

MBRB2535CTL

Preferred Device

SWITCHMODE™ Power Rectifier

D²PAK Surface Mount Power Package

The D²PAK Power Rectifier employs the Schottky Barrier principle in a large metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. Ideally suited for use in low voltage, high frequency switching power supplies, free wheeling diodes, and polarity protection diodes. These state-of-the-art devices have the following features:

Features

- Pb-Free Packages are Available
- Center-Tap Configuration
- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL 94, V-0 @ 0.125 in
- Short Heatsink Tab Manufactured – Not Sheared
- Similar in Size to the Industry Standard TO-220 Package

Mechanical Characteristics

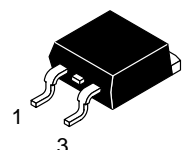
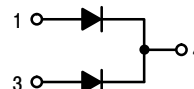
- Case: Epoxy, Molded, Epoxy Meets UL 94, V-0
- Weight: 1.7 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Available in 24 mm Tape and Reel, 800 units per 13" reel by adding a "T4" suffix to the part number
- Device Meets MSL1 Requirements
- ESD Ratings: Machine Model, C (>400 V)
Human Body Model, 3B (>8000 V)



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SCHOTTKY BARRIER RECTIFIER 25 AMPERES 35 VOLTS



D²PAK
CASE 418B
STYLE 3

MARKING DIAGRAM



B2535L = Device Code
A = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

| Device | Package | Shipping† |
|----------------|---------------------------------|-----------------|
| MBRB2535CTL | D ² PAK | 50 Units/Rail |
| MBRB2535CTLG | D ² PAK (Pb-Free) | 50 Units/Rail |
| MBRB2535CTLT4 | D ² PAK | 800/Tape & Reel |
| MBRB2535CTLT4G | D ² PAK (Pb-Free) | 800 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.

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MAXIMUM RATINGS (Per Leg)

| Rating | Symbol | Value | Unit |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 35 | V |
| Average Rectified Forward Current, (Rated V_R , $T_C = 110^\circ\text{C}$) | $I_{F(AV)}$ | 12.5 | A |
| Peak Repetitive Forward Current, (Rated V_R , Square Wave, 20 kHz, $T_C = 90^\circ\text{C}$) | I_{FRM} | 25 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 150 | A |
| Peak Repetitive Reverse Surge Current (2.0 μs , 1.0 kHz) | I_{RRM} | 1.0 | A |
| Storage Temperature Range | T_{stg} | -65 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature | T_J | -65 to +125 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated V_R) | dv/dt | 10,000 | V/ μs |

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.

THERMAL CHARACTERISTICS (Per Leg)

| Characteristic | Symbol | Value | Unit |
|--------------------------------------|-----------------|-------|--------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 2.0 | $^\circ\text{C/W}$ |
| Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 5.0 | |

ELECTRICAL CHARACTERISTICS (Per Leg)

| | | | |
|--|-------|----------------------|-------|
| Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 25$ Amps, $T_J = 25^\circ\text{C}$) ($i_F = 12.5$ Amps, $T_J = 125^\circ\text{C}$) ($i_F = 12.5$ Amps, $T_J = 25^\circ\text{C}$) | v_F | 0.55 0.41 0.47 | Volts |
| Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_J = 125^\circ\text{C}$) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) | I_R | 500 10 | mA |

1. When mounted using minimum recommended pad size on FR-4 board.
2. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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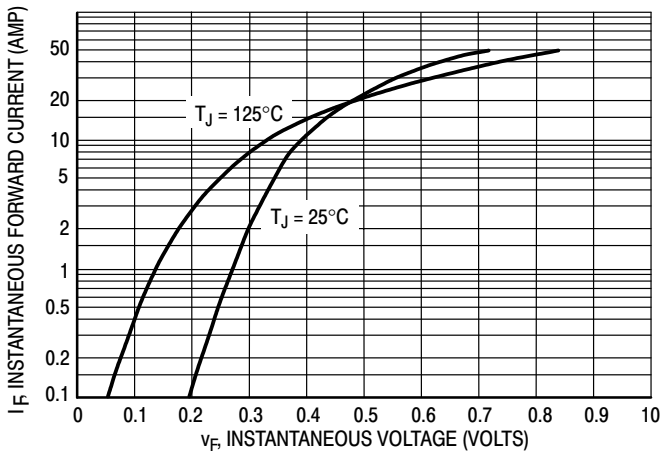


Figure 1. Typical Forward Voltage, Per Leg

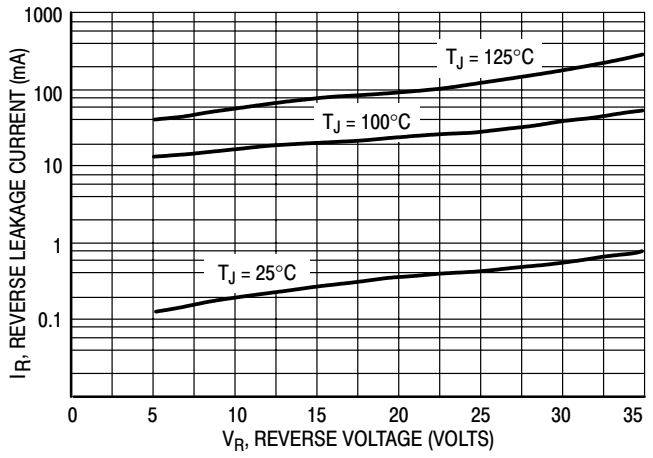


Figure 2. Typical Reverse Current, Per Leg

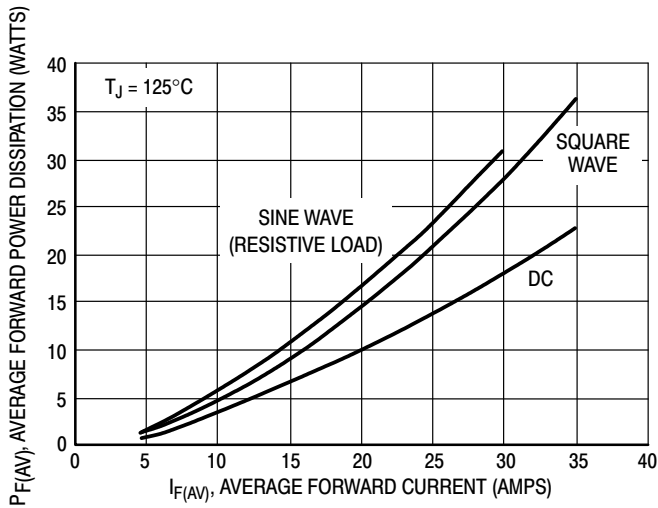


Figure 3. Typical Forward Power Dissipation

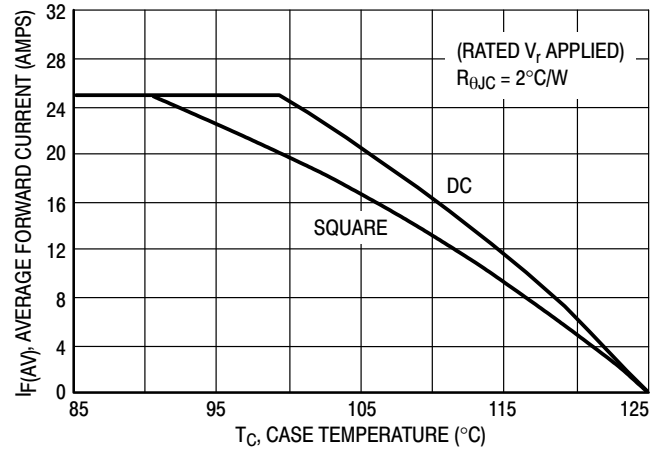
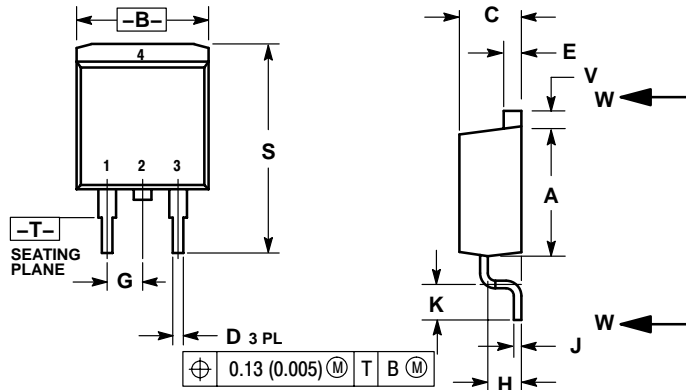


Figure 4. Current Derating, Case

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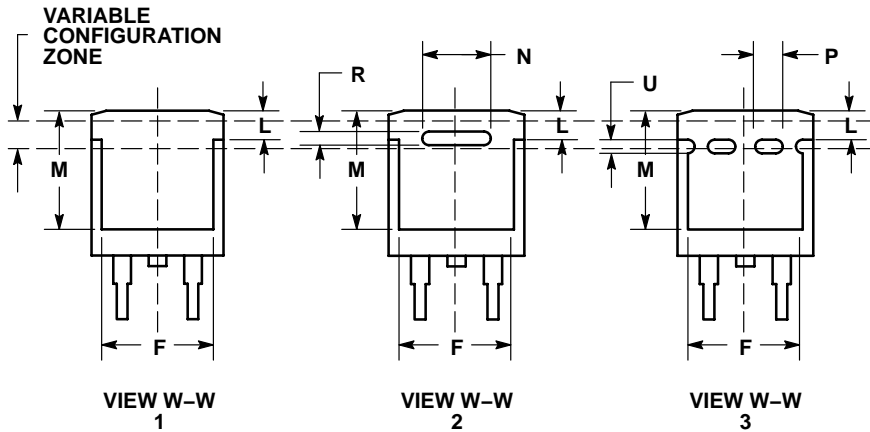
PACKAGE DIMENSIONS

D²PAK
CASE 418B-04
ISSUE J



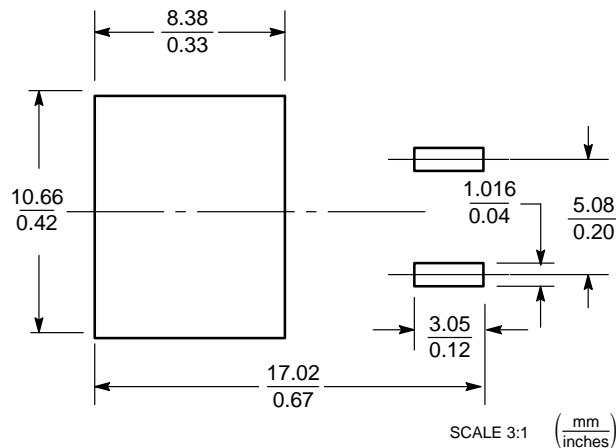
- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 418B-01 THRU 418B-03 OBSOLETE, NEW STANDARD 418B-04.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.340 | 0.380 | 8.64 | 9.65 |
| B | 0.380 | 0.405 | 9.65 | 10.29 |
| C | 0.160 | 0.190 | 4.06 | 4.83 |
| D | 0.020 | 0.035 | 0.51 | 0.89 |
| E | 0.045 | 0.055 | 1.14 | 1.40 |
| F | 0.310 | 0.350 | 7.87 | 8.89 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.080 | 0.110 | 2.03 | 2.79 |
| J | 0.018 | 0.025 | 0.46 | 0.64 |
| K | 0.090 | 0.110 | 2.29 | 2.79 |
| L | 0.052 | 0.072 | 1.32 | 1.83 |
| M | 0.280 | 0.320 | 7.11 | 8.13 |
| N | 0.197 REF | | 5.00 REF | |
| P | 0.079 REF | | 2.00 REF | |
| R | 0.039 REF | | 0.99 REF | |
| S | 0.575 | 0.625 | 14.60 | 15.88 |
| V | 0.045 | 0.055 | 1.14 | 1.40 |



- STYLE 3:
PIN 1: ANODE
2: CATHODE
3: ANODE
4: CATHODE

SOLDERING FOOTPRINT*




SCALE 3:1 (mm / inches)

*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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