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

NPN POWER SILICON SWITCHING TRANSISTOR

2N5339

MAXIMUM RATINGS

Ratings	Symbol	Value	Units
Collector-Emitter Voltage	V_{CEO}	100	Vdc
Collector-Base Voltage	V_{CBO}	100	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Base Current	I_B	1.0	Adc
Collector Current	I_C	5.0	Adc
Total Power Dissipation @ $T_A = +25^0C$ (1) @ $T_C = +25^0C$ (2)	P_T	1.0 10	W W
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-55 to +200	^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	17.5	$^0C/W$

1) Derate linearly 5.71 $mW/^0C$ for $T_A > 25^0C$
2) Derate linearly 57.1 $mW/^0C$ for $T_C > 25^0C$

TO-39*

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage I_C = 50 mAdc	$V_{(BR)CEO}$	100		Vdc
Collector-Emitter Cutoff Current V_{CE} = 100 Vdc	I_{CEO}		100	μAdc
Collector-Emitter Cutoff Current V_{CE} = 90 Vdc, V_{BE} = 1.5 Vdc	I_{CEX}		10	μAdc
Collector-Base Cutoff Current V_{CB} = 100 Vdc	I_{CBO}		10	μAdc
Emitter-Base Cutoff Current V_{EB} = 6.0 Vdc	I_{EBO}		100	μAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS [3]				
Forward-Current Transfer Ratio I_C = 0.5 Adc, V_{CE} = 2.0 Vdc I_C = 2.0 Adc, V_{CE} = 2.0 Vdc I_C = 5.0 Adc, V_{CE} = 2.0 Vdc	h_{FE}	 60 60 40	 240	
Collector-Emitter Saturation Voltage I_C = 2.0 Adc, I_B = 0.2 Adc I_C = 5.0 Adc, I_B = 0.5 Adc	$V_{CE(sat)}$		0.7 1.2	Vdc
Base-Emitter Saturation Voltage I_C = 2.0 Adc, I_B = 0.2 Adc I_C = 5.0 Adc, I_B = 0.5 Adc	$V_{BE(sat)}$		1.2 1.8	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 10 MHz	$\lvert h_{fe} \rvert$	3.0	15	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		250	pF
Input Capacitance V_{BE} = 2.0 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{ibo}		1.000	pF

SAFE OPERATING AREA

DC Tests

T_C = +25°C, 1 Cycle, t ≥ 0.5 s

Test 1

V_{CE} = 2.0 Vdc, I_C = 5.0 Adc

Test 2

V_{CE} = 5.0 Vdc, I_C = 2.0 Adc

Test 3

V_{CE} = 90 Vdc, I_C = 55 mAdc

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.