Super Fast Surface Mount Rectifiers
US1AFA-US1MFA



SOD−123FA
CASE 425AB



Features

- Glass Passivated Chip Junction
- Low Power Loss, High Efficiency
- Fast Switching Reverse Recovery Time: 50~75 ns Maximum
- High Surge Capacity
- UL Flammability 94V−0 Classification
- MSL 1 per J−STD−020
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free and are RoHS Compliant

MARKING DIAGRAM



YYYY = Binary Calendar Year Code Scheme
Z = Assembly Plant Code
XXX = Specific Device Code
W = Single Digit Week Code

ORDERING INFORMATION

Part Number	Device Code Marking	Package	Shipping†
US1AFA, NRVUS1AFA*	HAL	SOD−123FA (Pb−Free / Halogen Free)	3,000 / Tape & Reel
US1BFA, NRVUS1BFA*	HBL		
US1DFA, NRVUS1DFA*	HDL		
US1FFA, NRVUS1FFA*	HFL		
US1GFA, NRVUS1GFA*	HGL		
US1JFA, NRVUS1JFA*	HJL		
US1KFA, NRVUS1KFA*	HKL		
US1MFA, NRVUS1MFA*	HML		

†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.
*NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable

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US1MFA/D

ABSOLUTE MAXIMUM RATINGS (Values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	US1 AFA	US1 BFA	US1 DFA	US1 FFA	US1 GFA	US1 JFA	US1 KFA	US1 MFA	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	50	100	200	300	400	600	800	1000	V
V_{RMS}	RMS Reverse Voltage	35	70	140	210	280	420	560	700	V
V_R	DC Blocking Voltage	50	100	200	300	400	600	800	1000	V
$I_{F(AV)}$	Average Forward Rectified Current	1								A
I_{FSM}	Peak Forward Surge Current: 8.3 ms Single Half Sine−Wave Superimposed on Rated Load	30								A
T_J	Operating Junction Temperature Range	−55 to +150								°C
T_{STG}	Storage Temperature Range	−55 to +150								°C

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.

THERMAL CHARACTERISTICS (Values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
Ψ_{JL}	Typical Thermal Resistance, Junction to Lead	21	°C/W
$R_{\theta JA}$	Typical Thermal Resistance, Junction to Ambient	153	°C/W

NOTE: Device mounted at minimum pad.

ELECTRICAL CHARACTERISTICS (Values are at T_A = 25°C unless otherwise noted)

Symbol	Parameter	Conditions	US1 AFA	US1 BFA	US1 DFA	US1 FFA	US1 GFA	US1 JFA	US1 KFA	US1 MFA	Unit
V_F	Maximum Instantaneous Forward Voltage (Note 1)	I_F = 1 A	0.95				1.30	1.70			V
I_R	Maximum Reverse Current at Rated V_R	T_J = 25°C	5								μA
		T_J = 125°C	150								
C_J	Typical Junction Capacitance	V_R = 4.0 V, f = 1.0 MHz	20					15			pF
T_{rr}	Maximum Reverse Recovery Time	I_F = 0.5 A, I_R = 1 A, I_{rr} = 0.25 A	50					75			ns

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.

1. Pulse test with PW = 300 μs, 1% duty cycle.

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TYPICAL PERFORMANCE CHARACTERISTICS

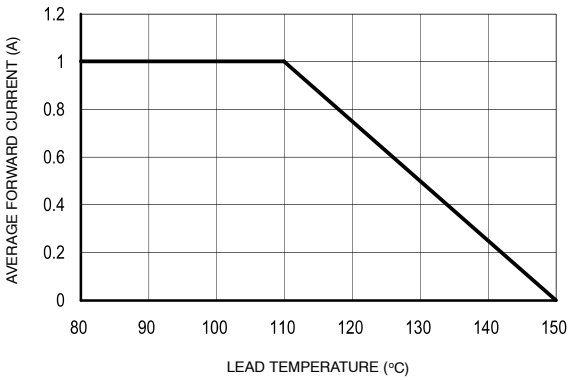


Figure 1. Maximum Forward Current Derating Voltage

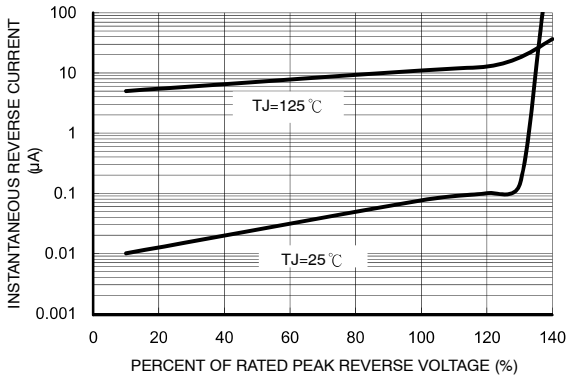


Figure 2. Typical Reverse Characteristics

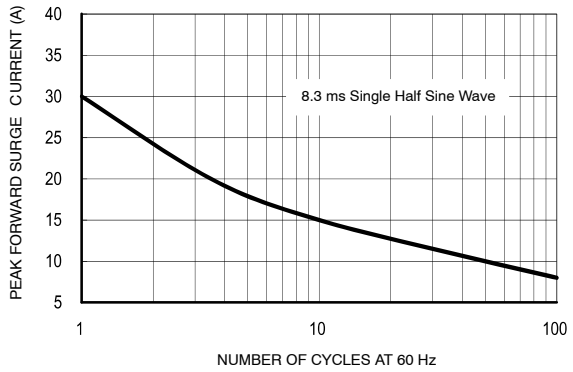


Figure 3. Maximum Non−Repetitive Forward Surge Current

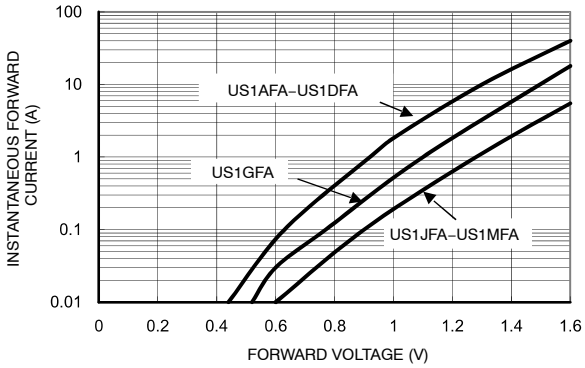


Figure 4. Typical Instantaneous Forward Characteristics

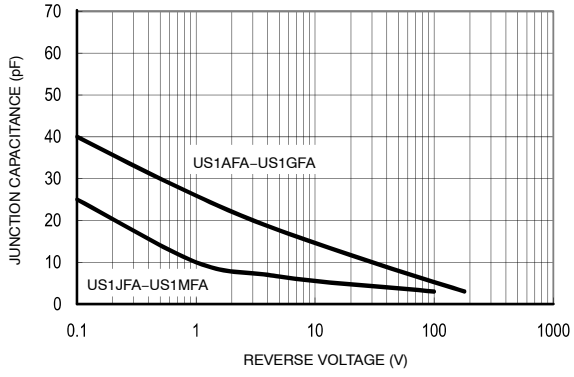


Figure 5. Typical Junction Capacitance

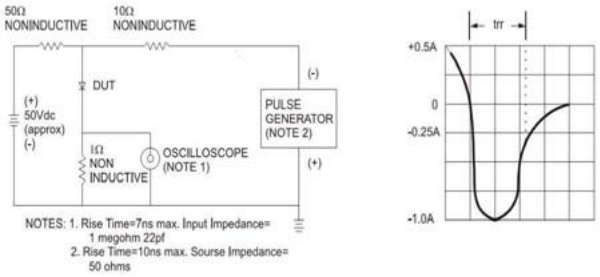
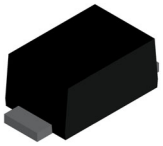


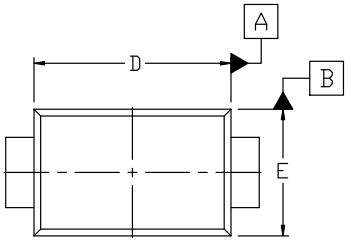
Figure 6. Reverse Recovery Time Characteristic and Test Circuit Diagram

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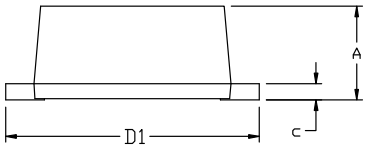


SOD−123FA
CASE 425AB
ISSUE A

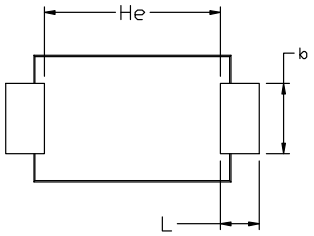
DATE 11 AUG 2022



TOP VIEW



FRONT VIEW

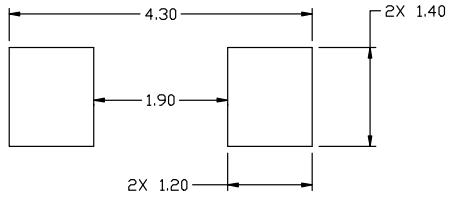


BOTTOM VIEW

NOTES:

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3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND THE BAR PROTRUSIONS.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	1.23	1.33	1.43
b	0.80	1.00	1.20
c	0.16	0.23	0.30
D	2.70	2.80	2.90
D1	3.40	3.60	3.80
E	1.70	1.80	1.90
He	2.45	---	2.60
L	0.35	0.60	0.85



RECOMMENDED
MOUNTING FOOTPRINT*

* 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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