



# KSH13009H

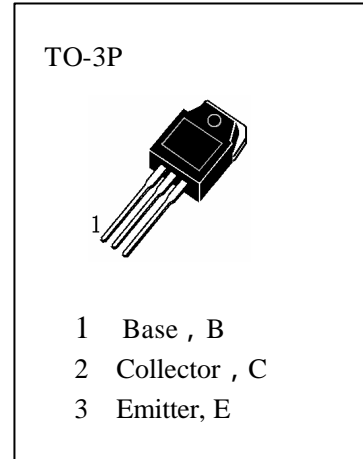
## HIGH VOLTAGE SWITCH MODE APPLICATIONS

High Speed Switching

Suitable for Switching Regulator and Motor Control

### ABSOLUTE MAXIMUM RATINGS ( $T_a=25$ )

$T_{stg}$ —Storage Temperature.....	-55~150
$T_j$ —Junction Temperature.....	150
$P_C$ —Collector Dissipation( $T_c=25$ ).....	130W
$V_{CBO}$ —Collector-Base Voltage.....	700V
$V_{CEO}$ —Collector-Emitter Voltage.....	400V
$V_{EBO}$ —Emitter-Base Voltage.....	9V
$I_C$ —Collector Current ( DC ) .....	12A
$I_B$ —Base Current.....	6A



### ELECTRICAL CHARACTERISTICS ( $T_a=25$ )

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BVCEO	Collector-Emitter Breakdown Voltage	400			V	$I_C=10mA, I_B=0$
IEBO	Emitter-Base Cut-off Current			1	mA	$V_{EB}=9V, I_C=0$
HFE ( 1 )	DC Current Gain	8		40		$V_{CE}=5V, I_C=5A$
HFE ( 2 )		6		30		$V_{CE}=5V, I_C=8A$
VCE(sat1)	Collector- Emitter Saturation Voltage			1	V	$I_C=5A, I_B=1A$
VCE(sat2)				1.5	V	$I_C=8A, I_B=1.6A$
VCE(sat3)				3	V	$I_C=12A, I_B=3A$
VBE(sat1)	Base-Emitter Saturation Voltage			1.2	V	$I_C=5A, I_B=1A$
VBE(sat2)				1.6	V	$I_C=8A, I_B=1.6A$
Cob	Output Capacitance		180		pF	$V_{CB}=10V, f=0.1MHz$
ft	Current Gain-Bandwidth Product	4			MHz	$V_{CE}=10V, I_C=0.5A$
ton	Turn On Time			1.1	$\mu s$	$V_{CC}=125V, I_C=8A,$ $I_{B1}=1.6A, I_{B2}=-1.6A$ $R_L=15.6$
tSTG	Storage Time			3.0	$\mu s$	
tF	Fall Time			0.7	$\mu s$	

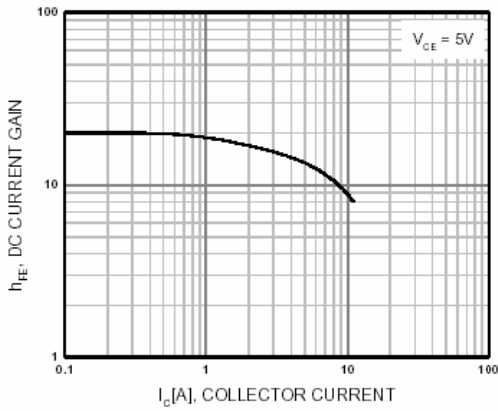


Figure 1. DC current Gain

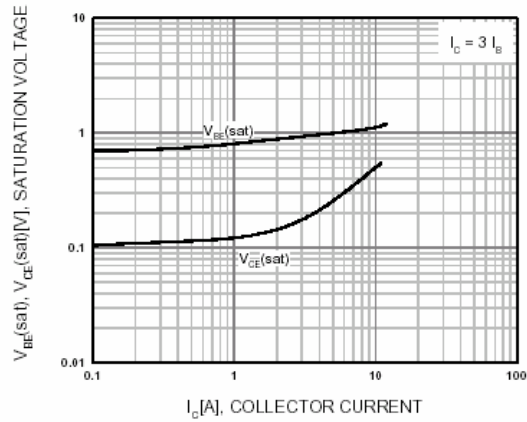


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

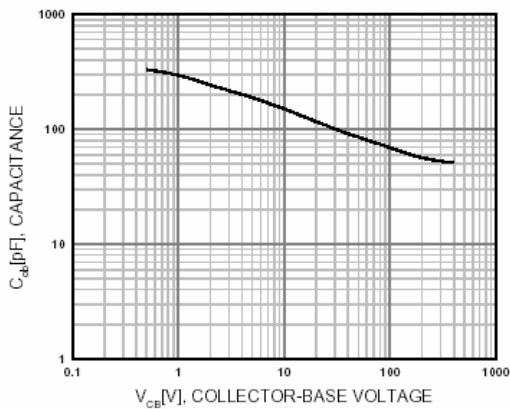


Figure 3. Collector Output Capacitance

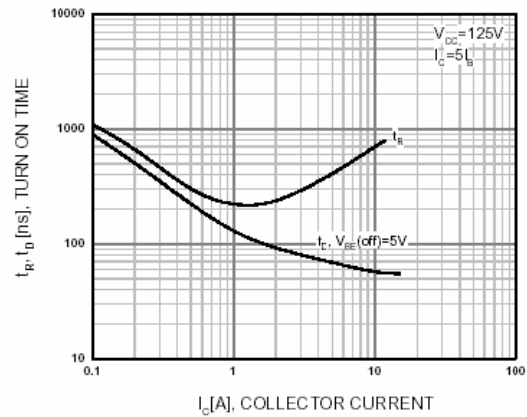


Figure 4. Turn On Time

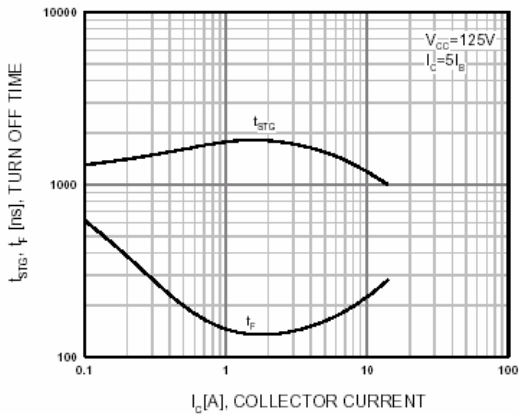


Figure 5. Turn Off Time

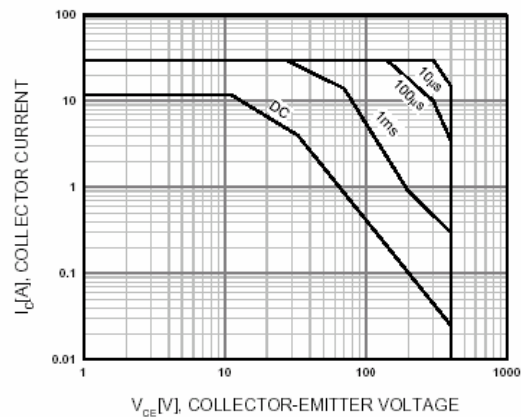


Figure 6. Forward Bias Safe Operating Area

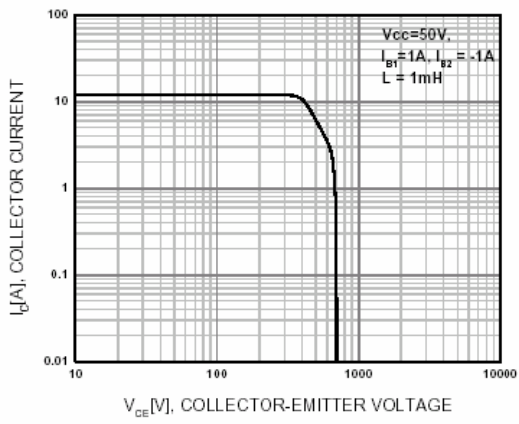


Figure 7. Reverse Bias Safe Operating Area

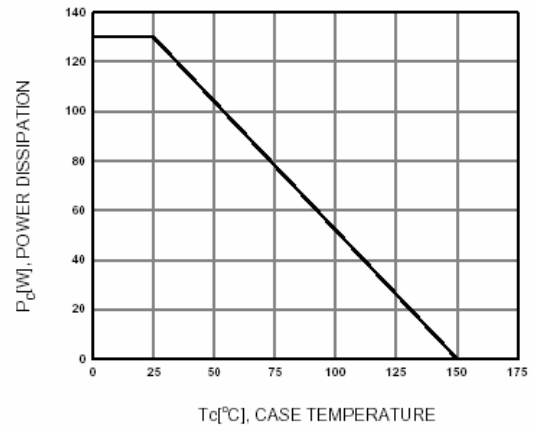


Figure 8. Power Derating