

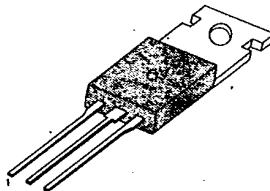
KSC2517**NPN EXITAXIAL SILICON TRANSISTOR**

T-33-09

**HIGH SPEED SWITCHING
INDUSTRIAL USE****ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CB0}	150	V
Collector-Emitter Voltage	V_{CE0}	100	V
Emitter-Base Voltage	V_{EB0}	12	V
Collector Current (DC)	I_C	5	A
Collector Current (Pulse)	I_C	10	A
Collector Dissipation ($T_a=25^\circ\text{C}$)	P_C	1.5	W
Collector Dissipation ($T_c=25^\circ\text{C}$)	P_C	30	W
Base Current	I_B	2.5	A
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

TO-220



1. Base 2. Collector 3. Emitter

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* $PW \leq 300\mu\text{s}$, Duty Cycle $< 10\%$ **ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector Emitter Sustaining Voltage	$V_{CE0}(\text{sus})$	$I_C=3A, I_B=0.3A, L=1\text{mH}$	100		V
Collector Emitter Sustaining Voltage	$V_{CEX}(\text{sus})1$	$I_C=3A, I_B=-I_{B2}=0.3A$ $V_{BE}(\text{off})=-5V, L=180\mu\text{H}$ Clamped	150		V
Collector Emitter Sustaining Voltage	$V_{CEX}(\text{sus})2$	$I_C=6A, I_B=1.2A, I_{B2}=-0.3A, V_{BE}(\text{off})=-5V$ $L=180\mu\text{H}$, Clamped	100		V
Collector Cutoff Current	I_{CBO}	$V_{CB}=100V, I_E=0$		10	μA
Collector Cutoff Current	I_{CER}	$V_{CE}=100V, R_{BE}=51\Omega$ $T_a=125^\circ\text{C}$		1	mA
Collector Cutoff Current	I_{CEX1}	$V_{CE}=100V, V_{BE}(\text{off})=-1.5V$		10	μA
Collector Cutoff Current	I_{CEX2}	$V_{CE}=100V, T_a=125^\circ\text{C}$ $V_{BE}(\text{off})=-1.5V$		1	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=10V, I_C=0$		10	μA
*DC Current Gain	h_{FE1}	$V_{CE}=5V, I_C=0.2A$	40		
	h_{FE2}	$V_{CE}=5V, I_C=2A$	40	200	
*Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C=3A, I_B=0.3A$		0.6	V
*Base-Emitter Saturation Voltage	$V_{BE}(\text{sat})$	$I_C=3A, I_B=0.3A$		1.5	V
Turn On Time	t_{on}	$I_C=3A, R_L=17\Omega, V_{CC}=50V$		0.5	μs
Storage Time	t_s	$I_B=-I_{B2}=0.3A$		2.5	μs
Fall Time	t_f			0.5	μs

*Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 2\%$ **$h_{FE}(2)$ CLASSIFICATION**

Classification	R	O	Y
$h_{FE}(2)$	40-80	60-120	100-200

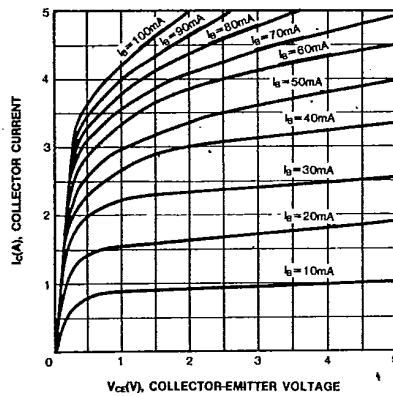


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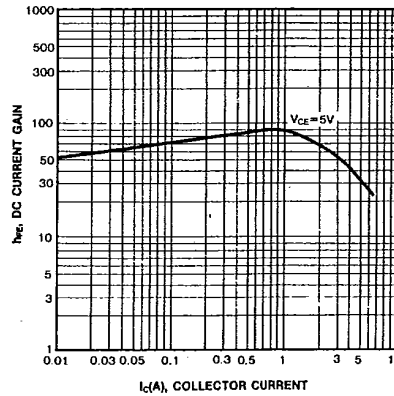
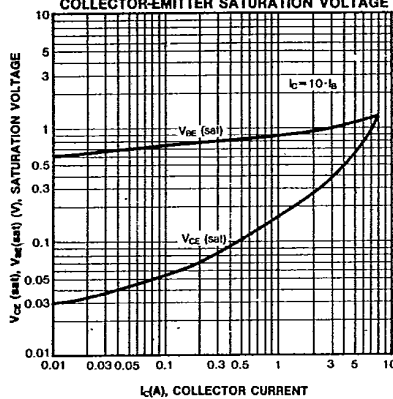
NPN EXITAXIAL SILICON TRANSISTOR

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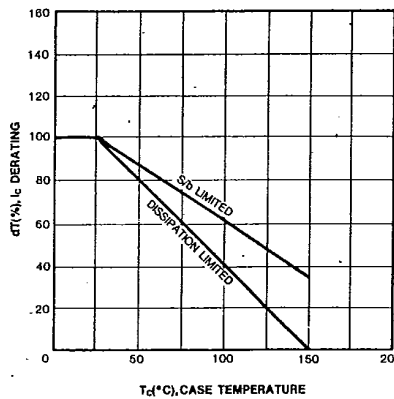
STATIC CHARACTERISTIC



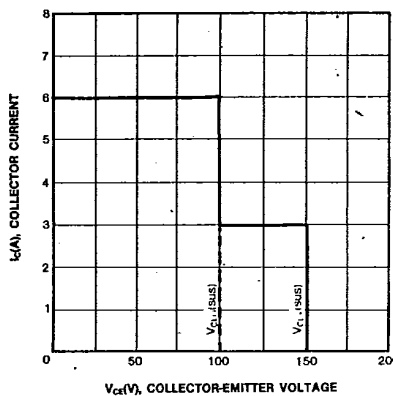
DC CURRENT GAIN

BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE

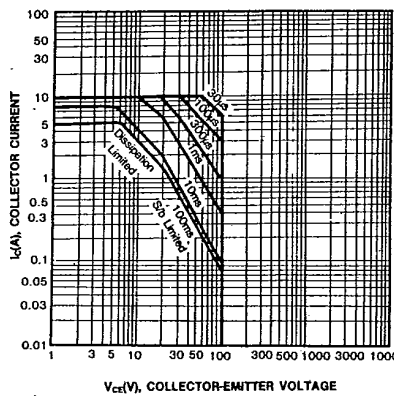
DERATING CURVE OF SAFE OPERATING AREAS



REVERSE BIAS SAFE OPERATING AREAS

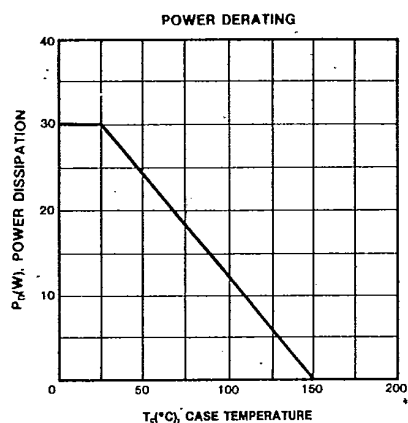


SAFE OPERATING AREA



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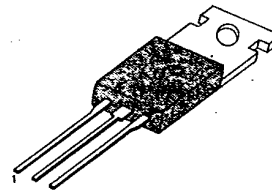
T-33-07

HIGH SPEED, HIGH VOLTAGE SWITCHING
LOW COLLECTOR SATURATION VOLTAGE
SPECIFIED OF REVERSE BIASED SOA
WITH INDUCTIVE LOADS

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	500	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	4	A
*Collector Current (Pulse)	I_C	8	A
Base Current (DC)	I_B	1	A
Collector Dissipation	P_C	15	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

TO-220



1. Base 2. Collector 3. Emitter

* $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 10\%$ **ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)**

Characteristic	Symbol	Test Condition	Min	Max	Unit
Collector-Emitter Sustaining Voltage	$V_{CE(sus)}$	$I_C=2A$, $I_B=0.4A$, $L=1mH$	400		V
Collector-Emitter Sustaining Voltage	$V_{CE(sus)1}$	$I_C=2A$, $I_{B1}=-I_{B2}=0.4A$ $T_a=125^\circ\text{C}$, $L=180\mu H$, Clamped	450		V
Collector-Emitter Sustaining Voltage	$V_{CE(sus)2}$	$I_C=4A$, $I_{B1}=0.8A$, $-I_{B2}=0.4A$ $T_a=125^\circ\text{C}$, $L=180\mu H$, Clamped	400		V
Collector Cutoff Current	I_{CBO}	$V_{CB}=400V$, $I_E=0$		10	μA
Collector Cutoff Current	I_{CER}	$V_{CE}=400V$, $R_{BE}=51\Omega$, $T_a=125^\circ\text{C}$		1	mA
Collector Cutoff Current	I_{CEX1}	$V_{CE}=400V$, $V_{BE(off)}=-1.5V$		10	μA
Collector Cutoff Current	I_{CEX2}	$V_{CE}=400V$, $V_{BE(off)}=-1.5V$ $T_a=125^\circ\text{C}$		1	mA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5V$, $I_C=0$		10	μA
*DC Current Gain	h_{FE1}	$V_{CE}=5V$, $I_C=0.3A$	20	80	
	h_{FE2}	$V_{CE}=5V$, $I_C=1.5A$	10		
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1.5A$, $I_B=0.3A$		1	V
*Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1.5A$, $I_B=0.3A$		1.5	V
Turn On Time	t_{on}	$I_C=2A$, $I_{B1}=-I_{B2}=0.4A$		1	μs
Storage Time	t_{stg}	$RL=75\Omega$, $V_{CC}=150V$		2.5	μs
Fall Time	t_f			0.7	μs

* Pulse Test: $PW \leq 350\mu\text{s}$, Duty Cycle $\leq 2\%$ Pulsed **h_{FE} (1) CLASSIFICATION**

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

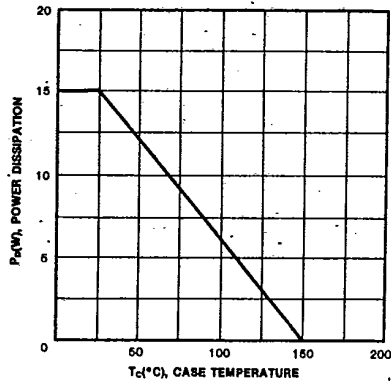


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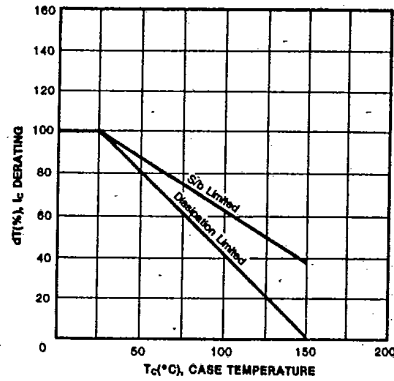
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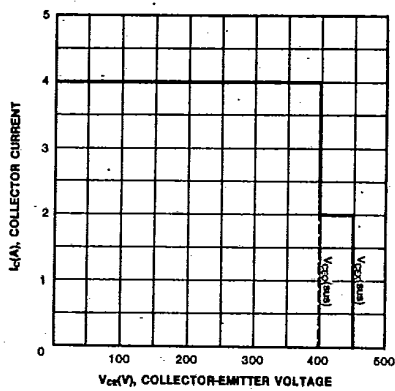
POWER DERATING



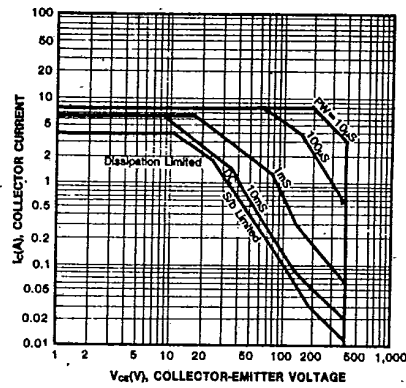
DERATING CURVE OF SAFE OPERATING AREAS



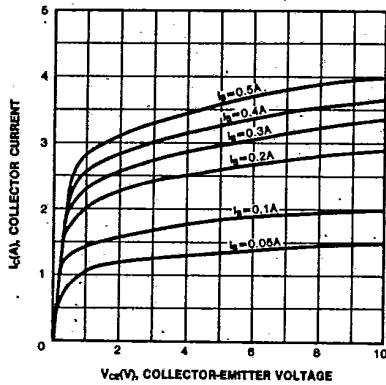
REVERSE BIAS SAFE OPERATING AREA



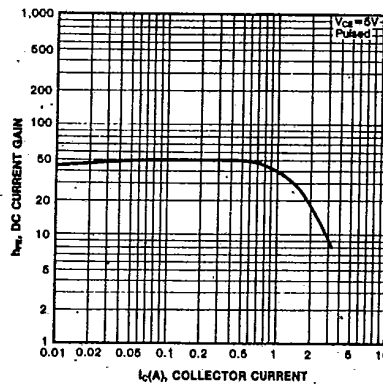
FORWARD BIAS SAFE OPERATING AREA



STATIC CHARACTERISTIC



DC CURRENT GAIN



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NPN EPITAXIAL SILICON TRANSISTOR

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