

# New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.  
SPRINGFIELD, NEW JERSEY 07081  
U.S.A.

TELEPHONE: (973) 376-2922  
(212) 227-6005  
FAX: (973) 376-8960

## 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 conveter

### FEATURES:

\*Collector-Emitter Sustaining Voltage-

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

\* Collector-Emitter Saturation Voltage -

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

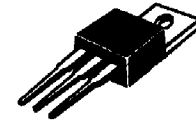
\* Switching Time -  $t_f = 1.0 \text{ us (Max.) @ } I_C = 3.0 \text{ A}$

**NPN**  
**2SC2335**

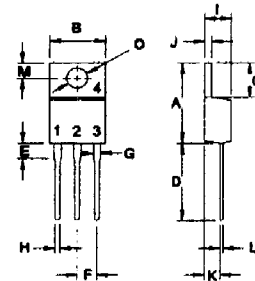
**7.0 AMPERE**  
**SILICON POWER**  
**TRANSISTORS**  
**400 VOLTS**  
**40 WATTS**

### 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	A
Base current	$I_B$	3.5	A
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	$P_D$	40	W
Derate above $25^\circ\text{C}$		0.32	W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$



**TO-220**

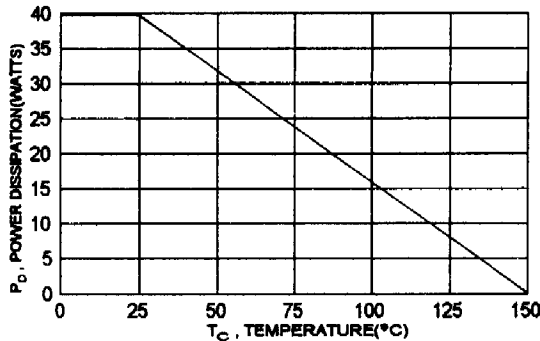


PIN 1. BASE  
2. COLLECTOR  
3. EMITTER  
4. COLLECTOR(CASE)

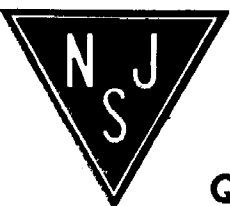
### THERMAL CHARACTERISTICS

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

FIGURE -1 POWER DERATING



DIM	MILLIMETERS	
	MIN	MAX
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.08	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



**Quality Semi-Conductors**

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

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

## OFF CHARACTERISTICS

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

## ON CHARACTERISTICS (1)

DC Current Gain ( $I_C = 0.1\text{A}$ , $V_{CE} = 5.0\text{V}$ ) ( $I_C = 1.0\text{A}$ , $V_{CE} = 5.0\text{V}$ ) * ( $I_C = 3.0\text{A}$ , $V_{CE} = 5.0\text{V}$ )	hFE(2) hFE(3) hFE	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	$\mu\text{s}$
Storage Time		$t_s$	2.5	$\mu\text{s}$
Fall Time		$t_f$	1.0	$\mu\text{s}$

(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ 

\* hFE(3) Classification

20	M	40	30	L	60	40	K	80
----	---	----	----	---	----	----	---	----