

## 2A, 50V - 1400V Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Glass passivated junction chip
- Ideal for automated placement
- Low forward voltage drop
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Converter

### MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.09 g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_{F(AV)}$    | 2              | A    |
| $V_{RRM}$      | 50 - 1400      | V    |
| $I_{FSM}$      | 50             | A    |
| $T_{J\ MAX}$   | 150            | °C   |
| Package        | DO-214AA (SMB) |      |
| Configuration  | Single Die     |      |



DO-214AA (SMB)

| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)                   |              |              |     |     |     |     |     |      |      |      |      |
|-----------------------------------------------------------------------------------------------|--------------|--------------|-----|-----|-----|-----|-----|------|------|------|------|
| PARAMETER                                                                                     | SYMBOL       | S2A          | S2B | S2D | S2G | S2J | S2K | S2M  | S2Q  | S2V  | UNIT |
| Marking code on the device                                                                    |              | S2A          | S2B | S2D | S2G | S2J | S2K | S2M  | S2Q  | S2V  |      |
| Repetitive peak reverse voltage                                                               | $V_{RRM}$    | 50           | 100 | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 | V    |
| Reverse voltage, total rms value                                                              | $V_{R(RMS)}$ | 30           | 70  | 140 | 280 | 420 | 560 | 700  | 840  | 980  | V    |
| Maximum DC blocking voltage                                                                   | $V_{DC}$     | 50           | 100 | 200 | 400 | 600 | 800 | 1000 | 1200 | 1400 | V    |
| Forward current                                                                               | $I_{F(AV)}$  | 2            |     |     |     |     |     |      |      |      | A    |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | $I_{FSM}$    | 50           |     |     |     |     |     |      |      |      | A    |
| Junction temperature                                                                          | $T_J$        | - 55 to +150 |     |     |     |     |     |      |      |      | °C   |
| Storage temperature                                                                           | $T_{STG}$    | - 55 to +150 |     |     |     |     |     |      |      |      | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | TYP. | UNIT |
|----------------------------------------|-----------------|------|------|
| Junction to Lead Thermal Resistance    | $R_{\theta JL}$ | 16   | °C/W |
| Junction to Ambient Thermal Resistance | $R_{\theta JA}$ | 53   | °C/W |

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| PARAMETER                                              | CONDITIONS                                                        | SYMBOL   | TYP. | MAX. | UNIT          |
|--------------------------------------------------------|-------------------------------------------------------------------|----------|------|------|---------------|
| Forward voltage per diode <sup>(1)</sup>               | $I_F = 2\text{A}, T_J = 25^\circ\text{C}$                         | $V_F$    | -    | 1.15 | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $T_J = 25^\circ\text{C}$                                          | $I_R$    | -    | 1    | $\mu\text{A}$ |
|                                                        | $T_J = 125^\circ\text{C}$                                         |          | -    | 125  | $\mu\text{A}$ |
| Junction capacitance                                   | 1 MHz, $V_R = 4.0\text{V}$                                        | $C_J$    | 30   | -    | pF            |
| Reverse recovery time                                  | $I_F = 0.5\text{A}, I_R = 1.0\text{A}$<br>$I_{RR} = 0.25\text{A}$ | $t_{rr}$ | 1.5  | -    | $\mu\text{s}$ |

**Notes:**

1. Pulse test with  $PW = 0.3\text{ ms}$
2. Pulse test with  $PW = 30\text{ ms}$

**EXAMPLE P/N**

| ORDERING CODE | PACKAGE | PACKING                  |
|---------------|---------|--------------------------|
| S2AHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2AHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2AHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2BHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2BHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2BHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2DHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2DHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2DHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2GHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2GHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2GHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2JHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2JHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2JHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2KHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2KHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2KHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2MHR5G       | SMB     | 850 / 7" Plastic reel    |
| S2MHR4G       | SMB     | 3,000 / 13" Paper reel   |
| S2MHM4G       | SMB     | 3,000 / 13" Plastic reel |
| S2QHR5G       | SMB     | 850 / 7" Plastic reel    |

| <b>EXAMPLE P/N</b>   |                |                          |
|----------------------|----------------|--------------------------|
| <b>ORDERING CODE</b> | <b>PACKAGE</b> | <b>PACKING</b>           |
| S2QHR4G              | SMB            | 3,000 / 13" Paper reel   |
| S2QHM4G              | SMB            | 3,000 / 13" Plastic reel |
| S2VHR5G              | SMB            | 850 / 7" Plastic reel    |
| S2VHR4G              | SMB            | 3,000 / 13" Paper reel   |
| S2VHM4G              | SMB            | 3,000 / 13" Plastic reel |
| S2AHR5               | SMB            | 850 / 7" Plastic reel    |
| S2AHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2AHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2BHR5               | SMB            | 850 / 7" Plastic reel    |
| S2BHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2BHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2DHR5               | SMB            | 850 / 7" Plastic reel    |
| S2DHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2DHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2GHR5               | SMB            | 850 / 7" Plastic reel    |
| S2GHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2GHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2JHR5               | SMB            | 850 / 7" Plastic reel    |
| S2JHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2JHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2KHR5               | SMB            | 850 / 7" Plastic reel    |
| S2KHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2KHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2MHR5               | SMB            | 850 / 7" Plastic reel    |
| S2MHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2MHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2QHR5               | SMB            | 850 / 7" Plastic reel    |
| S2QHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2QHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2VHR5               | SMB            | 850 / 7" Plastic reel    |
| S2VHR4               | SMB            | 3,000 / 13" Paper reel   |
| S2VHM4               | SMB            | 3,000 / 13" Plastic reel |
| S2A R5G              | SMB            | 850 / 7" Plastic reel    |
| S2A R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2A M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2B R5G              | SMB            | 850 / 7" Plastic reel    |
| S2B R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2B M4G              | SMB            | 3,000 / 13" Plastic reel |

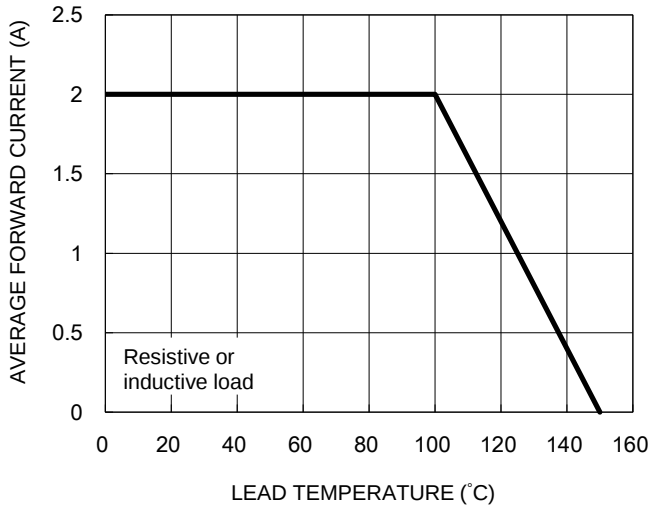
| <b>EXAMPLE P/N</b>   |                |                          |
|----------------------|----------------|--------------------------|
| <b>ORDERING CODE</b> | <b>PACKAGE</b> | <b>PACKING</b>           |
| S2D R5G              | SMB            | 850 / 7" Plastic reel    |
| S2D R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2D M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2G R5G              | SMB            | 850 / 7" Plastic reel    |
| S2G R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2G M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2J R5G              | SMB            | 850 / 7" Plastic reel    |
| S2J R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2J M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2K R5G              | SMB            | 850 / 7" Plastic reel    |
| S2K R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2K M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2M R5G              | SMB            | 850 / 7" Plastic reel    |
| S2M R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2M M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2Q R5G              | SMB            | 850 / 7" Plastic reel    |
| S2Q R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2Q M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2V R5G              | SMB            | 850 / 7" Plastic reel    |
| S2V R4G              | SMB            | 3,000 / 13" Paper reel   |
| S2V M4G              | SMB            | 3,000 / 13" Plastic reel |
| S2A R5               | SMB            | 850 / 7" Plastic reel    |
| S2A R4               | SMB            | 3,000 / 13" Paper reel   |
| S2A M4               | SMB            | 3,000 / 13" Plastic reel |
| S2B R5               | SMB            | 850 / 7" Plastic reel    |
| S2B R4               | SMB            | 3,000 / 13" Paper reel   |
| S2B M4               | SMB            | 3,000 / 13" Plastic reel |
| S2D R5               | SMB            | 850 / 7" Plastic reel    |
| S2D R4               | SMB            | 3,000 / 13" Paper reel   |
| S2D M4               | SMB            | 3,000 / 13" Plastic reel |
| S2G R5               | SMB            | 850 / 7" Plastic reel    |
| S2G R4               | SMB            | 3,000 / 13" Paper reel   |
| S2G M4               | SMB            | 3,000 / 13" Plastic reel |
| S2J R5               | SMB            | 850 / 7" Plastic reel    |
| S2J R4               | SMB            | 3,000 / 13" Paper reel   |
| S2J M4               | SMB            | 3,000 / 13" Plastic reel |
| S2K R5               | SMB            | 850 / 7" Plastic reel    |
| S2K R4               | SMB            | 3,000 / 13" Paper reel   |

| <b>EXAMPLE P/N</b>   |                |                          |
|----------------------|----------------|--------------------------|
| <b>ORDERING CODE</b> | <b>PACKAGE</b> | <b>PACKING</b>           |
| S2K M4               | SMB            | 3,000 / 13" Plastic reel |
| S2M R5               | SMB            | 850 / 7" Plastic reel    |
| S2M R4               | SMB            | 3,000 / 13" Paper reel   |
| S2M M4               | SMB            | 3,000 / 13" Plastic reel |
| S2Q R5               | SMB            | 850 / 7" Plastic reel    |
| S2Q R4               | SMB            | 3,000 / 13" Paper reel   |
| S2Q M4               | SMB            | 3,000 / 13" Plastic reel |
| S2V R5               | SMB            | 850 / 7" Plastic reel    |
| S2V R4               | SMB            | 3,000 / 13" Paper reel   |
| S2V M4               | SMB            | 3,000 / 13" Plastic reel |

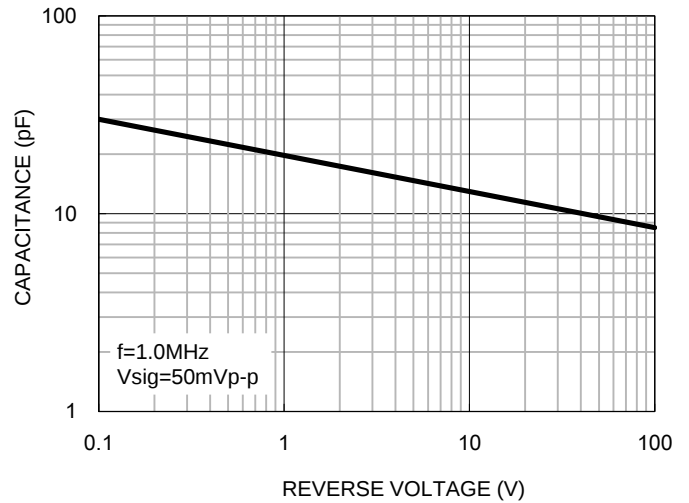
## CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

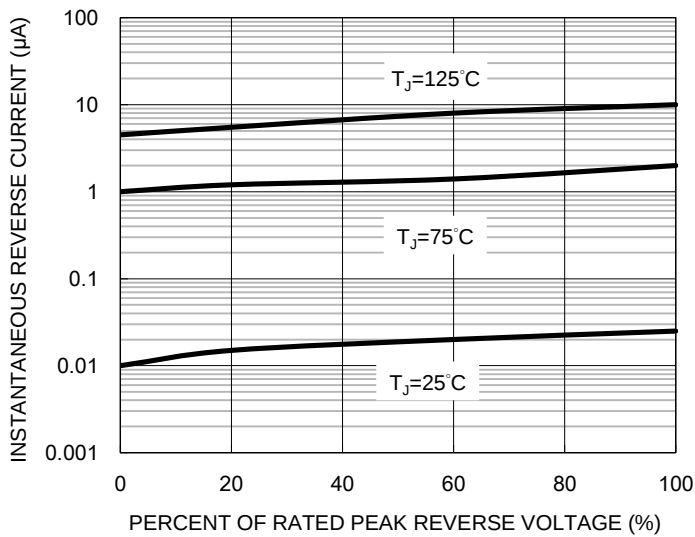
**Fig.1 Forward Current Derating Curve**



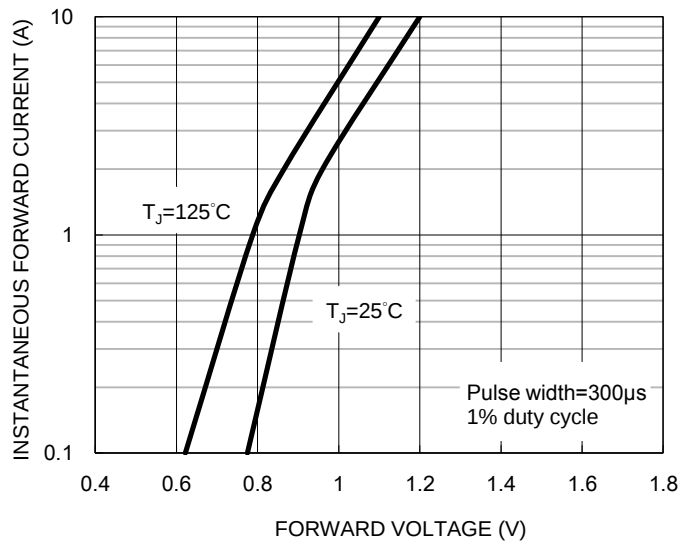
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



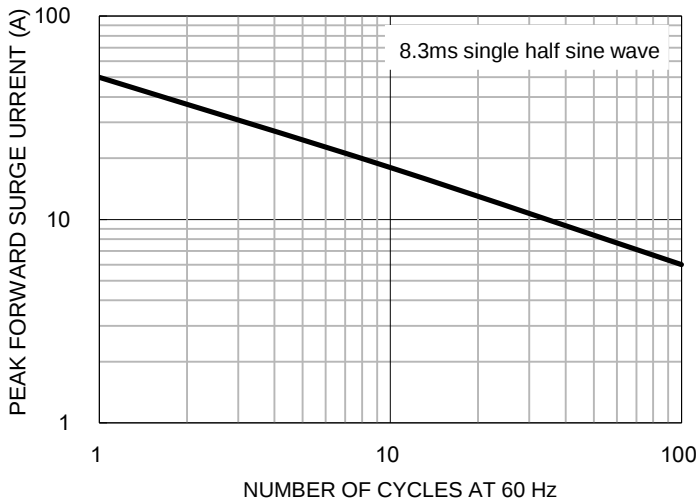
**Fig.4 Typical Forward Characteristics**



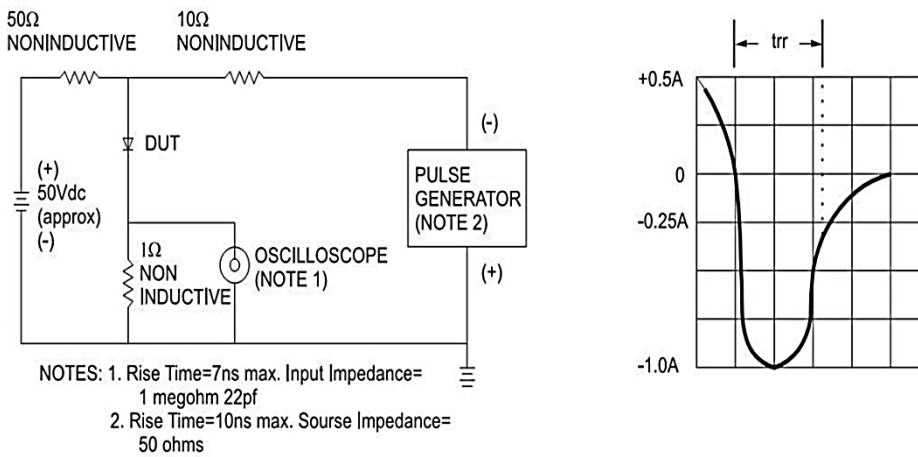
## CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.5 Maximum Non-repetitive Forward Surge Current**

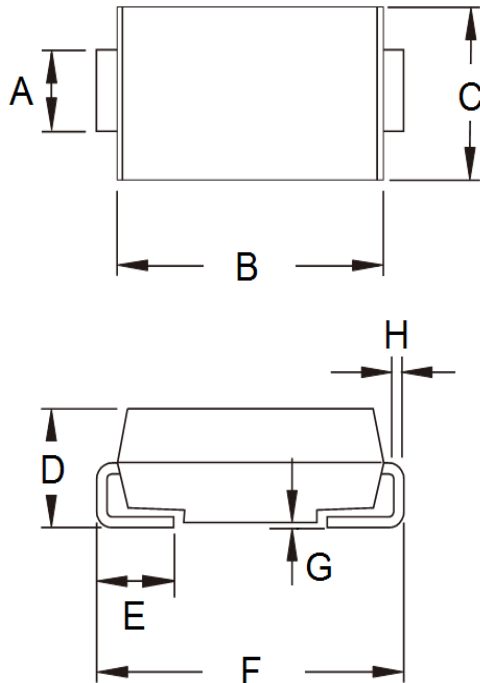


**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



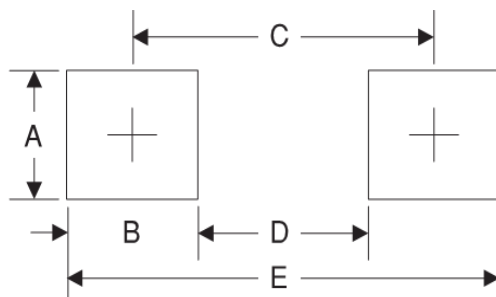
## PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 1.95      | 2.20 | 0.077       | 0.087 |
| B    | 4.05      | 4.60 | 0.159       | 0.181 |
| C    | 3.30      | 3.95 | 0.130       | 0.156 |
| D    | 1.95      | 2.65 | 0.077       | 0.104 |
| E    | 0.75      | 1.60 | 0.030       | 0.063 |
| F    | 5.10      | 5.60 | 0.201       | 0.220 |
| G    | 0.05      | 0.20 | 0.002       | 0.008 |
| H    | 0.15      | 0.31 | 0.006       | 0.012 |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 2.3       | 0.091       |
| B      | 2.5       | 0.098       |
| C      | 4.3       | 0.169       |
| D      | 1.8       | 0.071       |
| E      | 6.8       | 0.268       |

## MARKING DIAGRAM



P/N = Marking Code  
G = Green Compound  
YW = Date Code  
F = Factory Code

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