



NES

NEW ENGLAND SEMICONDUCTOR

2N3054

MEDIUM POWER NPN SILICON TRANSISTOR

- TO-66 PACKAGE FOR BETTER POWER HANDLING CAPABILITY
- DC CURRENT GAIN SPECIFIED TO 3.0 AMPERES
- EXCELLENT SAFE OPERATING AREA

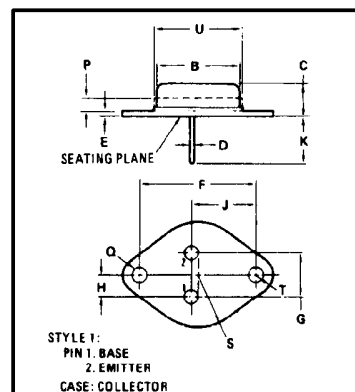
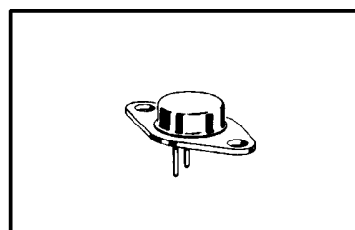
**4 AMPERE
POWER TRANSISTOR
NPN SILICON
55 VOLTS
25 WATTS**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	55	Vdc
Collector-Emitter Voltage ($R_{BE} = 100 \Omega$)	V_{CER}	60	Vdc
Collector-Base Voltage	V_{CB}	90	Vdc
Emitter-Base Voltage	V_{EB}	7.0	Vdc
Collector Current - Continuous - Peak	I_C	4.0 10	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	25 0.43	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	θ_{JC}	7.0	$^\circ C/W$

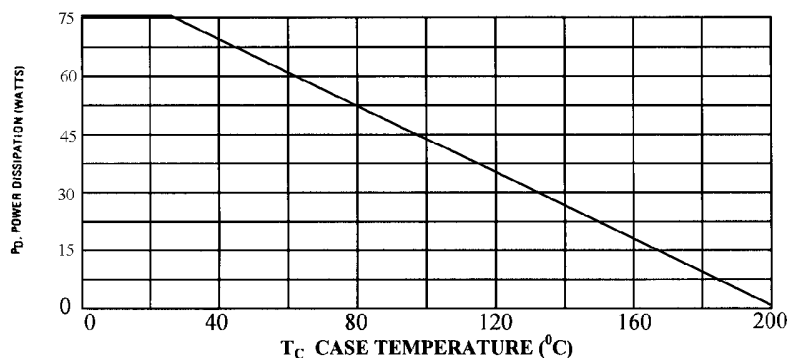


	MILLIMETER		INCHES	
DIM	MIN	MAX	MIN	MAX
B	11.94	12.70	0.470	0.500
C	6.35	8.64	0.250	0.340
D	0.71	0.86	0.028	0.034
E	1.27	1.91	0.050	0.075
F	24.33	24.43	0.958	0.962
G	4.83	5.33	0.190	0.210
H	2.41	2.67	0.095	0.105
J	14.48	14.99	0.570	0.590
K	9.14	-	0.360	-
P	-	1.27	-	0.050
Q	3.61	3.86	0.142	0.152
S	-	8.89	-	0.350
T	-	3.68	-	0.145
U	-	15.75	-	0.620

All JEDEC Dimensions and Notes Apply

TO-66

FIGURE 1 -- POWER DERATING



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

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (1) $I_C = 100\text{ mAdc}$, $I_B = 0$	$V_{CE(SUS)}$	55		Vdc
Collector-Emitter Sustaining Voltage (1) $I_C = 100\text{ mAdc}$, $R_{BE} = 100\Omega$	$V_{CER(SUS)}$	60		
Collector Cutoff Current $V_{CE} = 30\text{ Vdc}$, $I_B = 0$	I_{CEO}		500	μAdc
Collector Cutoff Current $V_{CE} = 90\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$ $V_{CE} = 90\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 150^\circ\text{C}$	I_{CEX}		1.0 6.0	μAdc
Emitter Cutoff Current $V_{BE} = 7.0\text{ Vdc}$, $I_C = 0$	I_{EBO}		1.0	nAdc
ON CHARACTERISTICS (1)				
DC Current Gain $I_C = 0.5\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$ $I_C = 3.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$	h_{FE}	25 5.0	100 -	
Collector-Emitter Saturation Voltage $I_C = 500\text{ mAdc}$, $I_B = 50\text{ mAdc}$ $I_C = 3.0\text{ Adc}$, $I_B = 1.0\text{ Adc}$	$V_{CE(sat)}$		1.0 6.0	Vdc
Base-Emitter On Voltage $I_C = 500\text{ mAdc}$, $V_{CE} = 4.0\text{ Vdc}$	$V_{BE(on)}$		1.7	Vdc
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product $I_C = 200\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$	f_T	.8		MHz
Small-Signal Current Gain $I_C = 100\text{ mAdc}$, $V_{CE} = 4.0\text{ Vdc}$, $f = 1.0\text{ kHz}$	h_{fe}	25		-
Common-Emitter Cutoff Frequency $I_C = 100\text{ mAdc}$, $V_{CE} = 4.0\text{ Vdc}$	f_{hfe}	30		kHz

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

FIGURE 2 - SWITCHING TIME EQUIVALENT TEST CIRCUIT

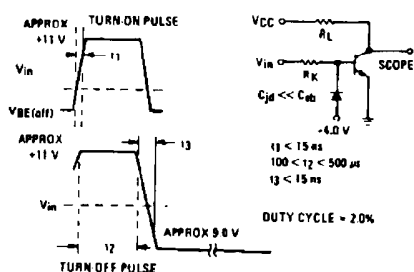
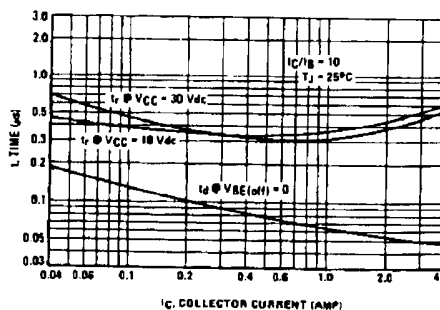


FIGURE 3 - TURN-ON TIME



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