

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

### FEATURES

- 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    |
| $I_{FSM}$      | 30             | A    |
| $T_{J\ MAX}$   | 175            | °C   |
| Package        | DO-214AC (SMA) |      |
| Configuration  | Single die     |      |



DO-214AC (SMA)



| ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)     |           |                     |             |       |      |
|-----------------------------------------------------------------------------|-----------|---------------------|-------------|-------|------|
| PARAMETER                                                                   |           | SYMBOL              | PE1BA       | PE1DA | UNIT |
| Marking code on the device                                                  |           |                     | PE1BA       | PE1DA |      |
| Repetitive peak reverse voltage                                             |           | V <sub>RRM</sub>    | 100         | 200   | V    |
| Reverse voltage, total rms value                                            |           | V <sub>R(RMS)</sub> | 70          | 140   | V    |
| Forward current                                                             |           | I <sub>F</sub>      | 1           |       | A    |
| Surge peak forward current single half sine-wave superimposed on rated load | t = 8.3ms | I <sub>FSM</sub>    | 30          |       | A    |
|                                                                             | t = 1.0ms |                     | 100         |       |      |
| 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    | $R_{\theta JL}$ | 22  | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 71  | °C/W |
| Junction-to-case thermal resistance    | $R_{\theta JC}$ | 22  | °C/W |

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

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

| PARAMETER                                    | CONDITIONS                                                              | SYMBOL   | TYP  | MAX  | UNIT          |
|----------------------------------------------|-------------------------------------------------------------------------|----------|------|------|---------------|
| Forward voltage <sup>(1)</sup>               | $I_F = 0.5\text{A}, T_J = 25^\circ\text{C}$                             | $V_F$    | 0.79 | -    | V             |
|                                              | $I_F = 1.0\text{A}, T_J = 25^\circ\text{C}$                             |          | 0.85 | 0.92 | V             |
|                                              | $I_F = 0.5\text{A}, T_J = 125^\circ\text{C}$                            |          | 0.63 | -    | V             |
|                                              | $I_F = 1.0\text{A}, T_J = 125^\circ\text{C}$                            |          | 0.69 | -    | 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, $V_R = 4.0\text{V}$                                               | $C_J$    | 24   | -    | pF            |
| Reverse recovery time                        | $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$           | $t_{rr}$ | -    | 15   | ns            |
|                                              | $I_F = 1.0\text{A}, di/dt = 50\text{A}/\mu\text{s}, V_R = 30\text{V}$   |          | 23   | -    |               |
| Reverse recovery current                     | $I_F = 1.0\text{A}, di/dt = 200\text{A}/\mu\text{s}, V_R = 100\text{V}$ | $I_{RM}$ | 1.9  | -    | A             |
| Reverse recovery charge                      |                                                                         | $Q_{rr}$ | 10.5 | -    | nC            |
| Reverse recovery time                        |                                                                         | $t_{rr}$ | 12   | -    | ns            |

**Notes:**

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

**ORDERING INFORMATION**

| ORDERING CODE <sup>(1)</sup> | PACKAGE        | PACKING            |
|------------------------------|----------------|--------------------|
| PE1xA                        | DO-214AC (SMA) | 7,500/ Tape & Reel |

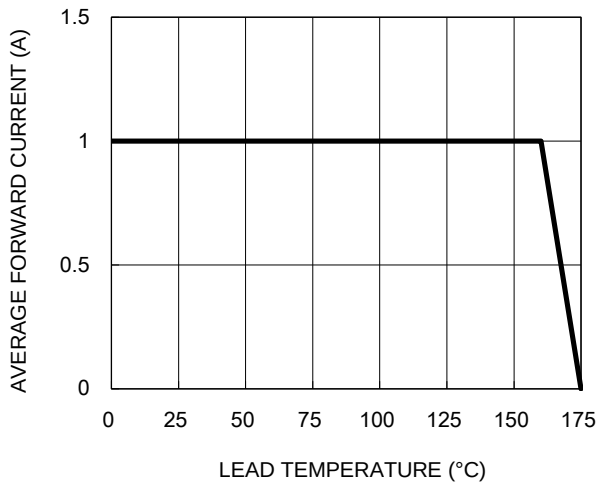
**Notes:**

1. "x" defines voltage from 100V(PE1BA) to 200V(PE1DA)

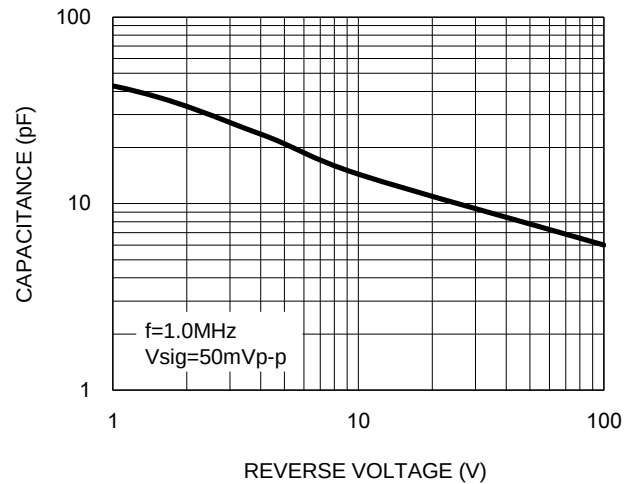
## CHARACTERISTICS CURVES

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

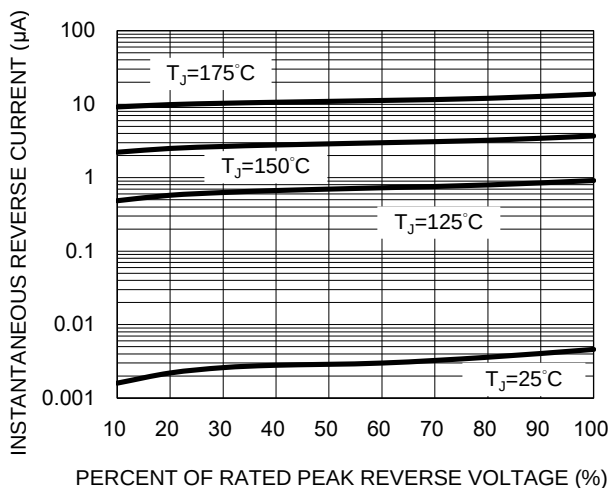
**Fig.1 Forward Current Derating Curve**



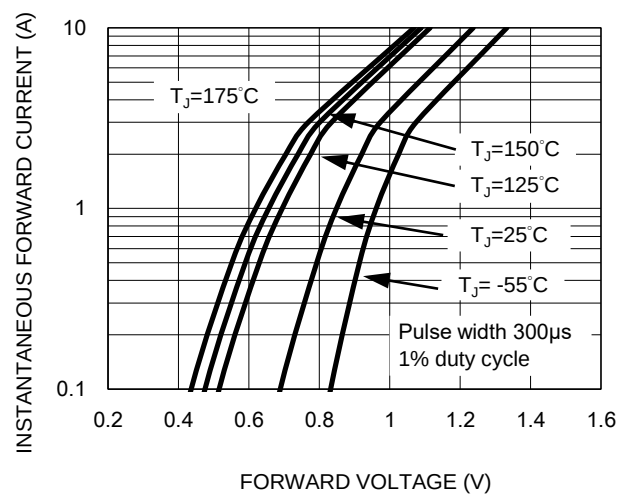
**Fig.2 Typical Junction Capacitance**



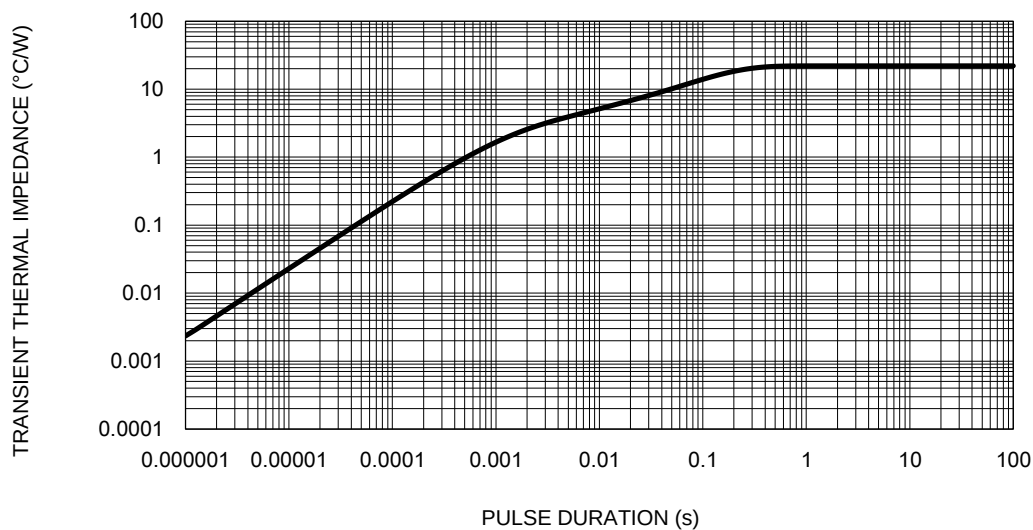
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**

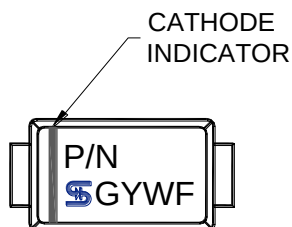
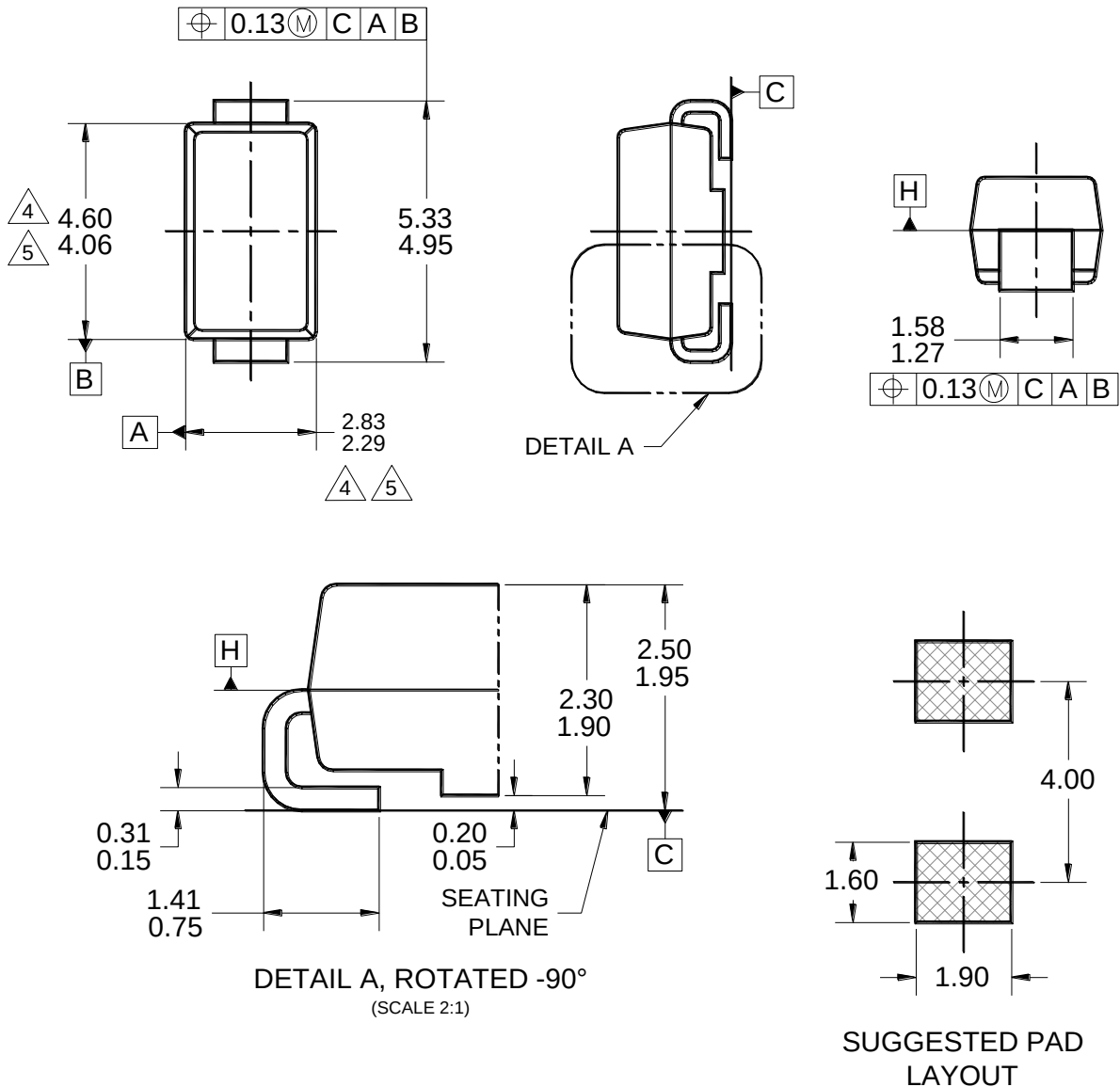


**Fig.5 Typical Transient Thermal Impedance**



## PACKAGE OUTLINE DIMENSIONS

### DO-214AC (SMA)



### MARKING DIAGRAM

P/N = MARKING CODE  
G = GREEN COMPOUND  
YW = DATE CODE  
F = FACTORY CODE

### NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
- PACKAGE OUTLINE REFERENCE: JEDEC DO-214, VARIATION AC, ISSUE D.
- MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH.
- MOLDED PLASTIC BODY LATERAL DIMENSIONS TO BE DETERMINED AT DATUM PLANE H.
- DWG NO. REF: HQ2SD07-DO214SMC-034 REV A.

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