1.0A SURFACE MOUNT ULTRA-FAST RECTIFIER

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	V_F Max (V)	I_R Max (µA)	Trr (ns)
200	1	0.92	5	25

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)**
- **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/**
- **An Automotive-Compliant Part is Available Under Separate Datasheet (FES1DEQ)**

Description

The FES1DE 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

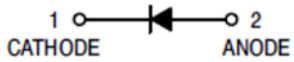
- Flat Panel Display
- Switching Power Supplies/Chargers
- LED Lighting
- Freewheeling Diode

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

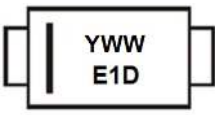
Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
FES1DE-7	Commercial	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



E1D = Product Type Marking Code
YWW = Date Code Marking
Y = Last Digit of Year (ex: 0 = 2020)
WW = Week Code (01~53)

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

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	200	V
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	$R_{\Theta JC}$	55	°C/W
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\Theta JA}$	115	°C/W
Typical Thermal Resistance Junction to Lead (Note 5)	$R_{\Theta JL}$	45	°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)	$V_{(BR)R}$	200	—	—	V	I_R = 10μA
Forward Voltage	V_F	—	0.87	0.92	V	I_F = 1A, T_J = +25°C
Reverse Leakage Current (Note 6)	I_R	—	0.01 1.2	5 200	μA	V_R = 200V, T_J = +25°C V_R = 200V, T_J = +125°C
Reverse Recovery Time	t_{RR}	—	—	25	ns	I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A
Total Capacitance	C_T	—	20	—	pF	V_R = 4V, f = 1MHz

Notes: 5. Thermal resistance test performed in accordance with JESD-51.
6. Short duration pulse test used to minimize self-heating effect.

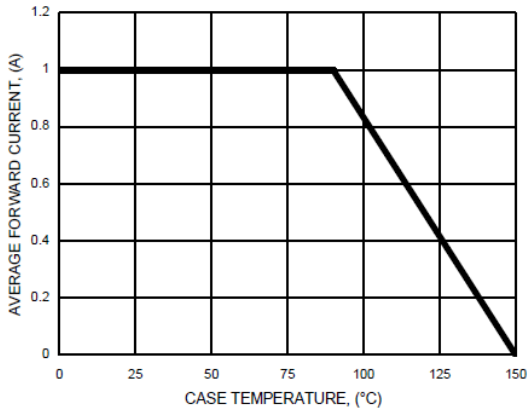


FIG.1- FORWARD CURRENT DERATING CURVE

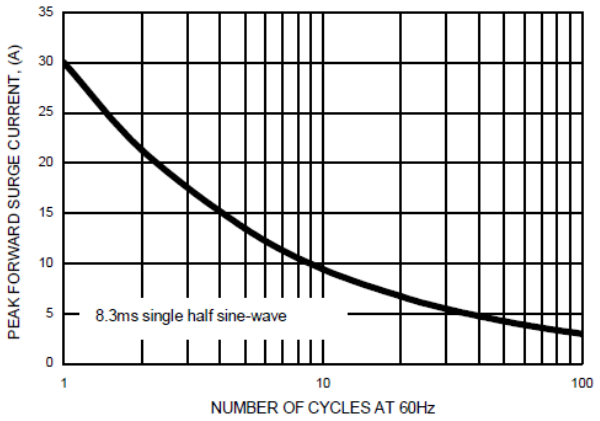


FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

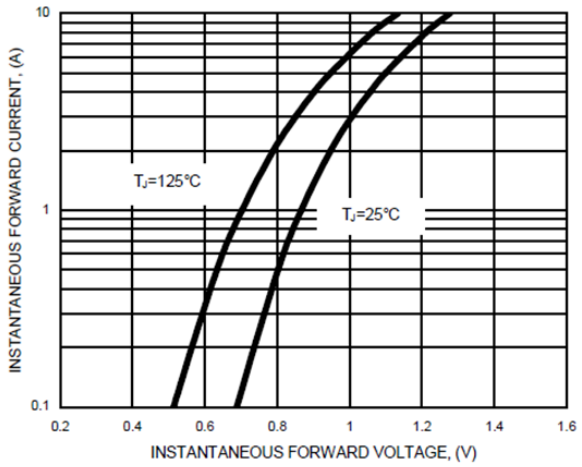


FIG.3- TYPICAL FORWARD CHARACTERISTICS

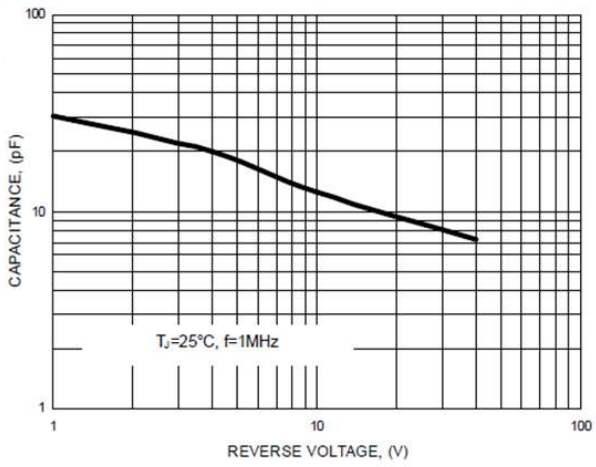


FIG.4- TYPICAL TOTAL CAPACITANCE

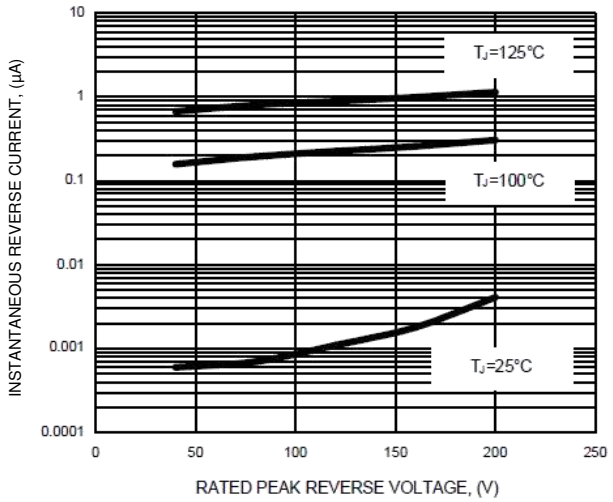
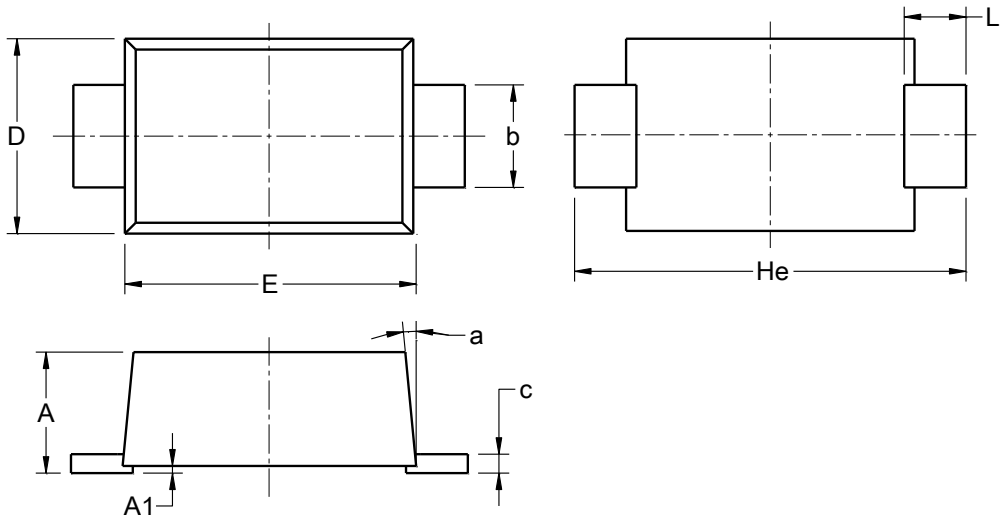


FIG.5- TYPICAL REVERSE CHARACTERISTICS

Package Outline Dimensions

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

DO-219AA

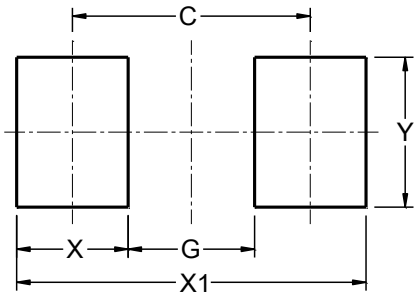


DO-219AA			
Dim	**Min**	**Max**	**Typ**
A	0.81	1.20	1.18
A1	0.03	0.10	0.07
b	0.85	1.15	1.00
c	0.05	0.30	0.15
D	1.70	2.00	1.90
E	2.70	2.90	2.80
He	3.50	3.90	3.80
L	0.45	0.75	0.60
a	0°	8°	5°
All Dimensions in mm			

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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