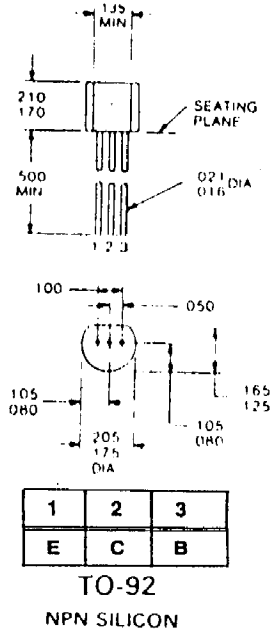


# Silicon Transistors



absolute maximum ratings: (25°C) (unless otherwise specified)

<b>Voltages</b>			
Collector to Emitter	$V_{CE0}$	60	volts
Emitter to Base	$V_{EB0}$	6	volts
Collector to Base	$V_{CB0}$	60	volts
<b>Current</b>			
Collector (Steady State)*	$I_C$	100	mA
<b>Dissipation</b>			
Total Power (Free air at 25°C)**	$P_T$	360	mW
<b>Temperature</b>			
Storage	$T_{STG}$	-55 to 150	°C
Operating	$T_J$	125	°C
Lead Soldering, 1/16" ± 1/32" from case for 10 seconds max.	$T_L$	260	°C

\*Determined from power limitations due to saturation voltage at this current.

\*\*Derate 3.6 mW/°C increase in ambient temperature above 25°C.

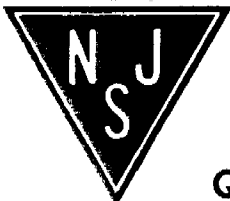
electrical characteristics: (25°C) (unless otherwise specified)

## STATIC CHARACTERISTICS

	Sym.	Min.	Typ.	Max.	Units
Collector Cutoff Current ( $V_{CB} = 60V$ ) ( $T_A = 100^\circ C$ )	$I_{CBO}$			50	NA
	$I_{EBO}$			10	$\mu A$
Emitter Cutoff Current ( $V_{EB} = 6V$ )	$I_{EBO}$			0.1	$\mu A$
<b>Forward Current Transfer Ratio</b>					
2N3858A ( $V_{CE} = 1V, I_C = 10 mA$ )	$h_{FE}$	60			
2N3859A ( $V_{CE} = 1V, I_C = 10 mA$ )	$h_{FE}$	100			
2N3858A ( $V_{CE} = 4.5V, I_C = 2mA$ )	$h_{FE}$	60		120	
2N3859A ( $V_{CE} = 4.5V, I_C = 2mA$ )	$h_{FE}$	100		200	
Collector—Base Breakdown Voltage ( $I_C = 0.1 mA$ )	$BV_{CBO}$	60			volts
Emitter—Base Breakdown Voltage ( $I_E = 0.1 mA$ )	$BV_{EBO}$	6			volts
Collector—Emitter Breakdown Voltage ( $I_C = 1 mA$ )	$BV_{CEO}$	60			volts
Collector Saturation Voltage ( $I_C = 10 mA, I_B = 1 mA$ )	$V_{CE(SAT)}$			0.125	volts
Base—Emitter Voltage ( $I_C = 10 mA, V_{CE} = 1 volt$ )	$V_{BE(ON)}$		.68		volts
Base—Emitter Voltage ( $I_C = 10 mA, I_B = 1 mA$ )	$V_{BE(SAT)}$		.70	.78	volts

## DYNAMIC CHARACTERISTICS

<b>Gain Bandwidth Product (<math>V_{CE} = 10V, I_C = 2 mA</math>)</b>					
2N3858A	$f_T$	90	125	250	MHz
2N3859A	$f_T$	90	140	250	MHz
Collector—Base Time Constant ( $V_{CE} = 10V, I_C = 2 mA$ )	$\tau_{CB}$		65	150	psec.
Output Capacitance, Common Base ( $V_{CB} = 10V, I_C = 0, f = 1 MHz$ )	$C_{cb0}$	2.0	2.7	4.0	pF
Input Capacitance, Common Base ( $V_{EB} = 0.5V, I_C = 0, f = 1 MHz$ )	$C_{ib0}$		10		pF
Case Capacitance			0.00		pF



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