

**1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER**
**Product Summary (@ T<sub>A</sub> = +25°C)**

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V)	I <sub>R</sub> Max (μA)	T <sub>rr</sub> (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

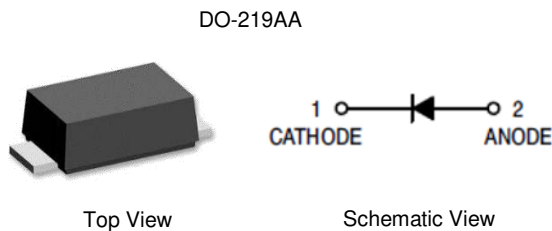
**Features and Benefits**

- 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/>

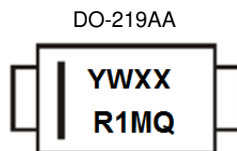
**Mechanical Data**

- 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 <sup>(e3)</sup>
- Polarity: Cathode Band
- Weight: 0.016 grams (Approximate)


**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**


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<sub>A</sub> = +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	V <sub>RRM</sub>	1000	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
Average Rectified Output Current	I <sub>O</sub>	1	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I <sub>FSM</sub>	30	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case	R <sub>θJC</sub>	20	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	110	°C/W
Typical Thermal Resistance Junction to Lead (Note 5)	R <sub>θJL</sub>	25	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (@ T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V <sub>(BR)R</sub>	1000	—	—	V	I <sub>R</sub> = 10μA
Forward Voltage	V <sub>F</sub>	—	1.1	1.3	V	I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C
Reverse Leakage Current (Note 6)	I <sub>R</sub>	—	0.5 20	5 200	μA	V <sub>R</sub> = 1000V, T <sub>J</sub> = +25°C V <sub>R</sub> = 1000V, T <sub>J</sub> = +100°C
Reverse Recovery Time	t <sub>RR</sub>	—	—	500	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>RR</sub> = 0.25A
Typical Total Capacitance	C <sub>T</sub>	—	5	—	pF	V <sub>R</sub> = 4V, f = 1MHz

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.

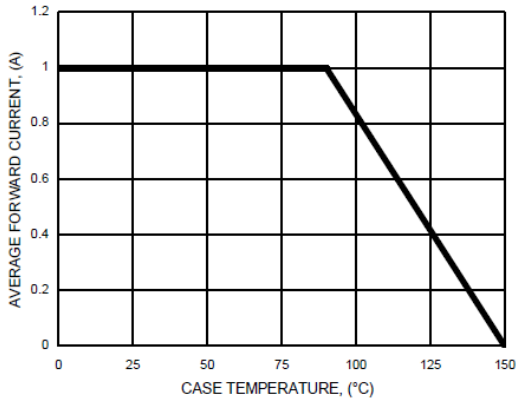


FIG. 1- FORWARD CURRENT DERATING CURVE

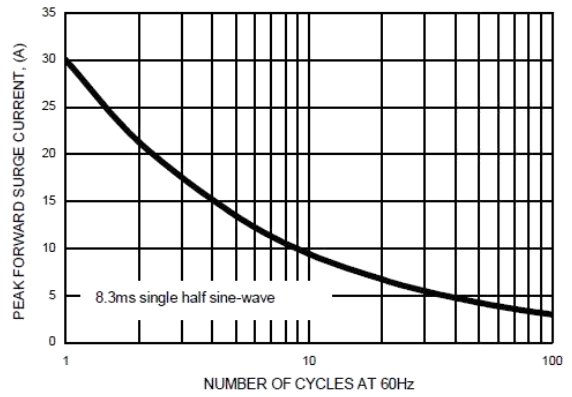


FIG. 2- MAXIMUM NON-REPETITIVE SURGE CURRENT

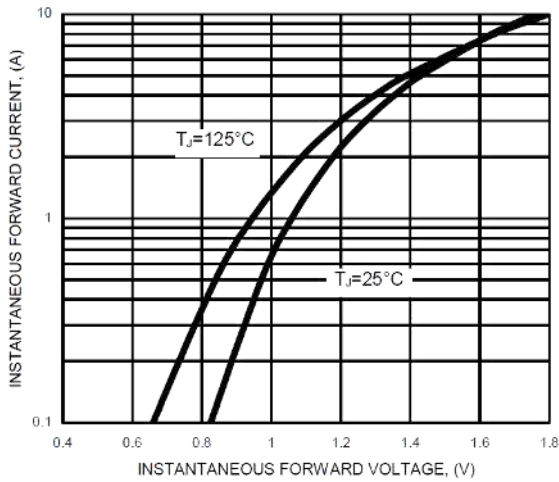


FIG. 3- TYPICAL FORWARD CHARACTERISTICS

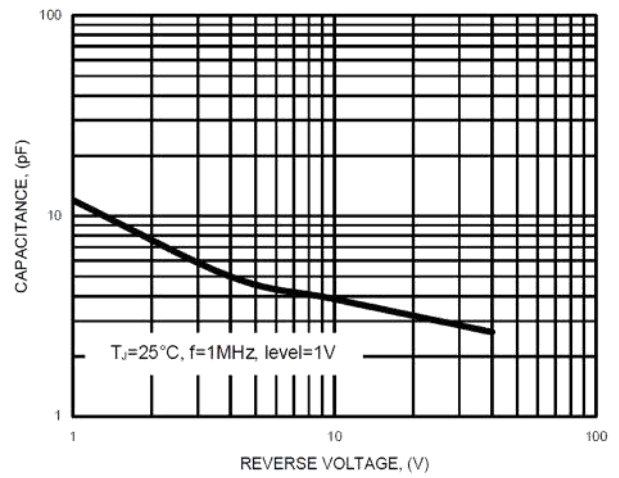


FIG. 4- TYPICAL TOTAL CAPACITANCE

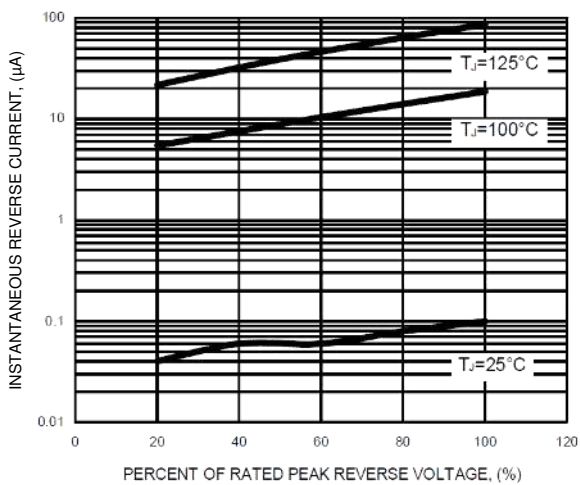
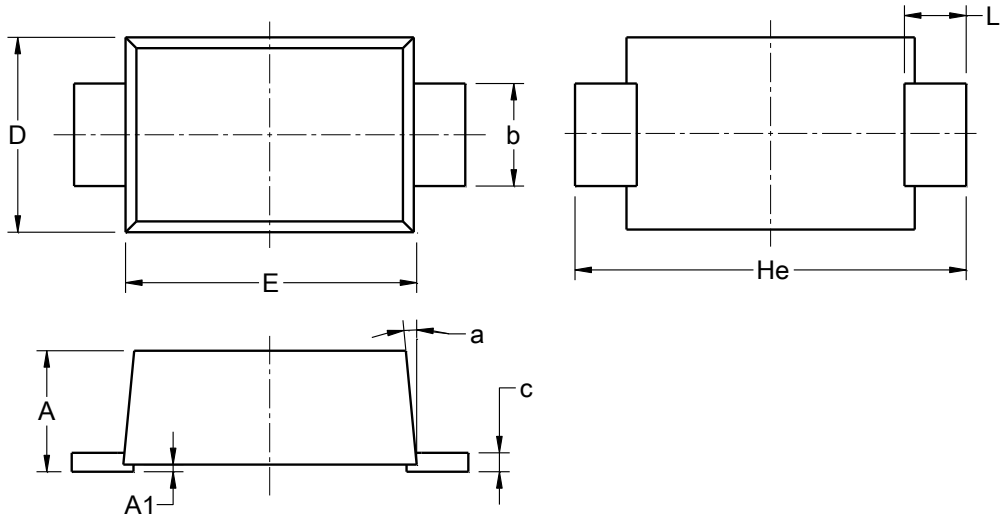


FIG. 5- TYPICAL REVERSE CHARACTERISTICS

**Package Outline Dimensions**

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

**DO-219AA**

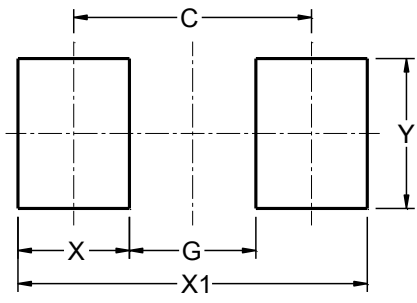


DO-219AA			
Dim	Min	Max	Typ
A	0.81	1.20	1.18
A1	0.03	0.10	0.07
b	0.85	1.15	1.00
c	0.05	0.30	0.15
D	1.70	2.00	1.90
E	2.70	2.90	2.80
He	3.50	3.90	3.80
L	0.45	0.75	0.60
a	0°	8°	5°
<b>All Dimensions in mm</b>			

**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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