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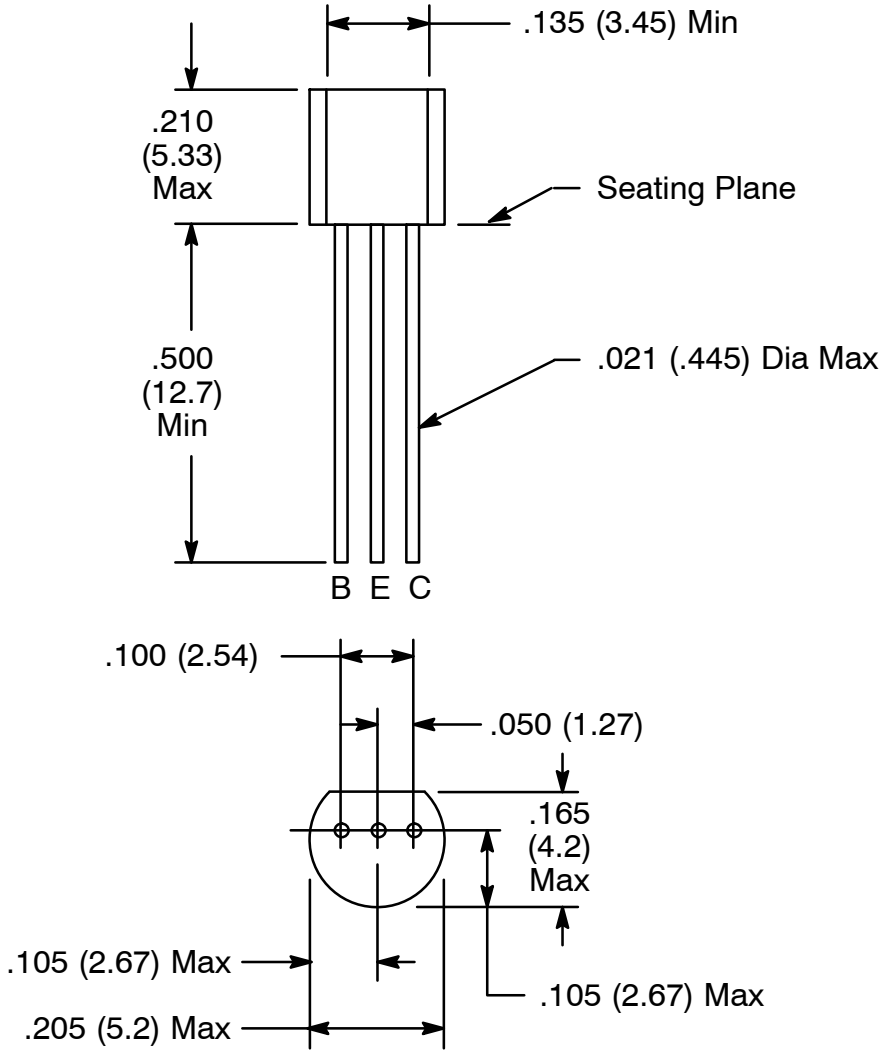
# MPSH10
# Silicon NPN Transistor
# VHF Oscillator, Mixer, IF Amp
# TO–92 Type Package

**Absolute Maximum Ratings:**

Collector–Emitter Voltage, $V_{CEO}$ . . . . . 25V
Collector–Base Voltage, $V_{CBO}$ . . . . . 30V
Emitter–Base Voltage, $V_{EBO}$ . . . . . 3V
Collector Current, $I_C$ . . . . . 50mA
Total Power Dissipation ($T_A$ = +25°C), $P_D$ . . . . . 350mW
Derate above +25°C . . . . . 2.8mW/°C
Total Power Dissipation ($T_C$ = +25°C), $P_D$ . . . . . 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 | 25 | – | – | V |
| Collector–Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$ = 100μA, $I_E$ = 0 | 30 | – | – | V |
| Emitter–Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$ = 10μA, $I_C$ = 0 | 3 | – | – | V |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$ = 25V, $I_E$ = 0 | – | – | 100 | nA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$ = 2V, $I_C$ = 0 | – | – | 100 | nA |
| **ON Characteristics** | | | | | | |
| DC Current Gain | $h_{FE}$ | $I_C$ = 4mA, $V_{CE}$ = 10V | 60 | – | – | |
| Collector–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$ = 4mA, $I_B$ = 0.4mA | – | – | 0.5 | V |
| Base–Emitter ON Voltage | $V_{BE(on)}$ | $I_C$ = 4mA, $V_{CE}$ = 10V | – | – | 0.95 | V |
| **Small–Signal Characteristics** | | | | | | |
| Current Gain–Bandwidth Product | $f_T$ | $I_C$ = 4mA, $V_{CE}$ = 10V, f = 100MHz | 650 | – | – | MHz |
| Collector–Base Capacitance | $C_{cb}$ | $I_E$ = 0, $V_{CB}$ = 10V, f = 1MHz | – | – | 0.7 | pF |
| Common–Base Feedback Capacitance | $C_{rb}$ | $I_E$ = 0, $V_{CB}$ = 10V, f = 1MHz | 0.35 | – | 0.65 | pF |
| Collector–Base Time Constant | $rb'C_c$ | $I_C$ = 4mA, $V_{CB}$ = 10V, f = 31.8MHz | – | – | 9.0 | ps |


.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