

MPSH17

Preferred Device

CATV Transistor

NPN Silicon

Features

- Pb-Free Package is Available*

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|----------------------------|
| Collector-Emitter Voltage | V_{CEO} | 15 | Vdc |
| Collector-Base Voltage | V_{CBO} | 20 | 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 2.81 | mW mW/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

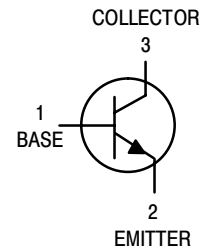
| Characteristic | Symbol | Max | Unit |
|---|-----------------|-----|---------------------------|
| Thermal Resistance, Junction to Ambient (Printed Circuit Board Mounting) | $R_{\theta JA}$ | 357 | $^\circ\text{C}/\text{W}$ |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

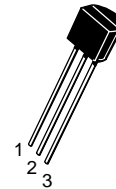


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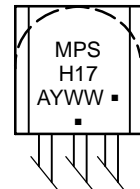
<http://onsemi.com>



MARKING DIAGRAM



TO-92
CASE 29-11
STYLE 2



MPSH17 = Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|--------------------|-------------------|
| MPSH17 | TO-92 | 5,000 Units/Box |
| MPSH17G | TO-92 (Pb-Free) | 5,000 Units/Box |
| MPSH17RLRA | TO-92 | 2,000/Tape & Reel |
| MPSH17RLRAG | TO-92 (Pb-Free) | 2,000/Tape & Reel |

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

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

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

MPSH17

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|----------------|--------|-----|-----|-----|------|
|----------------|--------|-----|-----|-----|------|

OFF CHARACTERISTICS

| | | | | | |
|--|---------------|-----|---|-----|------|
| Collector–Emitter Breakdown Voltage ($I_C = 1.0\text{ mAdc}$, $I_B = 0$) | $V_{(BR)CEO}$ | 15 | – | – | Vdc |
| Collector–Base Breakdown Voltage ($I_C = 100\ \mu\text{Adc}$, $I_E = 0$) | $V_{(BR)CBO}$ | 20 | – | – | Vdc |
| Emitter–Base Breakdown Voltage ($I_E = 10\ \mu\text{Adc}$, $I_C = 0$) | $V_{(BR)EBO}$ | 3.0 | – | – | Vdc |
| Collector Cutoff Current ($V_{CB} = 15\text{ Vdc}$, $I_E = 0$) | I_{CBO} | – | – | 100 | nAdc |

ON CHARACTERISTICS

| | | | | | |
|--|---------------|----|---|-----|---|
| DC Current Gain ($I_C = 5.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$) | h_{FE} | 25 | – | 250 | – |
| Collector–Emitter Saturation Voltage ($I_C = 10\text{ mAdc}$, $I_B = 1.0\text{ mAdc}$) | $V_{CE(sat)}$ | – | – | 0.5 | – |

SMALL–SIGNAL CHARACTERISTICS

| | | | | | |
|--|----------|-----|---|-----|-----|
| Current–Gain – Bandwidth Product ($I_C = 5.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 100\text{ MHz}$) | f_T | 800 | – | – | MHz |
| Collector–Base Capacitance ($V_{CB} = 10\text{ Vdc}$, $f = 1.0\text{ MHz}$) | C_{cb} | 0.3 | – | 0.9 | pF |
| Small–Signal Current Gain ($I_C = 5.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$) | h_{fe} | 30 | – | – | – |
| Noise Figure ($I_C = 5.0\text{ mAdc}$, $V_{CC} = 12\text{ Vdc}$, $R_S = 50\ \Omega$, $f = 200\text{ MHz}$) | NF | – | – | 6.0 | dB |

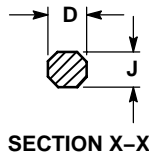
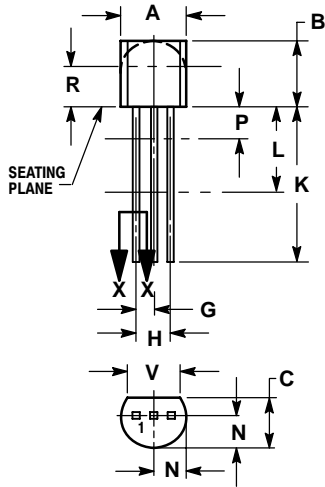
FUNCTIONAL TEST

| | | | | | |
|--|----------|---|----|---|----|
| Amplifier Power Gain ($I_C = 5.0\text{ mAdc}$, $V_{CC} = 12\text{ Vdc}$, $R_S = 50\ \Omega$, $f = 200\text{ MHz}$) | G_{pe} | – | 24 | – | dB |
|--|----------|---|----|---|----|

MPSH17

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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