

## 5A, 50V - 1000V Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low forward voltage drop
- High current capability
- High surge current capability
- 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-214AB (SMC)
- 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: 0.210g (approximately)

| KEY PARAMETERS |                |      |
|----------------|----------------|------|
| PARAMETER      | VALUE          | UNIT |
| $I_F$          | 5              | A    |
| $V_{RRM}$      | 50 - 1000      | V    |
| $I_{FSM}$      | 100            | A    |
| $T_{JMAX}$     | 150            | °C   |
| Package        | DO-214AB (SMC) |      |
| Configuration  | Single die     |      |



**DO-214AB (SMC)**



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)        |              |              |     |     |     |     |     |      |      |
|--|--------------|--------------|-----|-----|-----|-----|-----|------|------|
| PARAMETER  | SYMBOL       | S5A          | S5B | S5D | S5G | S5J | S5K | S5M  | UNIT |
| Marking code on the device   |              | S5A          | S5B | S5D | S5G | S5J | S5K | S5M  |      |
| 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    |
| Forward current  | $I_F$        | 5            |     |     |     |     |     |      | A    |
| Peak forward surge current, 8.3ms single half sine wave superimposed on rated load | $I_{FSM}$    | 100          |     |     |     |     |     |      | A    |
| Junction temperature   | $T_J$        | - 55 to +150 |     |     |     |     |     |      | °C   |
| Storage temperature  | $T_{STG}$    | - 55 to +150 |     |     |     |     |     |      | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | TYP | UNIT |
|--|-----------------|-----|------|
| Junction-to-lead thermal resistance    | $R_{\theta JL}$ | 13  | °C/W |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 47  | °C/W |

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

| PARAMETER                                    | CONDITIONS  | SYMBOL   | TYP  | MAX  | UNIT          |
|--|---|----------|------|------|---------------|
| Forward voltage <sup>(1)</sup>               | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$                     | $V_F$    | -    | 1.15 | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup> | $T_J = 25^\circ\text{C}$                                      | $I_R$    | -    | 10   | $\mu\text{A}$ |
|  | $T_J = 125^\circ\text{C}$                                     |          | -    | 250  | $\mu\text{A}$ |
| Junction capacitance                         | 1MHz, $V_R = 4.0\text{V}$                                     | $C_J$    | 60   | -    | pF            |
| Reverse recovery time                        | $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$ | $t_{rr}$ | 1500 | -    | 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             |
|------------------------------|----------------|---------------------|
| S5x                          | DO-214AB (SMC) | 3,000 / Tape & Reel |

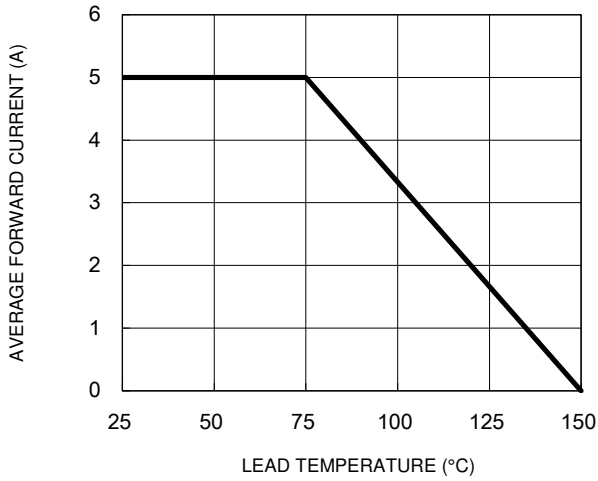
**Notes:**

1. "x" defines voltage from 50V(S5A) to 1000V(S5M)

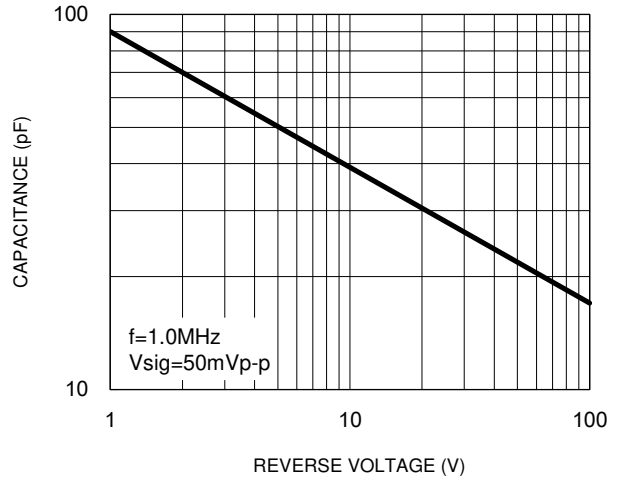
**CHARACTERISTICS CURVES**

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

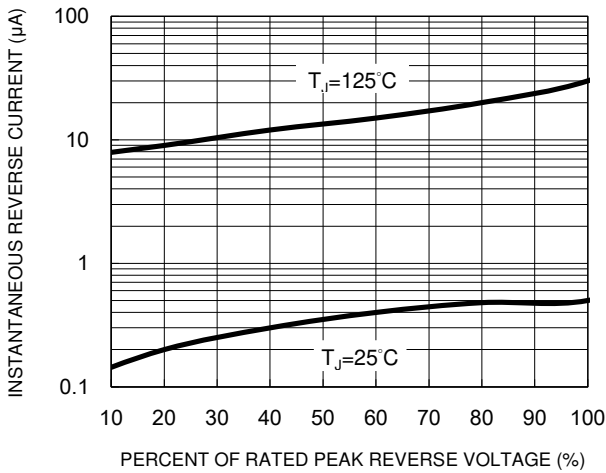
**Fig.1 Forward Current Derating Curve**



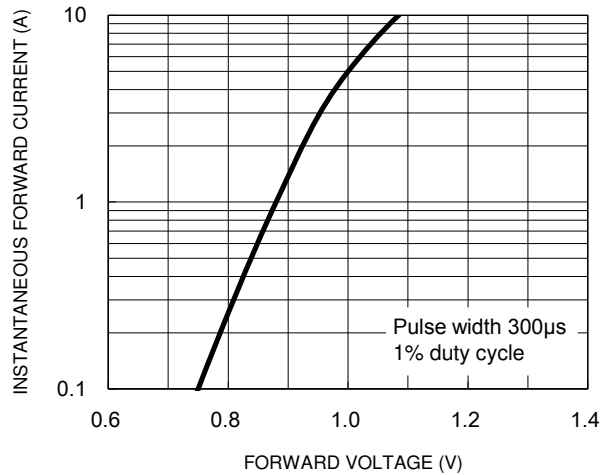
**Fig.2 Typical Junction Capacitance**



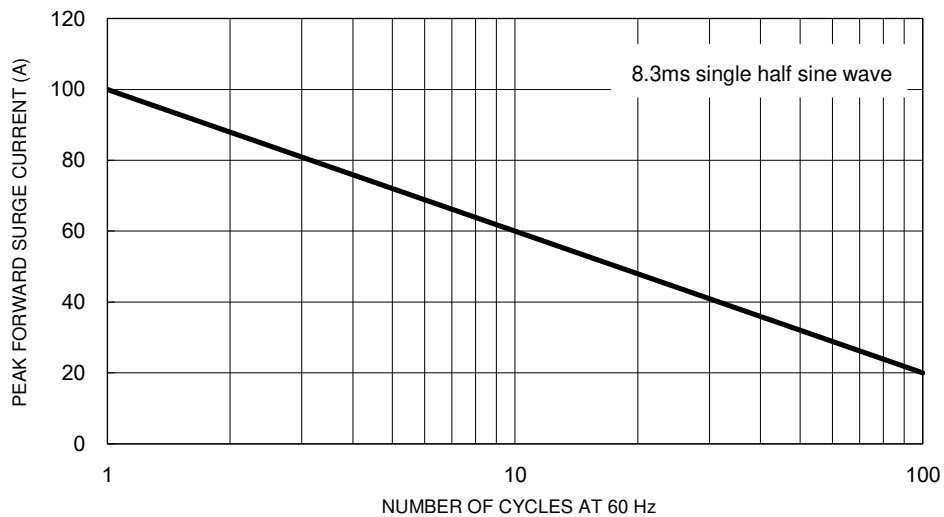
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



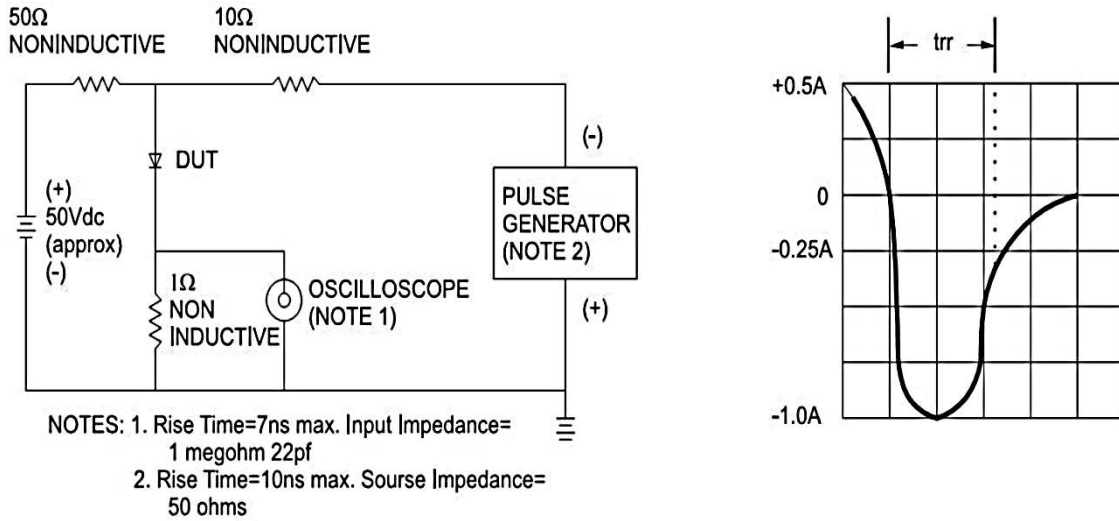
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



**CHARACTERISTICS CURVES**

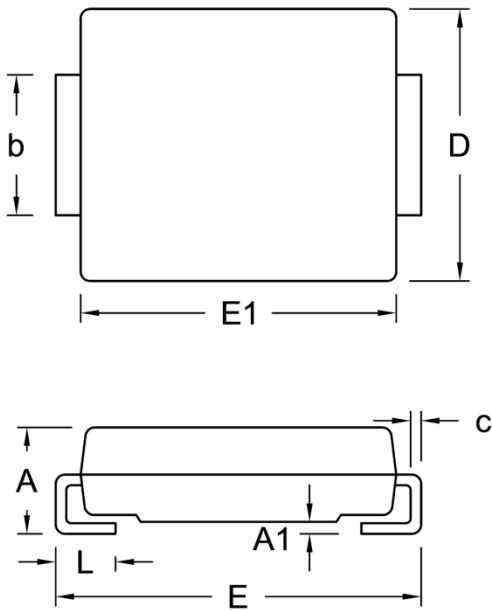
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.6 Reverse Recovery Time Characteristic And Test Circuit Diagram**



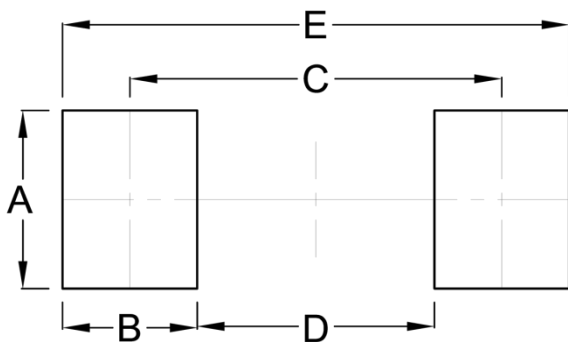
**PACKAGE OUTLINE DIMENSIONS**

DO-214AB (SMC)



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 2.00      | 2.62 | 0.079       | 0.103 |
| A1   | 0.10      | 0.20 | 0.004       | 0.008 |
| b    | 2.90      | 3.20 | 0.114       | 0.126 |
| c    | 0.15      | 0.31 | 0.006       | 0.012 |
| D    | 5.59      | 6.22 | 0.220       | 0.245 |
| E    | 7.75      | 8.13 | 0.305       | 0.320 |
| E1   | 6.60      | 7.11 | 0.260       | 0.280 |
| L    | 1.00      | 1.60 | 0.039       | 0.063 |

**SUGGESTED PAD LAYOUT**



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 3.30      | 0.130       |
| B      | 2.50      | 0.098       |
| C      | 6.90      | 0.272       |
| D      | 4.40      | 0.173       |
| E      | 9.40      | 0.370       |

**MARKING DIAGRAM**



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

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