



**NEW ENGLAND SEMICONDUCTOR**

**STP5508**

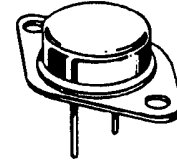
## HIGH POWER NPN SILICON TRANSISTOR

### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	$V_{CEO}$	120	Vdc
Collector-Base Voltage	$V_{CBO}$	140	Vdc
Emitter-Base Voltage	$V_{EB}$	6	Vdc
Collector Current - Continuous	$I_C$	50	Adc
Collector Current - Peak		100	
Base Current	$I_B$	20	Adc
Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	250	Watts $W/^\circ C$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +200	$^\circ C$

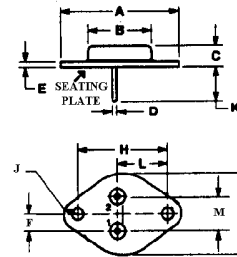
### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$\theta_{JC}$	1.43	$^\circ C/W$



TO-3

### MECHANICAL OUTLINE



PIN 1: Base  
PIN 2: Emitter  
Case: Collector

DIM	MILLIMETER		INCHES	
	MIN	MAX	MIN	MAX
A	39.35	39.37	1.510	1.550
B	19.30	21.00	0.760	0.830
C	6.35	7.62	0.250	0.300
D	1.45	1.60	0.057	0.063
E		3.43		0.135
F	5.21	5.72	0.205	0.225
G	24.89	26.67	0.980	1.050
H	29.90	30.40	1.177	1.197
J	3.84	4.09	0.151	0.161
K	11.18	12.19	0.440	0.480
L	16.64	17.15	0.655	0.675
M	10.67	11.18	0.420	0.440

Figure 1. Safe Operating Area

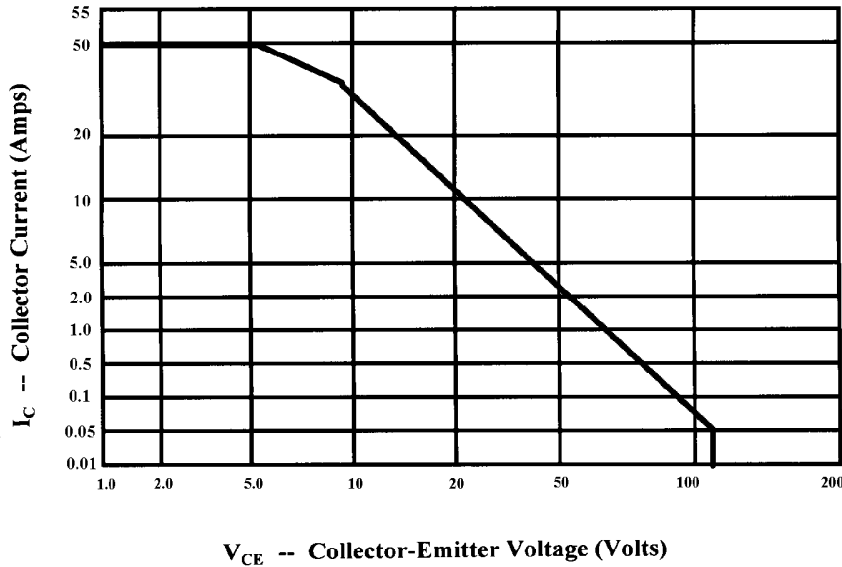
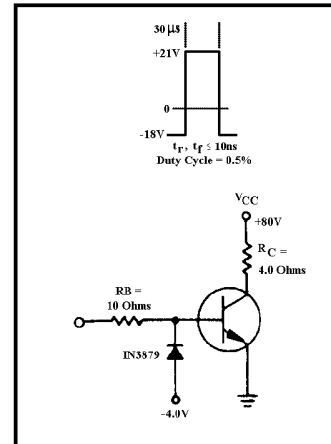


Figure 2. Switching Times Test Circuit



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T4-4.8-860-061 REV: --



# NES

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

Characteristics	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Sustaining Voltage (1) $I_C = 50 \text{ mAdc}, I_B = 0$	$V_{CEO(SUS)}$	120		Vdc
Collector Cutoff Current $V_{CE} = 60 \text{ Vdc}, I_B = 0$	$I_{CEO}$		50	$\mu\text{Adc}$
Collector Cutoff Current $V_{CE} = 140 \text{ Vdc}, V_{BE(off)} = 1.5 \text{ Vdc}$ $V_{CE} = 140 \text{ Vdc}, V_{BE(off)} = 1.5 \text{ Vdc}, T_C = 150^\circ\text{C}$	$I_{CEX}$		10 1.0	$\mu\text{Adc}$ mA
Emitter Cutoff Current $V_{BE} = 6.0 \text{ Vdc}, I_C = 0$	$I_{EBO}$		100	$\mu\text{Adc}$
<b>ON CHARACTERISTICS (1)</b>				
DC Current Gain $I_C = 1.0 \text{ Adc}, V_{CE} = 4.0\text{Vdc}$ $I_C = 20 \text{ Adc}, V_{CE} = 4.0\text{Vdc}$ $I_C = 50 \text{ Adc}, V_{CE} = 4.0\text{Vdc}$	$h_{FE}$	50 50 10	120	
Collector-Emitter Saturation Voltage $I_C = 20 \text{ Adc}, I_B = 2.0 \text{ Adc}$ $I_C = 50 \text{ Adc}, I_B = 10 \text{ Adc}$	$V_{CE(sat)}$		1.0 3.0	Vdc
Base-Emitter On Voltage $I_C = 20 \text{ Adc}, V_{CE} = 4.0 \text{ Vdc}$	$V_{BE(on)}$		1.8	Vdc
Base-Emitter Saturation Voltage $I_C = 20 \text{ Adc}, I_B = 2.0 \text{ Adc}$ $I_C = 50 \text{ Adc}, I_B = 10 \text{ Adc}$	$V_{BE(sat)}$		1.8 3.5	Vdc
<b>DYNAMIC CHARACTERISTICS</b>				
Small-Signal Current Gain $I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 10 \text{ MHz}$	$h_{fe}$	1		-
Common-Base Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 0.1 \text{ MHz}$	$C_{OB}$		600	$\text{p}^F$
Rise Time (2) $V_{CC} = 80 \text{ Vdc}, I_C = 20 \text{ Adc}$ $I_{B1} = 2.0 \text{ Adc}, V_{CB} = 5.0 \text{ Vdc}$	$t_r$		.35	$\mu\text{s}$
Storage Time (2) $V_{CC} = 80 \text{ Vdc}, I_C = 20 \text{ Adc}$ $I_{B1} = I_{B2} = 2.0 \text{ Adc}$	$t_s$		1.1	$\mu\text{s}$
Fall Time (2) $V_{CC} = 80 \text{ Vdc}, I_C = 20 \text{ Adc}$ $I_{B1} = I_{B2} = 2.0 \text{ Adc}$	$t_f$		.25	$\mu\text{s}$

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

(2) See Figure 2.

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