

## 1A, 100V - 200V Ultra Fast Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Planar technology
- Low power loss, high efficiency
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- High frequency switching
- DC/DC
- Snubber

### MECHANICAL DATA

- Case: DO-214AC (SMA)
- 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: 0.060g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_F$          | 1              | A    |
| $V_{RRM}$      | 100 - 200      | V    |
| $I_{FSM}$      | 45             | A    |
| $T_{JMAX}$     | 175            | °C   |
| Package        | DO-214AC (SMA) |      |
| Configuration  | Single die     |      |



DO-214AC (SMA)



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |                    |             |        |      |
|---|--------------------|-------------|--------|------|
| PARAMETER   | SYMBOL             | PU1BAH      | PU1DAH | UNIT |
| Marking code on the device  |                    | PU1BA       | PU1DA  |      |
| Repetitive peak reverse voltage   | $V_{RRM}$          | 100         | 200    | V    |
| Reverse voltage, total rms value  | $V_{R(RMS)}$       | 70          | 140    | V    |
| Forward current   | $I_F$              | 1           |        | A    |
| Surge peak forward current single half sine-wave superimposed on rated load | $t = 8.3\text{ms}$ | 45          |        | A    |
|   | $t = 1.0\text{ms}$ | 100         |        |      |
| Junction temperature  | $T_J$              | -55 to +175 |        | °C   |
| Storage temperature   | $T_{STG}$          | -55 to +175 |        | °C   |

| <b>THERMAL PERFORMANCE</b>             |                 |            |             |
|--|-----------------|------------|-------------|
| <b>PARAMETER</b>                       | <b>SYMBOL</b>   | <b>TYP</b> | <b>UNIT</b> |
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 20         | °C/W        |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 76         | °C/W        |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 23         | °C/W        |

**Thermal Performance Note:** Units mounted on PCB (5mm x 5mm Cu pad test board)

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |   |               |            |            |               |
|---|---|---------------|------------|------------|---------------|
| <b>PARAMETER</b>  | <b>CONDITIONS</b>   | <b>SYMBOL</b> | <b>TYP</b> | <b>MAX</b> | <b>UNIT</b>   |
| Forward voltage <sup>(1)</sup>  | $I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$                             | $V_F$         | 0.79       | -          | V             |
|   | $I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$                             |               | 0.84       | 0.93       | V             |
|   | $I_F = 0.5\text{A}, T_J = 125^\circ\text{C}$                            |               | 0.64       | -          | V             |
|   | $I_F = 1.0\text{A}, T_J = 125^\circ\text{C}$                            |               | 0.70       | -          | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup>  | $T_J = 25^\circ\text{C}$  | $I_R$         | -          | 2          | $\mu\text{A}$ |
|   | $T_J = 125^\circ\text{C}$   |               | -          | 10         | $\mu\text{A}$ |
| Junction capacitance  | 1MHz, $V_R = 4.0\text{V}$   | $C_J$         | 19         | -          | pF            |
| Reverse recovery time   | $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$           | $t_{rr}$      | -          | 25         | ns            |
|   | $I_F = 1.0\text{A}, di/dt = 50\text{A}/\mu\text{s}, V_R = 30\text{V}$   |               | 34         | -          |               |
| Reverse recovery current  | $I_F = 1.0\text{A}, di/dt = 200\text{A}/\mu\text{s}, V_R = 100\text{V}$ | $I_{RM}$      | 3.4        | -          | A             |
| Reverse recovery charge   |   | $Q_{rr}$      | 27         | -          | nC            |
| Reverse recovery time   |   | $t_{rr}$      | 19         | -          | ns            |

**Notes:**

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

| <b>ORDERING INFORMATION</b>        |                |                    |
|------------------------------------|----------------|--------------------|
| <b>ORDERING CODE<sup>(1)</sup></b> | <b>PACKAGE</b> | <b>PACKING</b>     |
| PU1xAH                             | DO-214AC (SMA) | 7,500/ Tape & Reel |

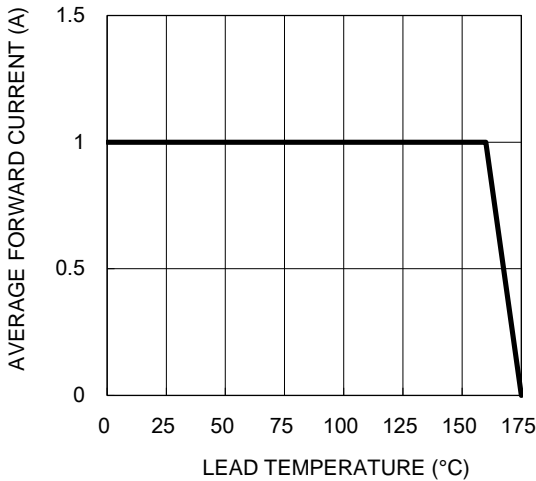
**Notes:**

1. "x" defines voltage from 100V(PU1BAH) to 200V(PU1DAH)

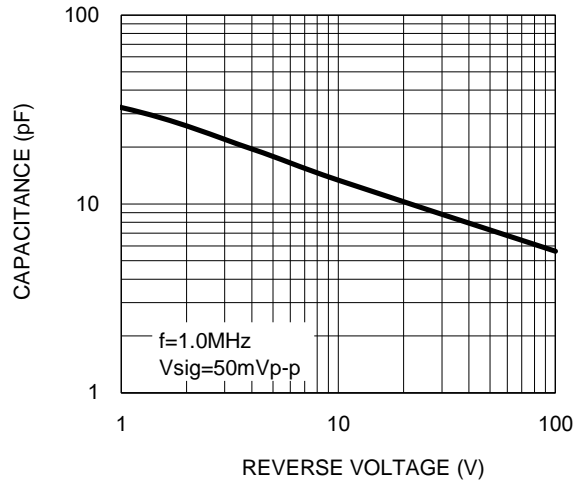
**CHARACTERISTICS CURVES**

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

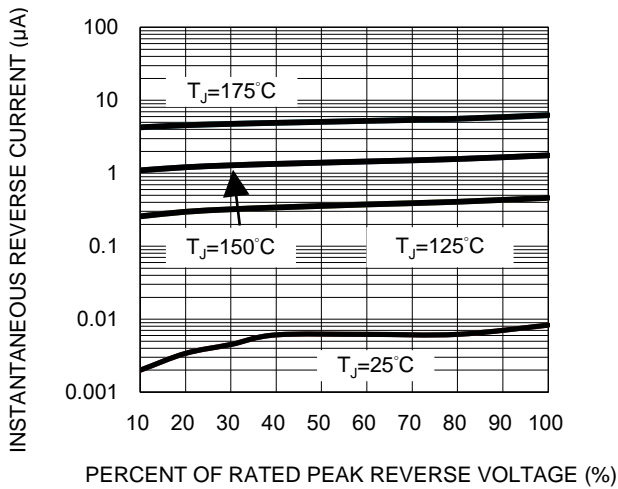
**Fig.1 Forward Current Derating Curve**



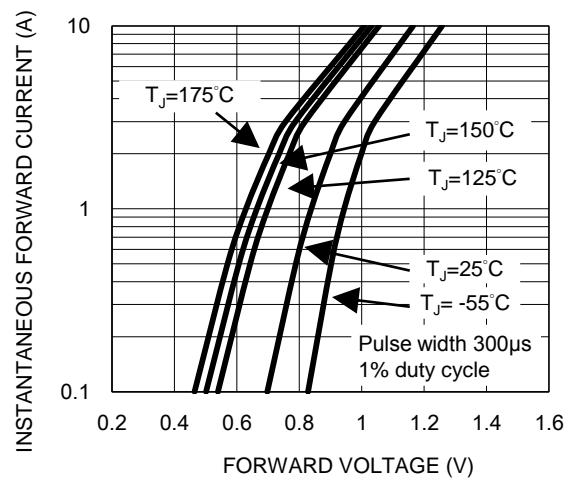
**Fig.2 Typical Junction Capacitance**



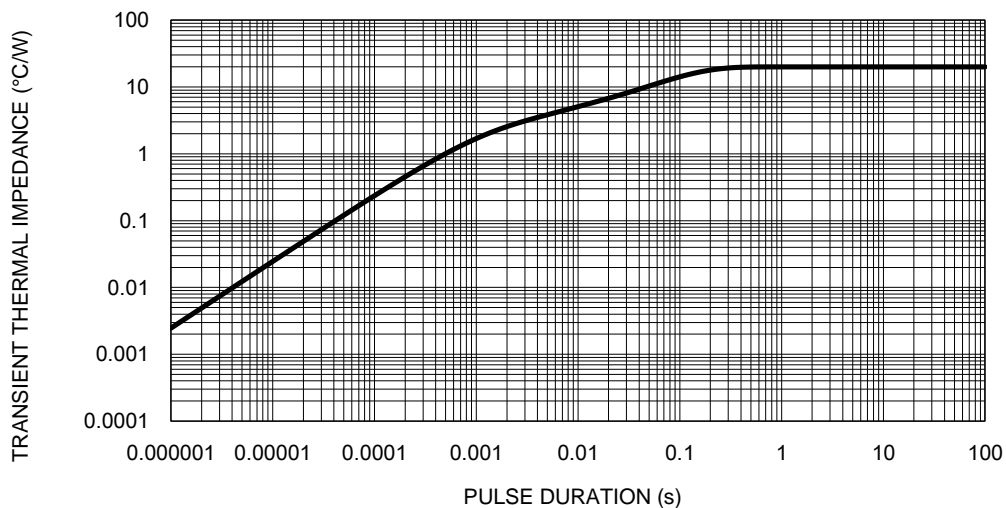
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

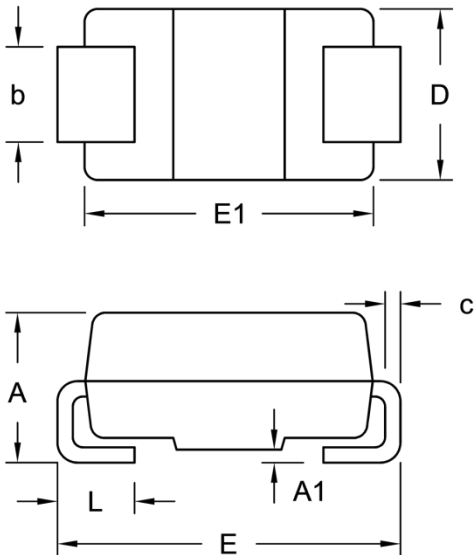


**Fig.5 Typical Transient Thermal Impedance**



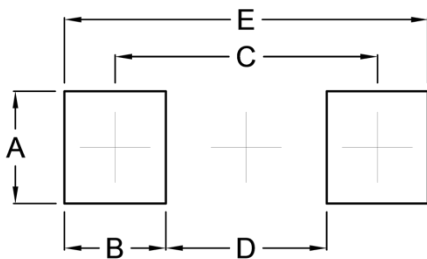
**PACKAGE OUTLINE DIMENSIONS**

DO-214AC (SMA)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 1.99      | 2.50 | 0.078       | 0.098 |
| A1   | 0.10      | 0.20 | 0.004       | 0.008 |
| b    | 1.27      | 1.58 | 0.050       | 0.062 |
| c    | 0.15      | 0.31 | 0.006       | 0.012 |
| D    | 2.29      | 2.83 | 0.090       | 0.111 |
| E    | 4.95      | 5.33 | 0.195       | 0.210 |
| E1   | 4.06      | 4.60 | 0.160       | 0.181 |
| L    | 0.90      | 1.41 | 0.035       | 0.056 |

**SUGGESTED PAD LAYOUT**



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.68      | 0.066       |
| B      | 1.52      | 0.060       |
| C      | 3.93      | 0.155       |
| D      | 2.41      | 0.095       |
| E      | 5.45      | 0.215       |

**MARKING DIAGRAM**



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

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