

1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER

Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _O (A)	V _F Max (V)	I _R Max (μA)	T _{rr} (ns)
1000	1	1.3	5	500

Description

The FRS1MEQ is a rectifier packaged in the DO-219AA package and is suited as a boost diode in power-factor correction circuitry. This device is for use in secondary rectification and freewheeling for ultra-fast switching speed AC-AC and DC-DC converters in high-temperature conditions for consumer applications.

Applications

- Flat Panel Display
- Switching Power Supplies/Chargers
- LED Lighting
- Freewheeling Diode
- Automotive

Features and Benefits

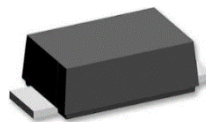
- Low Profile, Small Form Factor Package
- Low Leakage Current
- Glass Passivated Die Construction
- Superfast Recovery Time for High-Efficiency
- Low Forward Voltage, Low Power Loss
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The FRS1MEQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

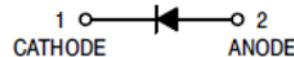
Mechanical Data

- Case: DO-219AA
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Copper Lead-Frame. Solderable per MIL-STD-202, Method 208 (e3)
- Polarity: Cathode Band
- Weight: 0.016 grams (Approximate)

DO-219AA



Top View



Schematic View

Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
FRS1MEQ-7	Automotive	DO-219AA	3000/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

DO-219AA



R1MQ = Product Type Marking Code
 YWXX = Date Code Marking
 Y = Last Digit of Year (ex: 0 = 2020)
 W = Week Code
 XX = Journal Lot Code (ex: 0~9 and A~Z, (Skip O, I))

Date Code Key

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	0	1	2	3	4	5	6	7	8	9	0	1
Week	1-26						27-52					
Code	A-Z						a-z					

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, 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	V_{RRM}	1000	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_R		
Average Rectified Output Current	I_O	1	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	30	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	20	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	110	$^\circ\text{C/W}$
Typical Thermal Resistance Junction to Lead (Note 5)	$R_{\theta JL}$	25	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	$V_{(BR)R}$	1000	—	—	V	$I_R = 10\mu\text{A}$
Forward Voltage	V_F	—	1.1	1.3	V	$I_F = 1\text{A}, T_J = +25^\circ\text{C}$
Reverse Leakage Current (Note 6)	I_R	—	0.5 20	5 200	μA	$V_R = 1000\text{V}, T_J = +25^\circ\text{C}$ $V_R = 1000\text{V}, T_J = +100^\circ\text{C}$
Reverse Recovery Time	t_{RR}	—	—	500	ns	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{RR} = 0.25\text{A}$
Typical Total Capacitance	C_T	—	5	—	pF	$V_R = 4\text{V}, f = 1\text{MHz}$

Notes: 5. Thermal resistance test performed in accordance with JESD-51. Unit mounted on glass-epoxy substrate with 5×7 mm copper pad.
6. Short duration pulse test used to minimize self-heating effect.

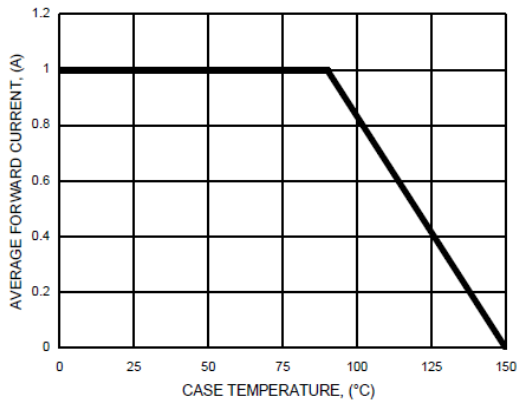


FIG.1- FORWARD CURRENT DERATING CURVE

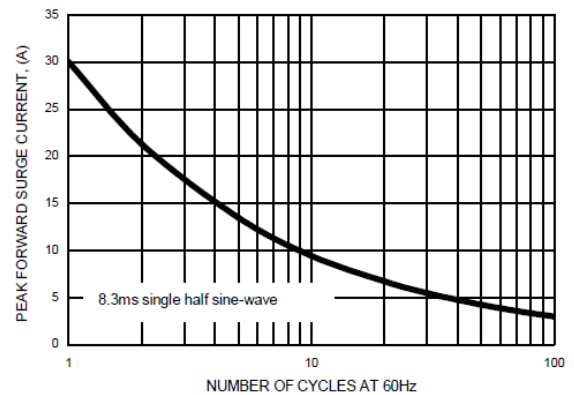


FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

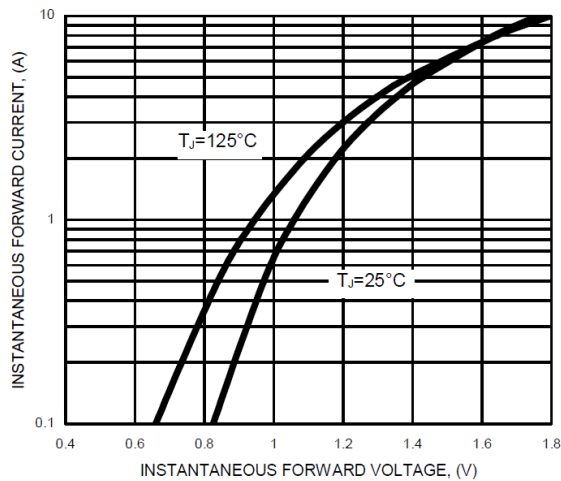


FIG.3- TYPICAL FORWARD CHARACTERISTICS

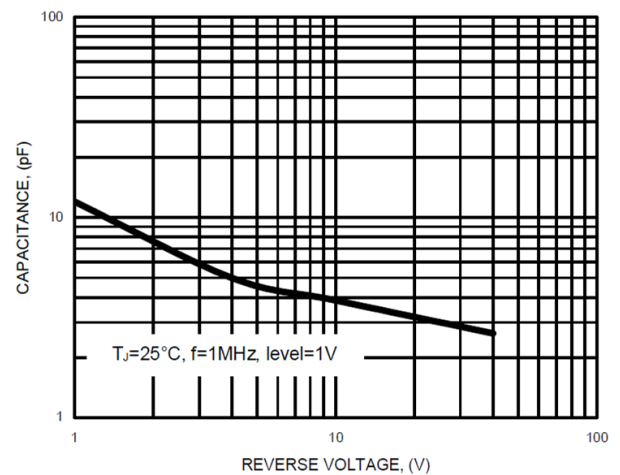


FIG.4- TYPICAL TOTAL CAPACITANCE

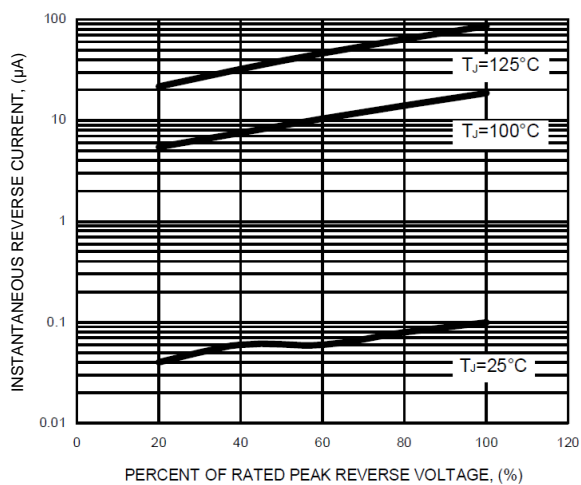
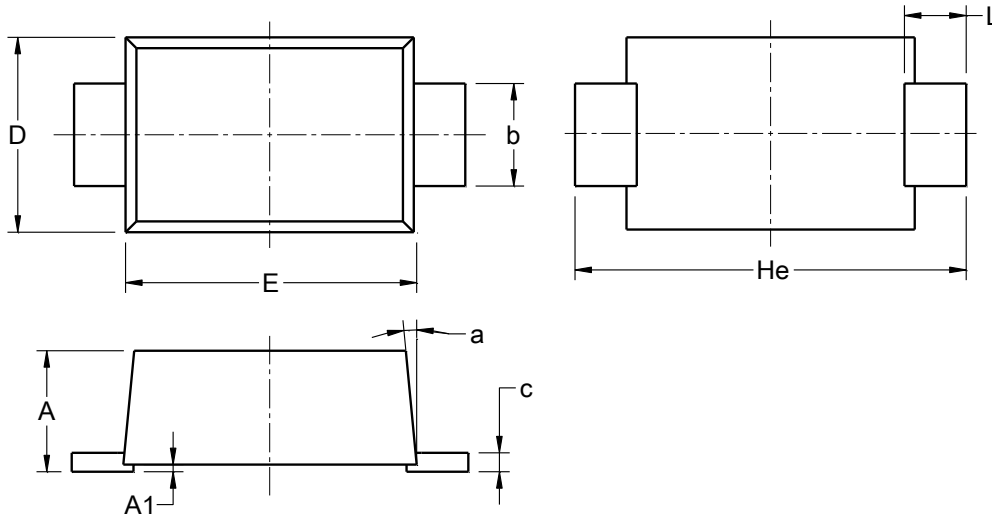


FIG.5- TYPICAL REVERSE CHARACTERISTICS

Package Outline Dimensions

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

DO-219AA

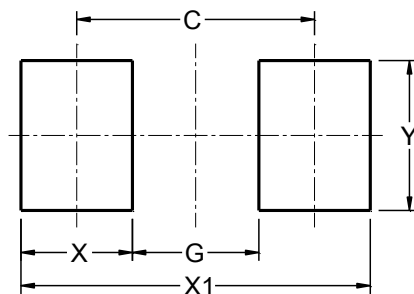


DO-219AA			
Dim	Min	Max	Typ
A	0.81	1.20	1.18
A1	0.03	0.10	0.07
b	0.85	1.15	1.00
c	0.05	0.30	0.15
D	1.70	2.00	1.90
E	2.70	2.90	2.80
He	3.50	3.90	3.80
L	0.45	0.75	0.60
a	0°	8°	5°
All Dimensions in mm			

Suggested Pad Layout

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

DO-219AA



Dimensions	Value (in mm)
C	2.86
G	1.52
X	1.34
X1	4.20
Y	1.80

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