

SWITCHMODE SERIES NPN POWER TRANSISTORS

... designed for use in high-voltage, high-speed, power switching in inductive circuit, they are particularly suited for 115 and 220 V switchmode applications such as switching regulator's, inverters, DC -DC and converter

FEATURES:

*Collector-Emitter Sustaining Voltage-

$$V_{CE(SUS)} = 400 \text{ V (Min)}$$

* Collector-Emitter Saturation Voltage -

$$V_{CE(sat)} = 1.0 \text{ V (Max.) @ } I_C = 3.0 \text{ A, } I_B = 0.6 \text{ A}$$

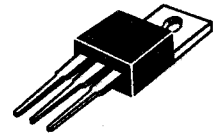
* Switching Time - $t_f = 1.0 \text{ us (Max.) @ } I_C = 3.0 \text{ A}$

NPN
2SC2335

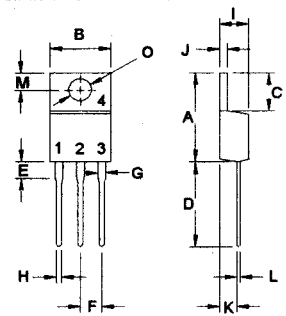
7.0 AMPERE
SILICON POWER
TRANSISTORS
400 VOLTS
40 WATTS

MAXIMUM RATINGS

Characteristic	Symbol	2SC2335	Unit
Collector-Emitter Voltage	V_{CEO}	400	V
Collector-Base Voltage	V_{CBO}	500	V
Emitter-Base Voltage	V_{EBO}	7.0	V
Collector Current - Continuous	I_C	7.0	A
- Peak	I_{CM}	15	
Base current	I_B	3.5	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	40 0.32	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$



TO-220



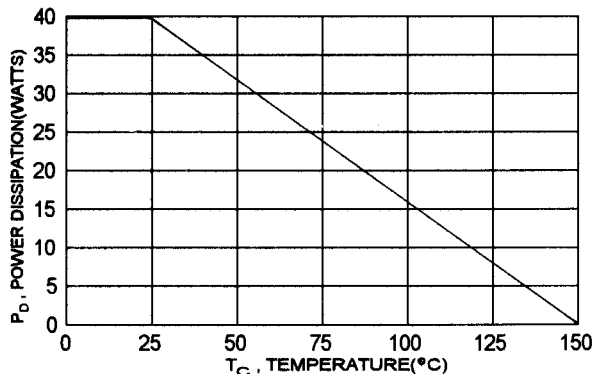
PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	3.125	$^\circ\text{C/W}$

DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

FIGURE -1 POWER DERATING



ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ($I_C = 3.0\text{A}$, $I_{B1} = 0.6\text{A}$, $L = 1\text{mH}$)	$V_{CEO(sus)}$	400		V
Collector Cutoff Current ($V_{CE} = 400\text{V}$, $V_{BE(om)} = -1.5\text{V}$) ($V_{CE} = 400\text{V}$, $V_{BE(om)} = -1.5\text{V}$, $T_c = 125^\circ\text{C}$)	I_{CEX}		10 5.0	μA mA
Collector Cutoff Current ($V_{CB} = 400\text{V}$, $I_E = 0$)	I_{CBO}		10	μA
Emitter Cutoff Current ($V_{EB} = 5.0\text{V}$, $I_C = 0$)	I_{EBO}		10	μA

ON CHARACTERISTICS (1)

DC Current Gain ($I_C = 0.1\text{A}$, $V_{CE} = 5.0\text{V}$) ($I_C = 1.0\text{A}$, $V_{CE} = 5.0\text{V}$) * ($I_C = 3.0\text{A}$, $V_{CE} = 5.0\text{V}$)	$h_{FE(2)}$ $h_{FE(3)}$ h_{FE}	20 20 10	80 80	
Collector-Emitter Saturation Voltage ($I_C = 3.0\text{A}$, $I_B = 600\text{mA}$)	$V_{CE(sat)}$		1.0	V
Base-Emitter Saturation Voltage ($I_C = 3.0\text{A}$, $I_B = 600\text{mA}$)	$V_{BE(sat)}$		1.2	V

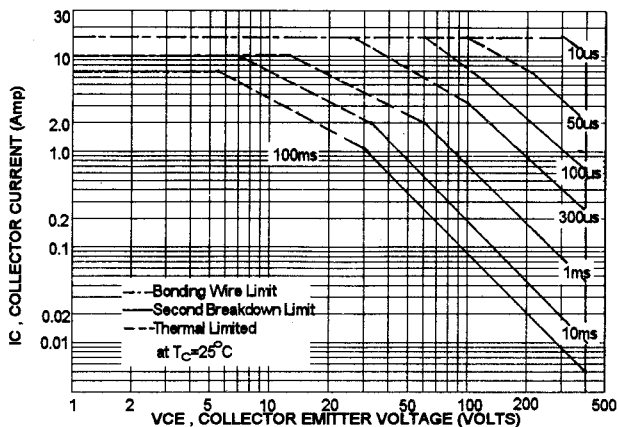
SWITCHING CHARACTERISTICS

On Time	$V_{CC} = 150\text{V}$, $I_C = 3.0\text{A}$ $I_{B1} = I_{B2} = 600\text{mA}$ $R_L = 50\text{ohm}$	t_{on}	1.0	μs
Storage Time		t_s	2.5	μs
Fall Time		t_f	1.0	μs

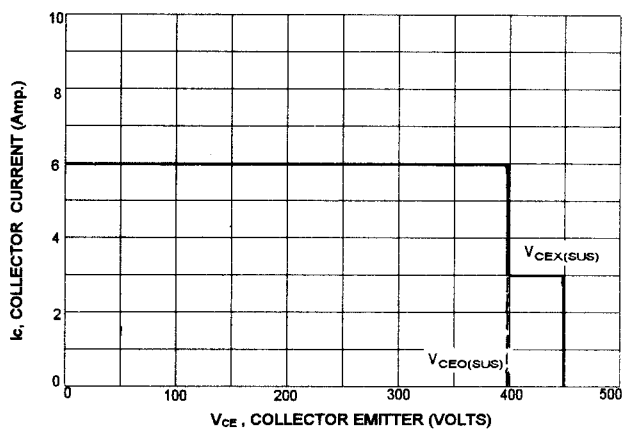
(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$ * $h_{FE(3)}$ Classification

20	M	40	30	L	60	40	K	80
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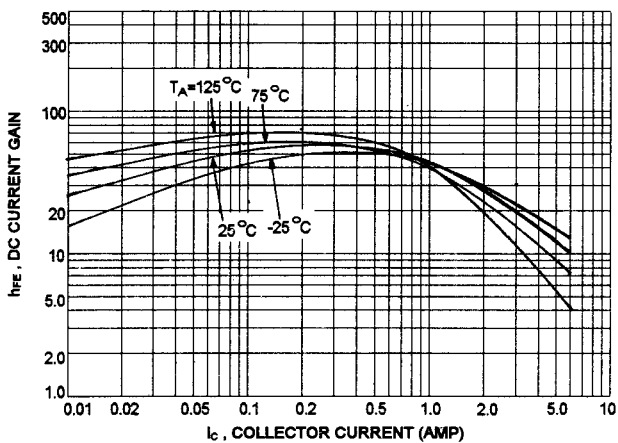
SAFE OPERATING AREA



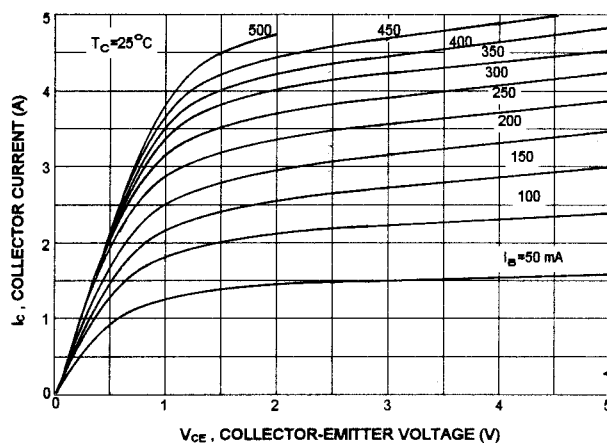
REVERSE BIASE SAFE OPERATING AREA



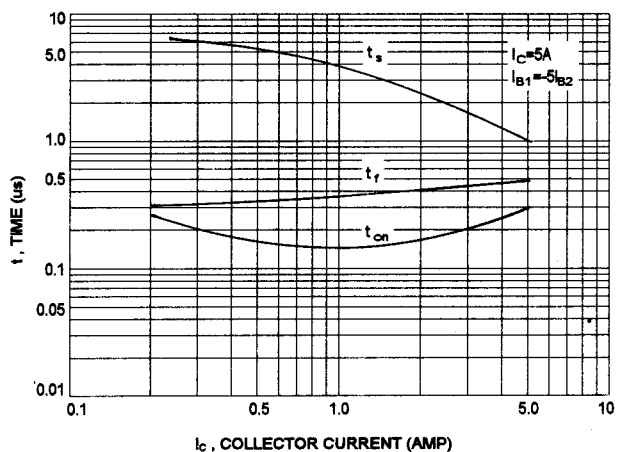
DC CURRENT GAIN



$I_C - V_{CE}$



SWITCHING TIME



"ON" VOLTAGES

