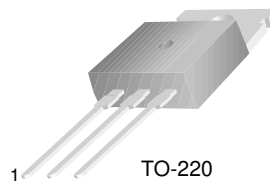


KSE13006/13007

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	: KSE13006	600	V
		: KSE13007	700	V
V_{CEO}	Collector-Emitter Voltage	: KSE13006	300	V
		: KSE13007	400	V
V_{EBO}	Emitter- Base Voltage	9	V	
I_C	Collector Current (DC)	8	A	
I_{CP}	Collector Current (Pulse)	16	A	
I_B	Base Current	4	A	
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	80	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
BV_{CEO}	Collector- Emitter Breakdown Voltage : KSE13006 : KSE13007	$I_C = 10\text{mA}, I_B = 0$	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	$V_{CE} = 5\text{V}, I_C = 2\text{A}$ $V_{CE} = 5\text{V}, I_C = 5\text{A}$	8		60	
			5		30	
$V_{CE(sat)}$	*Collector-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.4\text{A}$ $I_C = 5\text{A}, I_B = 1\text{A}$ $I_C = 8\text{A}, I_B = 2\text{A}$			1	V
					2	V
					3	V
$V_{BE(sat)}$	*Base-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.4\text{A}$ $I_C = 5\text{A}, I_B = 1\text{A}$			1.2	V
					1.6	V
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, f = 0.1\text{MHz}$		110		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	$V_{CC} = 125\text{V}, I_C = 5\text{A}$ $I_{B1} = -I_{B2} = 1\text{A}$ $R_L = 50\Omega$			1.6	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

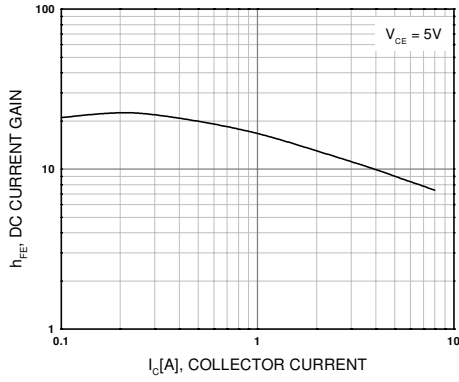


Figure 1. DC current Gain

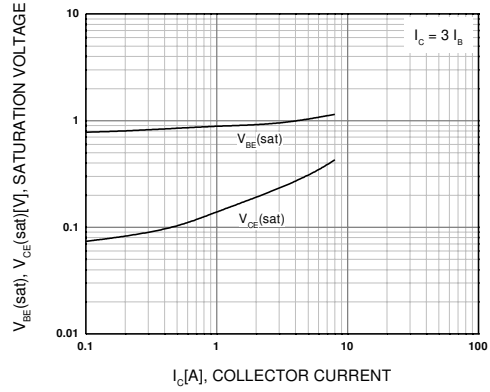


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

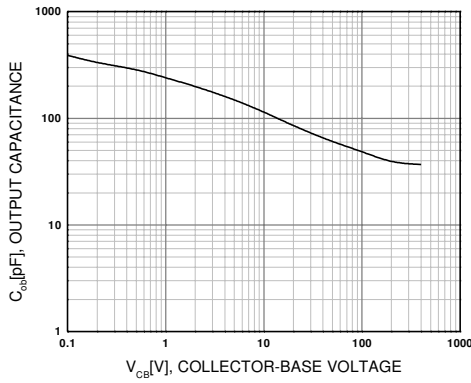


Figure 3. Collector Output Capacitance

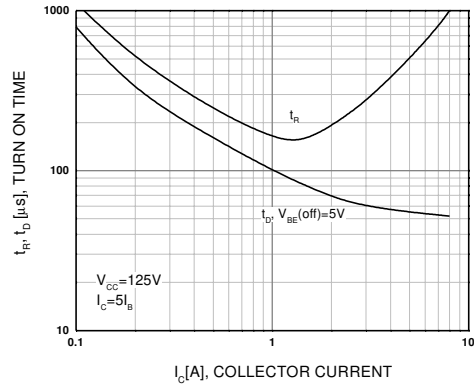


Figure 4. Turn On Time

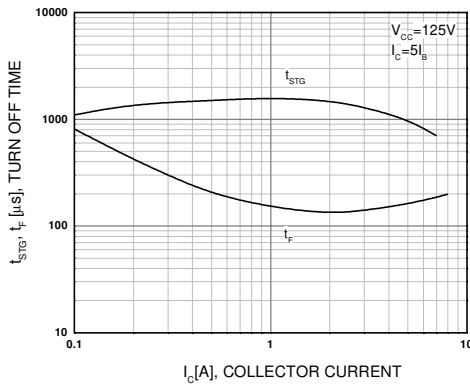


Figure 5. Turn Off Time

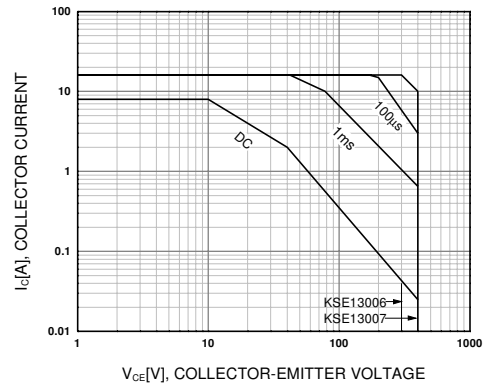


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

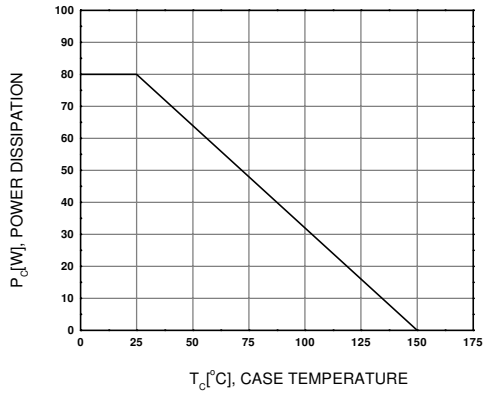
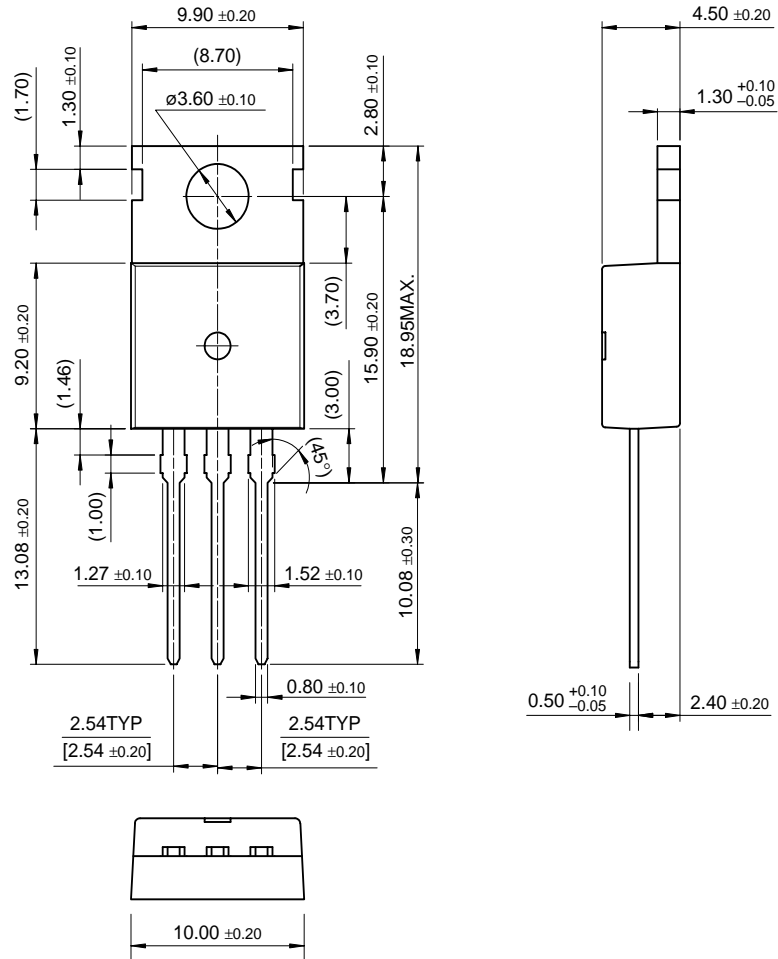


Figure 7. Power Derating

Package Dimensions

TO-220

KSE13006/13007



Dimensions in Millimeters

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KSE13006
NPN Silicon Transistor

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Product status/pricing/packaging

Product	Product status	Package type	Leads	Packing method
KSE13006TU	Full Production	TO-220	3	RAIL

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High Voltage Switch Mode

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
KSE13007H1SM	Full Production	\$0.62	TO-220	3	BULK
KSE13007SMTU	Full Production	\$0.62	TO-220	3	RAIL
KSE13007H2SM	Full Production	\$0.62	TO-220	3	BULK
KSE13007SM	Full Production	\$0.62	TO-220	3	BULK
KSE13007H2SMTU	Full Production	\$0.62	TO-220	3	RAIL
KSE13007H1SMTU	Full Production	\$0.62	TO-220	3	RAIL
KSE13007H3SM	Full Production	\$0.62	TO-220	3	BULK

* 1,000 piece Budgetary Pricing

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