

# MR2535L

## Overvoltage Transient Suppressors

### Medium Current

Designed for applications requiring a low voltage rectifier with reverse avalanche characteristics for use as reverse power transient suppressors. Developed to suppress transients in the automotive system, these devices operate in the forward mode as standard rectifiers or reverse mode as power avalanche rectifier and will protect electronic equipment from overvoltage conditions.

#### Features

- Avalanche Voltage 24 to 32 V
- High Power Capability
- Economical
- Increased Capacity by Parallel Operation
- Pb-Free Packages are Available\*

#### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 2.5 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Maximum Lead Temperature for Soldering Purposes: 350°C 3/8" from Case for 10 Seconds at 5 lbs. Tension
- Polarity: Indicated by Diode Symbol or Cathode Band

#### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

| Rating                                                                                                                 | Symbol                          | Value       | Unit             |
|------------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------------------|
| DC Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                              | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 20          | V                |
| Repetitive Peak Reverse Surge Current<br>(Time Constant = 10 ms, Duty Cycle $\leq 1\%$ ,<br>$T_C = 25^\circ\text{C}$ ) | $I_{RSM}$                       | 62          | A                |
| Average Rectified Forward Current<br>(Single Phase, Resistive Load, 60 Hz,<br>$T_C = 125^\circ\text{C}$ ) (Figure 4)   | $I_O$                           | 6.0         | A                |
| Non-Repetitive Peak Surge Current Surge<br>Supplied at Rated Load Conditions<br>Halfwave, Single Phase                 | $I_{FSM}$                       | 600         | A                |
| Operating and Storage Junction<br>Temperature Range                                                                    | $T_J, T_{stg}$                  | -65 to +175 | $^\circ\text{C}$ |

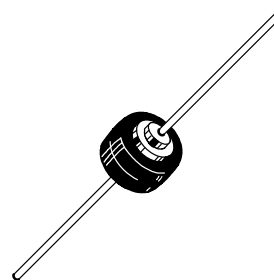
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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



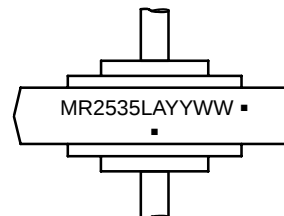
ON Semiconductor®

<http://onsemi.com>



MICRODE AXIAL  
CASE 194  
STYLE 1

#### MARKING DIAGRAM



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

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

| Device     | Package                    | Shipping <sup>†</sup> |
|------------|----------------------------|-----------------------|
| MR2535L    | Microde Axial              | 1000 Units/Box        |
| MR2535LG   | Microde Axial<br>(Pb-Free) | 1000 Units/Box        |
| MR2535LRL  | Microde Axial              | 800/Tape & Reel       |
| MR2535LRLG | Microde Axial<br>(Pb-Free) | 800/Tape & Reel       |

<sup>†</sup>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.

## THERMAL CHARACTERISTICS

| Characteristic                                                              | Lead Length          | Symbol          | Max             | Unit                 |
|-----------------------------------------------------------------------------|----------------------|-----------------|-----------------|----------------------|
| Thermal Resistance, Junction-to-Lead @ Both Leads to Heatsink, Equal Length | 1/4"<br>3/8"<br>1/2" | $R_{\theta JL}$ | 7.5<br>10<br>13 | $^{\circ}\text{C/W}$ |
| Thermal Resistance Junction-to-Case                                         |                      | $R_{\theta JC}$ | 0.8<br>(Note 1) | $^{\circ}\text{C/W}$ |

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

| Characteristic                                                                                                  | Symbol       | Min | Max               | Unit                         |
|-----------------------------------------------------------------------------------------------------------------|--------------|-----|-------------------|------------------------------|
| Instantaneous Forward Voltage (Note 2) ( $I_F = 100\text{ A}$ , $T_C = 25^{\circ}\text{C}$ )                    | $V_F$        | –   | 1.1               | V                            |
| Reverse Current ( $V_R = 20\text{ Vdc}$ , $T_C = 25^{\circ}\text{C}$ )                                          | $I_R$        | –   | 200               | nAdc                         |
| Breakdown Voltage (Note 2) ( $I_R = 100\text{ mAdc}$ , $T_C = 25^{\circ}\text{C}$ )                             | $V_{(BR)}$   | 24  | 32                | V                            |
| Breakdown Voltage (Note 2) ( $I_R = 90\text{ A}$ , $T_C = 150^{\circ}\text{C}$ , $PW = 80\text{ }\mu\text{s}$ ) | $V_{(BR)}$   | –   | 40                | V                            |
| Breakdown Voltage Temperature Coefficient                                                                       | $V_{(BR)TC}$ | –   | 0.096<br>(Note 1) | $\%/^{\circ}\text{C}$        |
| Forward Voltage Temperature Coefficient @ $I_F = 10\text{ mA}$                                                  | $V_{FTC}$    | –   | 2<br>(Note 1)     | $\text{mV}/^{\circ}\text{C}$ |

1. Typical.
2. Pulse Test: Pulse Width  $\leq 300\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

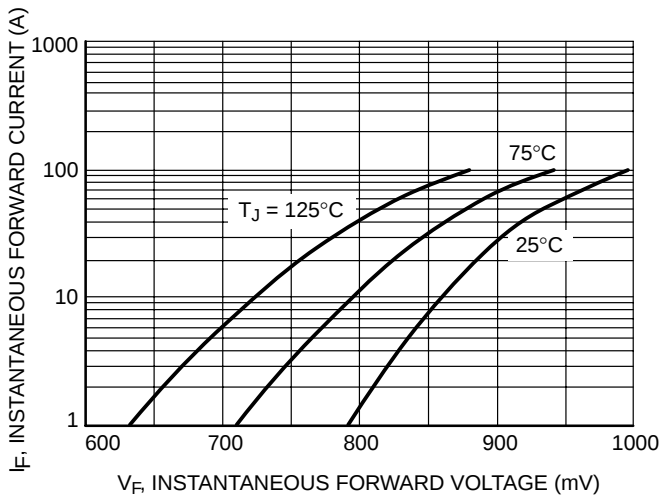


Figure 1. Typical Forward Voltage

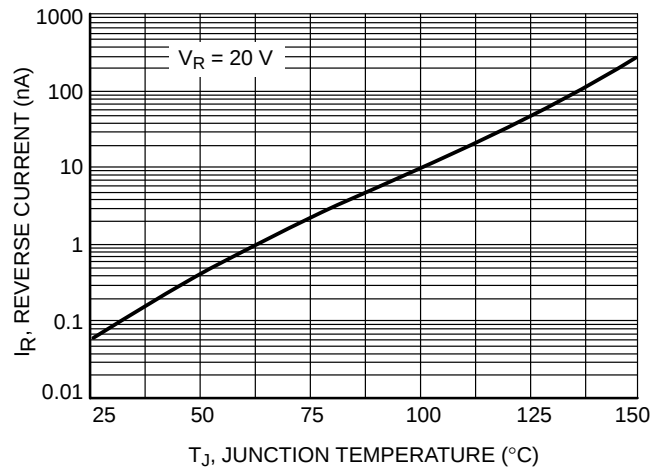


Figure 2. Typical Reverse Current versus Junction Temperature

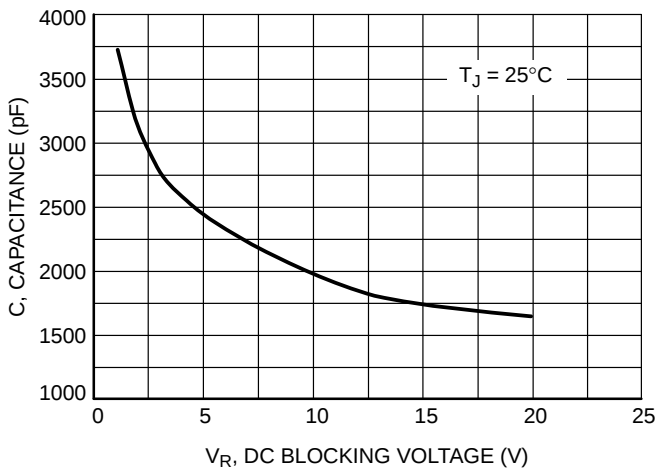


Figure 3. Typical Capacitance

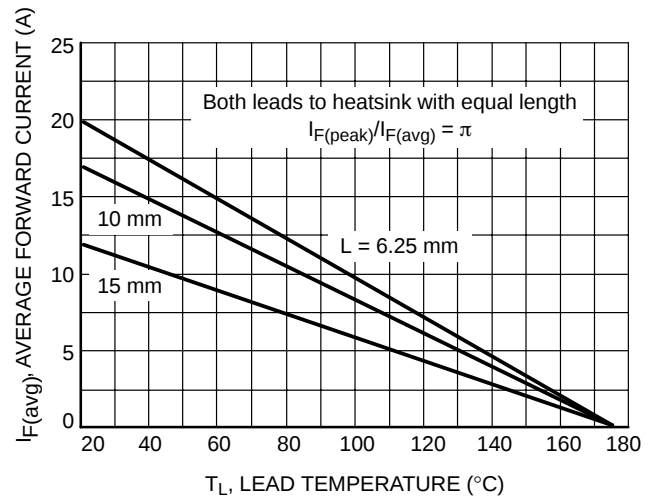


Figure 4. Maximum Current Ratings

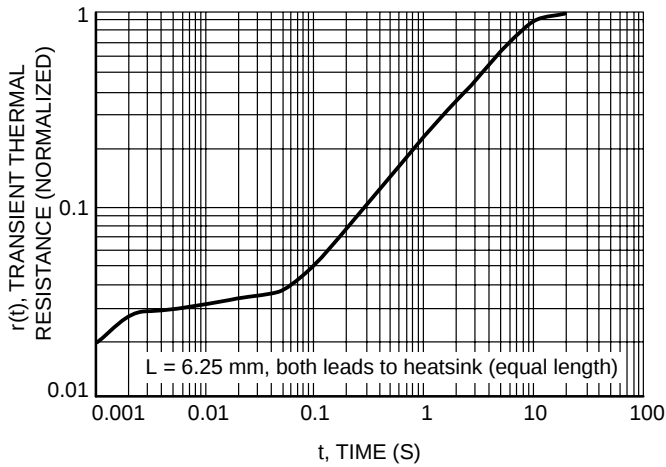


Figure 5. Thermal Response

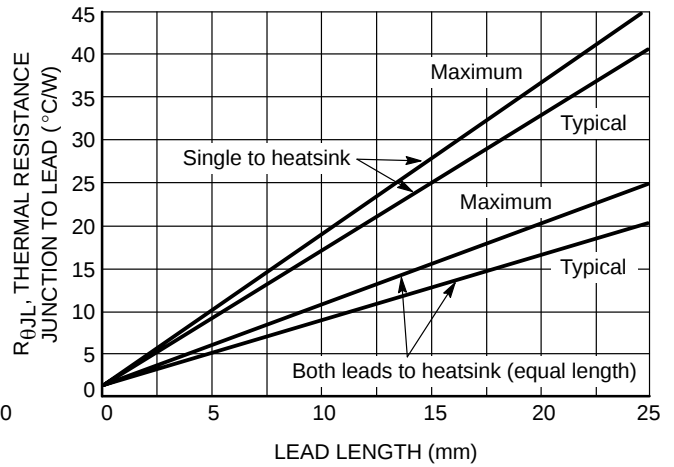


Figure 6. Steady State Thermal Resistance

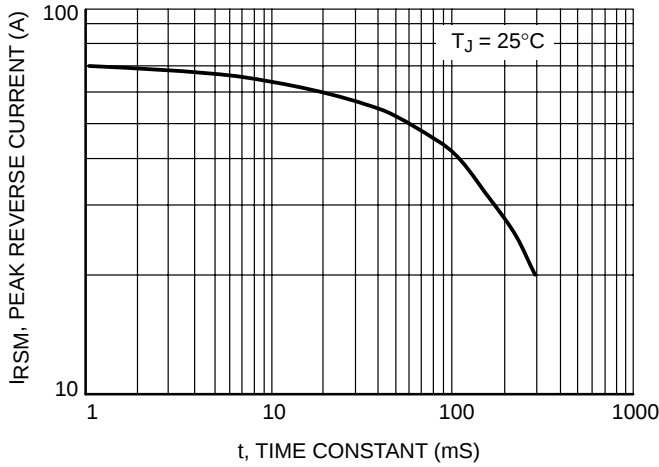


Figure 7. Maximum Peak Reverse Current

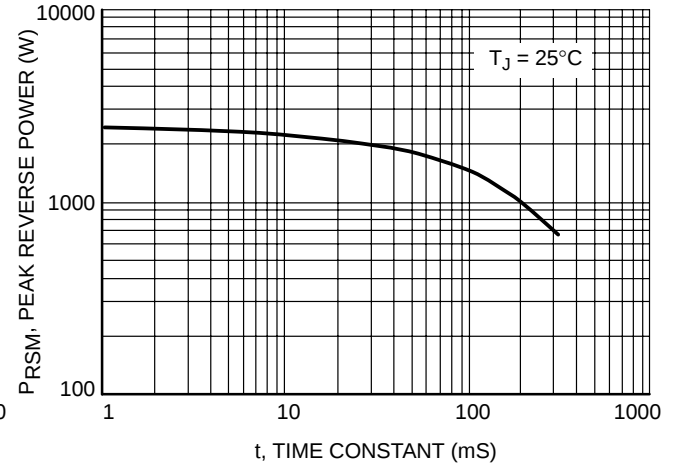


Figure 8. Maximum Peak Reverse Power

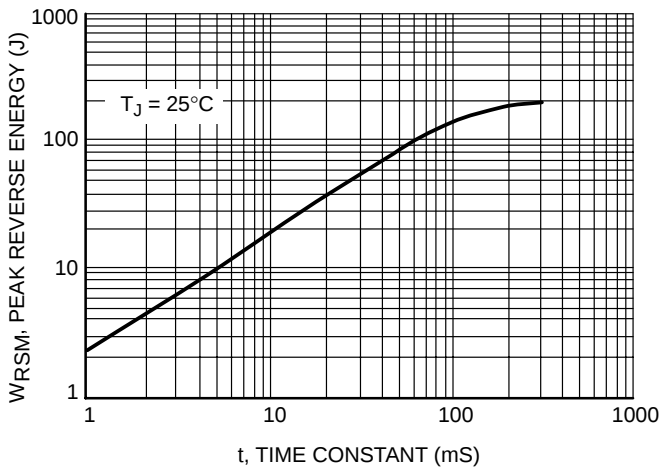


Figure 9. Maximum Reverse Energy

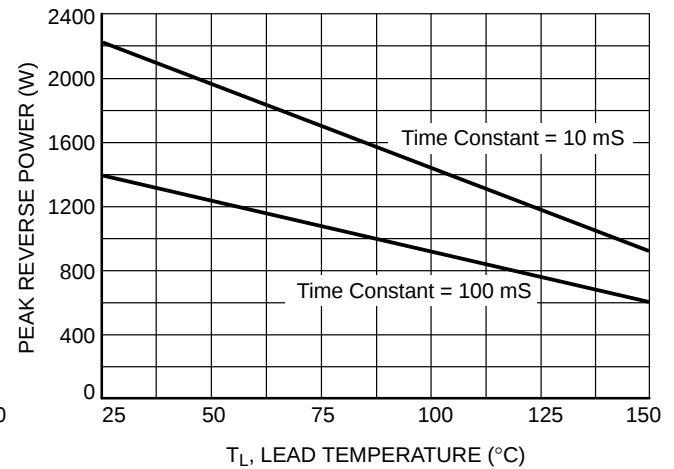


Figure 10. Reverse Power Derating

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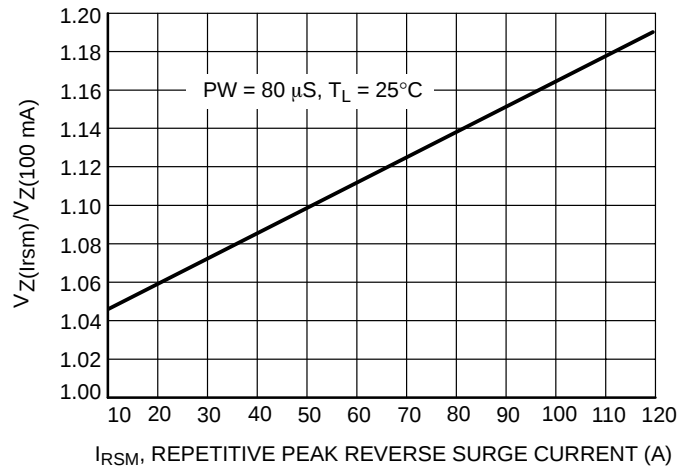


Figure 11. Typical Clamping Factor

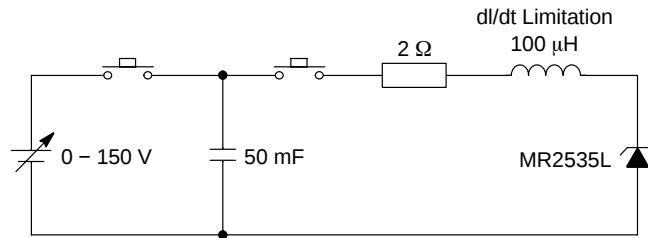


Figure 12. Load Dump Test Circuit

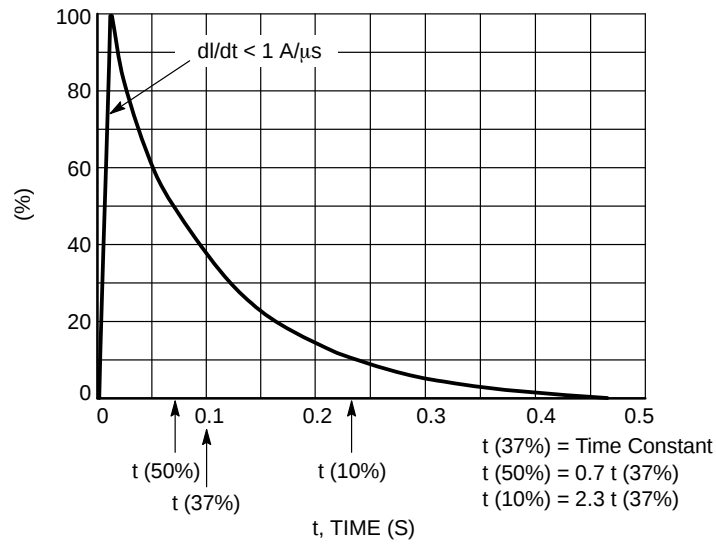
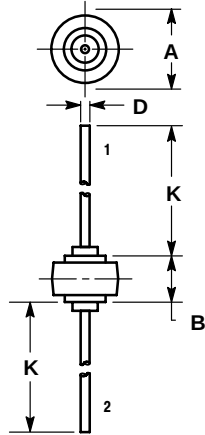


Figure 13. Load Dump Pulse Current

# MR2535L

## PACKAGE DIMENSIONS

### MICRODE AXIAL CASE 194-04 ISSUE H



- NOTES:
1. CATHODE SYMBOL ON PACKAGE.
  2. 194-01 OBSOLETE, 194-04 NEW STANDARD.

| DIM | MILLIMETERS |       | INCHES |       |
|-----|-------------|-------|--------|-------|
|     | MIN         | MAX   | MIN    | MAX   |
| A   | 8.43        | 8.69  | 0.332  | 0.342 |
| B   | 5.94        | 6.25  | 0.234  | 0.246 |
| D   | 1.27        | 1.35  | 0.050  | 0.053 |
| K   | 25.15       | 25.65 | 0.990  | 1.010 |

STYLE 1:  
PIN 1. CATHODE  
2. ANODE

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