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

NTE106
Silicon PNP Transistor
Switching Transistor

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 15V
Collector–Base Voltage, V_{CBO} 15V
Emitter–Base Voltage, V_{EBO} 4.5V
Continuous Collector Current, I_C 200mA
Total Device Dissipation (T_A = +25°C), P_D 0.36W
Derate Above 25°C . . . . . 2.06mW/°C
Total Device Dissipation (T_C = +25°C), P_D 1.2W
Derate Above 25°C . . . . . 6.9mW/°C
Operating Junction Temperature Range, T_J . . . . . –65° to +200°C
Storage Temperature Range, T_{stg} . . . . . –65° to +200°C

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 3mA, I_B = 0, Note 1	15	–	–	V
	$V_{(BR)CES}$	I_C = 100μA, V_{BE} = 0	15	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	15	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	4.5	5.9	–	V
Collector Cutoff Current	I_{CES}	V_{CE} = 8V, V_{BE} = 0	–	–	10	nA
		V_{CE} = 8V, V_{BE} = 0, T_A = +125°C	–	–	5	μA
Base Current	I_B	V_{CE} = 8V, V_{BE} = 0	–	–	1	nA
ON Characteristics						
DC Current Gain	h_{FE}	I_C = 1mA, V_{CE} = 500mV	35	–	–	
		I_C = 10mA, V_{CE} = 300mV	50	–	120	
		I_C = 10mA, V_{CE} = 300mV, T_A = –55°C	20	–	–	
		I_C = 50mA, V_{CE} = 1V, Note 1	40	–	–	

Note 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Electrical Characteristics (Cont'd): (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Cont'd)						
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1mA, I_B = 0.1mA	–	–	0.15	V
		I_C = 10mA, I_B = 1mA	–	–	0.18	V
		I_C = 50mA, I_B = 5mA, Note 1	–	–	0.6	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 1mA, I_B = 0.1mA	–	0.7	0.8	V
		I_C = 10mA, I_B = 1mA	0.75	0.86	0.90	V
		I_C = 50mA, I_B = 5mA, Note 1	–	1.1	1.5	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 10mA, V_{CE} = 10V, f = 100MHz	850	1100	–	MHz
Output Capacitance	C_{obo}	V_{CB} = 5V, I_E = 0, f = 140kHz	–	2.0	3.0	pF
Input Capacitance	C_{ibo}	V_{BE} = 500mV, I_C = 0, f = 140kHz	–	2.0	3.5	pF
Switching Characteristics						
Turn–On Time	t_{on}	V_{CC} = 1.5V, V_{BE} = 0, I_C = 10mA, I_{B1} = 1mA	–	10	15	ns
Delay Time	t_d		–	5	10	ns
Rise Time	t_r		–	5	15	ns
Turn–Off Time	t_{off}	V_{CC} = 1.5V, I_C = 10mA, I_{B1} = I_{B2} = 1mA	–	16	20	ns
Stoirage Time	t_s		–	17	20	ns
Fall Time	t_f		–	8	10	ns
Storage Time	t_s	I_C = 10mA, I_{B1} = 10mA, I_{B2} = 10mA	–	–	20	ns

Note 1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Note 2. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.