

# KSC13003H

**SemiHow**  
Know-How for Semiconductor

# KSC13003H

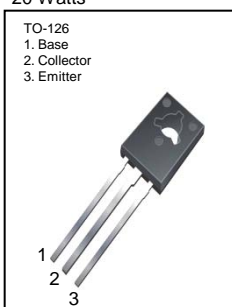
## Switch Mode series NPN silicon Power Transistor

- High voltage, high speed power switching
- Suitable for switching regulator, inverters motor controls

1.5 Amperes  
NPN Silicon Power Transistor  
20 Watts

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

CHARACTERISTICS	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	900	V
Collector-Emitter Voltage	$V_{CEO}$	530	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( $T_C=25^\circ\text{C}$ )	$P_C$	20	W
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65~150	$^\circ\text{C}$



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

CHARACTERISTICS	SYMBOL	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	$V_{CEO}$	$I_C=5\text{mA}, I_B=0$	400			V
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=9\text{V}, I_C=0$			10	$\mu\text{A}$
*DC Current Gain	$h_{FE1}$ $h_{FE2}$	$V_{CE}=2\text{V}, I_C=0.5\text{A}$ $V_{CE}=2\text{V}, I_C=1\text{A}$	9 5		40	
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}$ $I_C=1.5\text{A}, I_B=0.5\text{A}$			0.5 1 3	V V V
*Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$ $I_C=1\text{A}, I_B=0.25\text{A}$			1 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 Width $\leq$ 300 $\mu\text{s}$ , Duty Cycle $\leq$ 2%

Note.

hFE1 Classification	R	20 ~ 30
	O	25 ~ 35
	Y	30 ~ 40

Package Mark information.

S YWW Z KSC13003H	S	SemiHow symbol
	YWW	Y; year code, WW; week code
	Z	hFE1 Classification

# Typical Characteristics

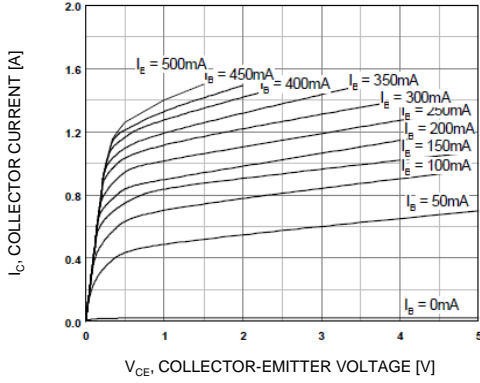


Figure 1. Static Characteristic

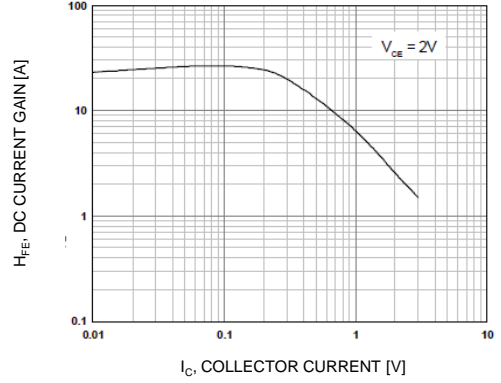


Figure 2. DC Current Gain

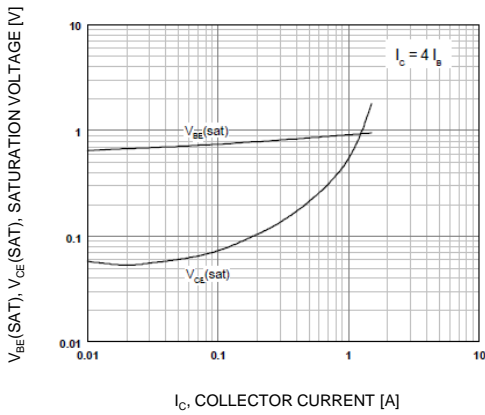


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

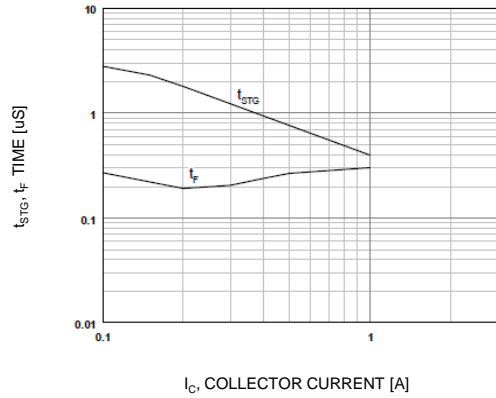


Figure 4. Switching Time

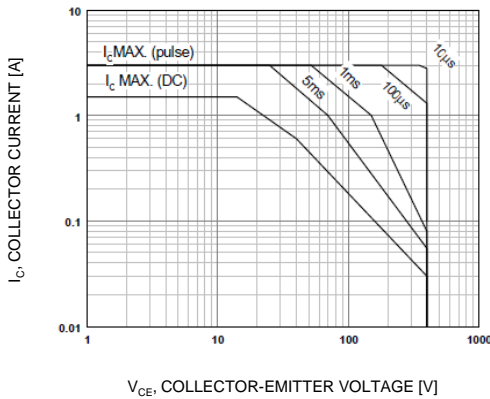


Figure 5. Safe Operating Area

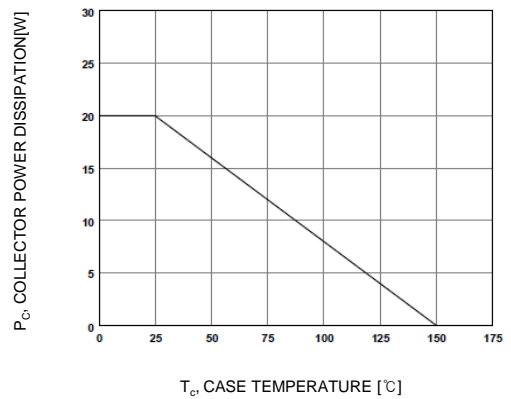
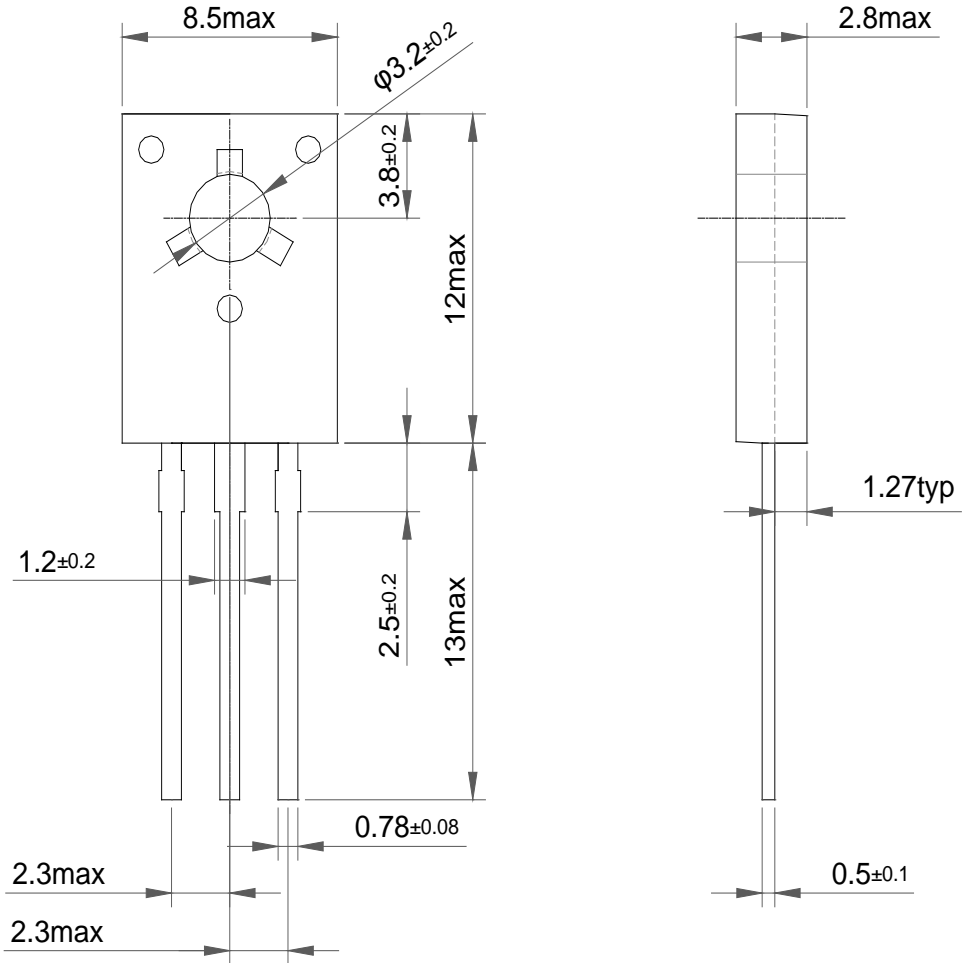


Figure 6. Power Derating

Package Dimension

TO-126



Dimensions in Millimeters