

MPSH10

Preferred Device

VHF/UHF Transistors

NPN Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|---------------------------|
| Collector - Emitter Voltage | V_{CEO} | 25 | Vdc |
| Collector - Base Voltage | V_{CBO} | 30 | Vdc |
| Emitter - Base Voltage | V_{EBO} | 3.0 | Vdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 350 2.8 | W mW/ $^\circ\text{C}$ |
| Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C | P_D | 1.0 8.0 | W mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|--------|---------------------------|
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 200357 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 125 | $^\circ\text{C}/\text{W}$ |

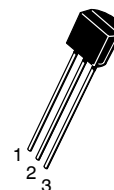
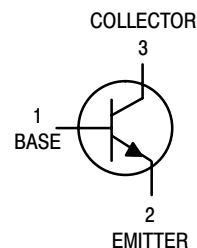
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



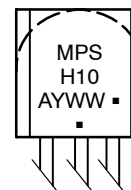
ON Semiconductor®

<http://onsemi.com>



TO-92
CASE 29-11
STYLE 2

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

MPSH10

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|--|----------------------|------|------|------------------|
| OFF CHARACTERISTICS | | | | |
| Collector – Emitter Breakdown Voltage (I _C = 1.0 mA _{dc} , I _B = 0) | V _{(BR)CEO} | 25 | – | V _{dc} |
| Collector – Base Breakdown Voltage (I _C = 100 μA _{dc} , I _E = 0) | V _{(BR)CBO} | 30 | – | V _{dc} |
| Emitter – Base Breakdown Voltage (I _E = 10 μA _{dc} , I _C = 0) | V _{(BR)EBO} | 3.0 | – | V _{dc} |
| Collector Cutoff Current (V _{CB} = 25 V _{dc} , I _E = 0) | I _{CBO} | – | 100 | nA _{dc} |
| Emitter Cutoff Current (V _{EB} = 2.0 V _{dc} , I _C = 0) | I _{EBO} | – | 100 | nA _{dc} |
| ON CHARACTERISTICS | | | | |
| DC Current Gain (I _C = 4.0 mA _{dc} , V _{CE} = 10 V _{dc}) | h _{FE} | 60 | – | – |
| Collector – Emitter Saturation Voltage (I _C = 4.0 mA _{dc} , I _B = 0.4 mA _{dc}) | V _{CE(sat)} | – | 0.5 | V _{dc} |
| Base – Emitter On Voltage (I _C = 4.0 mA _{dc} , V _{CE} = 10 V _{dc}) | V _{BE(on)} | – | 0.95 | V _{dc} |
| SMALL-SIGNAL CHARACTERISTICS | | | | |
| Current – Gain – Bandwidth Product (I _C = 4.0 mA _{dc} , V _{CE} = 10 V _{dc} , f = 100 MHz) | f _T | 650 | – | MHz |
| Collector – Base Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz) | C _{cb} | – | 0.7 | pF |
| Common – Base Feedback Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 1.0 MHz) | C _{rb} | 0.35 | 0.65 | pF |
| Collector Base Time Constant (I _C = 4.0 mA _{dc} , V _{CB} = 10 V _{dc} , f = 31.8 MHz) | rb'C _c | – | 9.0 | ps |

ORDERING INFORMATION

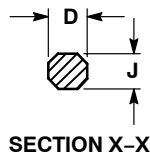
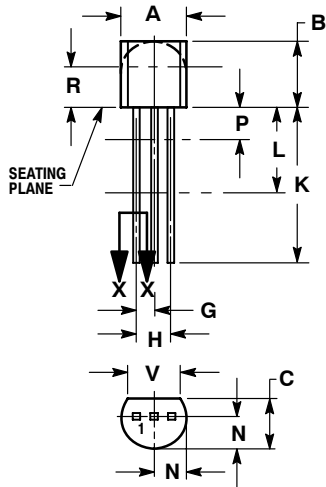
| Device | Package | Shipping [†] |
|-------------|--------------------|-----------------------|
| MPSH10 | TO-92 | 5000 Units / Box |
| MPSH10G | TO-92 (Pb-Free) | 5000 Units / Box |
| MPSH10RLRA | TO-92 | 2000 / Tape & Reel |
| MPSH10RLRAG | TO-92 (Pb-Free) | 2000 / Tape & Reel |
| MPSH10RLRP | TO-92 | 2000 / Ammo Pack |
| MPSH10RLRPG | TO-92 (Pb-Free) | 2000 / Ammo Pack |

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

MPSH10

PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
ISSUE AL



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.175 | 0.205 | 4.45 | 5.20 |
| B | 0.170 | 0.210 | 4.32 | 5.33 |
| C | 0.125 | 0.165 | 3.18 | 4.19 |
| D | 0.016 | 0.021 | 0.407 | 0.533 |
| G | 0.045 | 0.055 | 1.15 | 1.39 |
| H | 0.095 | 0.105 | 2.42 | 2.66 |
| J | 0.015 | 0.020 | 0.39 | 0.50 |
| K | 0.500 | --- | 12.70 | --- |
| L | 0.250 | --- | 6.35 | --- |
| N | 0.080 | 0.105 | 2.04 | 2.66 |
| P | --- | 0.100 | --- | 2.54 |
| R | 0.115 | --- | 2.93 | --- |
| V | 0.135 | --- | 3.43 | --- |

STYLE 2:

1. BASE
2. EMITTER
3. COLLECTOR

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