2N5400 & 2N5401
Silicon PNP Transistor
General Purpose Amplifier
TO92 Type Package

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO}
- 2N5400 . . . . . 120V
- 2N5401 . . . . . 150V

Collector–Base Voltage, V_{CBO}
- 2N5400 . . . . . 130V
- 2N5401 . . . . . 160V

Emitter–Base Voltage, V_{EBO} 5V
Continuous Collector Current, I_C 600mA
Total Device Dissipation (T_A = +25°C), P_D 625mW
- Derate Above 25°C . . . . . 5.0mW/°C

Total Device Dissipation (T_C = +25°C), P_D 1.5W
- Derate Above 25°C . . . . . 12.0mW/°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)

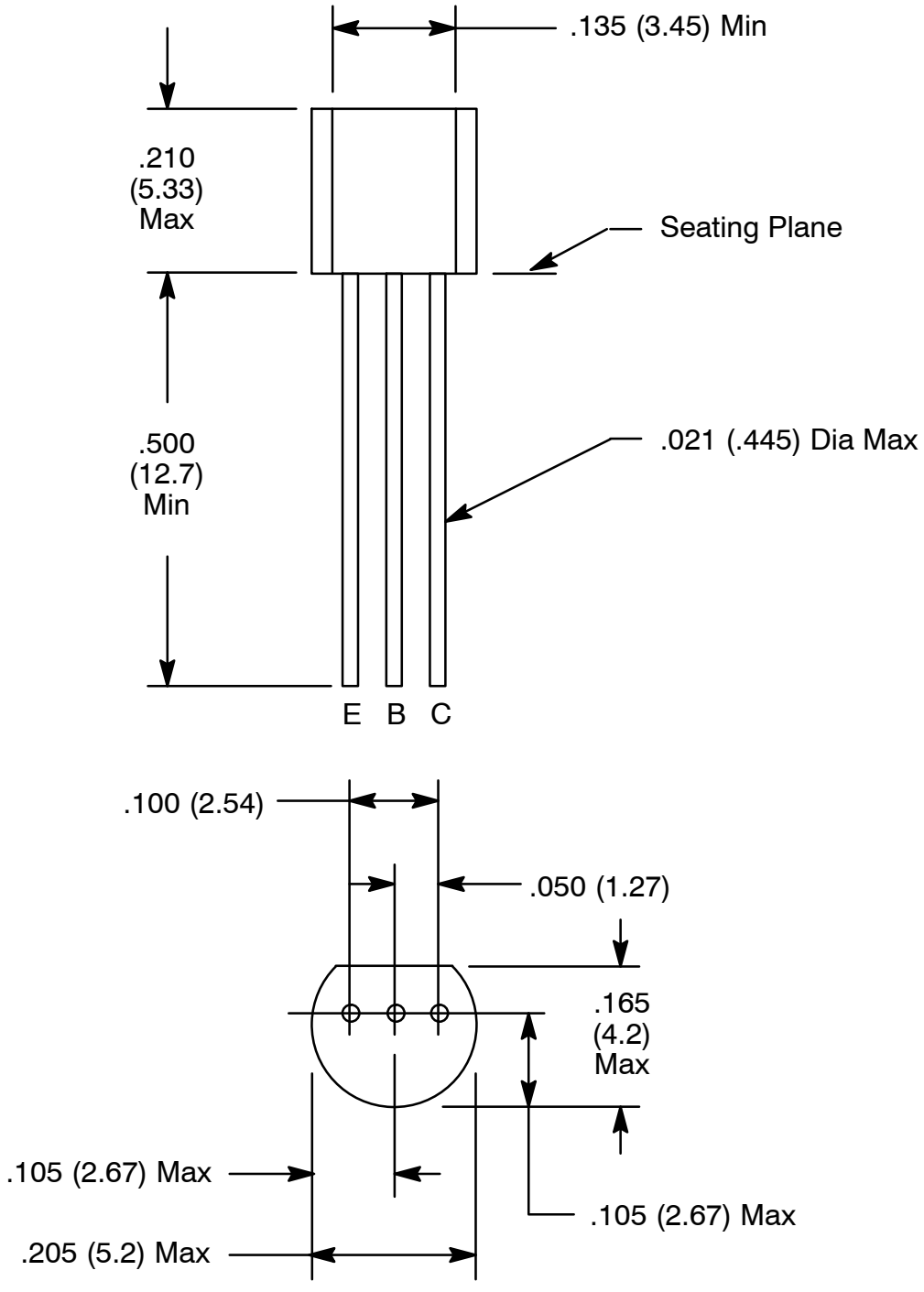
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector–Emitter Breakdown Voltage 2N5400	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0, Note 1	120	–	–	V
2N5401			150	–	–	V
Collector–Base Breakdown Voltage 2N5400	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	130	–	–	V
2N5401			160	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	5	–	–	V
Collector Cutoff Current 2N5400	I_{CBO}	V_{CB} = 100V, I_E = 0	–	–	100	nA
2N5401		V_{CB} = 120V, I_E = 0	–	–	50	nA
2N5400		V_{CB} = 100V, I_E = 0, T_A = +100°C	–	–	100	nA
2N5401		V_{CB} = 120V, I_E = 0, T_A = +100°C	–	–	50	nA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 3V, I_C = 0	–	–	50	nA

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 (Note 1)						
DC Current Gain 2N5400	h_{FE}	V_{CE} = 5V, I_C = 1mA	30	–	–	
2N5401			50	–	–	
2N5400		V_{CE} = 5V, I_C = 10mA	40	–	180	
2N5401			60	–	240	
2N5400		V_{CE} = 5V, I_C = 50mA	40	–	–	
2N5401			50	–	–	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 1mA	–	–	0.2	V
		I_C = 50mA, I_B = 5mA	–	–	0.5	V
Base−Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 1mA	–	–	1.0	V
		I_C = 50mA, I_B = 5mA	–	–	1.0	V
Small−Signal Characteristics						
Current Gain−Bandwidth Product 2N5400	f_T	I_C = 10mA, V_{CE} = 10V, f = 100MHz	100	–	400	MHz
2N5401			100	–	300	MHz
Output Capacitance	C_{obo}	V_{CB} = 10V, I_E = 0, f = 1MHz	–	–	6.0	pF
Small−Signal Current Gain 2N5400	h_{fe}	I_C = 1mA, V_{CE} = 10V, f = 1kHz	30	–	200	
2N5401			40	–	200	
Noise Figure	NF	I_C = 250μA, V_{CE} = 5V, R_S = 1kΩ, f = 10Hz to 15.7kHz	–	–	8.0	db

Note 1. 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