

1A, 50V - 1000V Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- 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
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Part no. with suffix "H" means AEC-Q101 qualified
- 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 |
| $I_{F(AV)}$ | 1 | A |
| V_{RRM} | 50 - 1000 | V |
| I_{FSM} | 30 | A |
| T_{JMAX} | 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 | S1AB | S1BB | S1DB | S1GB | S1JB | S1KB | S1MB | UNIT |
| Marking code on the device | | S1AB | S1BB | S1DB | S1GB | S1JB | S1KB | S1MB | |
| Repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 35 | 70 | 140 | 280 | 420 | 560 | 700 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 200 | 400 | 600 | 800 | 1000 | V |
| Forward current | $I_{F(AV)}$ | 1 | | | | | | | A |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 30 | | | | | | | A |
| Junction temperature | T_J | - 55 to +150 | | | | | | | °C |
| Storage temperature | T_{STG} | - 55 to +150 | | | | | | | °C |

THERMAL PERFORMANCE

| PARAMETER | SYMBOL | LIMIT | UNIT |
|-------------------------------------|-----------------|-------|------|
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 30 | °C/W |

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

| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
|--|---|--------|-----|-----|---------------|
| Forward voltage per diode ⁽¹⁾ | $I_F = 1\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 1.1 | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 5 | μA |
| | $T_J = 125^\circ\text{C}$ | | - | 50 | μA |
| Junction capacitance | 1 MHz, $V_R = 4.0\text{V}$ | C_J | 12 | - | pF |

Notes:

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

ORDERING INFORMATION

| PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX(*) | PACKAGE | PACKING |
|------------------|-----------------|--------------|------------------------|---------|--------------------------|
| S1xB (Note 1) | H | R5 | G | SMB | 850 / 7" Plastic reel |
| | | R4 | | SMB | 3,000 / 13" Paper reel |
| | | M4 | | SMB | 3,000 / 13" Plastic reel |

Note:

1. "x" defines voltage from 50V (S1AB) to 1000V (S1MB)
- : Optional available

EXAMPLE P/N

| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
|-------------|----------|-----------------|--------------|---------------------|--------------------------------------|
| S1ABHR5G | S1AB | H | R5 | G | AEC-Q101 qualified Green compound |

CHARACTERISTICS CURVES

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

Fig1. Forward Current Derating Curve

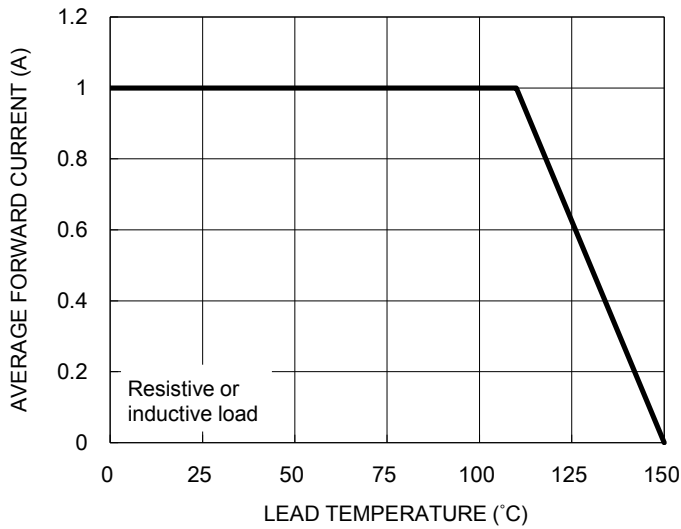


Fig2. Typical Junction Capacitance

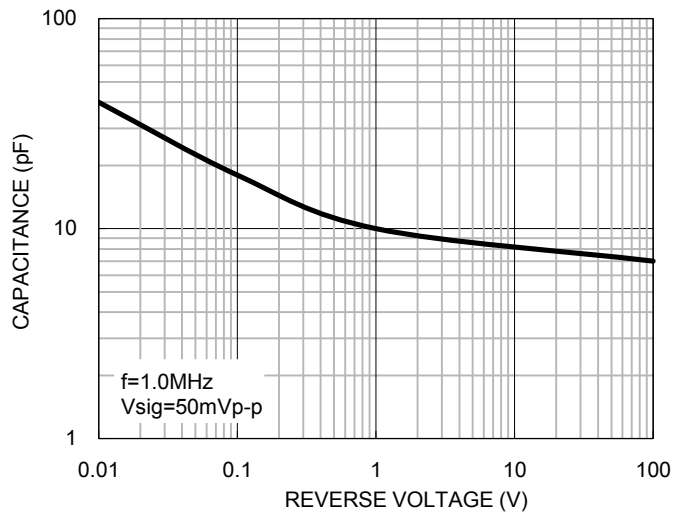


Fig3. Typical Reverse Characteristics

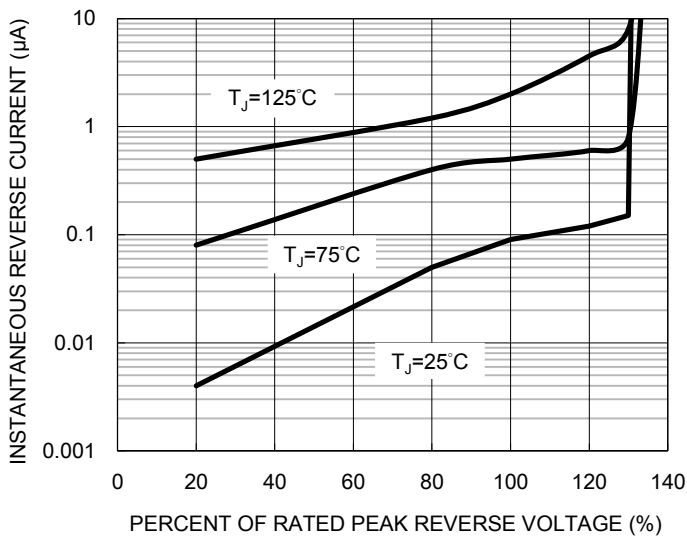


Fig4. Typical Forward Characteristics

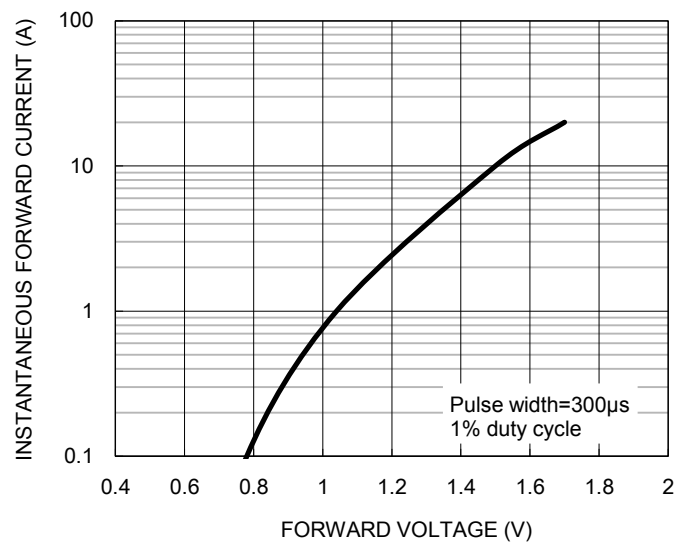
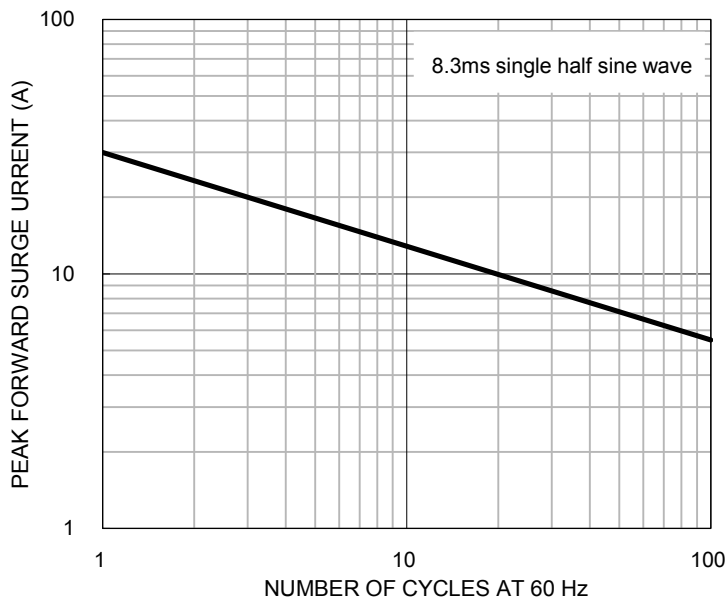


Fig5. Maximum Non-repetitive Forward Surge Current



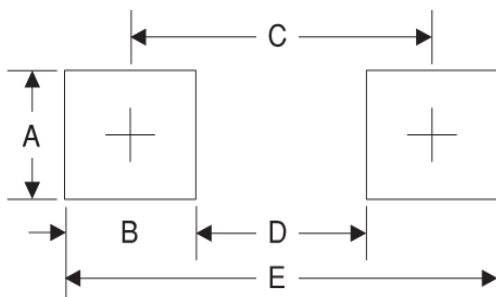
PACKAGE OUTLINE DIMENSIONS

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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