

# MR2835SK

## Overvoltage Transient Suppressor

The overvoltage transient suppressor is designed for applications requiring a diode with reverse avalanche characteristics for use as reverse power transient suppressor.

Developed to suppress transients in the automotive system, this device operates in reverse mode as power zener diode and will protect expensive modules such as ignition, injection and autoblocking systems from overvoltage conditions.

### Features

- High Power Capability
- Economical
- This is a Pb-Free Device

### Mechanical Characteristics

- Finish: All External Surfaces are Corrosion Resistant
- Polarity: Cathode to Terminal
- Weight: 1.78 Grams (Approximately)
- Maximum Temperature for Soldering Purposes: 260°C for 10 s using a Belt Furnace

### MAXIMUM RATINGS

| Rating   | Symbol    | Value       | Unit |
|--|-----------|-------------|------|
| DC Blocking Voltage  | $V_R$     | 23          | V    |
| Peak Repetitive Reverse Surge Current (Time Constant = 10 ms, $T_C = 25^\circ\text{C}$ ) | $I_{RSM}$ | 62          | A    |
| Non-Repetitive Peak Surge Current (Half-wave, Single Phase, 50 Hz)                       | $I_{FSM}$ | 400         | A    |
| Storage Temperature Range  | $T_{stg}$ | -40 to +150 | °C   |
| Operating Junction Temperature Range   | $T_J$     | -40 to +150 | °C   |

### THERMAL CHARACTERISTICS

| Characteristic                       | Symbol          | Value | Unit |
|--------------------------------------|-----------------|-------|------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 1.0   | °C/W |

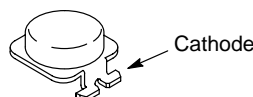
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



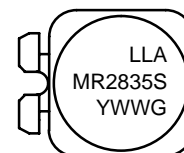
ON Semiconductor®

<http://onsemi.com>

### MARKING DIAGRAM



TOP CAN BUTTON  
CASE 460



LLA = Lot Number  
MR2835S = Specific Device Code  
Y = Year  
WW = Work Week  
G = Pb-Free Package

### ORDERING INFORMATION

| Device    | Package         | Shipping†       |
|-----------|-----------------|-----------------|
| MR2835SK  | Top Can Button* | 500/Tape & Reel |
| MR2835SKG | Top Can Button* | 500/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.

\*This package is inherently Pb-Free.

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

| Characteristic  | Symbol       | Min | Max   | Unit                       |
|---|--------------|-----|-------|----------------------------|
| Instantaneous Forward Voltage ( $I_F = 100\text{ A}$ ) (Note 1)                               | $V_F$        | -   | 1.1   | V                          |
| Reverse Current ( $V_R = 20\text{ V}$ ) (Note 1)  | $I_R$        | -   | 5.0   | $\mu\text{A}$              |
| Breakdown Voltage ( $I_Z = 100\text{ mA}$ ) (Note 1)  | $V_{(BR)}$   | 24  | 32    | V                          |
| Breakdown Voltage ( $I_Z = 80\text{ A}$ , $T_C = 85^\circ\text{C}$ , $PW = 80\ \mu\text{s}$ ) | $V_{(BR)}$   | -   | 40    | V                          |
| Breakdown Voltage Temperature Coefficient   | $V_{(BR)TC}$ | -   | 0.09  | $\%/^\circ\text{C}$        |
| Forward Voltage Temperature Coefficient ( $I_F = 10\text{ mA}$ )                              | $V_{FTC}$    | -   | -2.0* | $\text{mV}/^\circ\text{C}$ |

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

\*Typical

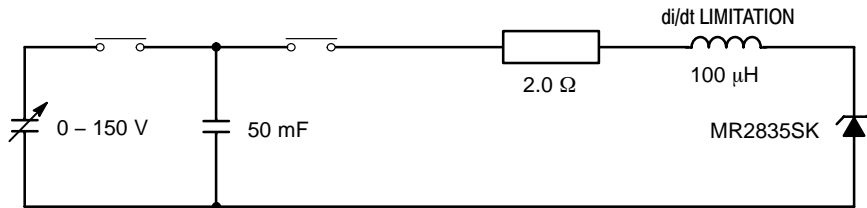


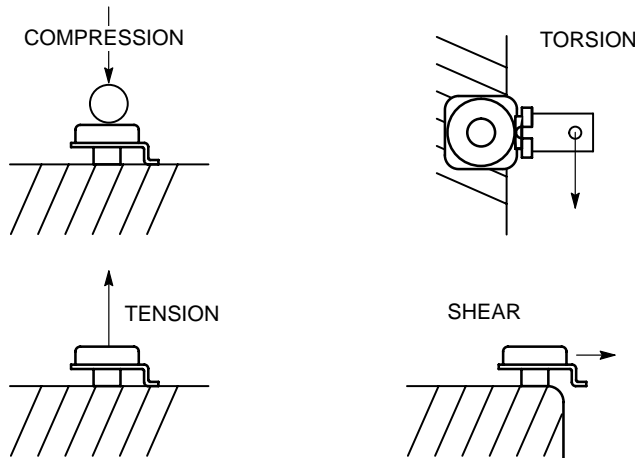
Figure 1. Load Dump Test Circuit

## MOUNTING AND HANDLING

The mechanical stress limits for the Top Can diode are as follows:

|              |              |                   |
|--------------|--------------|-------------------|
| Compression: | 33.7 lbs     | 150 newtons       |
| Tension:     | 33.7 lbs     | 150 newtons       |
| Torsion:     | 6.3 inch lbs | 0.7 newton meters |
| Shear:       | 56.2 lbs     | 250 newtons       |

## MECHANICAL STRESS



# MR2835SK

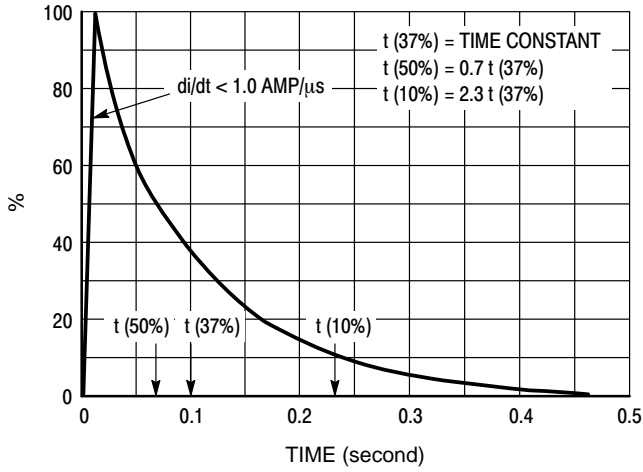


Figure 2. Load Dump Pulse Current

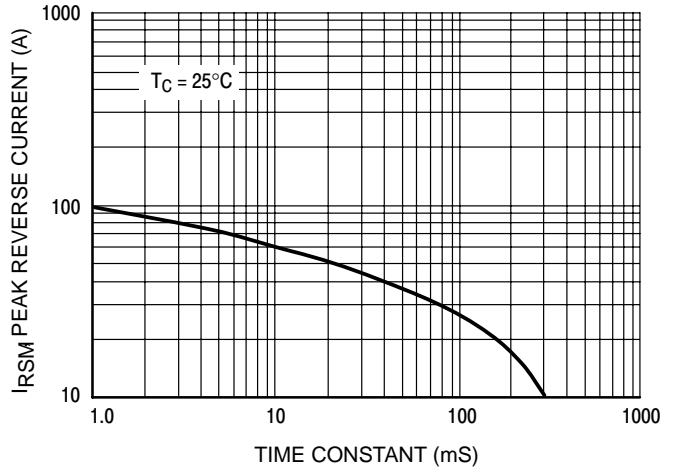


Figure 3. Maximum Peak Reverse Current

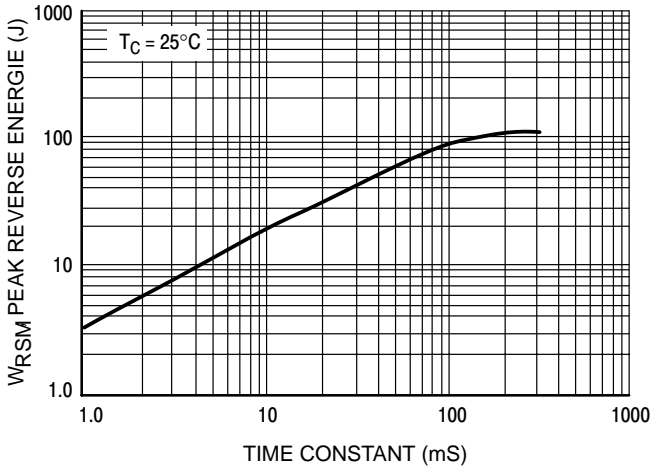


Figure 4. Maximum Reverse Energy

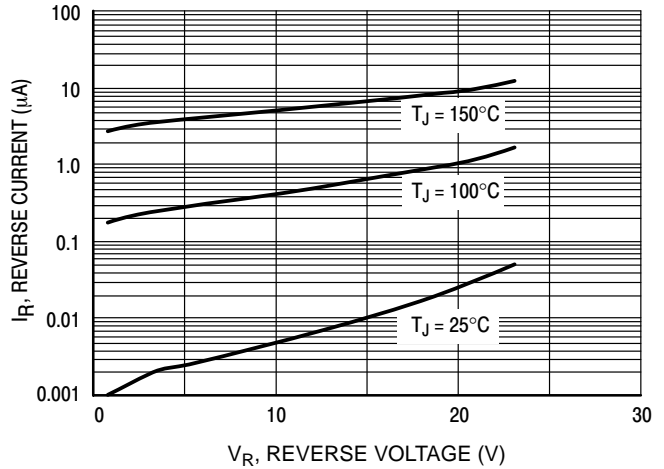


Figure 5. Typical Reverse Current

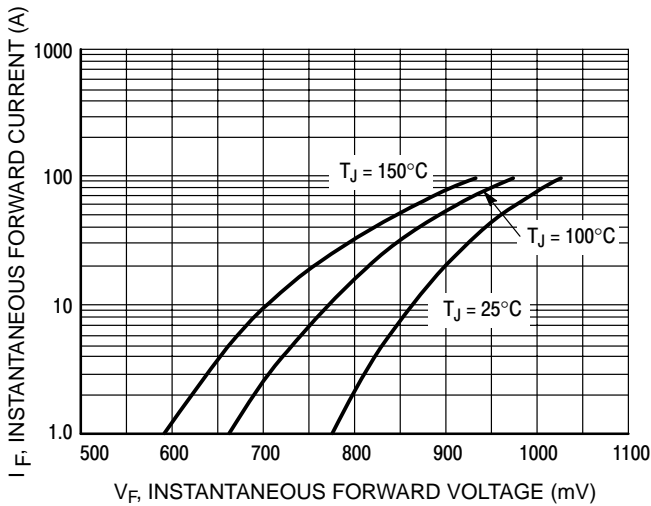


Figure 6. Typical Forward Voltage

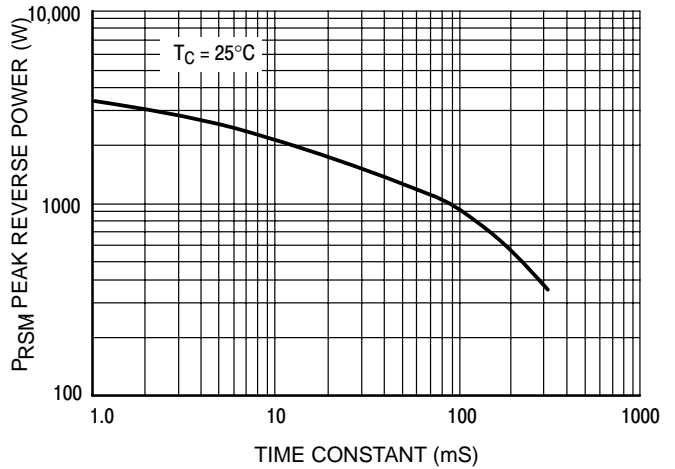


Figure 7. Maximum Peak Reverse Power

# MR2835SK

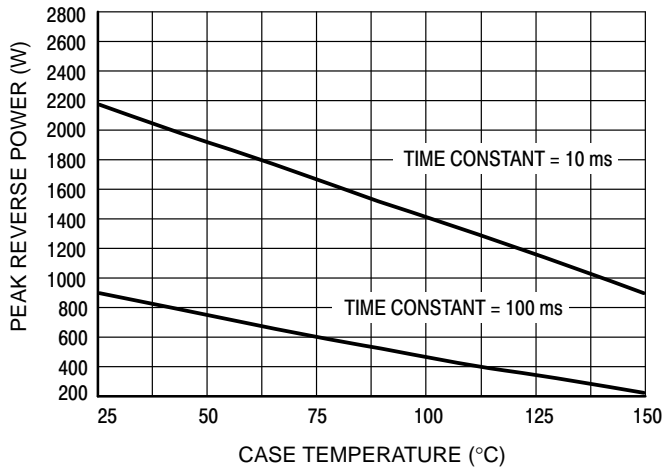


Figure 8. Reverse Power Derating

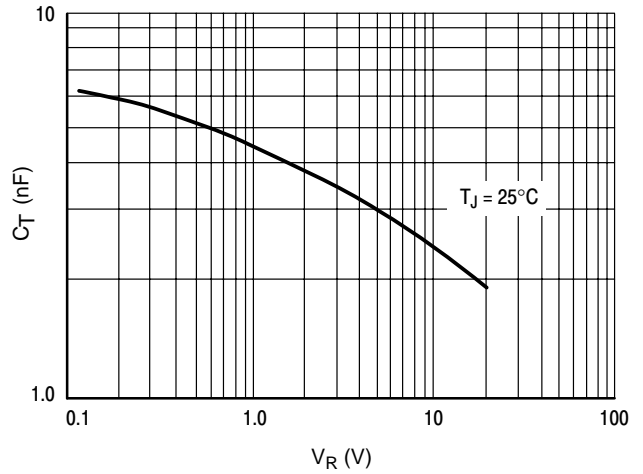


Figure 9. Typical Reverse Capacitance

## Reel of 500 Units

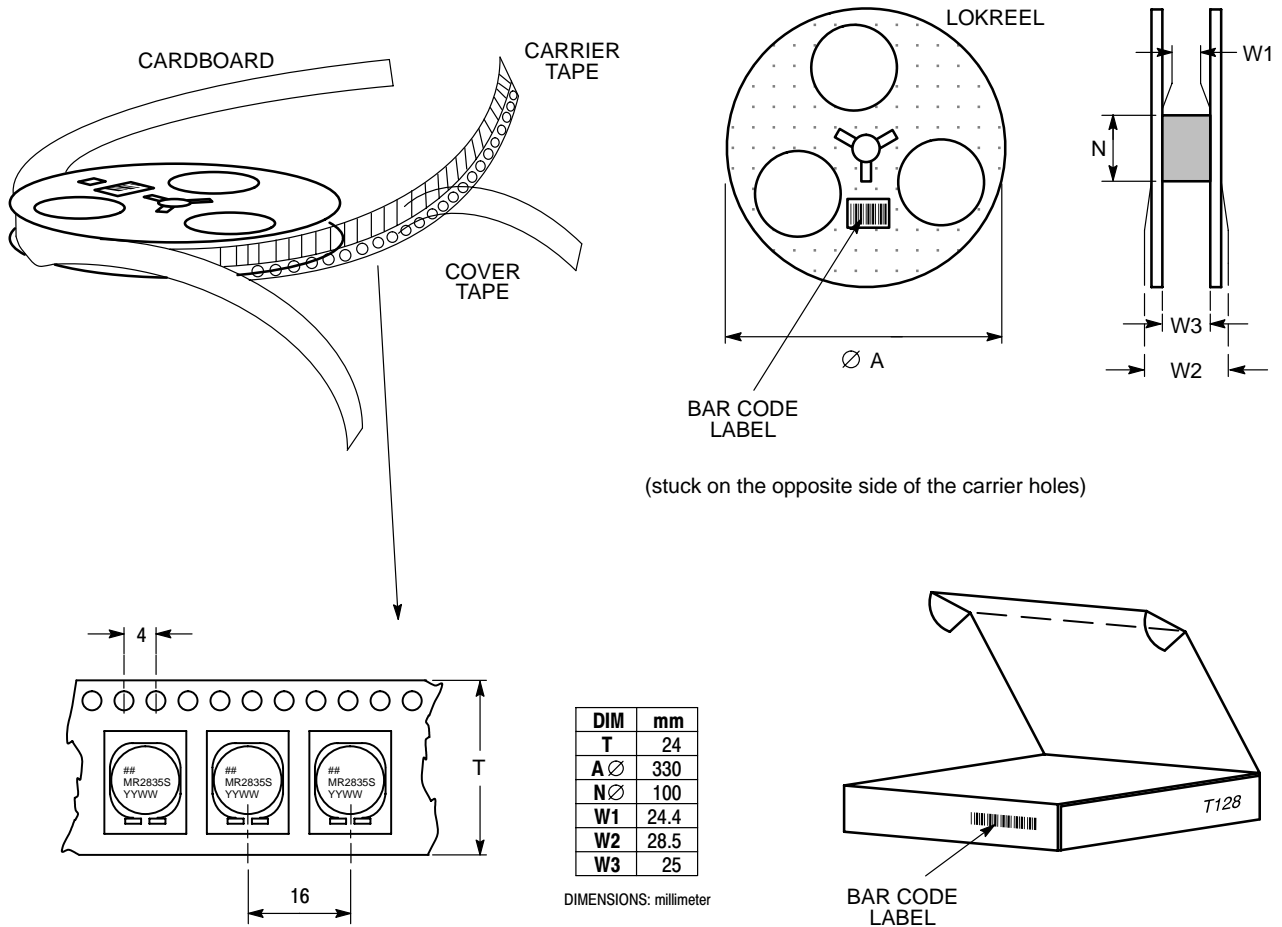
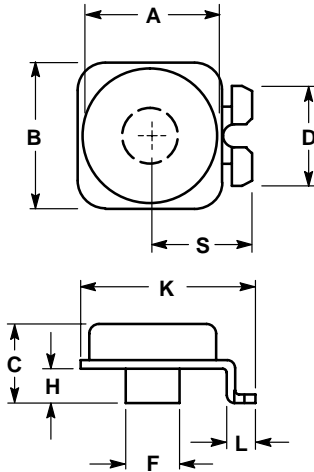


Figure 10. Reel Packing of MR2835SK – Top Can

# MR2835SK

## PACKAGE DIMENSIONS

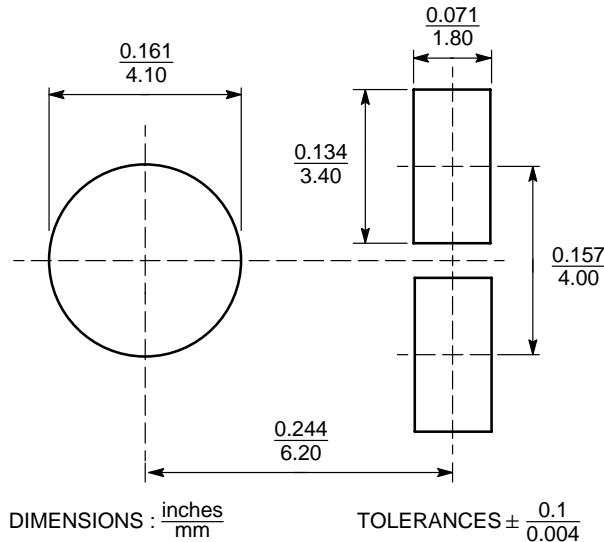
### TOP CAN BUTTON CASE 460-02 ISSUE B



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: MILLIMETER.

| DIM | MILLIMETERS |      | INCHES |       |
|-----|-------------|------|--------|-------|
|     | MIN         | MAX  | MIN    | MAX   |
| A   | 9.1         | 9.5  | 0.358  | 0.374 |
| B   | 9.5         | 9.9  | 0.374  | 0.390 |
| C   | 5.2         | 5.6  | 0.205  | 0.220 |
| D   | 6.4         | 6.8  | 0.252  | 0.268 |
| F   | 3.4         | 3.8  | 0.134  | 0.149 |
| H   | 2.0         | 2.4  | 0.079  | 0.095 |
| K   | 11.4        | 11.8 | 0.449  | 0.465 |
| L   | 1.8         | 2.2  | 0.071  | 0.087 |
| S   | 6.5         | 6.9  | 0.256  | 0.272 |

### 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.

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