



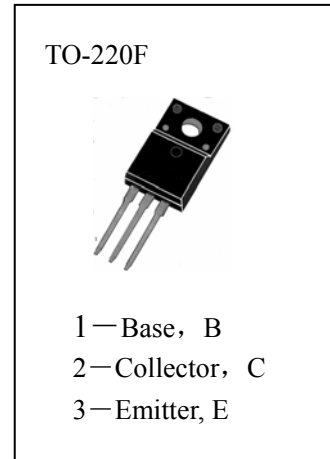
# KSH13009F

## ■ HIGH VOLTAGE SWITCH MODE APPLICATION

High Speed Switching  
Suitable for Switching Regulator and Motor Control

## ■ ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C)

T <sub>stg</sub>	—Storage Temperature	.....	-55~150°C
T <sub>j</sub>	—Junction Temperature	.....	150°C
P <sub>C</sub>	—Collector Dissipation (T <sub>c</sub> =25°C)	.....	50W
V <sub>CBO</sub>	—Collector-Base Voltage	.....	700V
V <sub>CEO</sub>	—Collector-Emitter Voltage	.....	400V
V <sub>EBO</sub>	—Emitter-Base Voltage	.....	9V
I <sub>C</sub>	—Collector Current (DC)	.....	12A
I <sub>CP</sub>	—Collector Current (Pulse)	.....	24A
I <sub>B</sub>	—Base Current	.....	6A



## ■ 电参数 (T<sub>a</sub>=25°C)

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV <sub>CEO</sub>	Collector-Emitter Sustaining Voltage	400			V	I <sub>C</sub> =10mA, I <sub>B</sub> =0
I <sub>EBO</sub>	Emitter-Base Cut-off Current			1	mA	V <sub>EB</sub> =7V, I <sub>C</sub> =0
H <sub>FE</sub>	DC Current Gain	8		40		V <sub>CE</sub> =5V, I <sub>C</sub> =5A
		6		30		V <sub>CE</sub> =5V, I <sub>C</sub> =8A
V <sub>CE(sat)</sub>	Collector- Emitter Saturation Voltage			1	V	I <sub>C</sub> =5A, I <sub>B</sub> =1A
				1.5	V	I <sub>C</sub> =8A, I <sub>B</sub> =1.6A
				3	V	I <sub>C</sub> =12A, I <sub>B</sub> =3A
V <sub>BE(sat)</sub>	Base- Emitter Saturation Voltage			1.2	V	I <sub>C</sub> =5A, I <sub>B</sub> =1A
				1.6	V	I <sub>C</sub> =8A, I <sub>B</sub> =1.6A
C <sub>ob</sub>	Output Capacitance		180		pF	V <sub>CB</sub> =10V, f=0.1MHz
f <sub>T</sub>	Current Gain-Bandwidth Product	4			MHz	V <sub>CE</sub> =10V, I <sub>C</sub> =0.5A
t <sub>ON</sub>	Turn On Time			1.1	μs	V <sub>CC</sub> =125V, I <sub>C</sub> =8A, I <sub>B1</sub> =-I <sub>B2</sub> =1.6A R <sub>L</sub> =15.6Ω
t <sub>S</sub>	Storage Time			3.0	μs	
t <sub>F</sub>	Fall Time			0.7	μs	

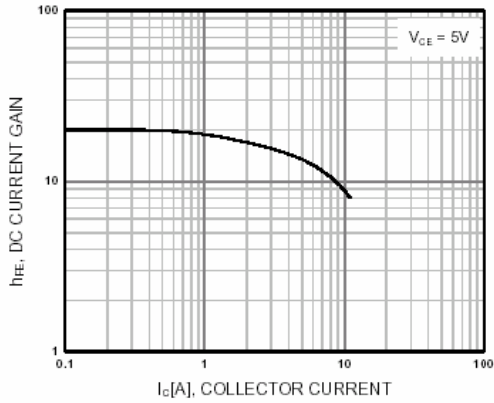


Figure 1. DC current Gain

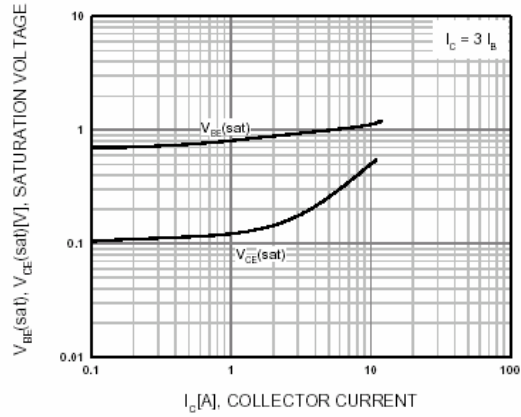


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

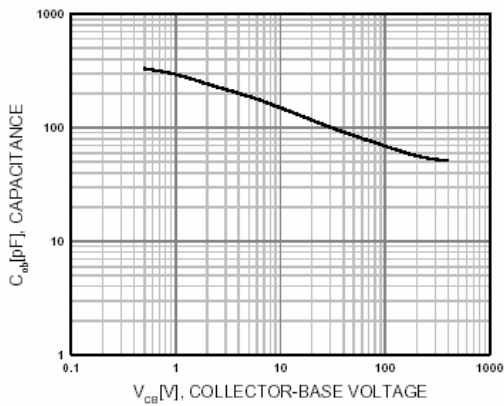


Figure 3. Collector Output Capacitance

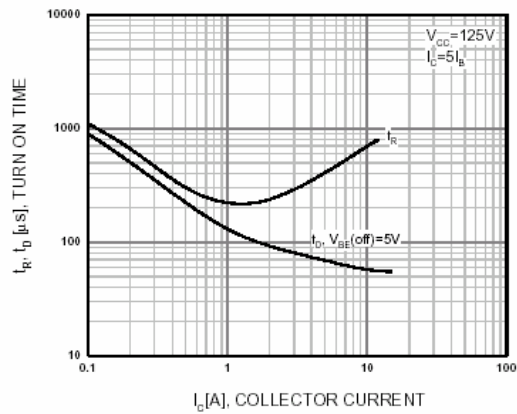


Figure 4. Turn On Time

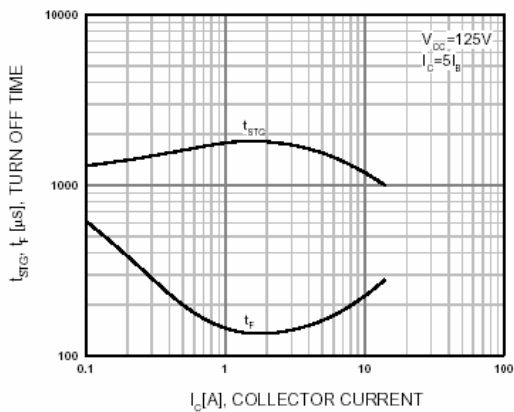


Figure 5. Turn Off Time

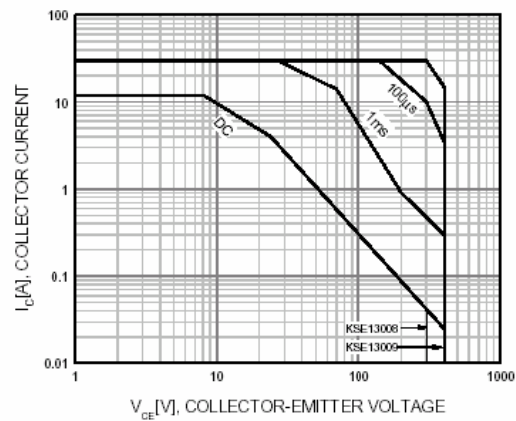
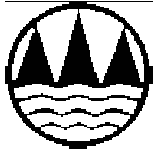


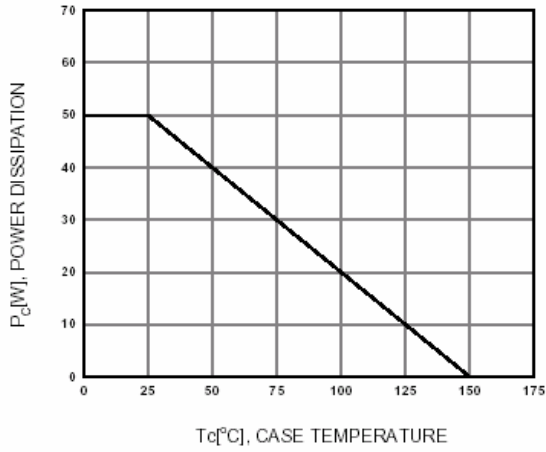
Figure 6. Safe Operating Area



**Shantou Huashan Electronic Devices Co.,Ltd.**

NPN SILICON TRANSISTOR

**KSH13009F**



**Figure 1. DC current Gain**