ELECTRONICS, INC.
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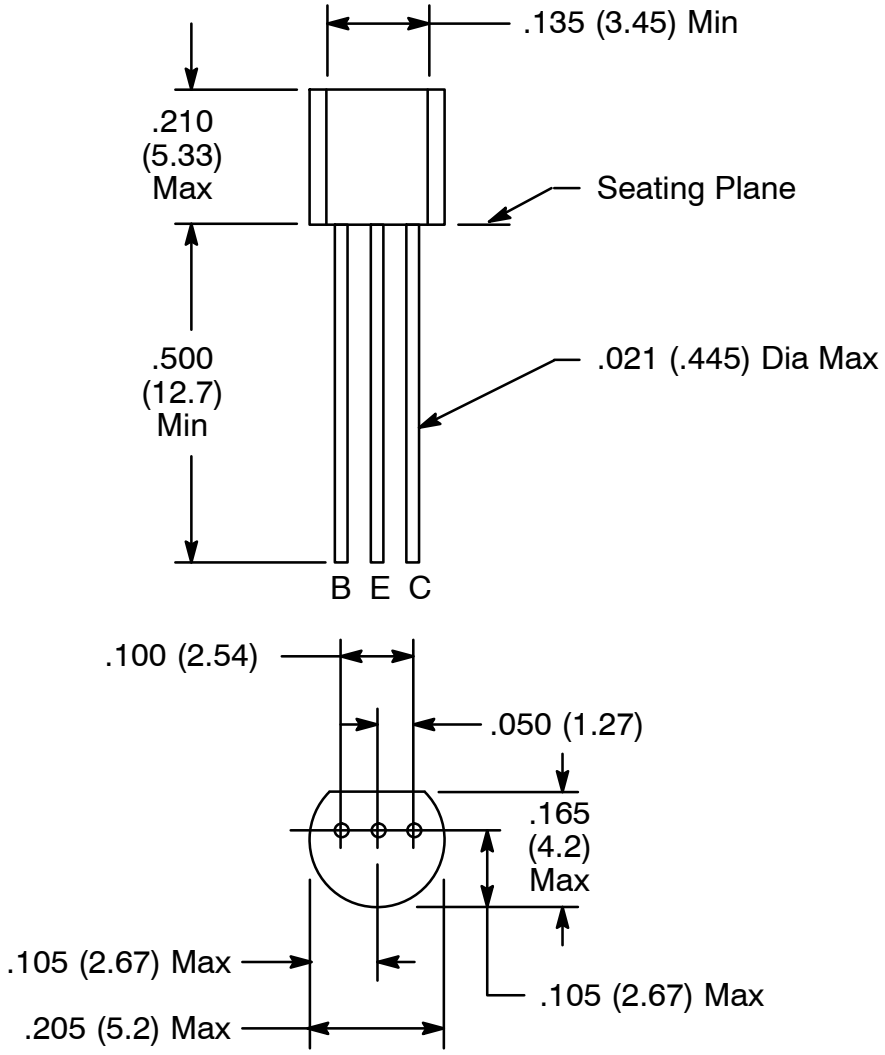
MPSH30
Silicon NPN Transistor
VHF Oscillator, Mixer, IF Amp
TO–92 Type Package

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 20V
Collector–Base Voltage, V_{CBO} 20V
Emitter–Base Voltage, V_{EBO} 3V
Collector Current, I_C 50mA
Total Power Dissipation (T_A = +25°C), P_T 350mW
Derate above +25°C . . . . . 2.8mW/°C
Total Power Dissipation (T_C = +25°C), P_T 1W
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–Ambient, R_{thJA} . . . . . +357°C/W
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . +125°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	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	20	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 100μA, I_E = 0	20	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 100μA, I_C = 0	3	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 10V, I_E = 0	–	–	50	nA
ON Characteristics						
DC Current Gain	h_{FE}	I_C = 4mA, V_{CE} = 5V	20	–	200	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 5mA	0.1	–	3.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 5mA	–	–	0.96	V
Small–Signal Characteristics						
Current Gain–Bandwidth Product	f_T	I_C = 4mA, V_{CE} = 10V, f = 100MHz	300	–	800	MHz
Collector–Base Capacitance	C_{cb}	I_E = 0, V_{CB} = 10V, f = 1MHz	–	–	0.65	pF
Noise Figure	NF	V_{AGC} = 2.75V, R_S = 50Ω, f = 45MHz	–	–	6	dB
Functional Tests						
Power Gain	G_{pe}	V_{AGC} = 2.75V, R_S = 50Ω, f = 45MHz	22.5	–	31.0	dB
Forward AGC Voltage	V_{AGC}	Gain Reduction = 30dB, R_S = 50Ω, f = 45MHz	4.4	–	5.4	V


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