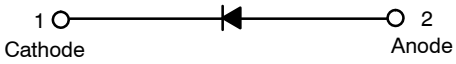
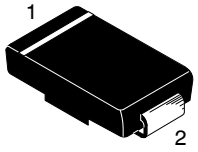
General-Purpose Rectifiers

S1A - S1M



Description

In the world of commodity rectifiers, **onsemi** S1 family of 1 A, P−I−N, SMA rectifiers stand out for their optimized low leakage, low capacitance, and fast response time. This was achieved while maintaining the industry standard V_F max of 1.1 V at 1 A and a 30 A surge rating. In today's world, where system power efficiency is a critical differentiating feature, these advantages can be leveraged to support those higher efficiency goals.



SMA
CASE 403AE

Features

- 1 A $I_{F(AV)}$ Current Rating
- Glass Passivated
- Low Leakage:
  - 1 μA Maximum at 25°C
  - 50 μA Maximum at 125°C
- Fast Response: 1.8 μs (Typical)
- 30 A Surge Rating
- 50 V to 1000 V Reverse Voltage Ratings
- 6.6 pF Typical Capacitance
- UL Certified, UL #E258596
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

MARKING DIAGRAM

Z	= Assembly Plant Code
X	= Last Digit of Year of Manufacture
YY	= Weekly Code of Manufacture
DDDD	= Specific Device Code

ORDERING INFORMATION

Part Number	Device Code Marking	Package	Shipping†
S1A	S1A	DO−214AC (SMA) (Pb−Free)	7500 / Tape & Reel
S1B	S1B		7500 / Tape & Reel
S1D	S1D		7500 / Tape & Reel
S1G	S1G		7500 / Tape & Reel
S1J	S1J		7500 / Tape & Reel
S1K	S1K		7500 / Tape & Reel
S1M	S1M		7500 / Tape & Reel

†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.

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted) (Note 1)

Symbol	Parameter	Value							Unit
		S1A	S1B	S1D	S1G	S1J	S1K	S1M	
V_{RRM}	Maximum Repetitive Reverse Voltage	50	100	200	400	600	800	1000	V
$I_{F(AV)}$	Average Rectified Forward Current at T_A = 100°C	1.0							A
I_{FSM}	Non−Repetitive Peak Forward Surge Current 8.3 ms Single Half−Sine−Wave	30							A
T_{STG}	Storage Temperature Range	−55 to +150							°C
T_J	Operating Junction Temperature	−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.

1. These ratings are limiting values above which the serviceability of any semiconductor device maybe impaired.

THERMAL CHARACTERISTICS (T_A = 25°C unless otherwise noted) (Note 1)

Symbol	Characteristic	Value	Unit
P_D	Power Dissipation	1.4	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 2)	85	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (Note 3)	170	°C/W
Ψ_{JL}	Junction−Lead Thermal Characteristics (Note 3)	25	°C/W

2. Device mounted on FR−4 PCB, land pattern size: 25 mm^2 (5 x 5 mm).
3. Device mounted on FR−4 PCB, land pattern size: 4.6375 mm^2 (2.65 x 1.75 mm).

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	Forward Voltage	I_F = 1.0 A	–	–	1.1	V
t_{rr}	Reverse Recovery Time	I_F = 0.5 A, I_R = 1.0 A I_{rr} = 0.25 A	–	1.8	–	μs
I_R	Reverse Current at Rated V_R	T_A = 25°C	–	–	1.0	μA
		TA = 125°C	–	–	50	
C_J	Junction Capacitance	V_R = 4.0 V, f = 1.0 MHz	–	6.6	–	pF

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.

TYPICAL PERFORMANCE CHARACTERISTICS

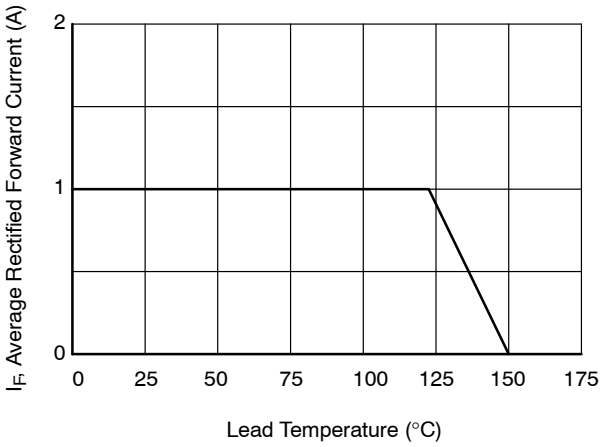


Figure 1. Forward Current Derating Curve

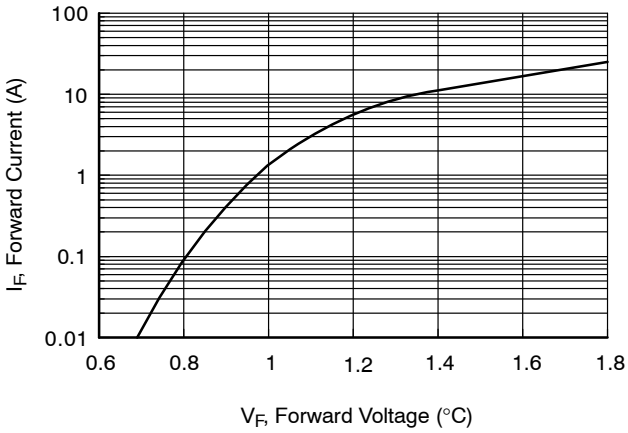


Figure 2. Forward Voltage Characteristics

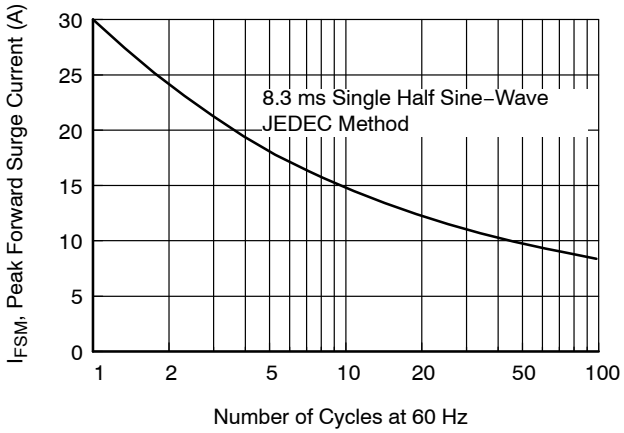


Figure 3. Non−Repetitive Surge Current

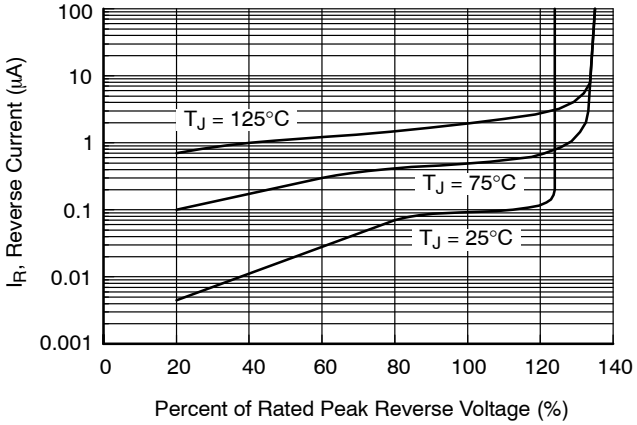


Figure 4. Reverse Current vs. Reverse Voltage

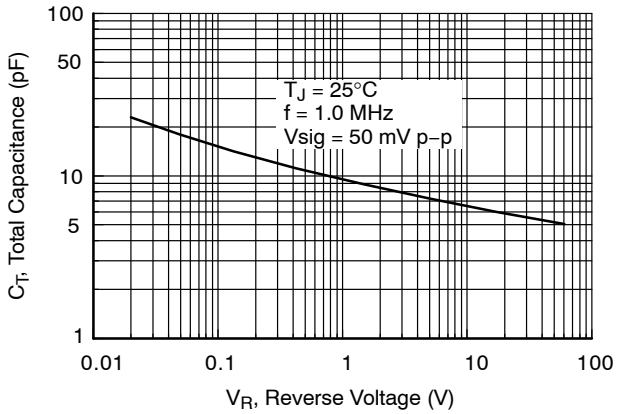


Figure 5. Total Capacitance

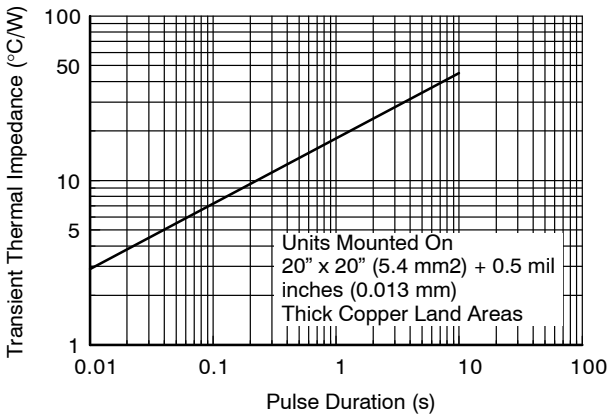


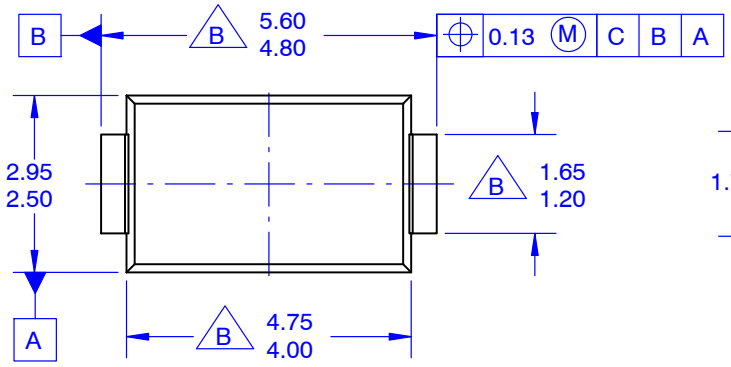
Figure 6. Thermal Impedance Characteristics

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

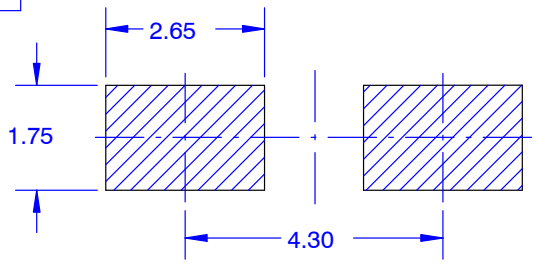
ON Semiconductor®

SMA
CASE 403AE
ISSUE O

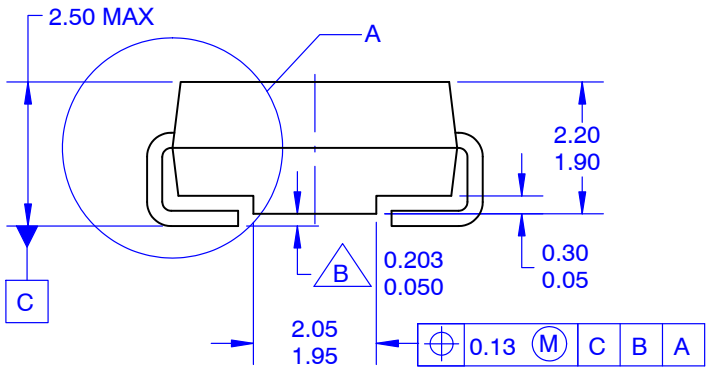
DATE 31 AUG 2016



TOP VIEW



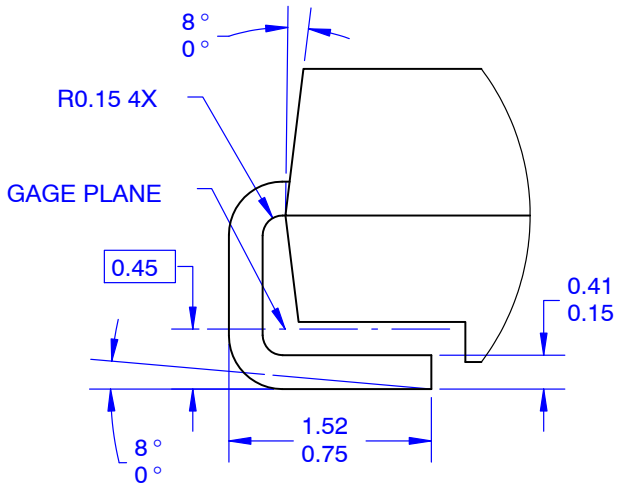
LAND PATTERN RECOMMENDATION



SIDE VIEW

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



DETAIL A
SCALE 20 : 1

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