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

NTE159
Silicon PNP Transistor
Audio Amplifier, Switch
(Compl to NTE123AP)

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 80V
Collector–Base Voltage, V_{CBO} 80V
Emitter–Base Voltage, V_{EBO} 5V
Continuous Collector Current, I_C 1.0A
Total Device Dissipation (T_A = 25°C), P_D 625mW
Derate Above 25°C . . . . . 5mW/°C
Total Device Dissipation (T_C = 25°C), P_D 1.5W
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, $R_{\theta JC}$ . . . . . 83.3°C/W
Thermal Resistance, Junction to Ambient, $R_{\theta JA}$ . . . . . 200°C/W

Note 1. Matched complementary pairs are available upon request (NTE159MCP). Matched complementary pairs have their gain specification (h_{FE}) matched to within 10% of each other.

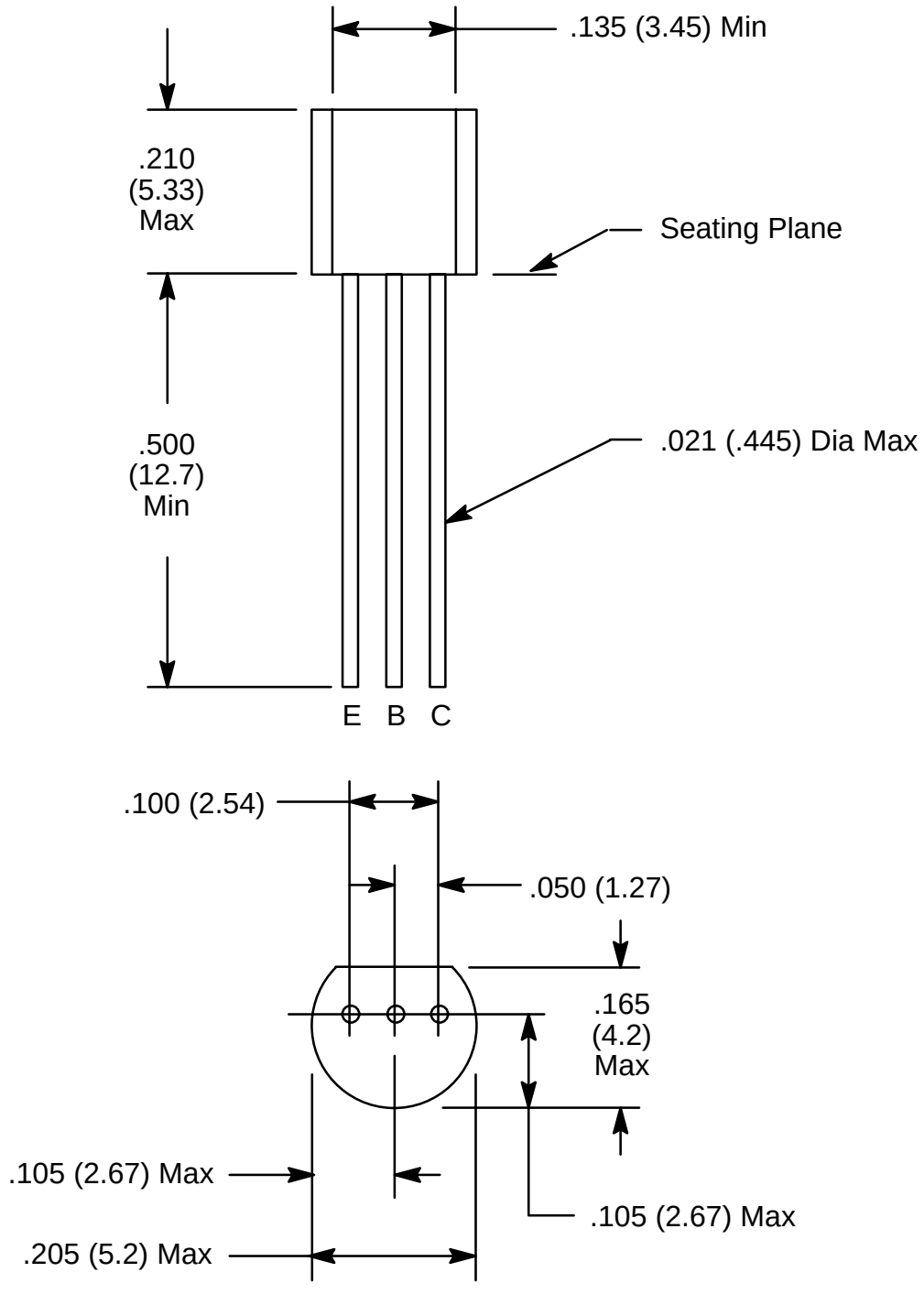
Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0	80	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0	80	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	5	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 50V, I_E = 0	–	–	50	nA
		V_{CB} = 50V, I_E = 0, T_A = +75°C	–	–	5	μA
Emitter Cutoff Current	I_{EBO}		–	–	100	nA

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics						
DC Current Gain	h_{FE}	V_{CE} = 10V, I_C = 0.1mA	25	–	–	
		V_{CE} = 10V, I_C = 1mA	40	–	–	
		V_{CE} = 10V, I_C = 10mA	50	–	250	
		V_{CE} = 10V, I_C = 100mA	40	–	–	
		V_{CE} = 10V, I_C = 500mA	30	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 150mA, I_B = 15mA, Note 2	–	–	0.15	V
		I_C = 500mA, I_B = 50mA, Note 2	–	–	0.5	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 150mA, I_B = 15mA, Note 2	–	–	0.9	V
		I_C = 500mA, I_B = 50mA, Note 2	–	–	1.1	V
Base–Emitter ON Voltage	$V_{BE(on)}$	I_C = 500mA, V_{CE} = 500mV	–	–	1.1	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 50mA, V_{CE} = 10V, f = 100MHz	100	–	500	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 100kHz	–	–	30	pF
Input Capacitance	Ci_b	V_{CB} = 10V, I_E = 0, f = 100kHz	–	–	110	pF
Input Impedance	h_{ie}	I_C = 10mA, V_{CE} = 10V, f = 1kHz	–	550	–	kΩ
Voltage Feedback Ratio	h_{re}	I_C = 10mA, V_{CE} = 10V, f = 1kHz	–	100	–	x 10^{-6}
Small–Signal Current Gain	h_{fe}	I_C = 10mA, V_{CE} = 10V, f = 1kHz	–	200	–	
Output Admittance	h_{oe}	I_C = 10mA, V_{CE} = 10V, f = 1kHz	–	100	–	μmhos
Noise Figure	NF	I_C = 100μA, V_{CE} = 10V, R_S = 1kΩ, f = 1kHz	–	–	3	dB
Switching Characteristics						
Turn–On Time	t_{on}	V_{CC} = 30V, $V_{BE(off)}$ = 3.8V, I_C = 500mA, I_{B1} = 50mA	–	–	100	ns
Turn–Off Time	t_{off}	V_{CC} = 30V, I_C = 500mA, I_{B1} = I_{B2} = 50mA	–	–	400	ns

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


.135 (3.45) Min
.210
(5.33)
Max
Seating Plane
.500
(12.7)
Min
.021 (.445) Dia Max
E B C
.100 (2.54)
.050 (1.27)
.165
(4.2)
Max
.105 (2.67) Max
.105 (2.67) Max
.205 (5.2) Max