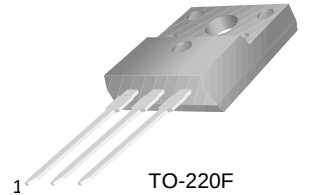


KSC3569

KSC3569

High Speed Switching Application

- Low Collector Saturation Voltage
- Specified of Reverse Biased SOA With Inductive Loads



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

NPN Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	500	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	2	A
I_{CP}	*Collector Current (Pulse)	4	A
I_B	Base Current	1	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	15	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

* $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 10\%$

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

Symbol	Parameter	Test Condition	Min.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 0.5\text{A}$, $I_{B1} = 0.1\text{A}$, $L = 1\text{mH}$	400		V
$V_{CEX(sus)1}$	Collector-Emitter Sustaining Voltage	$I_C = 0.5\text{A}$, $I_{B1} = -I_{B2} = 0.1\text{A}$ $T_a = 125^\circ\text{C}$, $L = 180\mu\text{H}$, Clamped	450		V
$V_{CEX(sus)2}$	Collector-Emitter Sustaining Voltage	$I_C = 1\text{A}$, $I_{B1} = -I_{B2} = 0.2\text{A}$, $T_a = 125^\circ\text{C}$, $L = 180\mu\text{H}$, Clamped	400		V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 400\text{V}$, $I_E = 0$		10	μA
I_{CER}	Collector Cut-off Current	$V_{CE} = 400\text{V}$, $R_{BE} = 51\Omega$ @ $T_C = 125^\circ\text{C}$		1	mA
I_{CEX1}	Collector Cut-off Current	$V_{CE} = 400\text{V}$, $V_{BE}(\text{off}) = -5\text{V}$		10	μA
I_{CEX2}	Collector Cut-off Current	$V_{CE} = 400\text{V}$, $V_{BE}(\text{off}) = -5\text{V}$ @ $T_C = 125^\circ\text{C}$		1	mA
I_{EBO}	Emitter Cut-off Current	$V_{BE} = 5\text{V}$, $I_C = 0$		10	μA
h_{FE1} h_{FE2}	* DC Current Gain	$V_{CE} = 5\text{V}$, $I_C = 0.1\text{A}$ $V_{CE} = 5\text{V}$, $I_C = 0.5\text{A}$	20 10	80	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 0.5\text{A}$, $I_B = 0.1\text{A}$		1	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C = 0.5\text{A}$, $I_B = 0.1\text{A}$	-	1.2	V
t_{ON}	Turn ON Time	$V_{CC} = 150\text{V}$, $I_C = 0.5\text{A}$ $I_{B1} = -I_{B2} = 0.1\text{A}$ $R_L = 300\Omega$		1	μs
t_{STG}	Storage Time			2.5	μs
t_F	Fall Time			1	μs

* Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycles $\leq 2\%$ Pulsed

h_{FE} Classification

Classification	R	O	Y
h_{FE1}	20 ~ 40	30 ~ 60	40 ~ 80

Typical Characteristics

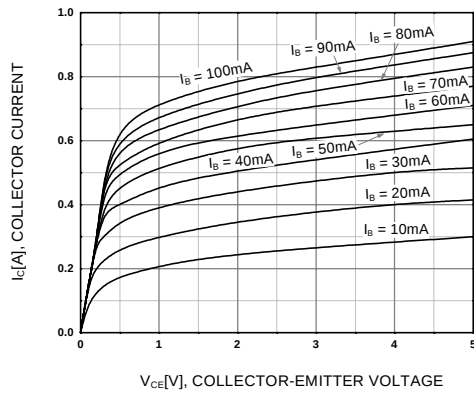


Figure 1. Static Characteristic

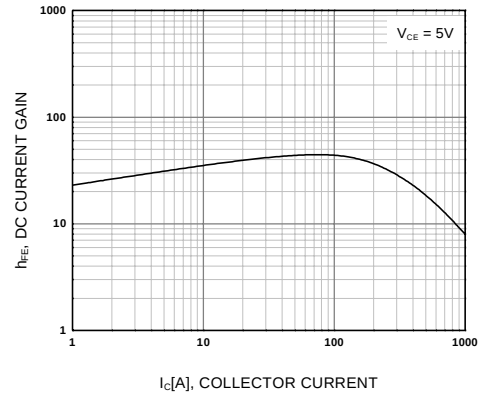


Figure 2. DC current Gain

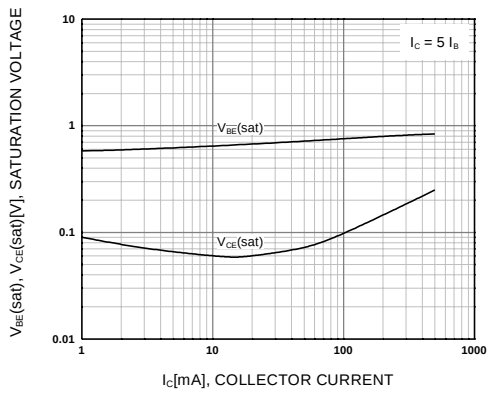


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

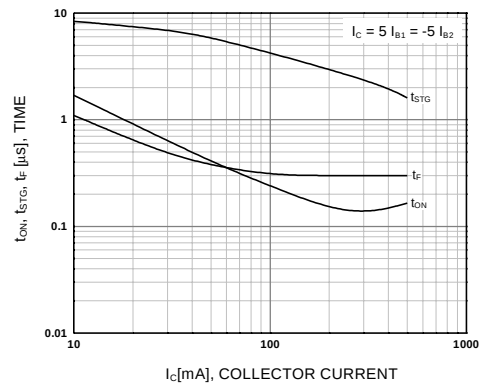


Figure 4. Switching Time

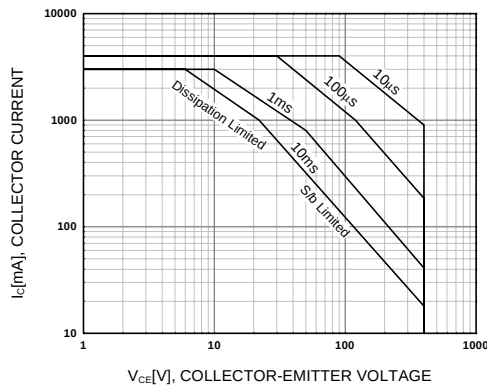


Figure 5. Safe Operating Area

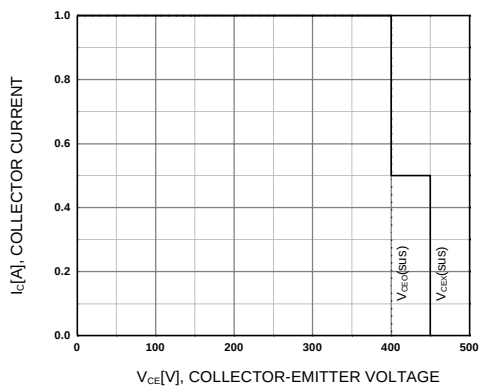
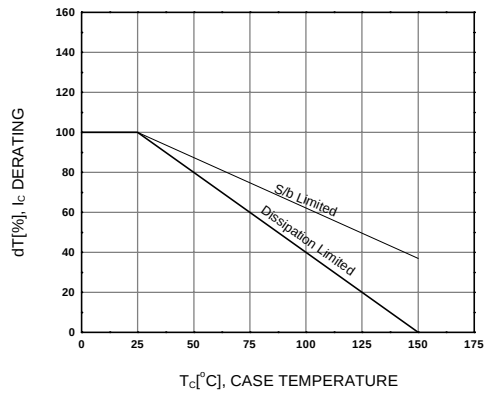
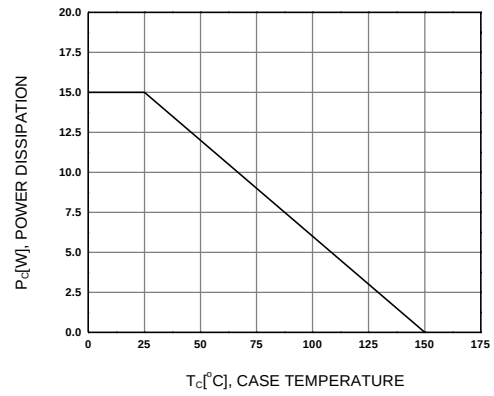
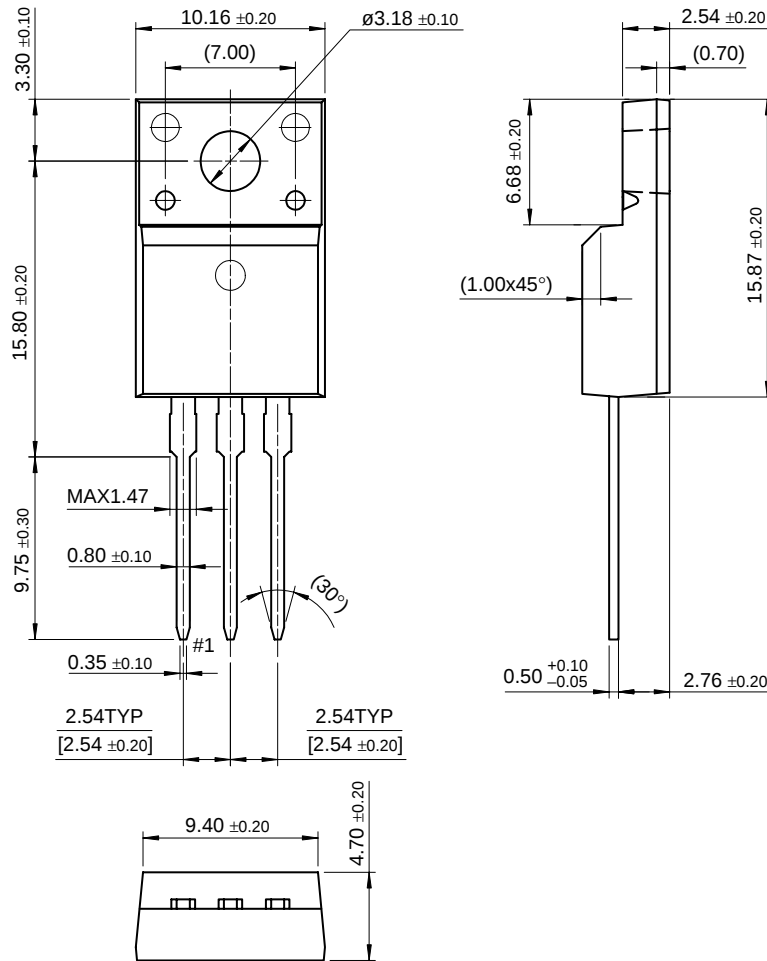


Figure 6. Reverse Bias Safe Operating Area

Typical Characteristics (Continued)**Figure 7. Derating Curve of Safe Operating Area****Figure 8. Power Derating**

Package Dimensions

TO-220F



Dimensions in Millimeters

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