FAIRCHILD
SEMICONDUCTOR®

KSC5030F

High Voltage Fast Switching Transistor

Features

• Fast Speed Switching
• Wide Safe Operating Area

TO-3PF

1.Base   2.Collector   3.Emitter
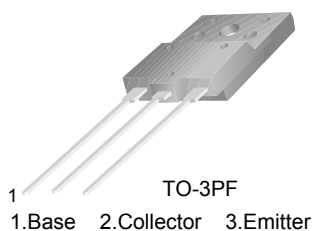
Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	1100	V
V_{CEO}	Collector-Emitter Voltage	800	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	6	A
I_{CP}	* Collector Current (Pulse)	20	A
P_C	Collector Dissipation (T_C = 25°C)	60	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55 ~ 150	°C

* Pulse Test: PW = 300μs, Duty Cycle = 2% Pulsed

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
KSC5030F	KSC5030FRTU	TO3PF	-	-	50

Electrical Characteristics $T_C = 25°C$ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 1mA, I_E = 0$	1100			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 5mA, I_B = 0$	800			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 1mA, I_C = 0$	7			V
$V_{CEX}(sus)$	Collector-Emitter Sustaining Voltage	$I_C = 3A, I_{B1} = - I_{B2} = 0.6A$ L=1mH, Clamped	800			V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 800V, I_E = 0$			10	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5V, I_C = 0$			10	μA
h_{FE1} h_{FE2}	DC Current Gain	$V_{CE} = 5V, I_C = 0.6A$ $V_{CE} = 5V, I_C = 2.0A$	10 8		40	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 3A, I_B = 0.6A$			2.0	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 3A, I_B = 0.6A$			1.5	V
C_{OB}	Output Capacitance	$V_{CB} = 10V, I_E = 0, f = 1MHz$		120		pF
t_{ON}	Turn On Time	$V_{CC}=400V, I_C=4A$ $I_{B1}=0.8A, I_{B2}=-1.6A$ $R_L=100\Omega$			0.5	μs
t_{STG}	Storage Time				3.0	μs
t_F	Fall Time				0.3	μs

h_{FE} Classification

Classification	R	O	Y
h_{FE1}	10 ~ 20	15 ~ 30	20 ~ 40

Typical Performance Characteristics

Figure 1. Static Characterstic

$I_C[A]$, COLLECTOR CURRENT

I_B = 800mA
I_B = 700mA
I_B = 600mA
I_B = 500mA
I_B = 400mA
I_B = 300mA
I_B = 200mA
I_B = 150mA
I_B = 100mA
I_B = 50mA
I_B = 20mA I_B = 0

$V_{CE}[V]$, COLLECTOR-EMITTER VOLTAGE

Figure 2. DC Current Gain

V_{CE} = 5V
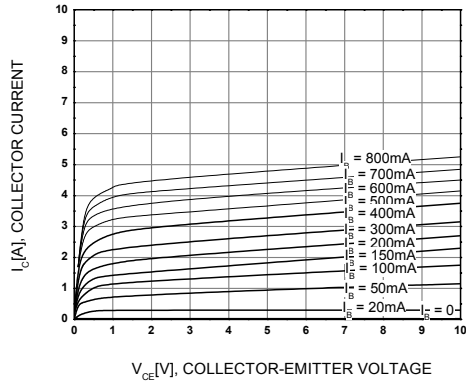
h_{FE}, DC CURRENT GAIN

$I_C[A]$, COLLECTOR CURRENT
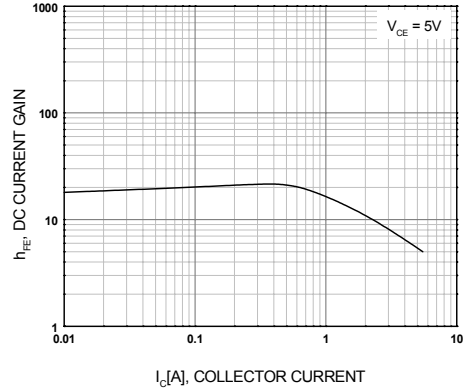
Figure 3. Collector-Emitter Saturation Voltage

$V_{BE}(sat)$, $V_{CE}(sat)[V]$, SATURATION VOLTAGE

I_C = 5 I_B

$V_{BE}(sat)$

$V_{CE}(sat)$

$I_C[A]$, COLLECTOR CURRENT
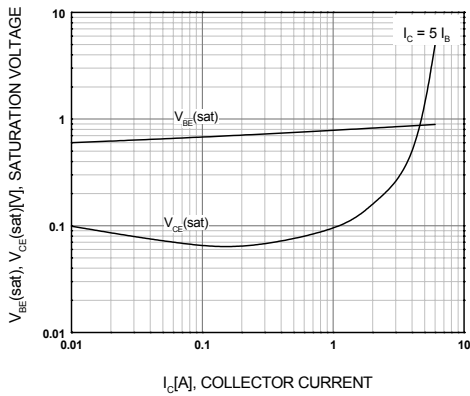
Figure 4. Base-Emitter On Voltage

V_{CE} = 5V

$I_C[A]$, COLLECTOR CURRENT

$V_{BE}[V]$, BASE-EMITTER VOLTAGE

Figure 5. Switching Time

t_{ON}, t_{STG}, t_F [μs], TIME

t_{STG}

t_{ON}

t_F

$I_C[A]$, COLLECTOR CURRENT
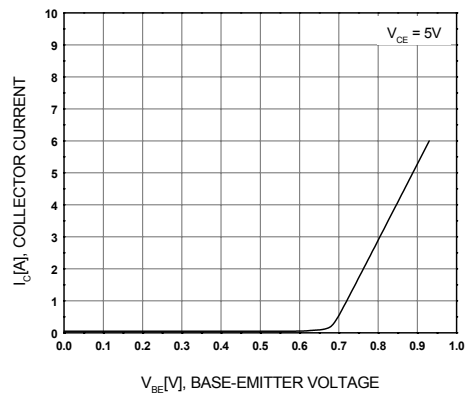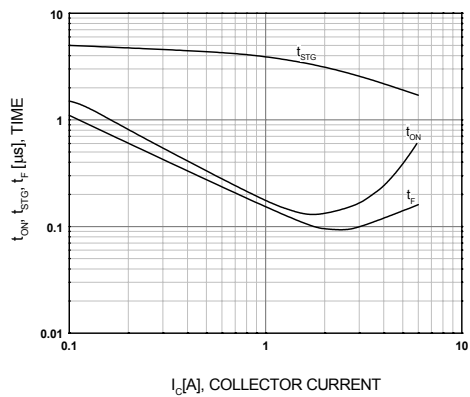
Figure 6. Forward Biased Safe Operating Area

$I_C[A]$, COLLECTOR CURRENT

$I_C(max).(Pulse)$
$I_C(max)$

100μs
10ms
1ms
DC

$V_{CE}[V]$, COLLECTOR-EMITTER VOLTAGE

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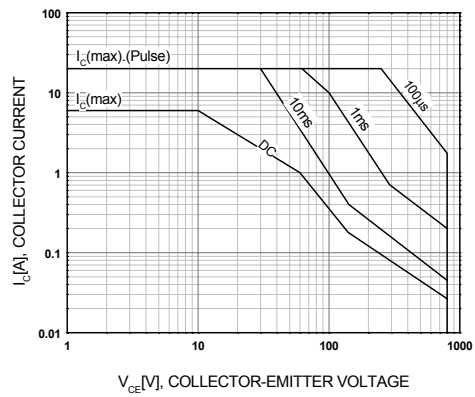
Typical Performance Characteristics (Continued)

Figure 7. Reverse Biased Safe Operating Area

L=200uH
$I_B2 = -0.6A$

I_C[A], COLLECTOR CURRENT

V_{CE}[V], COLLECTOR-EMITTER VOLTAGE

Figure 8. Power Derating Curve

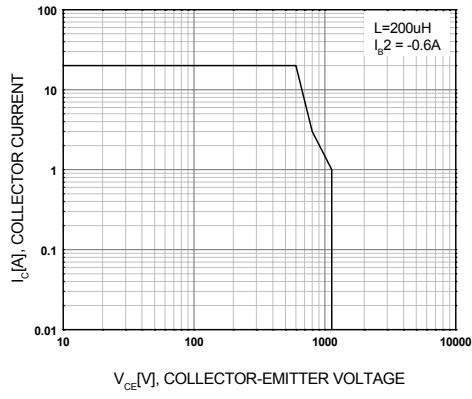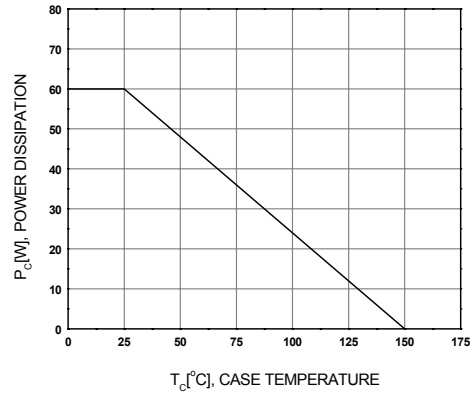P_C[W], POWER DISSIPATION

T_C[°C], CASE TEMPERATURE

KSC5030F Rev. A
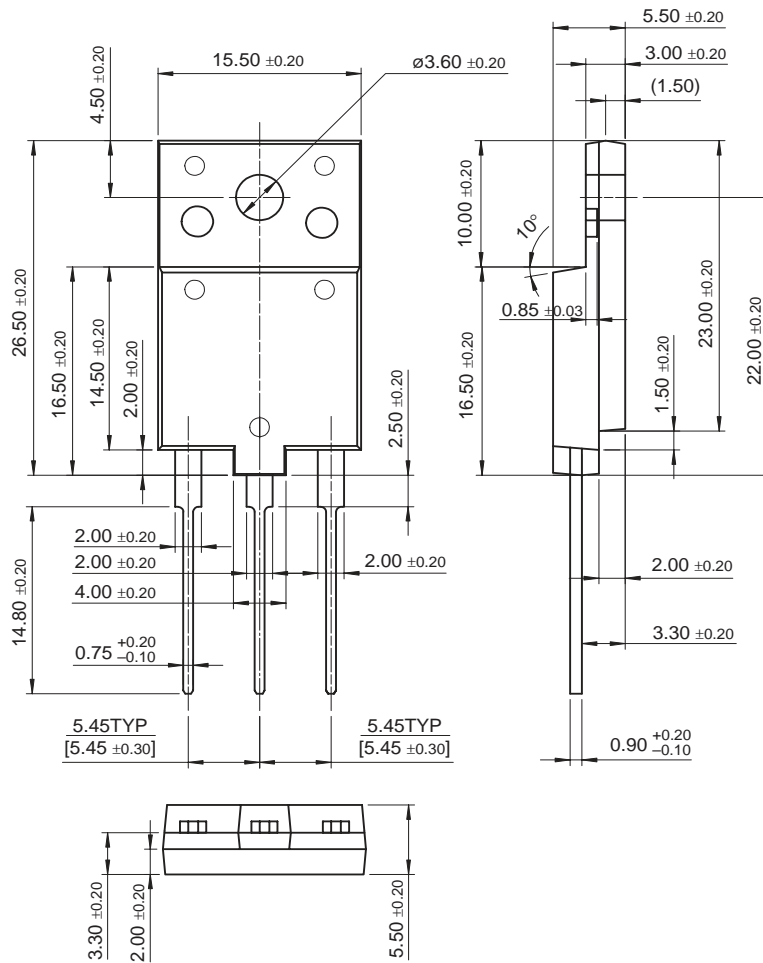
Mechanical Dimensions

TO-3PF

Dimensions in Millimeters

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