

## 1A, 50V - 600V Ultra Fast Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Ultra Fast recovery time for high efficiency
- Low forward voltage, low power loss
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- 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: Indicated by cathode band
- Weight: 0.090g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_F$          | 1              | A    |
| $V_{RRM}$      | 50 - 600       | V    |
| $I_{FSM}$      | 40, 35         | A    |
| $T_{J\ MAX}$   | 175            | °C   |
| Package        | DO-214AA (SMB) |      |
| Configuration  | Single die     |      |


**HALOGEN  
FREE**

**DO-214AA (SMB)**


| ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)                  |                     |              |             |             |             |             |             |      |
|------------------------------------------------------------------------------------------|---------------------|--------------|-------------|-------------|-------------|-------------|-------------|------|
| PARAMETER                                                                                | SYMBOL              | MUR<br>105S  | MUR<br>110S | MUR<br>115S | MUR<br>120S | MUR<br>140S | MUR<br>160S | UNIT |
| Marking code on the device                                                               |                     | MUR<br>105S  | MUR<br>110S | MUR<br>115S | MUR<br>120S | MUR<br>140S | MUR<br>160S |      |
| Repetitive peak reverse voltage                                                          | V <sub>RRM</sub>    | 50           | 100         | 150         | 200         | 400         | 600         | V    |
| Reverse voltage, total rms value                                                         | V <sub>R(RMS)</sub> | 35           | 70          | 105         | 140         | 280         | 420         | V    |
| Forward current                                                                          | I <sub>F</sub>      | 1            |             |             |             |             |             | A    |
| Surge peak forward current, 8.3ms<br>single half sine-wave superimposed<br>on rated load | I <sub>FSM</sub>    | 40           |             |             |             | 35          |             | A    |
| Junction temperature                                                                     | T <sub>J</sub>      | - 55 to +175 |             |             |             |             |             | °C   |
| Storage temperature                                                                      | T <sub>STG</sub>    | - 55 to +175 |             |             |             |             |             | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                           | SYMBOL          | TYP | UNIT |
|-------------------------------------|-----------------|-----|------|
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 17  | °C/W |

**ELECTRICAL SPECIFICATIONS** (TA = 25°C unless otherwise noted)

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

**Notes:**

Pulse test with PW = 0.3ms

Pulse test with PW = 30ms

**ORDERING INFORMATION**

| <b>ORDERING CODE<sup>(1)</sup></b> | <b>PACKAGE</b> | <b>PACKING</b>      |
|------------------------------------|----------------|---------------------|
| MUR1xS                             | DO-214AA (SMB) | 3,000 / Tape & Reel |

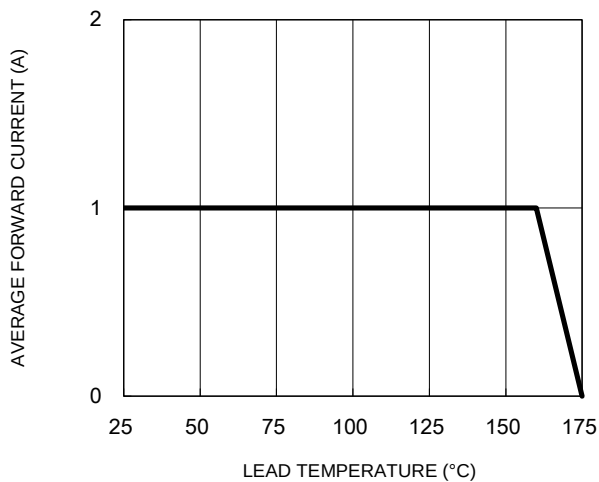
**Notes:**

"x" defines voltage from 50V(MUR105S) to 600V(MUR160S)

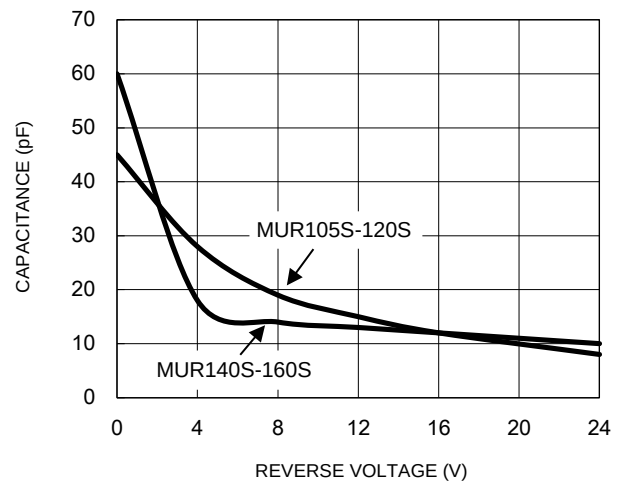
## CHARACTERISTICS CURVES

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

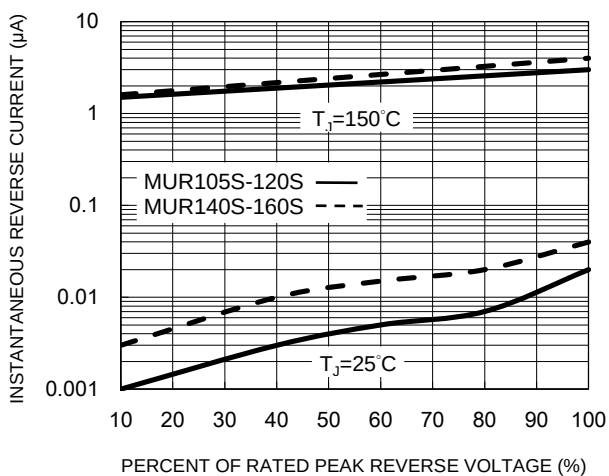
**Fig.1 Forward Current Derating Curve**



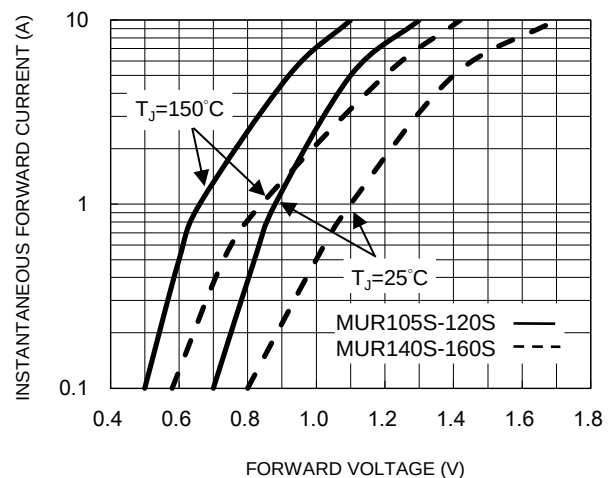
**Fig.2 Typical Junction Capacitance**



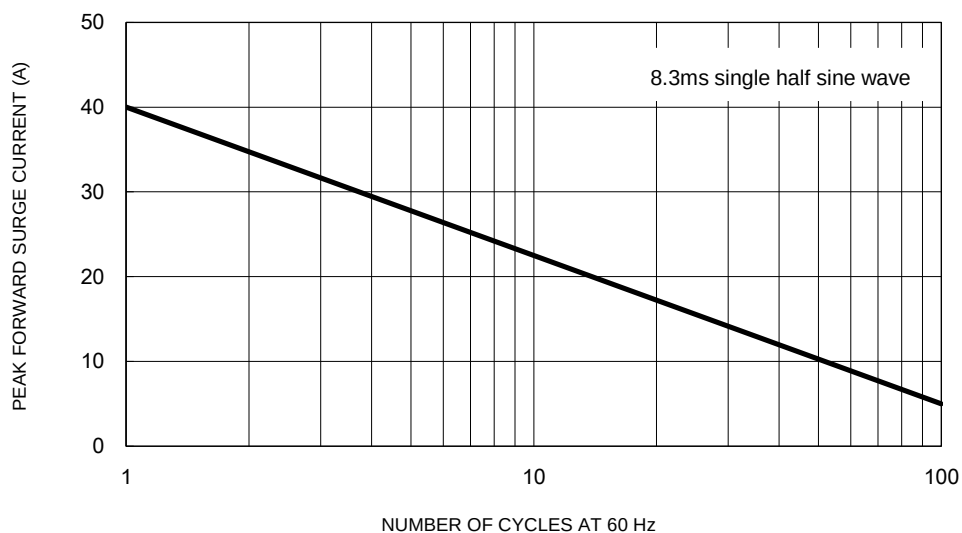
**Fig.3 Typical Reverse Characteristics**



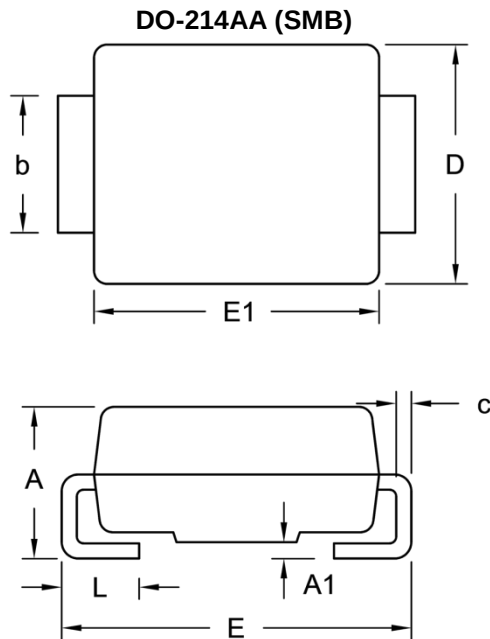
**Fig.4 Typical Forward Characteristics**



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

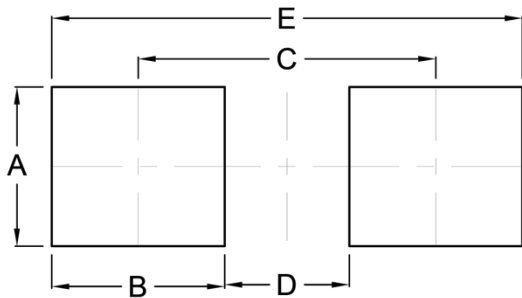


## PACKAGE OUTLINE DIMENSIONS



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 1.95      | 2.65 | 0.077       | 0.104 |
| A1   | 0.05      | 0.20 | 0.002       | 0.008 |
| b    | 1.95      | 2.20 | 0.077       | 0.087 |
| c    | 0.15      | 0.31 | 0.006       | 0.012 |
| D    | 3.30      | 3.95 | 0.130       | 0.156 |
| E    | 5.10      | 5.60 | 0.201       | 0.220 |
| E1   | 4.05      | 4.60 | 0.159       | 0.181 |
| L    | 0.75      | 1.60 | 0.030       | 0.063 |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 2.30      | 0.091       |
| B      | 2.50      | 0.098       |
| C      | 4.30      | 0.169       |
| D      | 1.80      | 0.071       |
| E      | 6.80      | 0.268       |

## MARKING DIAGRAM



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

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