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Green

MRS30M

3.0A SURFACE MOUNT FAST RECOVERY BRIDGE RECTIFIER

Product Summary (@T_A = +25°C)

V_{RRM} (V)	I_O (A)	V_F (V)	I_R (µA)	t_{RR} (ns)
1000	3.0	1.3	5	250

Features and Benefits

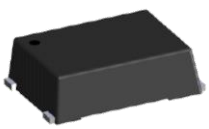
- Glass Passivated Die Construction
- Filter Rectifier with EMI Design Friendly
- Compact, Thin Profile Package Design
- Reliable Robust Construction
- Rated at 1000V PRV
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Description and Applications

Suitable for AC to DC bridge full wave rectification for SMPS, LED lighting, adapter, battery charger, home appliances, office equipment, and telecommunication applications.

Mechanical Data

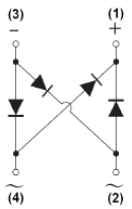
- Case: MSBL
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 (e3)
- Polarity: As Marked on Body
- Weight: 0.216 grams (Approximate)



Top View



Pin Diagram



Internal Schematic

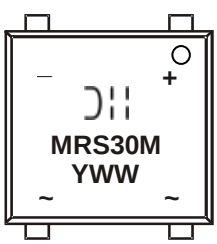
Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
MRS30M-13	Commercial	MSBL	2,500/Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

Pin 1



MRS30M= Product Type Marking Code
= Manufacturer's Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 1 = 2021)
WW = Week Code (01 to 53)

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	1000	V
Average Rectified Output Current @ T_C = +130°C	I_O	3.0	A
Non-Repetitive Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	100	A
I^2t Rating for Fusing (1ms < t < 8.3ms)	I^2t	41.5	A^2s

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient (Note 5) (Per Element)	$R_{\theta JA}$	25	°C/W
Typical Thermal Resistance, Junction to Case (Note 5) (Per Element)	$R_{\theta JC}$	2	°C/W
Typical Thermal Resistance, Junction to Lead (Note 5) (Per Element)	$R_{\theta JL}$	10	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	1,000	—	—	V	I_R = 5μA
Forward Voltage (Note 7) (Per Element)	V_F	— —	— 0.99	1.3 —	V	I_F = 3A, T_A = +25°C I_F = 3A, T_A = +125°C
Leakage Current (Note 6) (Per Element)	I_R	— —	— 81	5 —	μA	V_R = 1,000V, T_A = +25°C V_R = 1,000V, T_A = +125°C
Total Capacitance	C_T	—	45	—	pF	V_R = 4V, f = 1.0MHz
Reverse Recovery Time	t_{RR}	—	—	250	ns	I_F = 0.5A, I_{RR} = 0.25A, I_R = 1.0A

Notes: 5. Device mounted on 120mm*96mm*1.45mm Aluminum plate. Test performed in accordance with JESD-51.
6. Short duration pulse test used to minimize self-heating effect.
7. 300μs pulse width, 2% duty cycle.

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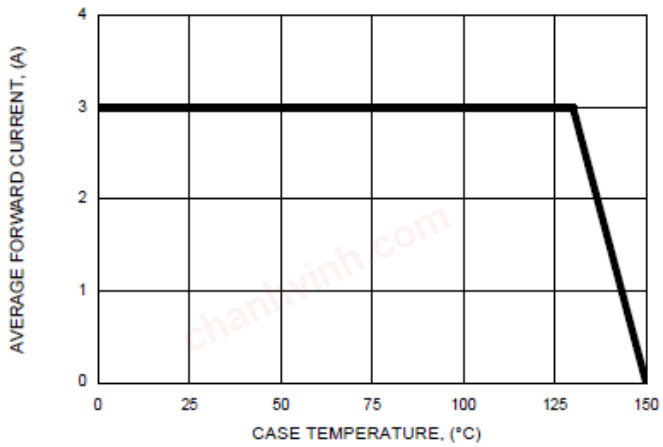


FIG.1- FORWARD CURRENT DERATING CURVE

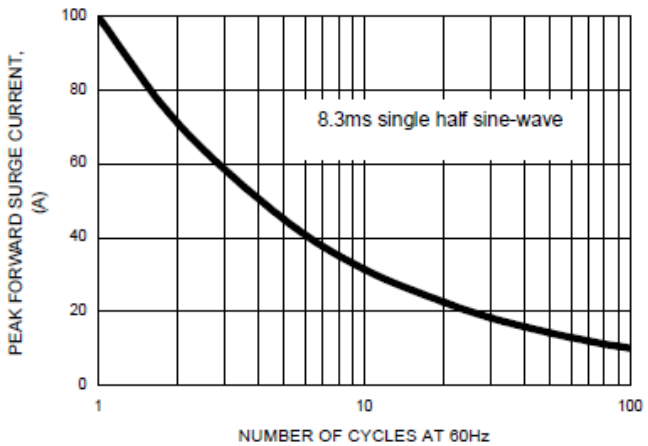


FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

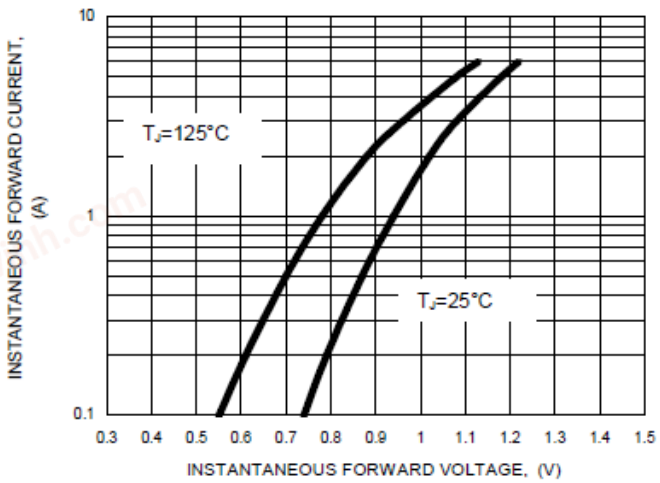


FIG.3- TYPICAL FORWARD CHARACTERISTICS

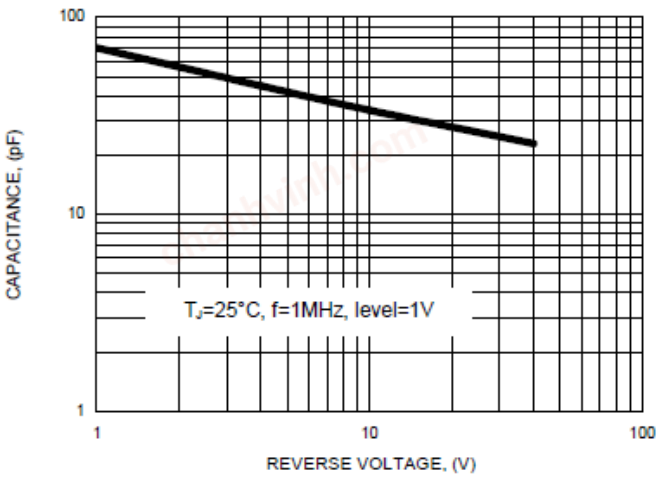


FIG.4- TYPICAL JUNCTION CAPACITANCE

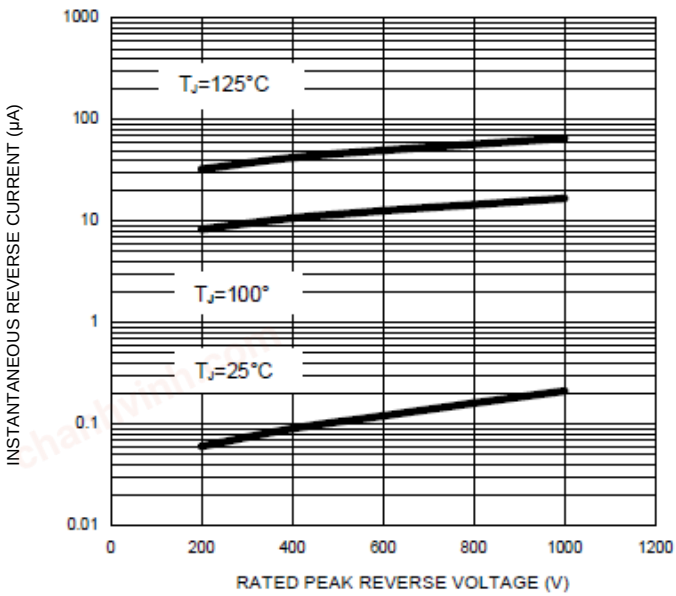


FIG.5- TYPICAL REVERSE CHARACTERISTICS

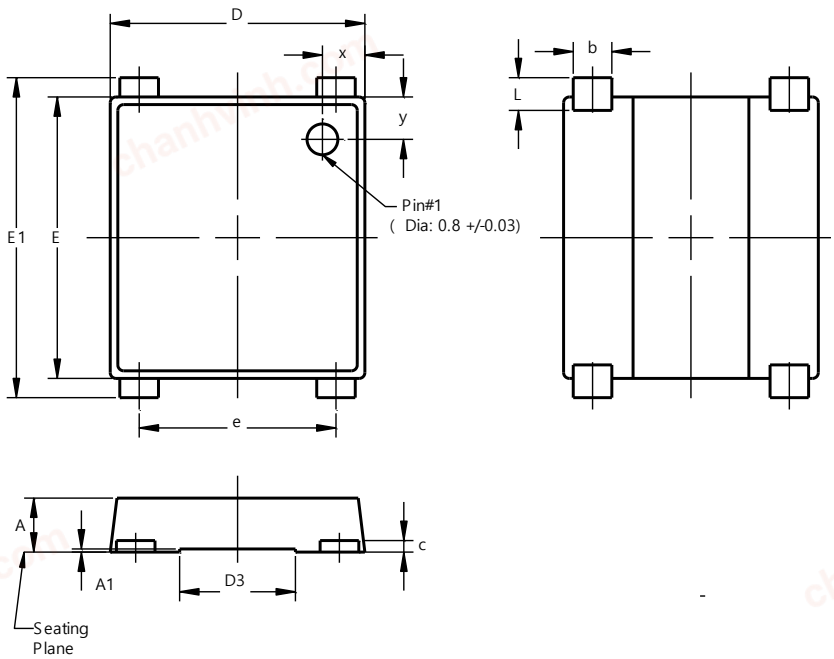
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Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

MSBL

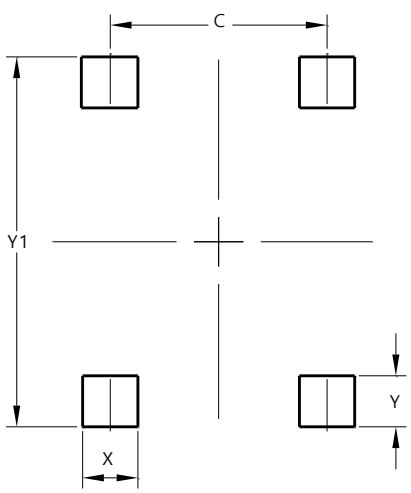


MSBL			
Dim	**Min**	**Max**	**Typ**
A	1.30	1.50	1.40
A1	0.04	0.08	0.06
b	0.95	1.15	1.00
c	0.27	0.40	0.30
D	6.50	6.70	6.60
D3	2.90	3.10	3.00
E	7.20	7.40	7.30
E1	7.90	8.60	8.30
e	5.00	5.20	5.10
L	0.65	1.05	0.85
x	0.95	1.25	1.10
y	0.95	1.25	1.10
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

MSBL



Dimensions	Value (in mm)
C	5.10
X	1.30
Y	1.20
Y1	8.70

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