

# NPN Silicon Transistor

absolute maximum ratings (25°C)

<b>Voltages</b>			
Collector to Base	$V_{CB}$	45	volts
Collector to Emitter	$V_{CE}$	45	volts
Emitter to Base	$V_{EB}$	4	volts
<b>Current</b>			
Collector	$I_C$	25	ma
<b>Power</b>			
Collector Dissipation RMS	$P_C$	500	mw @ 25°C (Free Air)
	$P_C$	83	mw @ 150°C (Free Air)
<b>Temperature</b>			
Storage	$T_{STG}$	-65 to 200	°C
Operating Junction	$T_J$	-65 to 175	°C

electrical characteristics (25°C)

### D-C CHARACTERISTICS

		Typ.	Max.
Collector to Base Voltage ( $I_C = 50 \mu A, I_E = 0$ )	$V_{CBO}$		volts
Collector to Emitter Voltage ( $I_B = 0, I_C = 1 \text{ ma}$ )	$V_{CEO}$		volts
Emitter to Base Voltage ( $I_E = 100 \mu A, I_C = 0$ )	$V_{EBO}$		volts
Forward Current Transfer Ratio (low current) ( $I_C = 1 \text{ ma}, V_{CE} = 5V$ )	$h_{FE}$	75	
Saturation Voltage ( $I_B = 1 \text{ ma}, I_C = 5 \text{ ma}$ )	$V_{CE(SAT)}$	.4	1.0 volts

### CUTOFF CHARACTERISTICS

Collector Current ( $V_{CB} = 30 V; I_E = 0; T_A = 25^\circ C$ )	$I_{CBO}$	1	500 $\mu A$
Collector Current (high temperature) ( $V_{CB} = 30 V; I_E = 0; T_A = 150^\circ C$ )	$I_{CBO}$	1	20 $\mu A$
Collector Emitter Current ( $V_{CE} = 30 V; I_B = 0; T_A = 150^\circ C$ )	$I_{CEO}$	60	$\mu A$

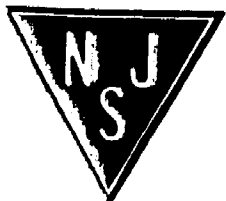
### LOW FREQUENCY CHARACTERISTICS ( $V_{CB} = 5 V; I_E = -1 \text{ ma}; f = 1000 \text{ cps}$ )

Forward Current Transfer Ratio	$h_{fe}$	95	333
Input Impedance	$h_{ie}$	3700	15,000 ohms
Output Admittance	$h_{oe}$	8.0	35 $\mu\text{mhos}$
Voltage Feedback Ratio	$h_{re}$	2.3	$\times 10^{-1}$
Input Impedance	$h_{ib}$	40	80 ohms
Output Admittance	$h_{ob}$	.13	1.2 $\mu\text{mhos}$
Reverse Voltage Transfer Ratio	$h_{rb}$	1.2	$10 \times 10^{-1}$
Noise Figure ( $B_w = 1 \text{ cycle}$ )	NF	11	30 db

### HIGH FREQUENCY CHARACTERISTICS (Common Base) ( $V_{CB} = 5 V; I_E = -1 \text{ ma}$ )

Output Capacity ( $f = 1 \text{ mc}$ )	$C_{ob}$	7	15 $\mu\text{f}$
Cutoff Frequency	$f_{\alpha b}$	15	mc

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**DIMENSIONS WITHIN  
JEDEC OUTLINE  
TO-3  
JEDEC BASE  
E3-44**

**NOTE 1:** The dimensions shown are for the JEDEC outline. The actual dimensions of the actual device may vary.

**NOTE 2:** Measured from the top of the lead frame.

**NOTE 3:** The spotted lead frame is given at the area between 260 and 240 from the base lead. Between 250 and 235 maximum of 0.025 diameter lead. Outside of these leads the lead diameter is not controlled.

