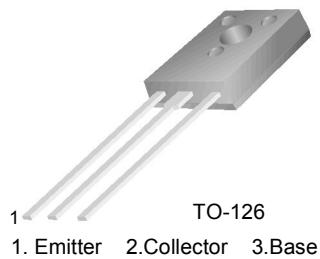


KSE13003

NPN Silicon Transistor

High Voltage Switch Mode Applications

- High Voltage Capability
- High Speed Switching
- Suitable for Switching Regulator and Motor Control



Absolute Maximum Ratings* $T_C = 25^\circ\text{C}$ unless otherwise noted (notes_1)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	700	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current (DC)	1.5	A
I_{CP}	Collector Current (Pulse)	3	A
I_B	Base Current	0.75	A
P_C	Collector Dissipation ($T_C = 25^\circ\text{C}$)	20	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-65 ~ 150	$^\circ\text{C}$

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES_1:

1) These ratings are based on a maximum junction temperature of 150°C .

2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

h_{FE} Classification

Classification	H1	H2	H3
h_{FE}^*	9 ~ 16	14 ~ 21	19 ~ 26

* Test on $V_{CE} = 2\text{V}$, $I_C = 0.5\text{A}$.

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

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}$, $I_B = 0$	400			V
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 9\text{V}$, $I_C = 0$			10	μA
h_{FE}	*DC Current Gain	$V_{CE} = 2\text{V}$, $I_C = 0.5\text{A}$ $V_{CE} = 2\text{V}$, $I_C = 1\text{A}$	8 5		40	
$V_{CE(\text{sat})}$	*Collector Emitter Saturation Voltage	$I_C = 0.5\text{A}$, $I_B = 0.1\text{A}$ $I_C = 1\text{A}$, $I_B = 0.25\text{A}$ $I_C = 1.5\text{A}$, $I_B = 0.5\text{A}$			0.5 1 3	V
$V_{BE(\text{sat})}$	*Base Emitter Saturation Voltage	$I_C = 0.5\text{A}$, $I_B = 0.1\text{A}$ $I_C = 1\text{A}$, $I_B = 0.25\text{A}$			1 1.2	V
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}$, $f = 0.1\text{MHz}$		21		pF
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}$, $I_C = 0.1\text{A}$	4			MHz
t_{ON}	Turn On Time	$V_{CC} = 125\text{V}$, $I_C = 1\text{A}$ $I_{B1} = 0.2\text{A}$, $I_{B2} = -0.2\text{A}$ $R_L = 125\text{W}$			1.1	ms
t_{STG}	Storage Time				4.0	ms
t_F	Fall Time				0.7	ms

* Pulse Test: Pulse Width=5ms, Duty Cycle \leq 10%**Package Marking and Ordering Information**

Device Item (notes_2)	Device Marking	Package	Packing Method	Remarks
KSE13003H1ASTU	1 E13003	TO-126	TUBE	
KSE13003H2ASTU	2 E13003	TO-126	TUBE	
KSE13003H3ASTU	3 E13003	TO-126	TUBE	

Notes_2 :

- 1) The Affix “-H1/-H2/-H3” means the h_{FE} classification.
- 2) The Suffix “-STU” means the TO126 short lead package and the Tube packing method, which can be on fairchildsemi website at <http://www.fairchildsemi.com>

Typical Performance Characteristics

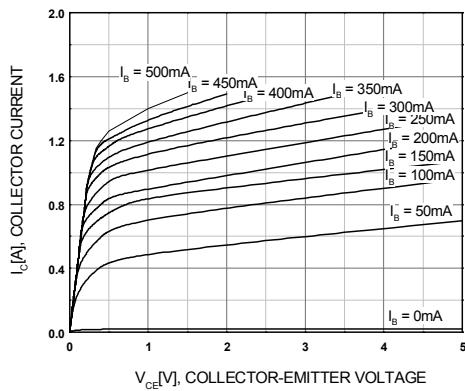


Figure 1. Static Characteristic

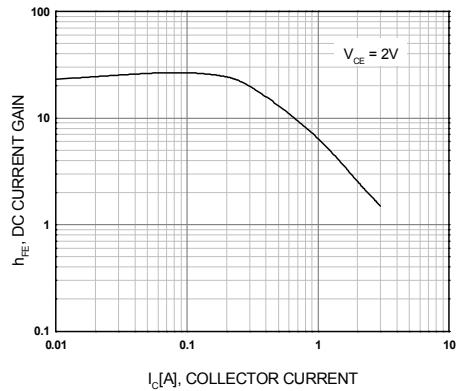


Figure 2. DC current Gain

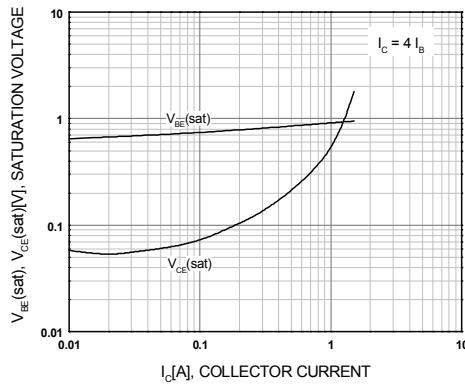


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

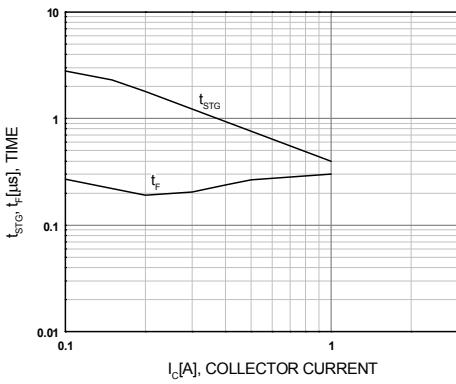


Figure 4. Switching Time

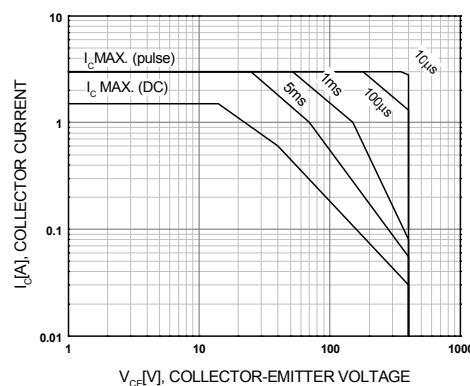


Figure 5. Safe Operating Area

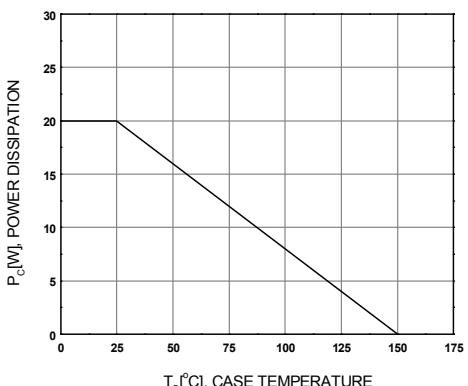


Figure 6. Power Derating



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