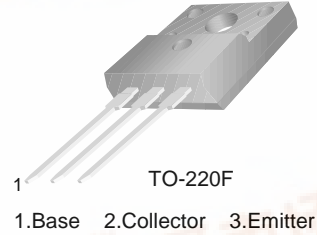


**FAIRCHILD**  
SEMICONDUCTOR™

## KSC5338F

### High Voltage Power Switch Switching Application

- High Speed Switching
- Wide SOA



### NPN Silicon Transistor

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	1000	V
$V_{CEO}$	Collector-Emitter Voltage	450	V
$V_{EBO}$	Emitter-Base Voltage	9	V
$I_C$	Collector Current (DC)	5	A
$I_{CP}$	Collector Current (Pulse)	10	A
$I_B$	Base Current (DC)	2	A
$I_{BP}$	Base Current (Pulse)	4	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	40	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
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 1\text{mA}, I_E = 0$	1000			V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}, I_B = 0$	450			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_C = 1\text{mA}, I_E = 0$	9			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 800\text{V}, V_{BE} = 0$			10	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 9\text{V}, I_C = 0$			10	$\mu\text{A}$
$h_{FE1}$ $h_{FE2}$	* DC Current Gain	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}$ $V_{CE} = 1\text{V}, I_C = 2\text{A}$	15 6		30	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.1\text{A}$ $I_C = 2\text{A}, I_B = 0.4\text{A}$		0.55	0.8 0.5	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.1\text{A}$ $I_C = 2\text{A}, I_B = 0.4\text{A}$			1.1 1.25	V V
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		70		pF
$C_{ib}$	Input Capacitance	$V_{EB} = 8\text{V}, I_C = 0, f = 1\text{MHz}$		1000		pF
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{V}, I_C = 0.1\text{A}$		14		MHz
$t_{ON}$	Turn ON Time	$V_{CC} = 125\text{V}, I_C = 1\text{A}$			200	ns
$t_{STG}$	Storage Time	$I_{B1} = 0.2\text{A}, I_{B2} = -0.2\text{A}$ $R_L = 125\Omega$			2	$\mu\text{s}$
$t_F$	Fall Time				500	ns

\* Pulse Test: Pulse Width=5ms, Duty Cycle≤10%



# Typical Characteristics

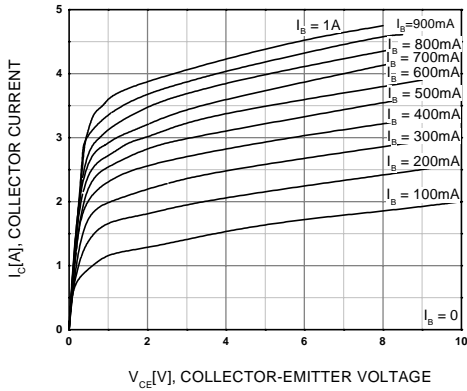


Figure 1. Static Characteristic

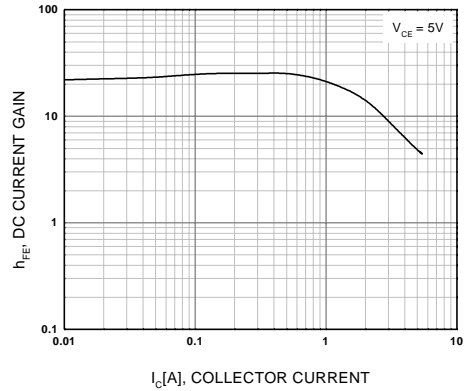


Figure 2. DC current Gain

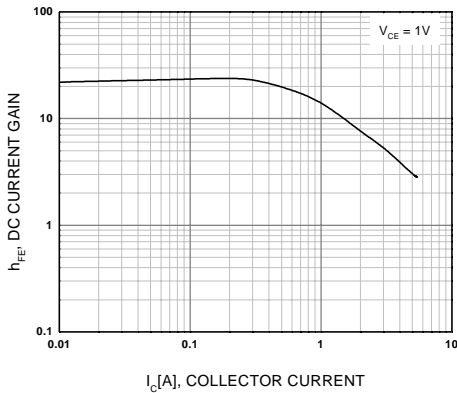


Figure 3. DC current Gain

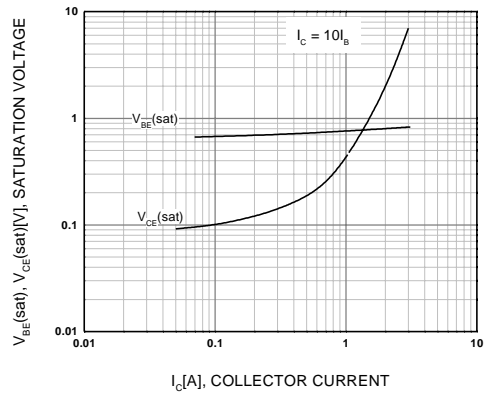


Figure 4. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

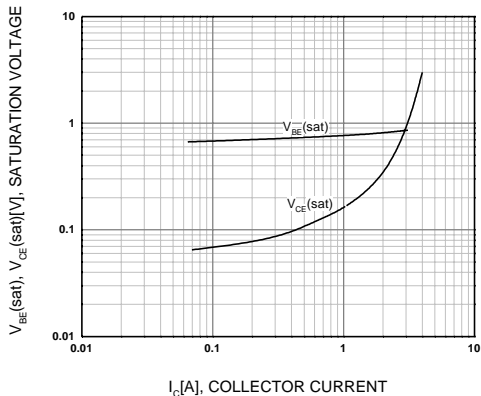


Figure 5. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

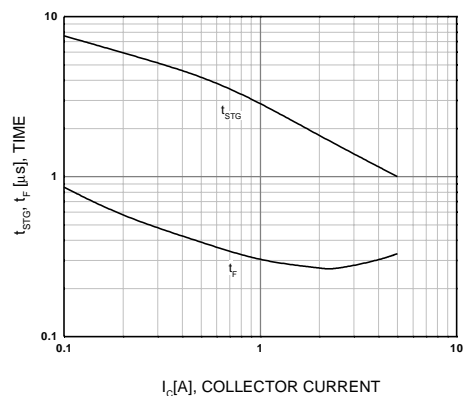
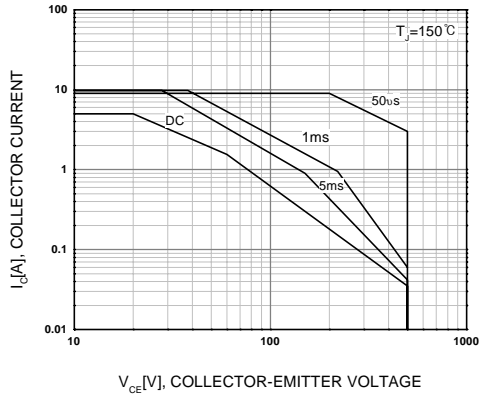
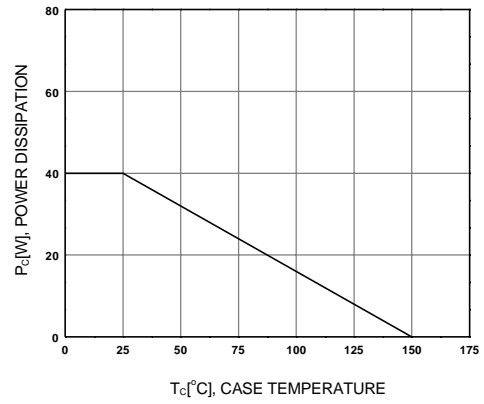


Figure 6. Switching Time

**Typical Characteristics** (Continued)



**Figure 7. Safe Operating Area**

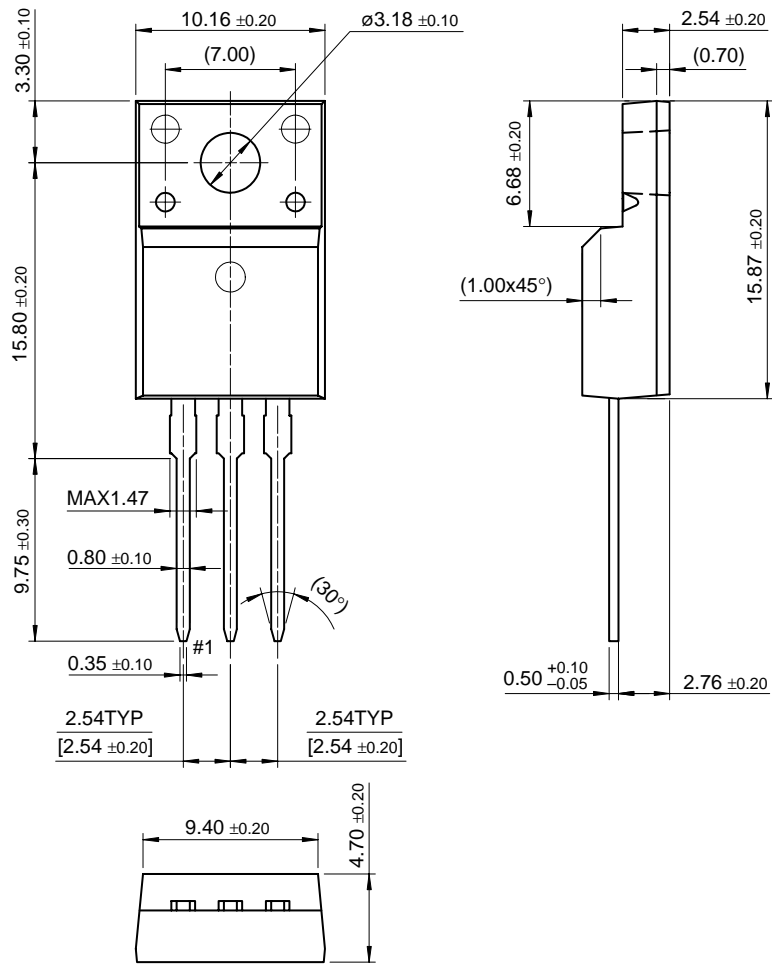


**Figure 8. Power Derating**

# Package Dimensions

KSC5338F

## TO-220F



Dimensions in Millimeters

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E <sup>2</sup> CMOS™	PowerTrench®	VCX™
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