

# Switch-mode Power Rectifier

## DPAK Surface Mount Package

### MBRD835L, SBRD8835L

This switch-mode power rectifier which uses the Schottky Barrier principle with a proprietary barrier metal, is designed for use as output rectifiers, free wheeling, protection and steering diodes in switching power supplies, inverters and other inductive switching circuits.

#### Features

- Low Forward Voltage
- 150°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Compact Size
- Lead Formed for Surface Mount
- SBRD8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free and are RoHS Compliant

#### Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 0.4 Gram (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 75 Units Per Plastic Tube
- ESD Rating:
  - ◆ Machine Model = C (> 400 V)
  - ◆ Human Body Model = 3B (> 8000 V)

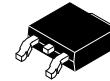


**ON Semiconductor®**

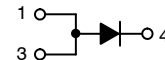
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### SCHOTTKY BARRIER RECTIFIER

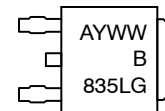
#### 8.0 AMPERES, 35 VOLTS



**DPAK  
CASE 369C**



#### MARKING DIAGRAM



B835LG = Specific Device Number  
 A = Assembly Location\*  
 Y = Year  
 WW = Work Week  
 G = Pb-Free Device

\* The Assembly Location Code (A) is front side optional. In cases where the Assembly Location is stamped in the package bottom (molding ejector pin), the front side assembly code may be blank.

#### ORDERING INFORMATION

Device	Package	Shipping†
MBRD835LG	DPAK (Pb-Free)	75 Units / Rail
SBRD8835LG	DPAK (Pb-Free)	75 Units / Rail
SBRD8835LG-VF01	DPAK (Pb-Free)	75 Units / Rail
MBRD835LT4G	DPAK (Pb-Free)	2,500 / Tape & Reel
SBRD835LT4G-VF01	DPAK (Pb-Free)	2,500 / Tape & Reel
SBRD8835LT4G	DPAK (Pb-Free)	2,500 / Tape & Reel
SBRD8835LT4G-VF01	DPAK (Pb-Free)	2,500 / 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

# MBRD835L, SBRD8835L

## MAXIMUM RATINGS

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 ( $T_C = 88^\circ\text{C}$ )	$I_{F(AV)}$	8.0	A
Peak Repetitive Forward Current (Square Wave, Duty = 0.5, $T_C = 80^\circ\text{C}$ )	$I_{FRM}$	16	A
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz)	$I_{FSM}$	75	A
Repetitive Avalanche Current (Current Decaying Linearly to Zero in 1 $\mu\text{s}$ , Frequency Limited by $T_{Jmax}$ )	$I_{AR}$	2.0	A
Storage / Operating Case Temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Operating Junction Temperature (Note 1)	$T_J$	-65 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10,000	V/ $\mu\text{s}$

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. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Thermal Resistance – Junction-to-Case	$R_{\theta JC}$	2.8	$^\circ\text{C/W}$
Thermal Resistance – Junction-to-Ambient (Note 2)	$R_{\theta JA}$	80	$^\circ\text{C/W}$

2. Rating applies when surface mounted on the minimum pad size recommended.

## ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 3) ( $I_F = 8$ Amps, $T_C = +25^\circ\text{C}$ ) ( $I_F = 8$ Amps, $T_C = +125^\circ\text{C}$ )	$V_F$	0.51 0.41	V
Maximum Instantaneous Reverse Current (Note 3) (Rated dc Voltage, $T_C = +25^\circ\text{C}$ ) (Rated dc Voltage, $T_C = +100^\circ\text{C}$ )	$I_R$	1.4 35	mA

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

# MBRD835L, SBRD8835L

## TYPICAL CHARACTERISTICS

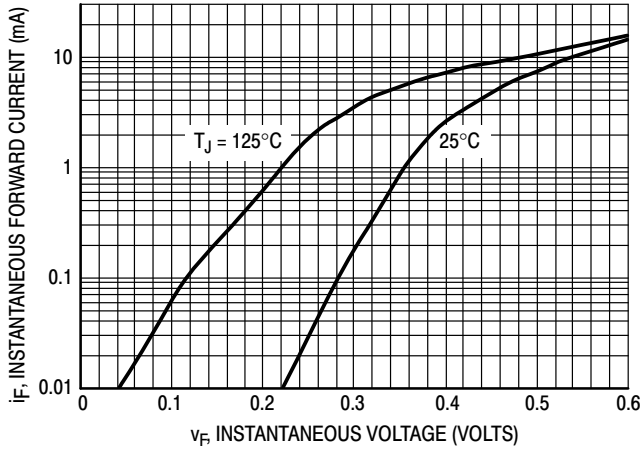


Figure 1. Maximum Forward Voltage

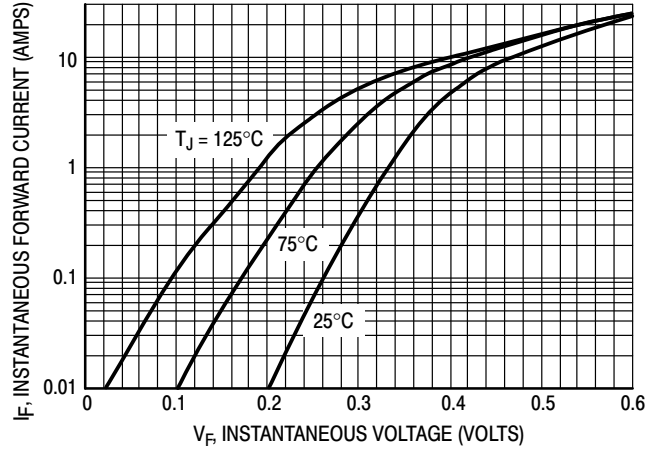


Figure 2. Typical Forward Voltage

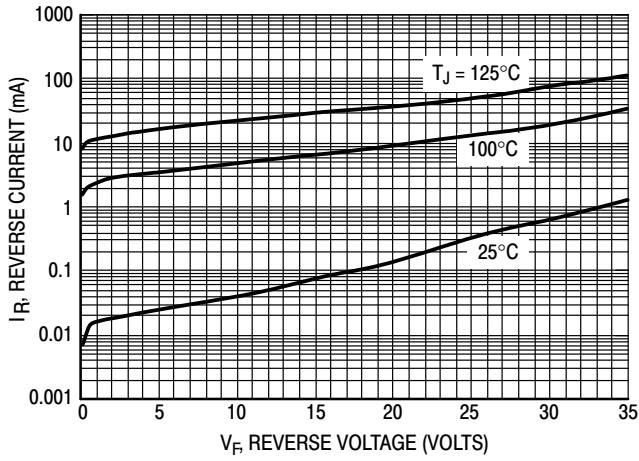


Figure 3. Maximum Reverse Current

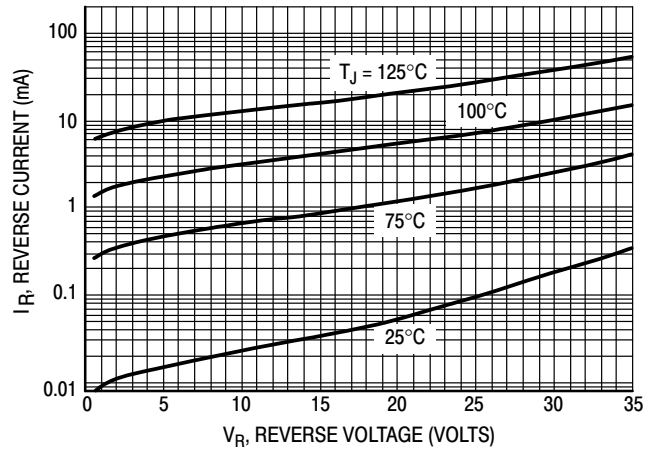


Figure 4. Typical Reverse Current

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## TYPICAL CHARACTERISTICS

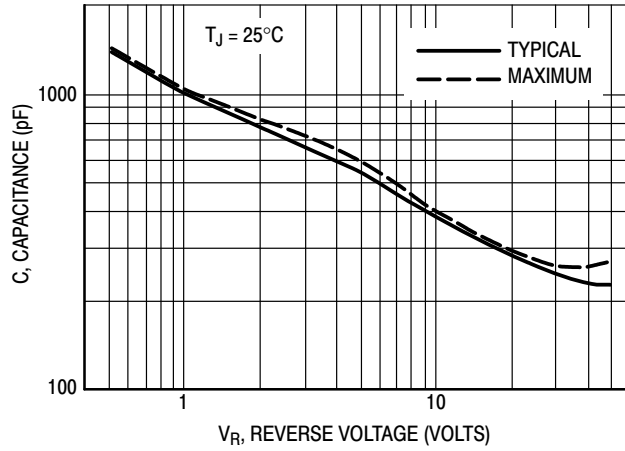


Figure 5. Maximum and Typical Capacitance

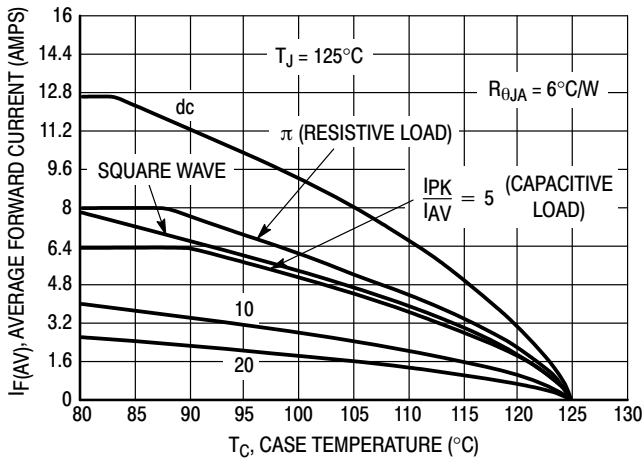


Figure 6. Current Derating, Infinite Heatsink

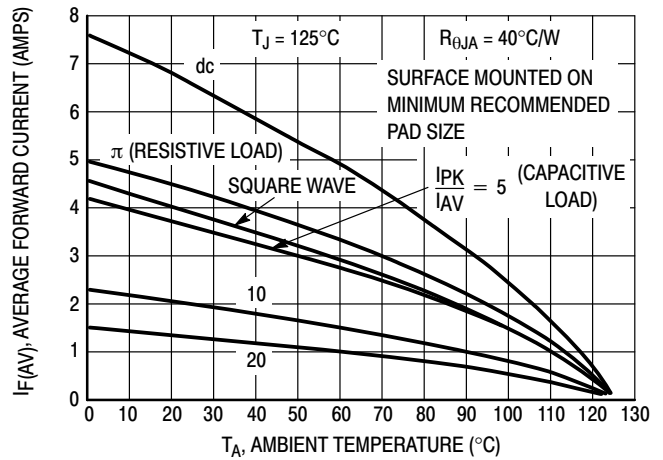


Figure 7. Current Derating

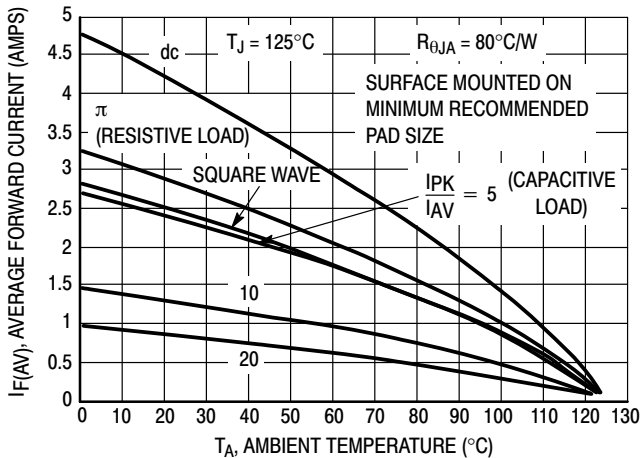


Figure 8. Current Derating, Free Air

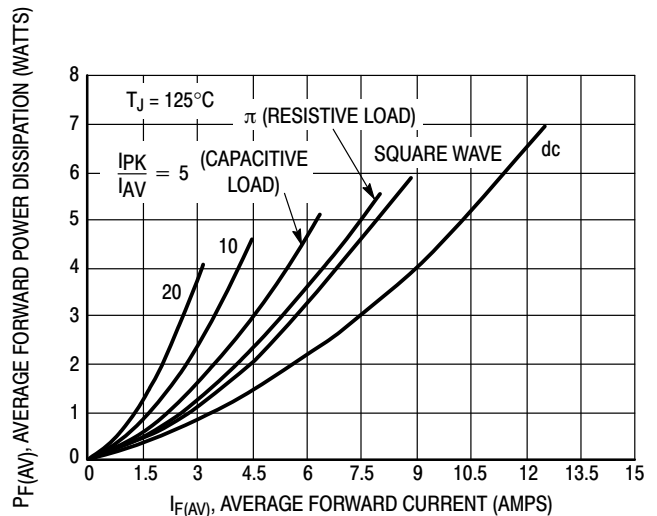


Figure 9. Forward Power Dissipation

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

ON Semiconductor®



SCALE 1:1

### DPAK (SINGLE GAUGE)

#### CASE 369C

#### ISSUE F

DATE 21 JUL 2015



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS b3, L3 and Z.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
5. DIMENSIONS D AND E ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY.
6. DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
7. OPTIONAL MOLD FEATURE.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.086	0.094	2.18	2.38
A1	0.000	0.005	0.00	0.13
b	0.025	0.035	0.63	0.89
b2	0.028	0.045	0.72	1.14
b3	0.180	0.215	4.57	5.46
c	0.018	0.024	0.46	0.61
c2	0.018	0.024	0.46	0.61
D	0.235	0.245	5.97	6.22
E	0.250	0.265	6.35	6.73
e	0.090 BSC		2.29 BSC	
H	0.370	0.410	9.40	10.41
L	0.055	0.070	1.40	1.78
L1	0.114 REF		2.90 REF	
L2	0.020 BSC		0.51 BSC	
L3	0.035	0.050	0.89	1.27
L4	---	0.040	---	1.01
Z	0.155	---	3.93	---

### GENERIC MARKING DIAGRAM\*



- XXXXXX = Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking.

- |  |  |   |   |  |
|--|--|---|---|--|
| <p>STYLE 1:<br/>PIN 1. BASE<br/>2. COLLECTOR<br/>3. EMITTER<br/>4. COLLECTOR</p> | <p>STYLE 2:<br/>PIN 1. GATE<br/>2. DRAIN<br/>3. SOURCE<br/>4. DRAIN</p>          | <p>STYLE 3:<br/>PIN 1. ANODE<br/>2. CATHODE<br/>3. ANODE<br/>4. CATHODE</p> | <p>STYLE 4:<br/>PIN 1. CATHODE<br/>2. ANODE<br/>3. GATE<br/>4. ANODE</p>              | <p>STYLE 5:<br/>PIN 1. GATE<br/>2. ANODE<br/>3. CATHODE<br/>4. ANODE</p>     |
| <p>STYLE 6:<br/>PIN 1. MT1<br/>2. MT2<br/>3. GATE<br/>4. MT2</p>                 | <p>STYLE 7:<br/>PIN 1. GATE<br/>2. COLLECTOR<br/>3. EMITTER<br/>4. COLLECTOR</p> | <p>STYLE 8:<br/>PIN 1. N/C<br/>2. CATHODE<br/>3. ANODE<br/>4. CATHODE</p>   | <p>STYLE 9:<br/>PIN 1. ANODE<br/>2. CATHODE<br/>3. RESISTOR ADJUST<br/>4. CATHODE</p> | <p>STYLE 10:<br/>PIN 1. CATHODE<br/>2. ANODE<br/>3. CATHODE<br/>4. ANODE</p> |

### 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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