

Silicon Transistors

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

Voltages

Collector to Base	V_{CBO}	40	Volts
Collector to Emitter	V_{CEO}	40	Volts
Emitter to Base	V_{EB0}	12	Volts

Current

Collector (Steady State)	I_C	300	mA
Collector (Pulsed)*	I_C	500	mA
Base (Steady State)	I_B	50	mA

Dissipation

Total Power ($T_A \leq 25^\circ C$)†	P_T	400	mW
Total Power with Heatsink ($T_A \leq 25^\circ C$)††	P_T	600	mW
Total Power with Heatsink ($T_C \leq 25^\circ C$)†††	P_T	900	mW

Temperature

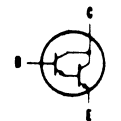
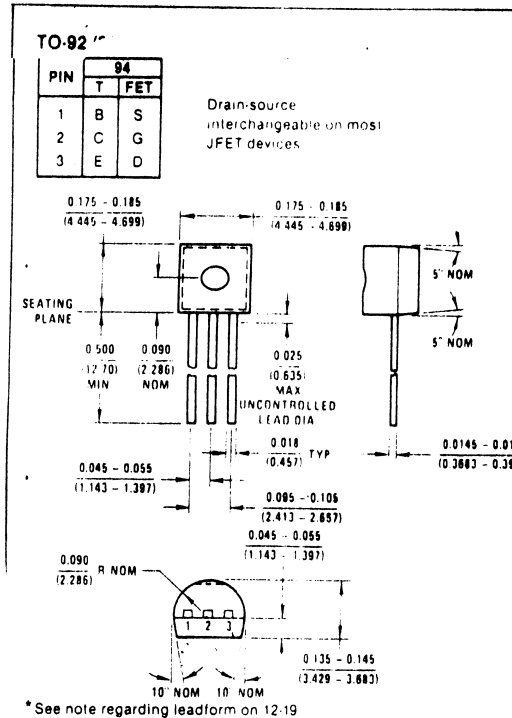
Storage	T_{STG}	-65 to +150° C
Operating	T_J	-65 to +125° C
Lead, 1/16" ± 1/32" from case for 10 sec. max.	T_L	+260° C

*Pulse conditions: 300 μsec. pulse width, 2% duty cycle.

†Derate 4.0 mW/° C for increase in ambient temperature above 25° C.

††Derate 6.0 mW/° C for increase in ambient temperature above 25° C.

†††Derate 9.0 mW/° C for increase in case temperature above 25° C.



Equiv. Circuit

STATIC CHARACTERISTICS

Collector to Base Breakdown Voltage ($I_C = 0.1\mu A, I_E = 0$)	$V_{(BR)CBO}$	40	Volts
Collector to Emitter Breakdown Voltage ($I_C = 10mA, I_B = 0$)	$V_{(BR)CEO}$	40	Volts
Emitter to Base Breakdown Voltage ($I_E = 0.1\mu A, I_C = 0$)	$V_{(BR)EBO}$	12	Volts
Forward Current Transfer Ratio			
($V_{CE} = 5V, I_C = 2mA$)	2N5307	h_{FE}	2000
($V_{CE} = 5V, I_C = 100mA$)	2N5307	h_{FE}	6000
($V_{CE} = 5V, I_C = 2mA$)	2N5308, A	h_{FE}	7000
($V_{CE} = 5V, I_C = 100mA$)	2N5308, A	h_{FE}	20000
Collector Cutoff Current			
($V_{CB} = 40V, I_E = 0$)		I_{CBO}	100 nA
($V_{CB} = 40V, I_E = 0, T_A = 100^\circ C$)		I_{CBO}	20 μA
Emitter Cutoff Current ($V_{EB} = 12V, I_C = 0$)		I_{EBO}	100 nA
Collector Emitter Saturation Voltage			
($I_C = 200mA, I_B = 0.2mA$)		$V_{CE(SAT)}$	1.4 Volts
Base Emitter Saturation Voltage			
($I_C = 200mA, I_B = 0.2mA$)		$V_{BE(SAT)}$	1.6 Volts
Base Emitter Voltage ($V_{CE} = 5V, I_C = 200mA$)		V_{BE}	1.5 Volts

DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio				
($V_{CE} = 5V, I_C = 2mA, f = 1kHz$)	2N5307	h_{fe}	2000	
($V_{CE} = 5V, I_C = 2mA, f = 1kHz$)	2N5308, A	h_{fe}	7000	
($V_{CE} = 5V, I_C = 2mA, f = 1kHz$)		$ h_{fe} $	15.6	dB
Gain Bandwidth Product ($V_{CE} = 5V, I_C = 2mA, f = 10 MHz$)		f_T	60	MHz
Input Impedance ($V_{CE} = 5V, I_C = 2mA, f = 1 kHz$)		h_{ie}	650	kohms
Collector Base Capacitance ($V_{CB} = 10V, f = 1 MHz$)		C_{cb}	7.6	10 pF
Emitter Capacitance ($V_{EB} = 0.5V, f = 1 MHz$)		C_{eb}	10.5	pF