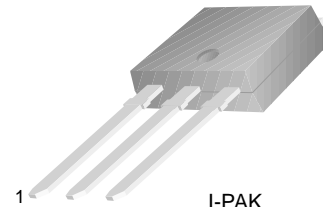


KSC5054

**High Speed High Voltage Switching
Industrial Use**



I-PAK
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_B	Base Current	0.25	A
I_C	Collector Current (DC)	0.5	A
I_{CP}	*Collector Current (Pulse)	1	A
P_C	Collector Dissipation ($T_a=25^\circ\text{C}$)	1	W
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	10	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

* $PW \leq 300\mu\text{s}$, 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	$I_C = 0.3\text{A}$, $I_{B1} = 0.06\text{A}$, $L = 10\text{mH}$	400		V
$V_{CEX(sus)1}$	Collector-Emitter Sustaining Voltage	$I_C = 0.3\text{A}$, $I_{B1} = -I_{B2} = 0.06\text{A}$ $V_{BE(off)} = -5\text{V}$, $L = 10\text{mH}$	450		V
$V_{CEX(sus)2}$	Collector-Emitter Sustaining Voltage	$I_C = 0.6\text{A}$, $I_{B1} = 0.2$, $L = 10\text{mH}$ $I_{B2} = -0.06$, $V_{BE(off)} = -5\text{V}$	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_{EBO}	Emitter Cut-off Current	$V_{EB} = 5\text{V}$, $I_C = 0$		10	μA
I_{CEX1} I_{CEX2}	Collector Cut-off Current	$V_{CE} = 400\text{V}$, $V_{BE(off)} = -1.5\text{V}$ $V_{CE} = 400\text{V}$, $V_{BE(off)} = -1.5\text{V}$ @ $T_C = 125^\circ\text{C}$		10 1	μA mA
h_{FE1} h_{FE2}	DC Current Gain	$V_{CE} = 5\text{V}$, $I_C = 0.05\text{A}$ $V_{CE} = 5\text{V}$, $I_C = 0.3\text{A}$	20 10	80	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 0.3\text{A}$, $I_B = 0.06\text{A}$		1	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 0.3\text{A}$, $I_B = 0.06\text{A}$		1.2	V
t_{ON}	Turn ON Time	$V_{CC} = 150\text{V}$, $I_C = 0.3\text{A}$		1	μs
t_{STG}	Storage Time	$I_{B1} = -I_{B2} = 0.06\text{A}$, $R_L = 500\Omega$ $PW = 50\mu\text{s}$, Duty Cycle $\leq 2\%$		2.5	μs
t_F	Fall Time			1	μs

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

h_{FE} Classification

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

Typical Characteristics

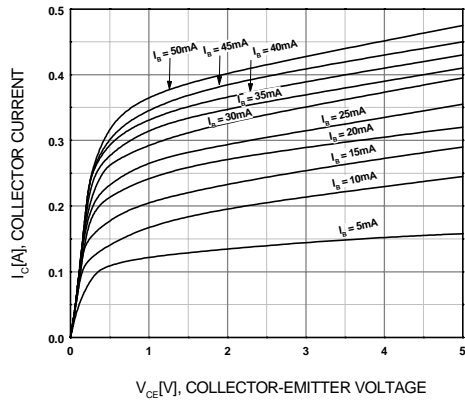


Figure 1. Static Characteristic

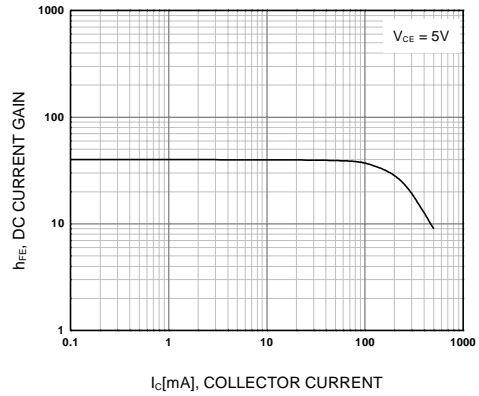


Figure 2. DC current Gain

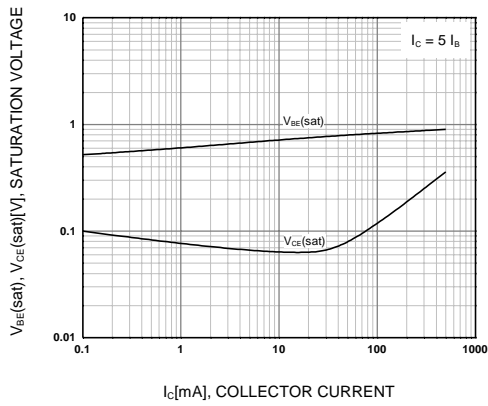


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

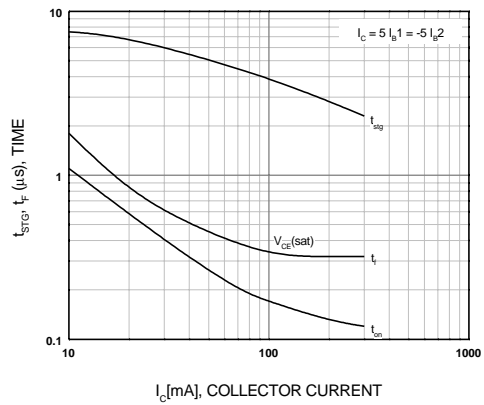


Figure 4. Switching Time

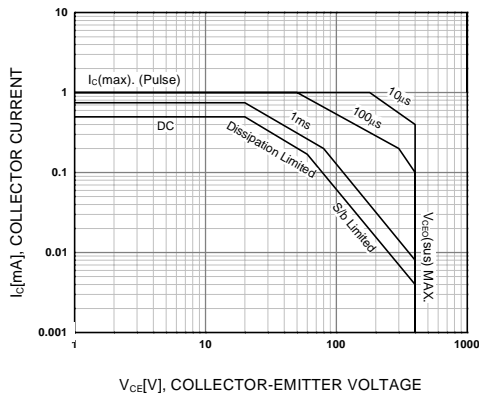


Figure 5. Safe Operating Area

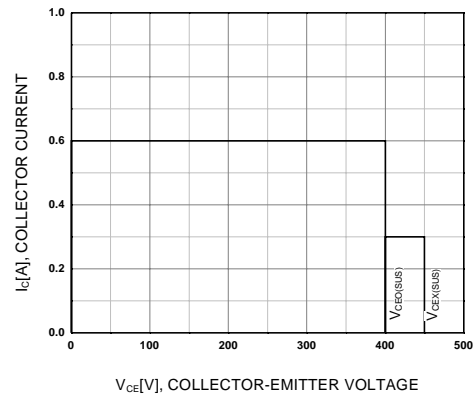


Figure 6. Reverse Bias Safe Operating Area

Typical Characteristics (Continued)

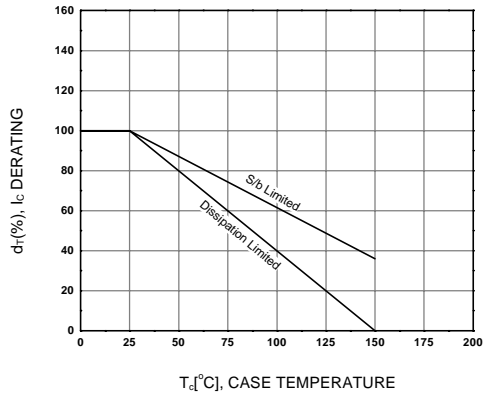


Figure 7. Derating Curve of Safe Operating Area

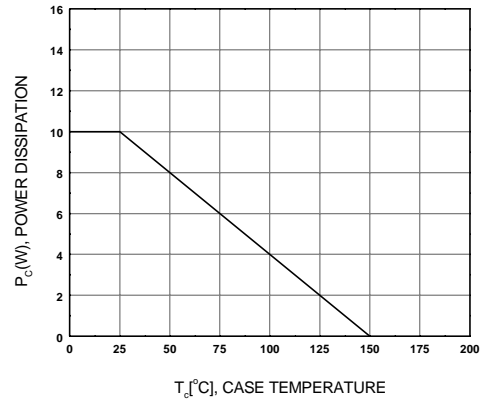


Figure 8. Power Derating

Package Dimensions

I-PAK



Dimensions in Millimeters

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KSC5054RTU	Full Production	\$0.295	TO-251(IPAK)	3	RAIL

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