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MPSA12

Darlington Transistors

NPN Silicon

Features

- Pb-Free Packages are Available*

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|----------------|-------------|----------------------------|
| Collector–Emitter Voltage | V_{CES} | 20 | Vdc |
| Emitter Base Voltage | V_{EBO} | 10 | Vdc |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 625 5.0 | 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 | $R_{\theta JA}$ | 200 | $^\circ\text{C}/\text{W}$ |

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.

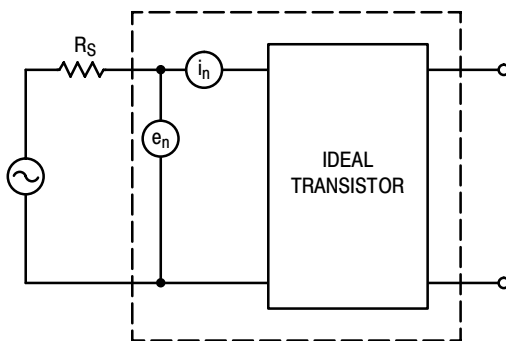


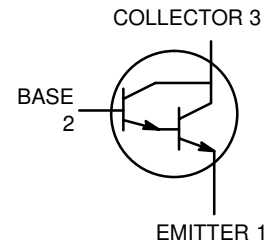
Figure 1. Transistor Noise Model

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

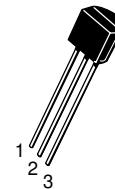


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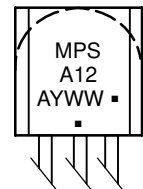
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MARKING DIAGRAM



TO-92
CASE 29-11
STYLE 1



MPSA12 = 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† |
|-------------|--------------------|-------------------|
| MPSA12 | TO-92 | 5,000 Units/Box |
| MPSA12G | TO-92 (Pb-Free) | 5,000 Units/Box |
| MPSA12RLRA | TO-92 | 2,000/Tape & Reel |
| MPSA12RLRAG | TO-92 (Pb-Free) | 2,000/Tape & Reel |
| MPSA12RLRP | TO-92 | 2,000/Tape & Reel |
| MPSA12RLRPG | 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.

MPSA12

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

| Characteristic | Symbol | Min | Max | Unit |
|--|----------------------|--------|-----|------|
| OFF CHARACTERISTICS | | | | |
| Collector – Emitter Breakdown Voltage (I _C = 100 μAdc, I _B = 0) | V _{(BR)CES} | 20 | – | Vdc |
| Collector Cutoff Current (V _{CB} = 15 Vdc, I _E = 0) | I _{CBO} | – | 100 | nAdc |
| Emitter Cutoff Current (V _{EB} = 12 Vdc, I _C = 0) | I _{EBO} | – | 100 | nAdc |
| ON CHARACTERISTICS | | | | |
| DC Current Gain (I _C = 10 mAdc, V _{CE} = 5.0 Vdc) | h _{FE} | 20,000 | – | – |
| Collector – Emitter Saturation Voltage (I _C = 10 mAdc, I _B = 0.01 mAdc) | V _{CE(sat)} | – | 1.0 | Vdc |
| Base – Emitter On Voltage (I _C = 10 mAdc, V _{CE} = 5.0 Vdc) | V _{BE(on)} | – | 1.4 | Vdc |

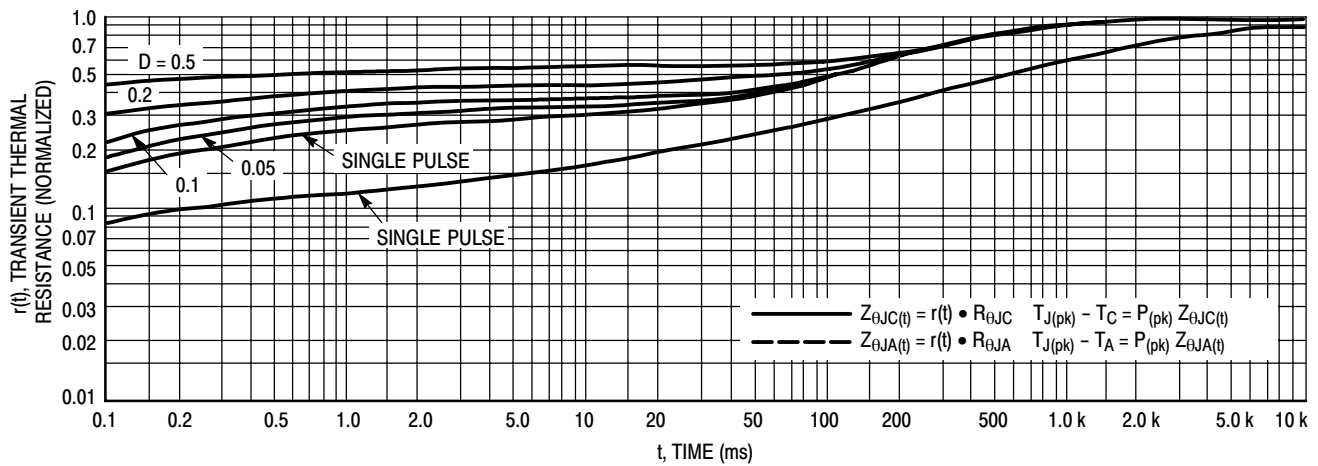
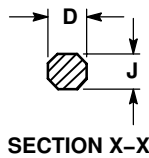
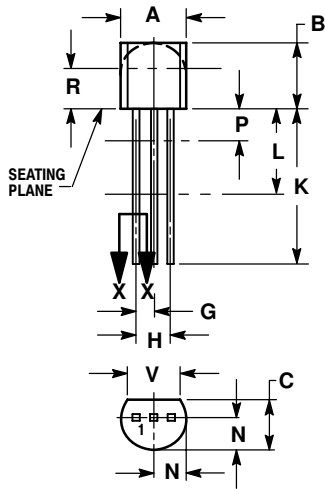


Figure 2. Thermal Response

MPSA12

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 1:

1. PIN 1. EMITTER
2. BASE
3. COLLECTOR

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