

MMDL914

High-Speed Switching Diode

Features

- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|------------------|-------|------|
| Reverse Voltage | V_R | 100 | V |
| Forward Current | I_F | 200 | mA |
| Non-Repetitive Peak Forward Surge Current 60 Hz | $I_{FSM(surge)}$ | 1.8 | A |
| Repetitive Peak Forward Current (Note 2) | I_{FRM} | 1.0 | A |
| Non-Repetitive Peak Forward Current (Square Wave, $T_J = 25^\circ\text{C}$ prior to surge) | I_{FSM} | | A |
| $t = 1 \mu\text{s}$ | | 36.0 | |
| $t = 10 \mu\text{s}$ | | 18.0 | |
| $t = 100 \mu\text{s}$ | | 6.0 | |
| $t = 1 \text{ ms}$ | | 3.0 | |
| $t = 10 \text{ ms}$ | | 1.8 | |
| $t = 100 \text{ ms}$ | | 1.3 | |
| $t = 1 \text{ s}$ | | 1.0 | |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|-----------------|------------|---------------------------|
| Total Device Dissipation FR-5 Board $T_A = 25^\circ\text{C}$ (Note 1) Derate above 25°C | P_D | 200 | mW |
| | | 1.57 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 635 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -55 to 150 | $^\circ\text{C}$ |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. FR-4 Minimum Pad.
2. Square Wave, $f = 40 \text{ kHz}$, $PW = 200 \text{ ns}$
Test Duration = 60 s, $T_J = 25^\circ\text{C}$ prior to surge.

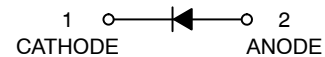


ON Semiconductor®

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SOD-323
CASE 477
STYLE 1



MARKING DIAGRAM



5D = Specific Device Code
M = Date Code
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

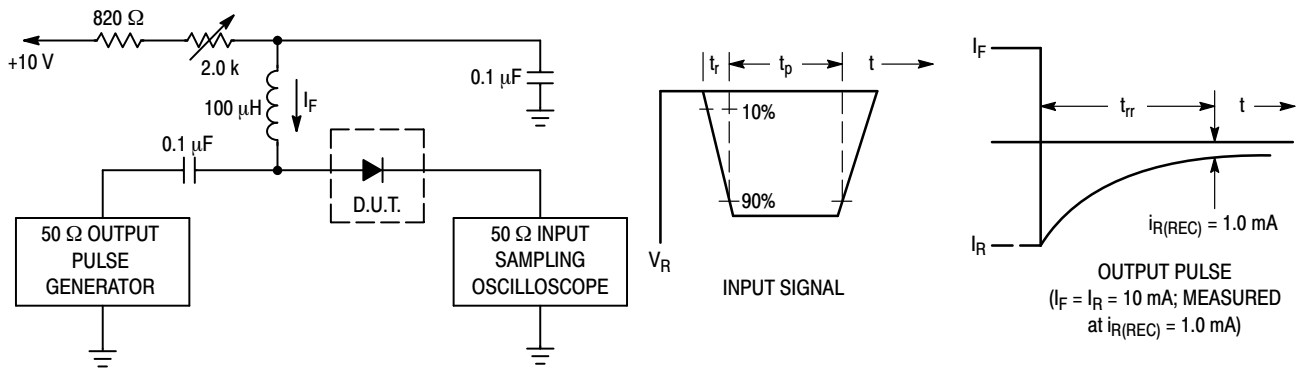
| Device | Package | Shipping† |
|-------------|----------------------|-------------------------|
| MMDL914T1G | SOD-323 (Pb-Free) | 3,000 / Tape & Reel |
| SMMDL914T1G | SOD-323 (Pb-Free) | 3,000 / Tape & Reel |
| MMDL914T3G | SOD-323 (Pb-Free) | 10,000 / Tape & Reel |

†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.

MMDL914

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

| Characteristic | Symbol | Min | Max | Unit |
|---|------------|-----|-----------|---------------------------|
| OFF CHARACTERISTICS | | | | |
| Reverse Breakdown Voltage ($I_R = 100 \mu\text{A}$) | $V_{(BR)}$ | 100 | - | Vdc |
| Reverse Voltage Leakage Current ($V_R = 20 \text{ Vdc}$) ($V_R = 75 \text{ Vdc}$) | I_R | - | 25 5.0 | nA dc μA dc |
| Diode Capacitance ($V_R = 0 \text{ V}$, $f = 1.0 \text{ MHz}$) | C_T | - | 4.0 | pF |
| Forward Voltage ($I_F = 10 \text{ mA}$) | V_F | - | 1.0 | Vdc |
| Reverse Recovery Time ($I_F = I_R = 10 \text{ mA}$) (Figure 1) | t_{rr} | - | 4.0 | ns |



- Notes: 1. A 2.0 k Ω variable resistor adjusted for a Forward Current (I_F) of 10 mA.
 2. Input pulse is adjusted so $I_{R(\text{peak})}$ is equal to 10 mA.
 3. $t_p > t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

TYPICAL CHARACTERISTICS

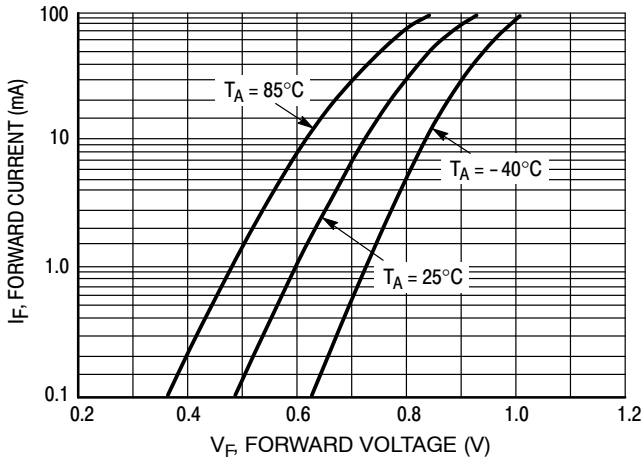


Figure 2. Forward Voltage

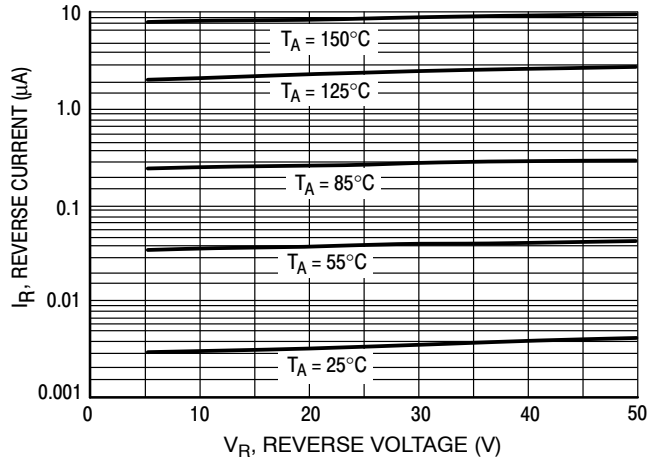


Figure 3. Leakage Current

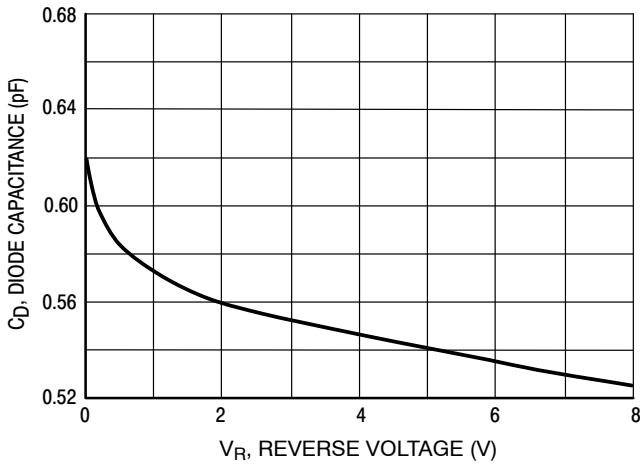


Figure 4. Capacitance

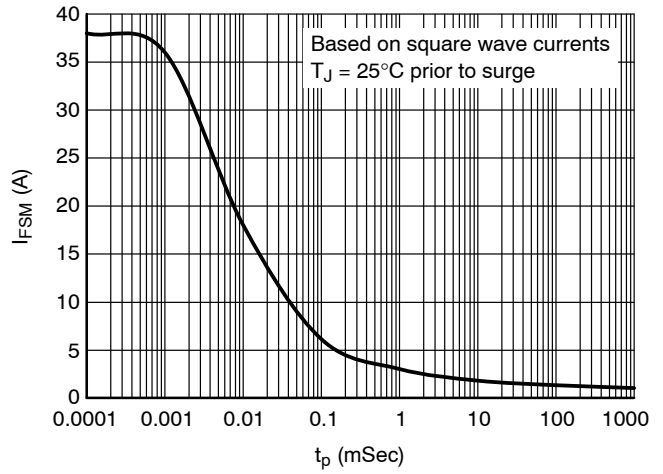


Figure 5. Maximum Non-repetitive Peak Forward Current as a Function of Pulse Duration, Typical Values

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

ON Semiconductor®



SOD-323
CASE 477-02
ISSUE H

DATE 13 MAR 2007



SCALE 4:1



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|-------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.80 | 0.90 | 1.00 | 0.031 | 0.035 | 0.040 |
| A1 | 0.00 | 0.05 | 0.10 | 0.000 | 0.002 | 0.004 |
| A3 | 0.15 REF | | | 0.006 REF | | |
| b | 0.25 | 0.32 | 0.4 | 0.010 | 0.012 | 0.016 |
| C | 0.089 | 0.12 | 0.177 | 0.003 | 0.005 | 0.007 |
| D | 1.60 | 1.70 | 1.80 | 0.062 | 0.066 | 0.070 |
| E | 1.15 | 1.25 | 1.35 | 0.045 | 0.049 | 0.053 |
| L | 0.08 | | | 0.003 | | |
| HE | 2.30 | 2.50 | 2.70 | 0.090 | 0.098 | 0.105 |

GENERIC MARKING DIAGRAM*



XX = Specific Device Code
M = Date Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

SOLDERING FOOTPRINT*



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

STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

STYLE 2:
NO POLARITY

| | | |
|-------------------------|--------------------|--|
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| DESCRIPTION: | SOD-323 | PAGE 1 OF 1 |

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