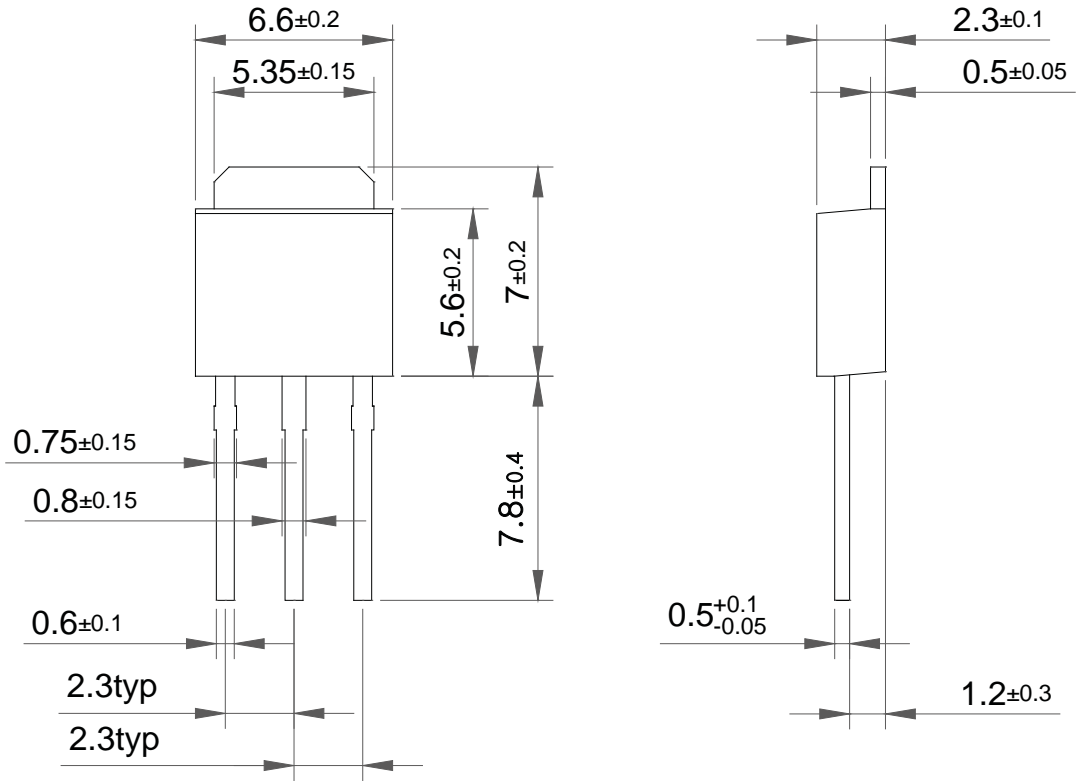
TO-92 TAPING



Item	Symbol	Dimension [mm]	
		Reference	Tolerance
Component pitch	P	12.7	±0.5
Side lead to center of feed hole	P1	3.85	±0.5
Center lead to center of feed hole	P2	6.35	±0.5
Lead pitch	F1,F2	2.5	+0.2/-0.1
Carrier Tape width	W	18.0	+1.0/-0.5
Adhesive tape width	W0	6.0	±0.5
Tape feed hole location	W1	9.0	±0.5
Adhesive tape position	W2	1.0 MAX	
Center of feed hole to bottom of component	H	19.5	±1
Center of feed hole to lead form	H0	16.0	±0.5
Component height	H1	27.0 max	
Tape feed hole diameter	D0	4.0	±0.2

Package Dimension

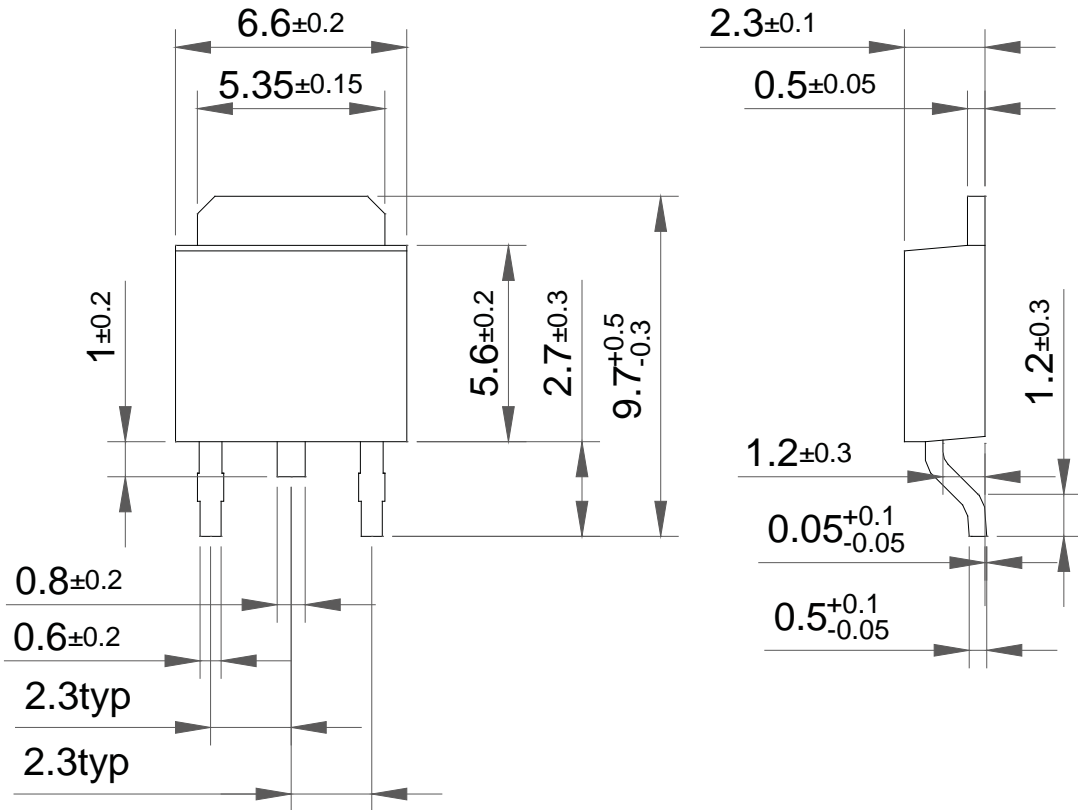
TO-251



Dimensions in Millimeters

Package Dimension

TO-252



Dimensions in Millimeters