

SWITCHMODE SERIES NPN POWER TRANSISTORS

... designed for use in high-voltage, high-speed, power switching applications such as switching regulator's, inverters, and converter.

FEATURES:

* Collector-Emitter Sustaining Voltage-

$$V_{CEO(sus)} = 800 \text{ V (Min)}$$

* Collector-Emitter Saturation Voltage -

$$V_{CE(sat)} = 2.0 \text{ V (Max.) @ } I_C = 1.5 \text{ A, } I_B = 0.3 \text{ A}$$

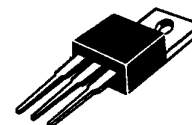
* Switching Time - $t_f = 0.7 \text{ us (Max.) @ } I_C = 2.0 \text{ A}$

NPN
2SC3150

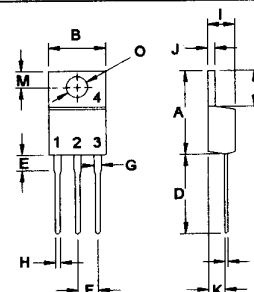
3 AMPERE
SILICON POWER
TRANSISTORS
800 VOLTS
50 WATTS

MAXIMUM RATINGS

Characteristic	Symbol	2SC3150	Unit
Collector-Emitter Voltage	V_{CEO}	800	V
Collector-Base Voltage	V_{CBO}	900	V
Emitter-Base Voltage	V_{EBO}	7.0	V
Collector Current - Continuous - Peak	I_C I_{CM}	3.0 10	A
Base current	I_B	1.5	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 0.4	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$



TO-220

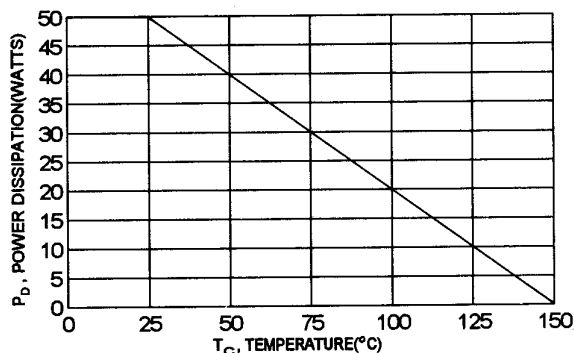


PIN 1.BASE
2.COLLECTOR
3.EMITTER
4.COLLECTOR(CASE)

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	2.5	$^\circ\text{C/W}$

FIGURE -1 POWER DERATING



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

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage ($I_C = 3.0\text{ A}$, $I_B = 1.0\text{ A}$, $L = 500\text{ }\mu\text{H}$)	$V_{CEO(sus)}$	800		V
Collector-Emitter Breakdown Voltage ($I_C = 5.0\text{ mA}$, $I_B = 0$)	$V_{(BR)CEO}$	800		V
Collector-Base Breakdown Voltage ($I_C = 1.0\text{ mA}$, $I_E = 0$)	$V_{(BR)CBO}$	900		V
Emitter-Base Breakdown Voltage ($I_C = 1.0\text{ mA}$, $I_C = 0$)	$V_{(BR)EBO}$	7.0		V
Collector Cutoff Current ($V_{CB} = 800\text{ V}$, $I_E = 0$)	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 ($I_C = 0.2\text{ A}$, $V_{CE} = 5.0\text{ V}$) * ($I_C = 1.0\text{ A}$, $V_{CE} = 5.0\text{ V}$)	$h_{FE(2)}$ h_{FE}	10 8.0	40	
Collector-Emitter Saturation Voltage ($I_C = 1.5\text{ A}$, $I_B = 300\text{ mA}$)	$V_{CE(sat)}$		2.0	V
Base-Emitter Saturation Voltage ($I_C = 1.5\text{ A}$, $I_B = 300\text{ mA}$)	$V_{BE(sat)}$		1.5	V

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 0.2\text{ A}$, $V_{CE} = 10\text{ V}$, $f = 1.0\text{ MHz}$)	f_T	7.0		MHz
--	-------	-----	--	-----

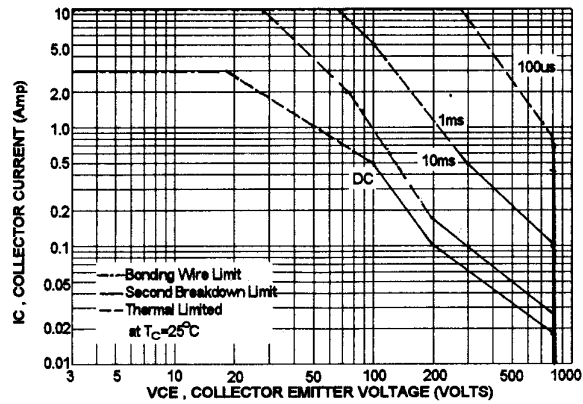
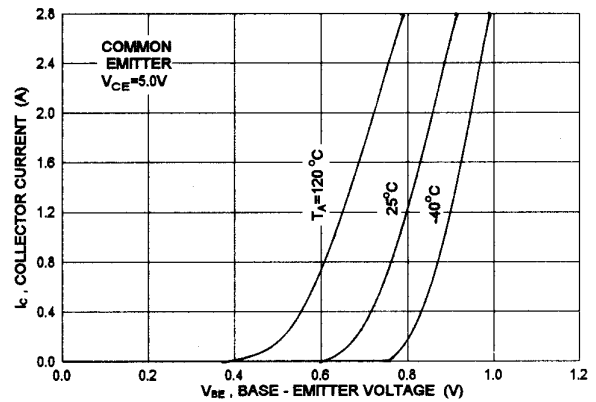
SWITCHING CHARACTERISTICS

On Time	$V_{CC} = 400\text{ V}$, $I_C = 2.0\text{ A}$ $I_{B1} = 0.4\text{ A}$, $I_{B2} = -0.8\text{ A}$ $R_L = 200\text{ }\Omega$	t_{on}		1.0	μs
Storage Time		t_s		3.0	μs
Fall Time		t_f		0.7	μs

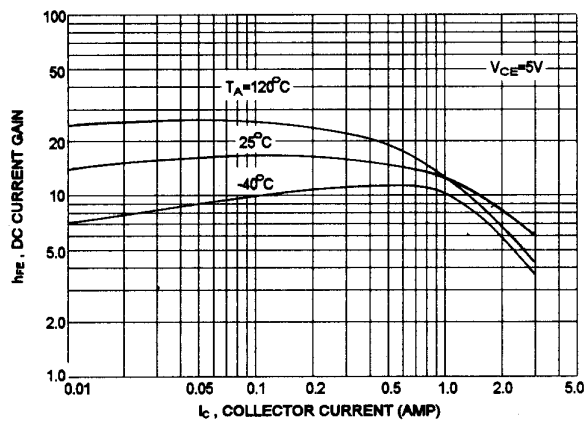
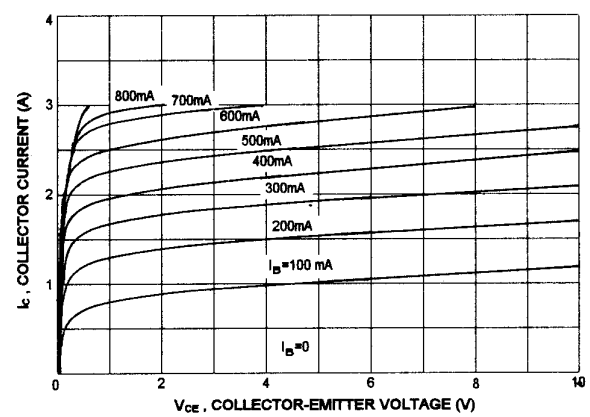
(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$ * $h_{FE(2)}$ Classification:

10	K	20	15	L	30	20	M	40
----	---	----	----	---	----	----	---	----

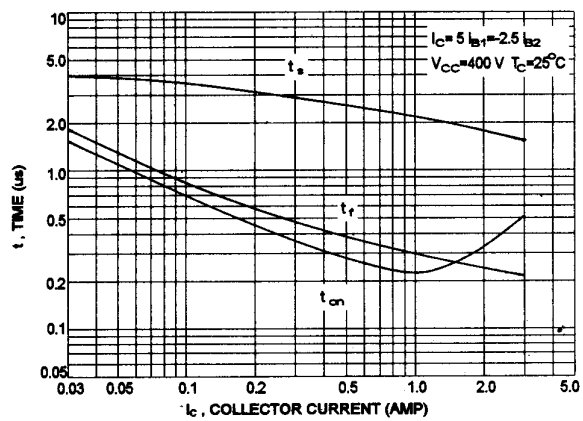
SAFE OPERATING AREA

 $I_C - V_{BE}$ 

DC CURRENT GAIN

 $I_C - V_{CE}$ 

SWITCHING TIME



"ON" VOLTAGES

