

1A, 50V - 600V Surface Mount Ultrafast Power Rectifier

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Ultrafast recovery time for high efficiency
- Low forward voltage, low power loss
- 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 - 600 | V |
| T_{JMAX} | 175 | °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 | MUR 105S | MUR 110S | MUR 115S | MUR 120S | MUR 140S | MUR 160S | UNIT |
|---|--------------|--------------|----------|----------|----------|----------|----------|------|
| Marking code on the device | | MUR 105S | MUR 110S | MUR 115S | MUR 120S | MUR 140S | MUR 160S | |
| Repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | 400 | 600 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 35 | 70 | 105 | 140 | 280 | 420 | V |
| Maximum DC blocking voltage | V_{DC} | 50 | 100 | 150 | 200 | 400 | 600 | 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} | 40 | | | | 35 | | A |
| Junction temperature | T_J | - 55 to +175 | | | | | | °C |
| Storage temperature | T_{STG} | - 55 to +175 | | | | | | °C |

| THERMAL PERFORMANCE | | | |
|-------------------------------------|-----------------|--------------|---------------|
| PARAMETER | SYMBOL | LIMIT | UNIT |
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 17 | $^{\circ}C/W$ |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}C$ unless otherwise noted) | | | | | | |
|--|---------|--|---------------|------------|------------|-------------|
| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | MUR105S | $I_F = 1A, T_J = 25^{\circ}C$ | V_F | - | 0.875 | V |
| | MUR110S | | | | | V |
| | MUR115S | | | | | V |
| | MUR120S | | | - | 1.250 | V |
| | MUR140S | | | | | V |
| | MUR160S | | | | | V |
| Forward voltage per diode ⁽¹⁾ | MUR105S | $I_F = 1A, T_J = 150^{\circ}C$ | V_F | - | 0.710 | V |
| | MUR110S | | | | | V |
| | MUR115S | | | | | V |
| | MUR120S | | | - | 1.050 | V |
| | MUR140S | | | | | V |
| | MUR160S | | | | | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | MUR105S | $T_J = 25^{\circ}C$ | I_R | - | 2 | μA |
| | MUR110S | | | | | μA |
| | MUR115S | | | | | μA |
| | MUR120S | | | - | 5 | μA |
| | MUR140S | | | | | μA |
| | MUR160S | | | | | μA |
| Reverse current @ rated V_R per diode ⁽²⁾ | MUR105S | $T_J = 150^{\circ}C$ | I_R | - | 50 | μA |
| | MUR110S | | | | | μA |
| | MUR115S | | | | | μA |
| | MUR120S | | | - | 150 | μA |
| | MUR140S | | | | | μA |
| | MUR160S | | | | | μA |
| Reverse recovery time | MUR105S | $I_F = 0.5A, I_R = 1.0A$ $I_{RR} = 0.25A$ | t_{rr} | - | 25 | ns |
| | MUR110S | | | | | ns |
| | MUR115S | | | | | ns |
| | MUR120S | | | - | 50 | ns |
| | MUR140S | | | | | ns |
| | MUR160S | | | | | ns |

Notes:

1. Pulse test with $PW = 0.3$ ms
2. Pulse test with $PW = 30$ ms

| ORDERING INFORMATION | | | | | |
|-----------------------------|------------------------|---------------------|-------------------------------|----------------|--------------------------|
| PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX(*) | PACKAGE | PACKING |
| MUR1xxS (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 (MUR105S) to 1000V (MUR160S)

*: Optional available

| EXAMPLE P/N | | | | | |
|--------------------|-----------------|------------------------|---------------------|----------------------------|--------------------------------------|
| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | PACKING CODE SUFFIX | DESCRIPTION |
| MUR160SHR5G | MUR160S | H | R5 | G | AEC-Q101 qualified Green compound |

CHARACTERISTICS CURVES

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

Fig1. Forward Current Derating Curve

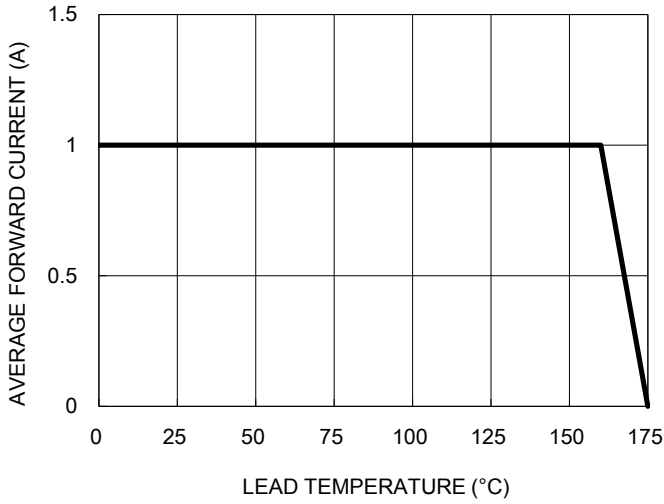


Fig2. Typical Junction Capacitance

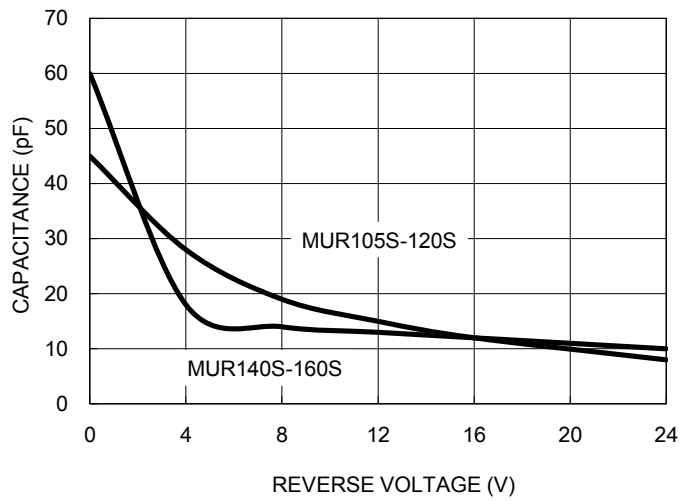


Fig3. Typical Reverse Characteristics

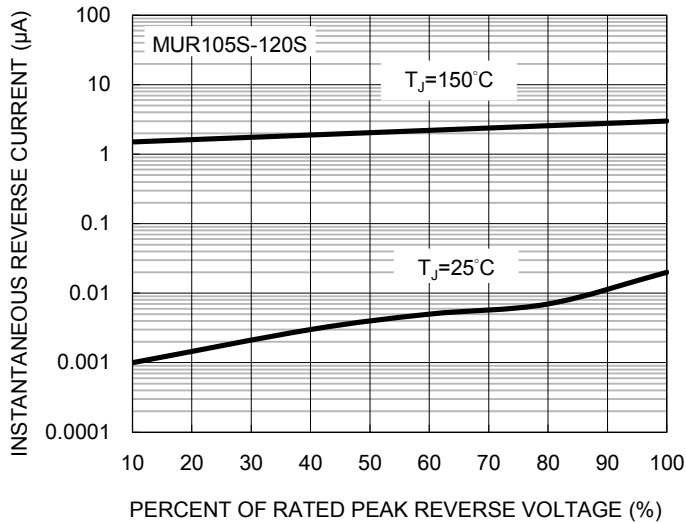


Fig4. Typical Reverse Characteristics

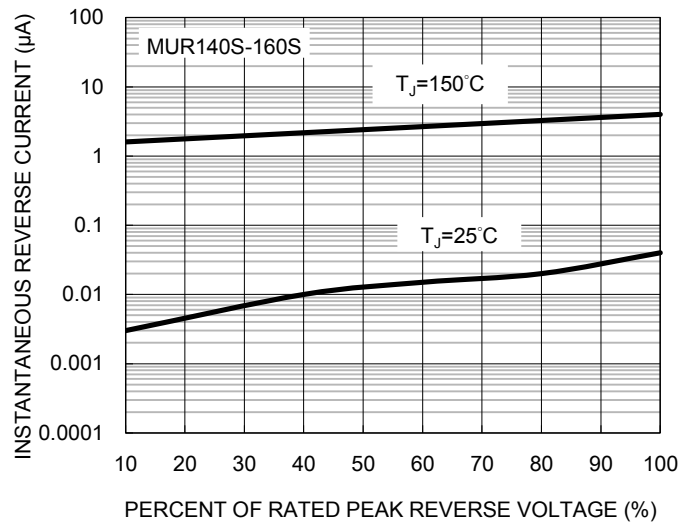


Fig5. Typical Forward Characteristics

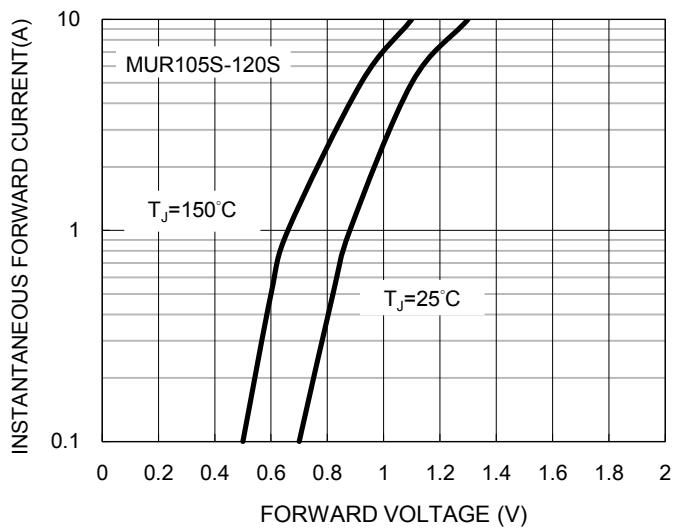


Fig6. Typical Forward Characteristics

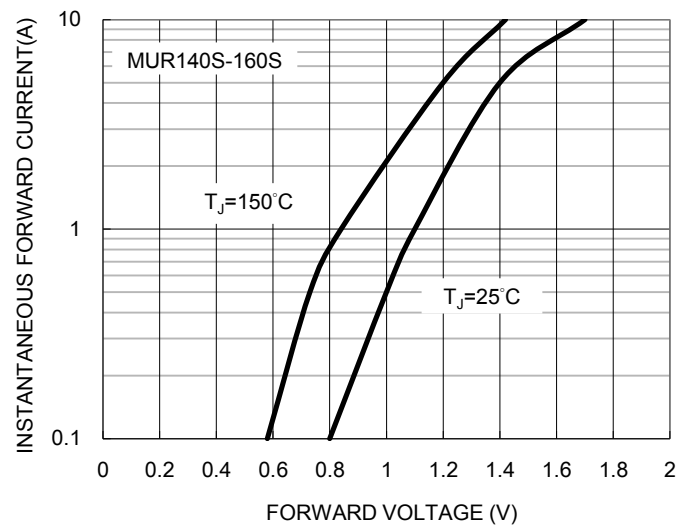
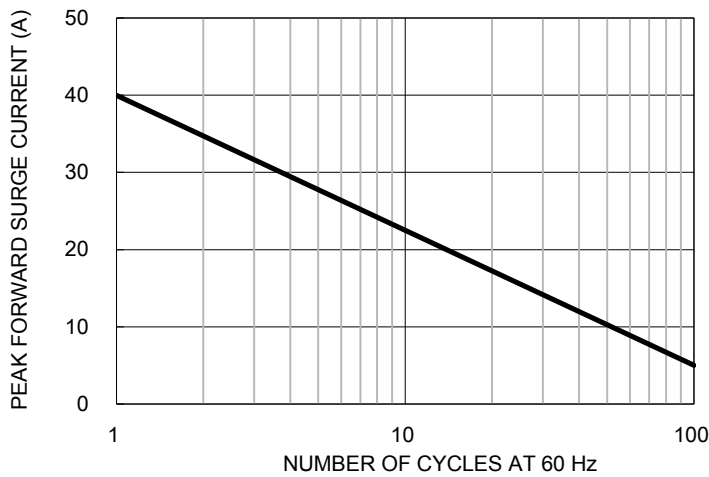
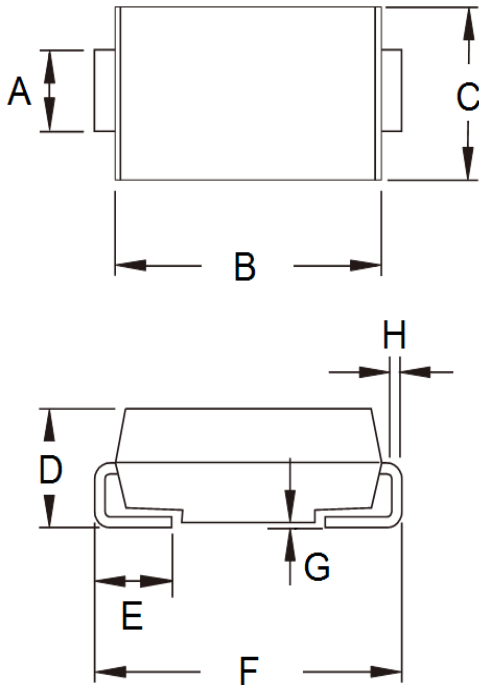


Fig5. Maximum Non-repetitive Forward Surge Current



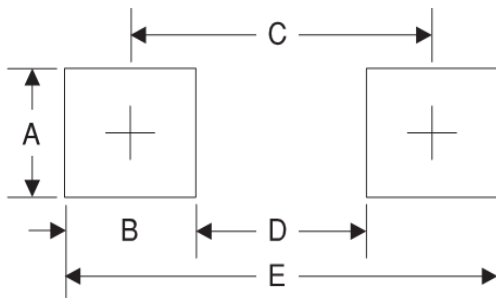
PACKAGE OUTLINE DIMENSIONS

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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