

Silicon
Transistors



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

Voltages			
Collector to Base	V_{CBO}	25	Volts
Collector to Emitter	V_{CEO}	25	Volts
Emitter to Base	V_{EBV}	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, $\frac{1}{16}'' \pm \frac{1}{32}''$ from case for 10 sec. max.	T_L	+260° C	

*Pulse conditions: 300 μ sec. 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.

STATIC CHARACTERISTICS

		Min.	Max.	
Collector to Base Breakdown Voltage ($I_C = 0.1 \mu A, I_B = 0$)	$V_{(BR)CBO}$	25		Volts
Collector to Emitter Breakdown Voltage ($I_C = 10mA, I_B = 0$)	$V_{(BR)CEO}$	25		Volts
Emitter to Base Breakdown Voltage ($I_C = 0.1\mu A, I_C = 0$)	$V_{(BR)EBV}$	12		Volts
Forward Current Transfer Ratio ($V_{CE} = 5V, I_C = 2mA$)	2N5305 h_{FE}	2000	20000	
($V_{CE} = 5V, I_C = 100mA$)	2N5305 h_{FE}	6000		
($V_{CE} = 5V, I_C = 2mA$)	2N5306, A h_{FE}	7000	70000	
($V_{CE} = 5V, I_C = 100mA$)	2N5306, A h_{FE}	20000		
Collector Cutoff Current ($V_{CB} = 25V, I_B = 0$)	I_{CBO}		100	nA
($V_{CB} = 25V, I_B = 0, T_A = 100^\circ C$)	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

		Min.	Typ.	Max.	
Forward Current Transfer Ratio ($V_{CE} = 5V, I_C = 2mA, f = 1kHz$)	2N5305 h_{fe}	2000			
($V_{CE} = 5V, I_C = 2mA, f = 1kHz$)	2N5306, A h_{fe}	7000			
($V_{CE} = 5V, I_C = 2mA, f = 10 MHz$)	$ 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_{be}		10.5		pF

