ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748–5089
http://www.nteinc.com

2N4123 & 2N4124
Silicon NPN Transistor
General Purpose
TO92 Type Package

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}
- 2N4123 . . . . . 30V
- 2N4124 . . . . . 25V

Collector–Base Voltage, V_{CBO}
- 2N4123 . . . . . 40V
- 2N4124 . . . . . 30V

Emitter–Base Voltage, V_{EBO} 5V
Continuous Collector Current, I_C 200mA
Total Device Dissipation (T_A = +25°C), P_D 350mW
- Derate Above 25°C . . . . . 2.8mW/°C

Total Device Dissipation (T_C = +25°C), P_D 1.0W
- Derate Above 25°C . . . . . 8mW/°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, R_{thJA} . . . . . 200°C/W

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

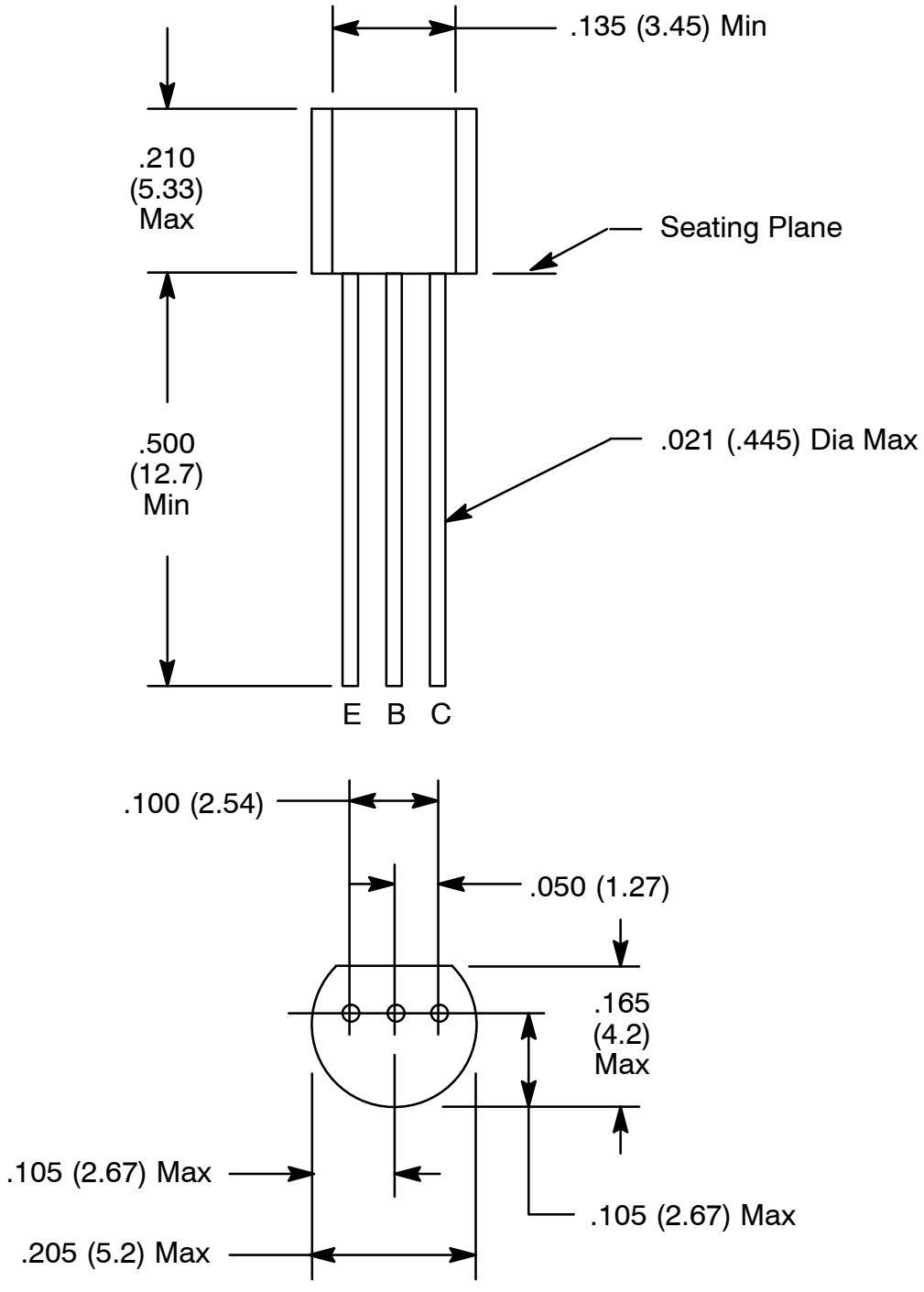
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage 2N4123	$V_{(BR)CEO}$	I_C = 1mA, I_E = 0, Note 1	30	–	–	V
2N4124			25	–	–	V
Collector–Base Breakdown Voltage 2N4123	$V_{(BR)CBO}$	I_C = 10° A, I_E = 0	40	–	–	V
2N4124			30	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10° A, I_C = 0	5	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 30V, I_E = 0	–	–	50	nA
Base Cutoff Current	I_{BL}	V_{BE} = 3V, I_C = 0	–	–	50	nA
ON Characteristics (Note 1)						
DC Current Gain 2N4123	h_{FE}	V_{CE} = 1V, I_C = 2mA	50	–	150	
2N4124			120	–	360	
2N4123		V_{CE} = 1V, I_C = 50mA	25	–	–	
2N4124			60	–	–	

Note 1. Pulse Test: Pulse Width = 300° s, 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) (Note 1)						
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA	–	–	0.3	V
Base−Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 50mA, I_B = 5mA	–	–	0.95	V
Small−Signal Characteristics						
Current Gain−Bandwidth Product 2N4123	f_T	I_C = 10mA, V_{CE} = 20V, f = 100MHz	250	–	–	MHz
2N4124			300	–	–	MHz
Output Capacitance	C_{obo}	V_{CB} = 5V, I_E = 0, f = 100MHz	–	–	4.0	pF
Input Capacitance	C_{ibo}	V_{BE} = 0.5V, I_C = 0, f = 100kHz	–	–	8.0	pF
Collector−Base Capacitance	C_{cb}	I_E = 0, V_{CB} = 5V, f = 100kHz	–	–	4.0	pF
Small−Signal Current Gain 2N4123	h_{fe}	I_C = 2mA, V_{CE} = 10V, f = 1kHz	50	–	200	
2N4124			120	–	480	
Current Gain − High Frequency 2N4123	$\|h_{fe}\|$	I_C = 10mA, V_{CE} = 20V, f = 100Hz	2.5	–	–	–
2N4124			3.0	–	–	–
2N4123		I_C = 2mA, V_{CE} = 10V, f = 1kHz	50	–	200	–
2N4124			120	–	480	–
Noise Figure 2N4123	NF	I_C = 100° A, V_{CE} = 5V, R_S = 1k≤ , Noise Bandwidth = 10Hz to 15.7kHz	–	–	6.0	db
2N4124			–	–	5.0	db

Note 1. Pulse Test: Pulse Width ≤ 300° s, 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