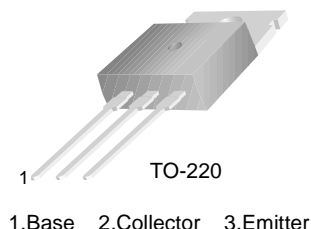


KSC5039

KSC5039

High Voltage Power Switch Switching Application



NPN Silicon Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	800	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	5	A
I_{CP}	Collector Current (Pulse)	10	A
I_B	Base Current	3	A
P_C	Collector Dissipation ($T_C=25^{\circ}\text{C}$)	70	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	$I_C = 1\text{mA}, I_E = 0$	800			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}, I_B = 0$	400			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_C = 1\text{mA}, I_C=0$	7			V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 500\text{V}, I_E = 0$			10	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 7\text{V}, I_C = 0$			10	μA
h_{FE}	* DC Current Gain	$V_{CE} = 5\text{V}, I_C = 0.3\text{A}$	10			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 2.5\text{A}, I_B = 0.5\text{A}$			1.5	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C = 2.5\text{A}, I_B = 0.5\text{A}$			2.0	V
f_T	Current Gain Bandwidth Product	$V_{CE} = 5\text{V}, I_C = 0.1\text{A}$		10		MHz
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		40		pF
t_{ON}	Turn ON Time	$V_{CC}=150\text{V}, I_C = 2.5\text{A}$ $I_{B1} = -I_{B2} = 0.5\text{A}$ $R_L = 60\Omega$			1	μs
t_{STG}	Storage Time				3	μs
t_F	Fall Time				0.8	μs

* Plus test: $PW=300\mu\text{s}$, Duty Cycle=2% Pulsed

Typical Characteristics

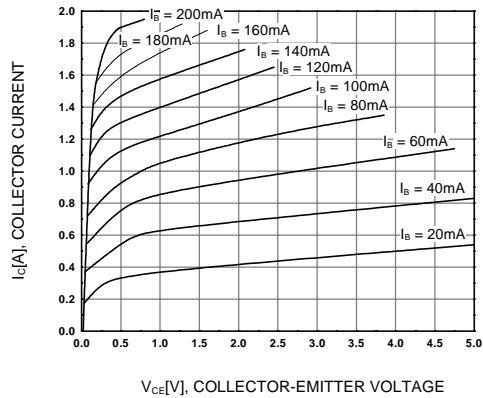


Figure 1. Static Characteristic

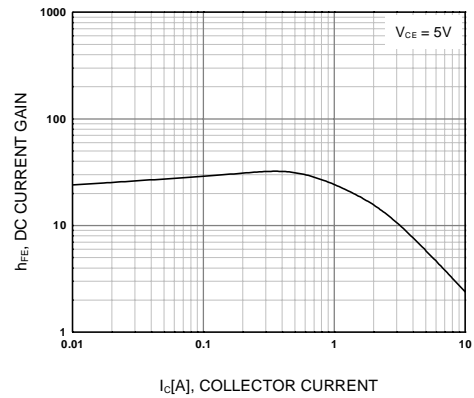


Figure 2. DC current Gain

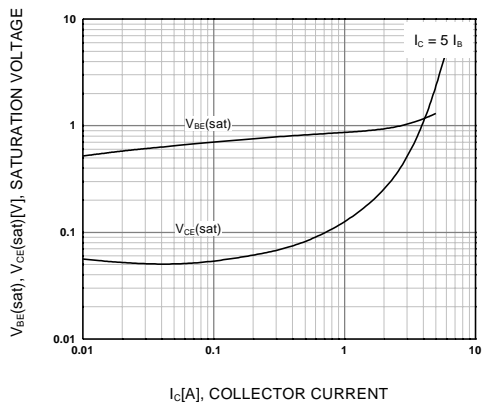


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

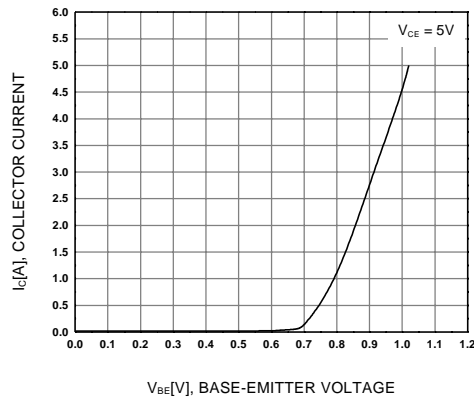


Figure 4. Base-Emitter On Voltage

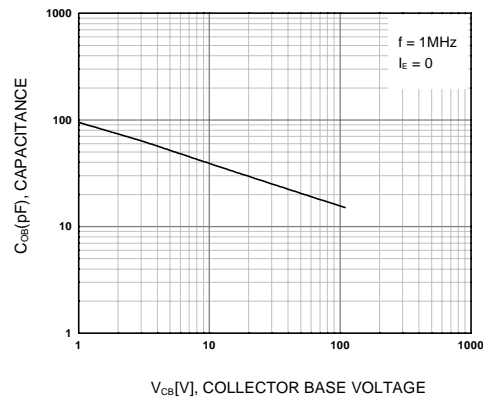


Figure 5. Collector Output Capacitance

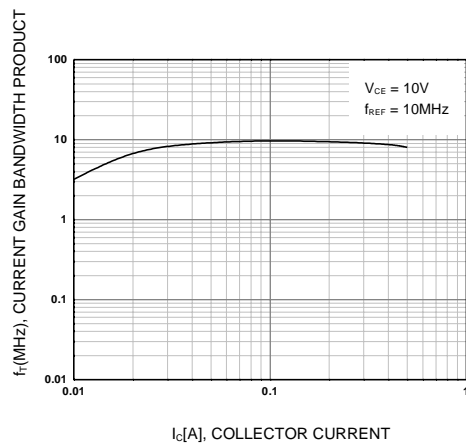


Figure 6. Current Gain Bandwidth Product

Typical Characteristics (Continued)

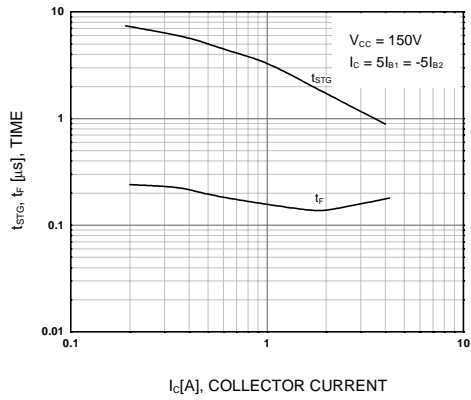


Figure 7. Switching Time

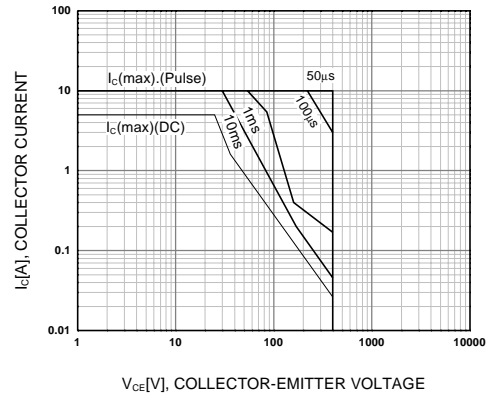


Figure 8. Safe Operating Area

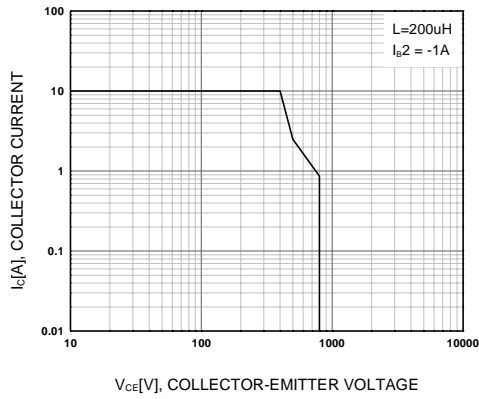


Figure 9. Reverse Bias Safe Operating Area

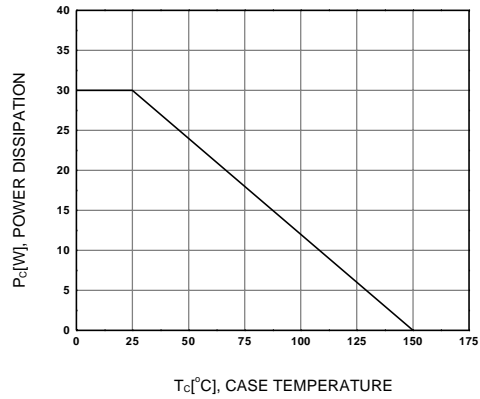
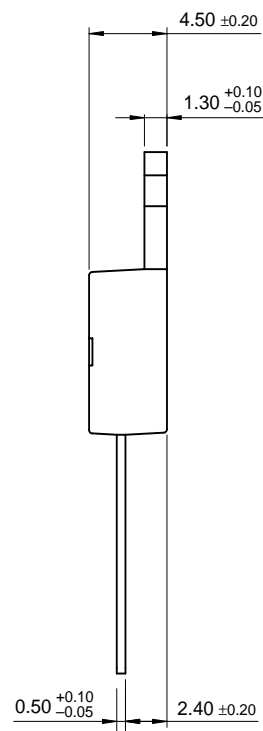


Figure 10. Power Derating

[illegible]

Rev. A, February 2000

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