

KSB13003AR

SemiHow
Know-How for Semiconductor

KSB13003AR

High Voltage Switch Mode Application

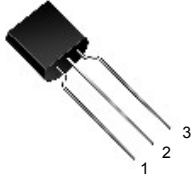
- High Speed Switching
- Suitable for Electronic Ballast up to 21W
- 150°C Max. Operating temperature
- 8KV ESD proof at HBM (C=100pF, R=1.5kΩ)

Absolute Maximum Ratings TC=25°C unless otherwise noted

1.5 Amperes
NPN Silicon Power Transistor
1.1 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(Tc=25°C)	P_C	1.10	W
Storage Temperature	T_{STG}	-65~150	°C
Max. Operating Junction Temperature	T_J	150	°C

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1. Emitter
2. Collector
3. Base



Electrical Characteristics TC=25°C unless otherwise noted

CHARACTERISTICS	SYMBOL	Test Condition	Min	Typ.	Max	Unit
Collector-Base Breakdown Voltage	V_{CBO}	$I_C=500\mu A, I_E=0$	700			V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=5mA, I_B=0$	400			V
Emitter Cut-off Current	I_{EBO}	$V_{EB}=9V, I_C=0$			10	μA
*DC Current Gain	h_{FE1} h_{FE2}	$V_{CE}=2V, I_C=0.5A$ $V_{CE}=2V, I_C=1A$	9 5		30	
*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	$V_{BE(sat)}$	$I_C=0.5A, I_B=0.1A$ $I_C=1A, I_B=0.25A$			1.0 1.2	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}	$V_{CC}=125V, I_C=2A$ $I_{B1}=0.2A, I_{B2}=-0.2A$ $R_L=125\Omega$			1.1	μs
Storage Time	t_{stg}				4.0	μs
Fall Time	t_F				0.7	μs

* Pulse Test: Pulse Width \leq 300 μs , Duty Cycles \leq 2%

Note.

hFE1 Classification	R	9 ~ 16
	O	15 ~ 25
	Y	20 ~ 30

Package Mark information.

S AR 13003 YWW Z	R	Pin type (ECB)
	YWW	Y; year code, WW; week code
	Z	hFE1 Classification

Typical Characteristics

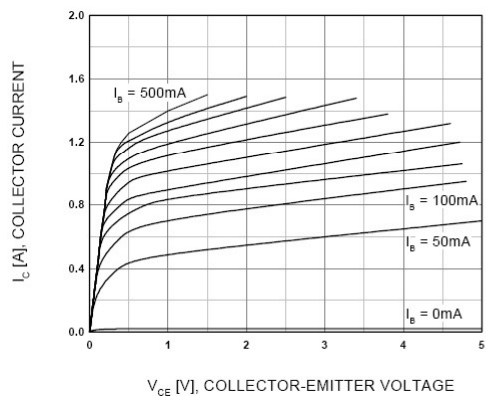


Figure 1. Static Characteristic

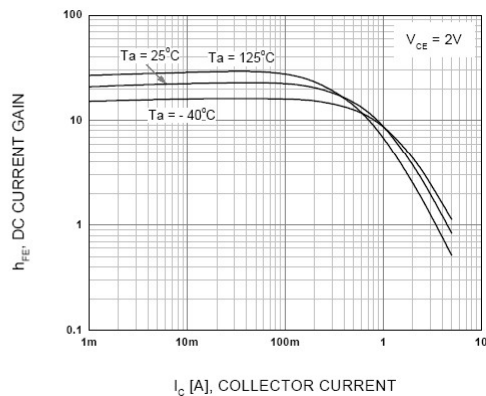


Figure 2. DC current Gain

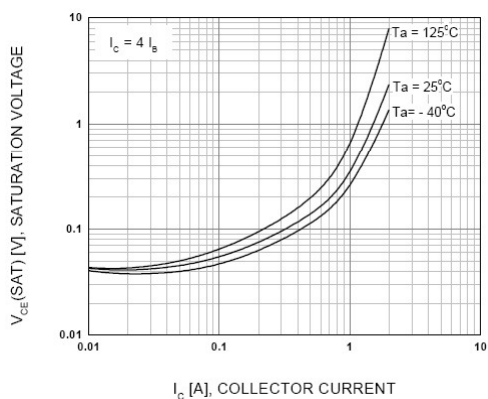


Figure 3. Collector-Emitter Saturation Voltage

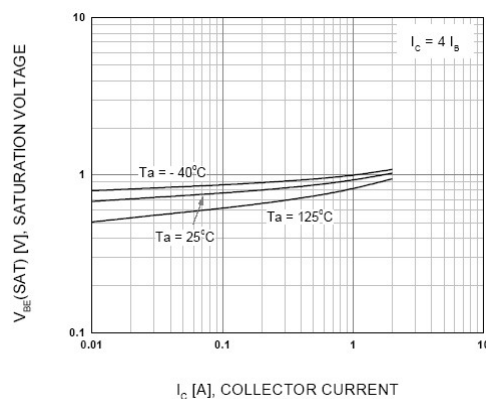


Figure 4. Base-Emitter Saturation Voltage

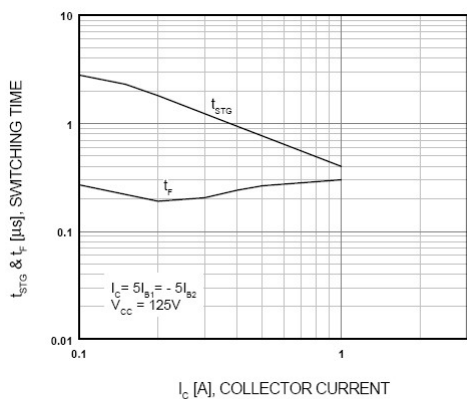


Figure 5. Resistive Load Switching Time

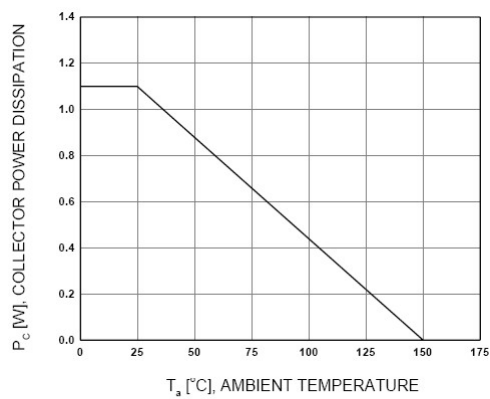


Figure 6. Power Derating

Typical Characteristics

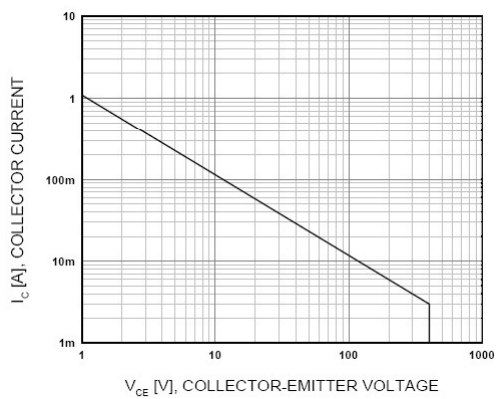


Figure 7. Forward Bias Safe Operating Area

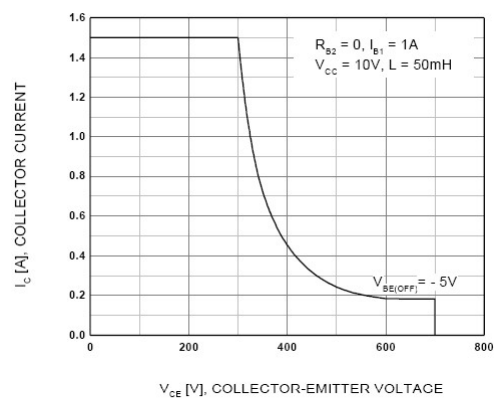
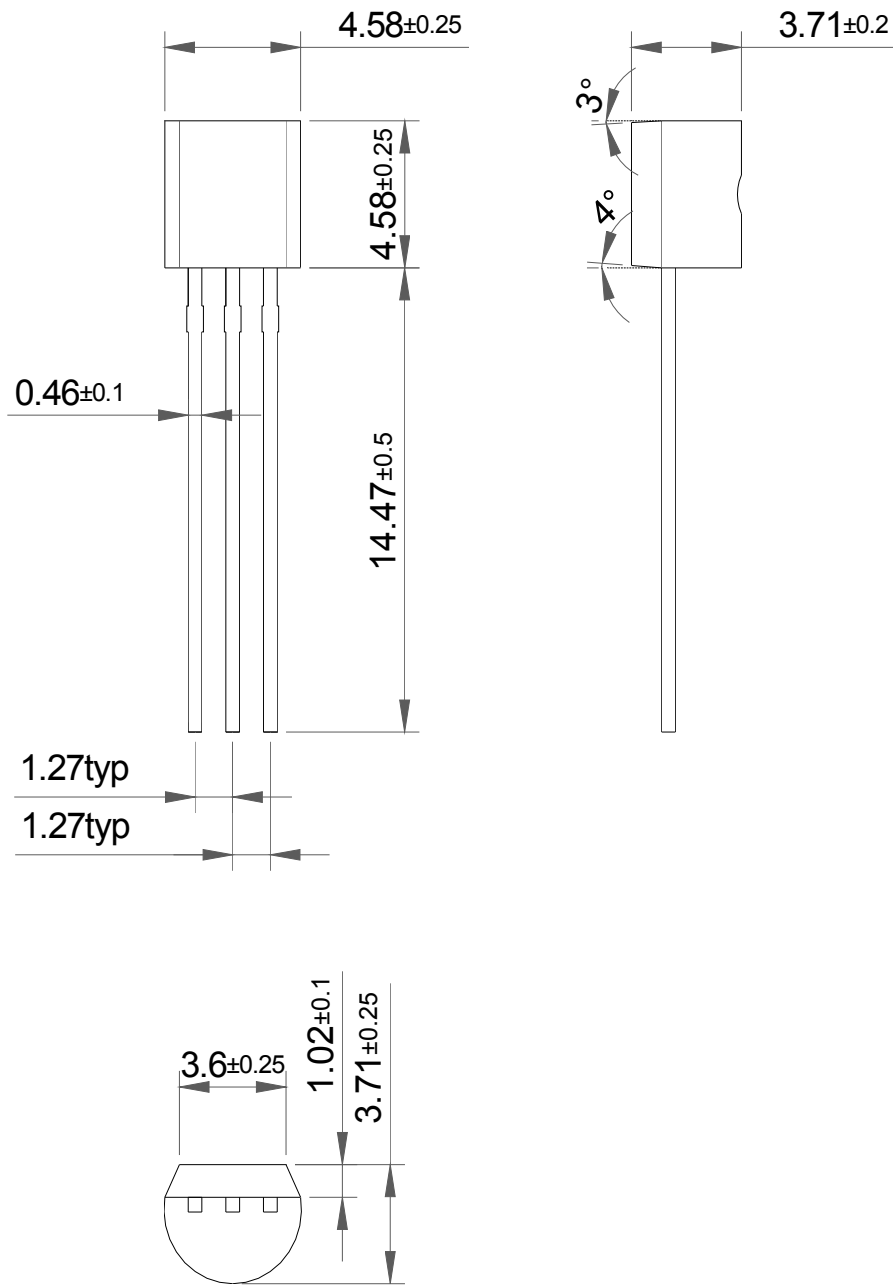


Figure 8. Reverse Bias Safe Operating Area

Package Dimension

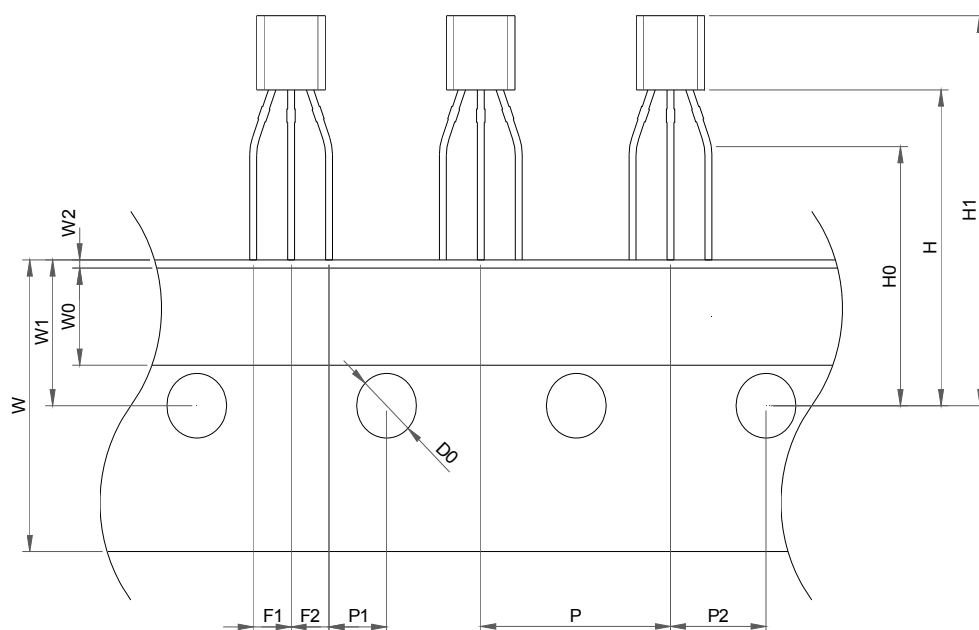
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Dimensions in Millimeters

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

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1. Document Name : KSB13003AR Data sheet
2. Revision History

Product Name	KSB13003AR	
File Name	KSB13003AR_datasheet	
Rev.	Revision History	Owner / date
A1	Initiate specification	Jroh / 20070604
A2	Add SPEC of Max. operating temperature, ESD level, MSL level	Jroh / 20070813