

# Super Fast Surface Mount Rectifiers

## US2AA-US2MA

### Features

- Glass Passivated Chip Junction
- High Surge Capacity
- Low Forward Voltage Drop
- Fast Switching with Reverse Recovery Time: 50~75 ns Maximum
- UL Flammability 94 V – 0 Classification
- MSL 1 per J-STD-020
- RoHS Compliant / Green Molding Compound
- NRV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable\*

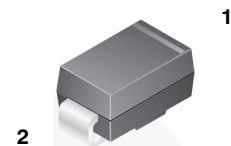
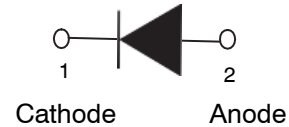
**Table 1. ORDERING INFORMATION**

Part Number	Top Mark	Package	Packing Method
US2AA, NRVUS2AA*	US2AA	DO-214AC (SMA)	Tape and Reel
US2BA, NRVUS2BA*	US2BA	DO-214AC (SMA)	Tape and Reel
US2DA, NRVUS2DA*	US2DA	DO-214AC (SMA)	Tape and Reel
US2FA, NRVUS2FA*	US2FA	DO-214AC (SMA)	Tape and Reel
US2GA, NRVUS2GA*	US2GA	DO-214AC (SMA)	Tape and Reel
US2JA, NRVUS2JA*	US2JA	DO-214AC (SMA)	Tape and Reel
US2KA, NRVUS2KA*	US2KA	DO-214AC (SMA)	Tape and Reel
US2MA, NRVUS2MA*	US2MA	DO-214AC (SMA)	Tape and Reel



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**SMA/DO-214AC**

COLOR BAND DENOTES CATHODE

### MARKING DIAGRAM



- \$Y                      = ON Semiconductor Logo
- &Z                     = Assembly Plant Code
- &3                     = Data Code (Year & Week)
- US2XA               = Specific Device Code
- X                     = A/B/D/F/G/J/K/M

# US2AA-US2MA

**Table 2. ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value								Unit
		US2 AA	US2 BA	US2 DA	US2 FA	US2 GA	US2 JA	US2 KA	US2 MA	
$V_{RRM}$	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
$V_{DC}$	DC Blocking Voltage	50	100	200	300	400	600	800	1000	V
$I_{F(AV)}$	Average Forward Rectified Current	1.5								A
$I_{FSM}$	Peak Forward Surge Current, 8.3 ms Single Half-Sine Wave, Superimposed on Rated Load	50								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.

**Table 3. THERMAL CHARACTERISTICS (NOTE 1)** (Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Value	Unit
$R_{\theta JA}$	Typical Thermal Resistance, Junction-to-Ambient	189	°C/W
$\Psi_{JL}$	Typical Thermal Characteristics, Junction-to-Lead (with Reference to Cathode Pin)	31	°C/W

1. Device mounted at minimum pad.

**Table 4. ELECTRICAL CHARACTERISTICS** (Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Value								Unit	
		US2 AA	US2 BA	US2 DA	US2 FA	US2 GA	US2 JA	US2 KA	US2 MA		
$V_F$	Maximum Instantaneous Forward Voltage (Note2) at Rated $I_{F(AV)}$	1.0				1.3	1.7				V
$I_R$	Maximum Reverse Current at Rated $V_R$	TJ = 25°C								μA	
		TJ = 125°C									
$t_{rr}$	Maximum Reverse Recovery Time (Note 3)	50				75				ns	
$C_J$	Typical Junction Capacitance (Note 4)	50				30				pF	

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

3. Reverse recovery test conditions:  $I_F = 0.5\text{ A}$ ,  $I_R = 1.0\text{ A}$ ,  $I_{RR} = 0.25\text{ A}$

4. Measured at 1 Mhz and applied reverse voltage of 4.0 V D.C.

# US2AA-US2MA

## TYPICAL PERFORMANCE CHARACTERISTICS

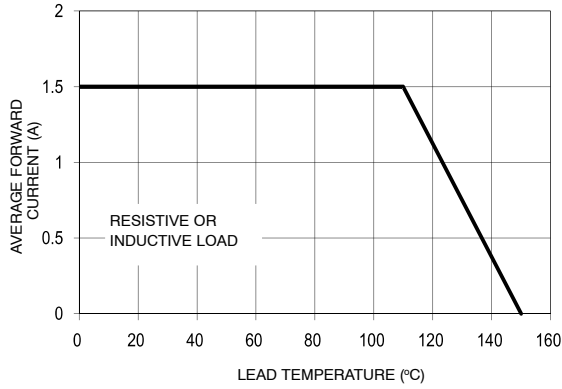


Figure 1. Forward Current Derating Curve

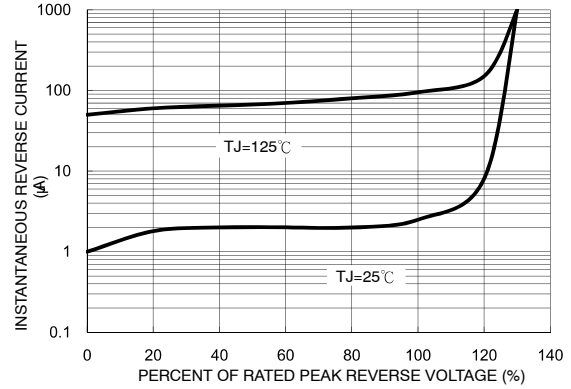


Figure 2. Typical Reverse Characteristics

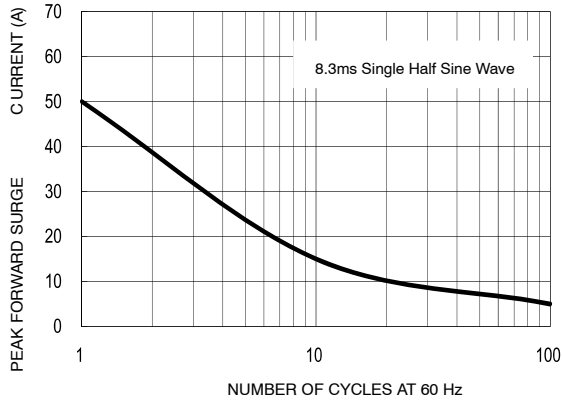


Figure 3. Maximum Non-Repetitive Forward Surge Current

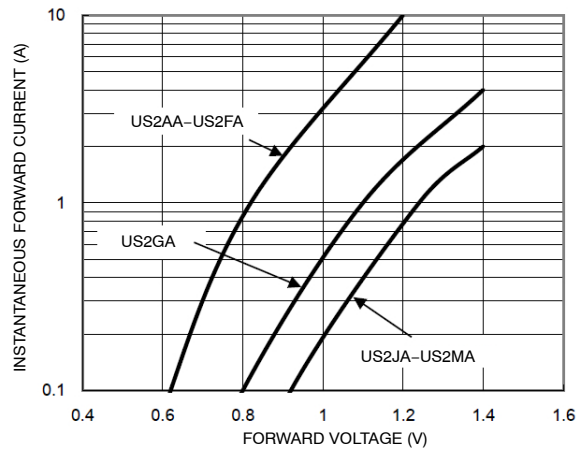


Figure 4. Typical Forward Characteristics

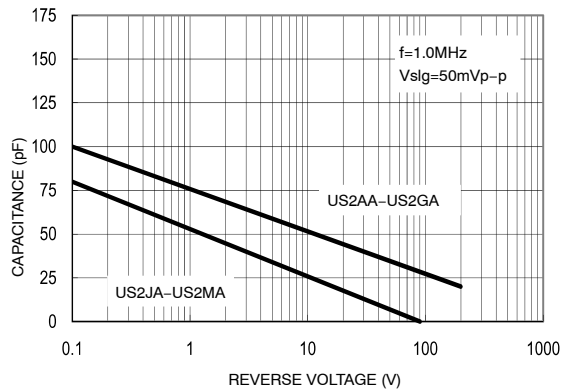


Figure 5. Typical Forward Characteristics

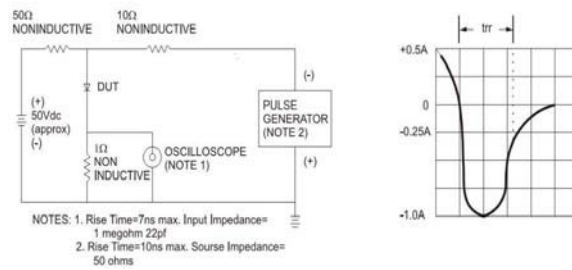


Figure 6. Typical Forward Characteristics

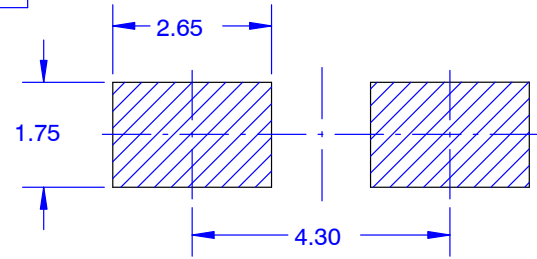
**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

ON Semiconductor®



**SMA**  
**CASE 403AE**  
**ISSUE O**

DATE 31 AUG 2016



**NOTES:**

- A. EXCEPT WHERE NOTED, CONFORMS TO JEDEC DO214 VARIATION AC.
- B. DOES NOT COMPLY JEDEC STANDARD VALUE.
- C. ALL DIMENSIONS ARE IN MILLIMETERS.
- D. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS.
- E. DIMENSIONS AND TOLERANCE AS PER ASME Y14.5-2009.
- E. LAND PATTERN STD. DIOM5025X231M



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