ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089

NTE47
Silicon NPN Transistor
High Gain, Low Noise Amp

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 45V
Collector–Base Voltage, V_{CBO} 45V
Emitter–Base Voltage, V_{EBO} 6.5V
Continuous Collector Current, I_C 200mA
Total Device Dissipation (T_A = +25°C), P_D 625mW
Derate above 25°C . . . . . 12mW/°C
Operating Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 83.3°C/W
Thermal Resistance, Junction–to–Ambient (Note 1), R_{thJA} . . . . . 200°C/W

Note 1 R_{thJA} is measured with the device soldered into a typical printed circuit board.

Electrical Characteristics: (T_A = +25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0, Note 2	45	–	–	V
Colletor–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100µA, I_E = 0	45	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10µA, I_C = 0	6.5	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 30V, I_E = 0	–	1.0	50	nA
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	V_{CE} = 5V, I_C = 10µA	400	580	–	
		V_{CE} = 5V, I_C = 100µA	500	850	–	
		V_{CE} = 5V, I_C = 1mA	500	1100	–	
		V_{CE} = 5V, I_C = 10mA	500	1150	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 0.5mA	–	–	0.2	V
		I_C = 50mA, I_B = 0.5mA	–	0.08	0.3	V
Base–Emitter ON Voltage	$V_{BE(on)}$	V_{CE} = 5V, I_C = 1mA	–	0.6	0.7	V

Note 2 Pulse test: Pulse Width ≤ 300µs, Duty Cycle ≤ 2.0%

Electrical Characteristics: (T_A = +25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	V_{CE} = 5V, I_C = 1mA, f = 100MHz	100	160	–	MHz
Output Capaciatnce	C_{obo}	V_{CB} = 5V, I_E = 0, f = 1MHz	–	1.7	3.0	pF
Noise Figure	NF	V_{CE} = 5V, I_C = 100μA, R_S = 10kΩ, f = 10Hz to 15.7MHz	–	0.5	1.5	dB
		V_{CE} = 5V, I_C = 100μA, R_S = 1.0kΩ, f = 100Hz	–	4.0	–	dB