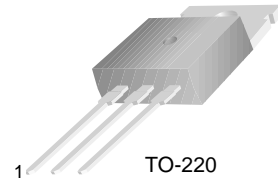


KSE13008/13009

High Voltage Switch Mode Application

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



TO-220
1.Base 2.Collector 3.Emitter

NPN Silicon Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage : KSE13008 : KSE13009	600	V
		700	V
V_{CEO}	Collector-Emitter Voltage : KSE13008 : KSE13009	300	V
		400	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current (DC)	12	A
I_{CP}	Collector Current (Pulse)	24	A
I_B	Base Current	6	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	100	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage : KSE13008 : KSE13009	$I_C = 10\text{mA}, I_B = 0$	300			V
			400			V
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 9\text{V}, I_C = 0$			1	mA
h_{FE}	* DC Current Gain	$V_{CE} = 5\text{V}, I_C = 5\text{A}$	8		40	
		$V_{CE} = 5\text{V}, I_C = 8\text{A}$	6		30	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 5\text{A}, I_B = 1\text{A}$			1	V
		$I_C = 8\text{A}, I_B = 1.6\text{A}$			1.5	V
		$I_C = 12\text{A}, I_B = 3\text{A}$			3	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C = 5\text{A}, I_B = 1\text{A}$			1.2	V
		$I_C = 8\text{A}, I_B = 1.6\text{A}$			1.6	V
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, f = 0.1\text{MHz}$		180		pF
f_T	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}$	4			MHz
t_{ON}	Turn On Time	$V_{CC} = 125\text{V}, I_C = 8\text{A}$ $I_{B1} = - I_{B2} = 1.6\text{A}$ $R_L = 15,6\Omega$			1.1	μs
t_{STG}	Storage Time				3	μs
t_F	Fall Time				0.7	μs

* Pulse test: $PW \leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

Typical Characteristics

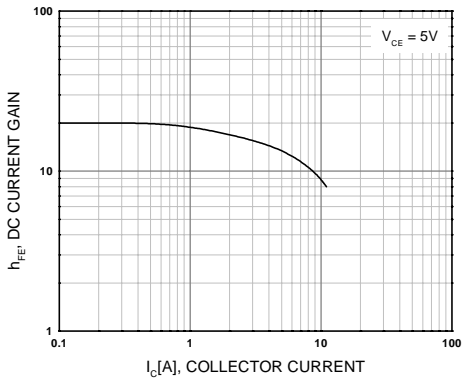


Figure 1. DC current Gain

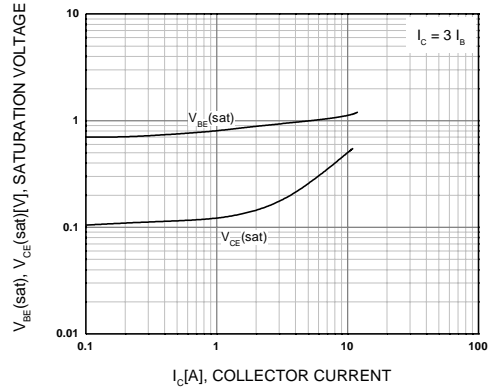


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

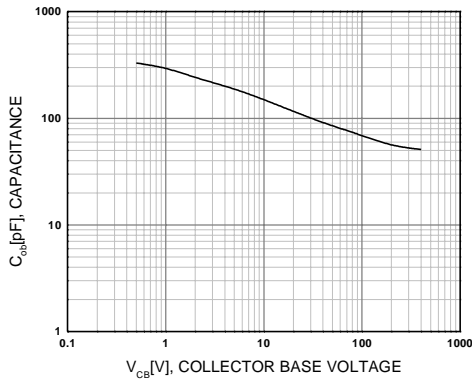


Figure 3. Collector Output Capacitance

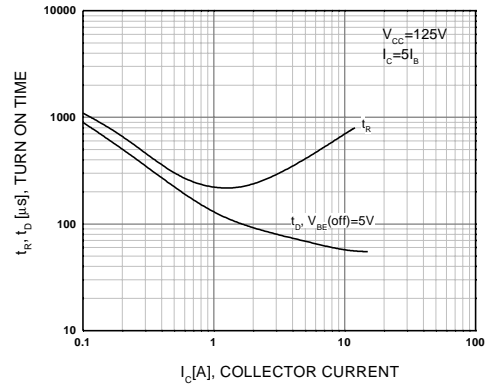


Figure 4. Turn On Time

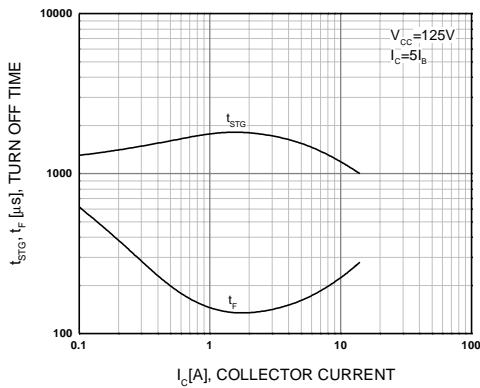


Figure 5. Turn Off Time

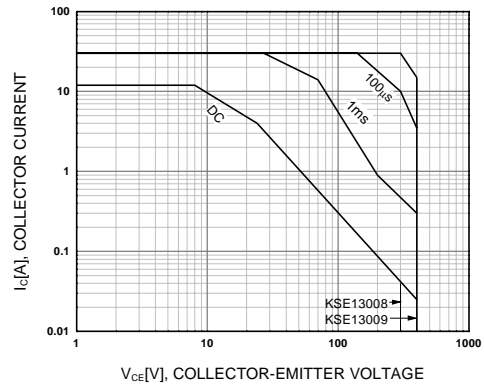


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

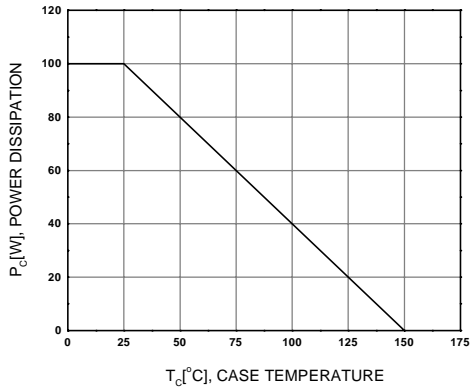
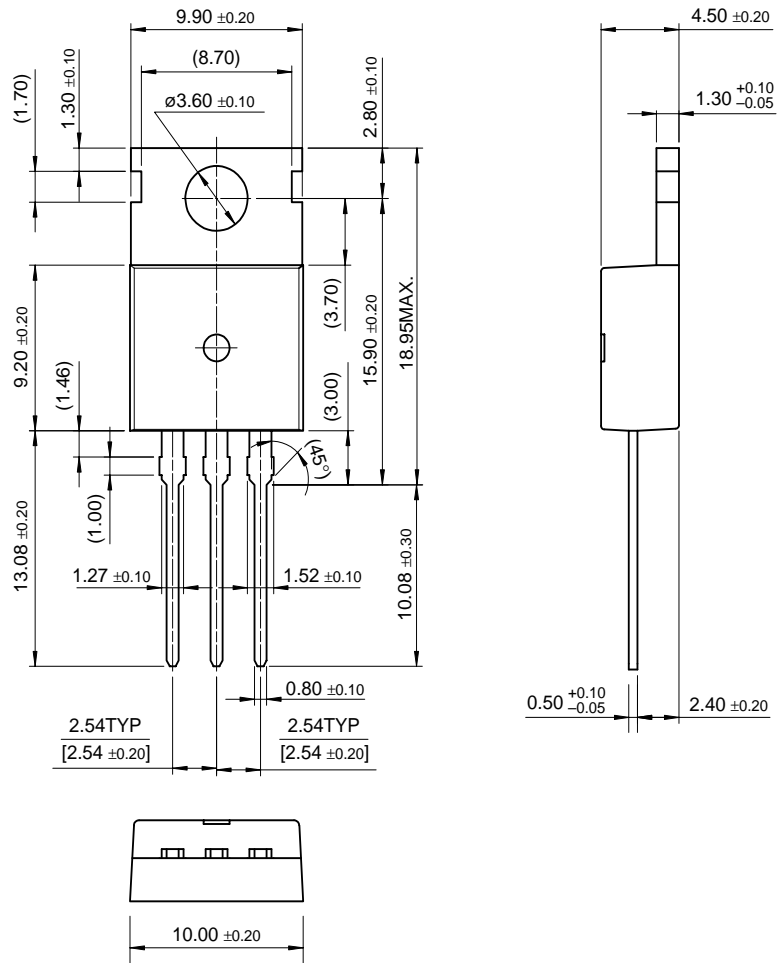


Figure 7. DC current Gain

Package Dimensions

TO-220

KSE13008/13009



Dimensions in Millimeters

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KSE13008
NPN Silicon Transistor

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Product	Product status	Package type	Leads	Packing method
KSE13008TU	Full Production	TO-220	3	RAIL

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Product status/pricing/packaging

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KSE13009H2TU	Full Production	\$0.81	TO-220	3	RAIL
KSE13009	Full Production	\$0.81	TO-220	3	BULK
KSE13009TU	Full Production	\$0.81	TO-220	3	RAIL

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