

## 8A, 20V - 150V Schottky Barrier Rectifier

### FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

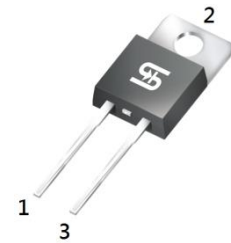
### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- DC to DC converters

### MECHANICAL DATA

- Case: TO-220AC
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Mounting torque: 0.56 N·m maximum
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 1.85g (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $I_F$          | 8          | A    |
| $V_{RRM}$      | 20 - 150   | V    |
| $I_{FSM}$      | 150        | A    |
| $T_{JMAX}$     | 125, 150   | °C   |
| Package        | TO-220AC   |      |
| Configuration  | Single die |      |


**TO-220AC**


| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)        |              |             |         |         |             |         |         |          |          |                  |
|--|--------------|-------------|---------|---------|-------------|---------|---------|----------|----------|------------------|
| PARAMETER  | SYMBOL       | SRA 820     | SRA 830 | SRA 840 | SRA 850     | SRA 860 | SRA 890 | SRA 8100 | SRA 8150 | UNIT             |
| Marking code on the device   |              | SRA 820     | SRA 830 | SRA 840 | SRA 850     | SRA 860 | SRA 890 | SRA 8100 | SRA 8150 |                  |
| Repetitive peak reverse voltage  | $V_{RRM}$    | 20          | 30      | 40      | 50          | 60      | 90      | 100      | 150      | V                |
| Reverse voltage, total rms value   | $V_{R(RMS)}$ | 14          | 21      | 28      | 35          | 42      | 63      | 70       | 105      | V                |
| Forward current  | $I_F$        | 8           |         |         |             |         |         |          |          | A                |
| Surge peak forward current, 8.3ms single half sine wave superimposed on rated load | $I_{FSM}$    | 150         |         |         |             |         |         |          |          | A                |
| Critical rate of rise of off-state voltage   | dv/dt        | 10,000      |         |         |             |         |         |          |          | V/ $\mu\text{s}$ |
| Junction temperature   | $T_J$        | -55 to +125 |         |         | -55 to +150 |         |         |          |          | °C               |
| Storage temperature  | $T_{STG}$    | -55 to +150 |         |         |             |         |         |          |          | °C               |

| <b>THERMAL PERFORMANCE</b>  |                 |            |             |
|-----------------------------|-----------------|------------|-------------|
| <b>PARAMETER</b>            | <b>SYMBOL</b>   | <b>TYP</b> | <b>UNIT</b> |
| Junction-to-case resistance | $R_{\theta JC}$ | 4          | °C/W        |

| <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>  | SRA820<br>SRA830<br>SRA840                     | $I_F = 8\text{A}, T_J = 25^\circ\text{C}$ | $V_F$         | -                         | 0.55       | V             |
|   | SRA850<br>SRA860                               |   |               | -                         | 0.70       | V             |
|   | SRA890<br>SRA8100                              |   |               | -                         | 0.85       | V             |
|   | SRA8150  |   |               | -                         | 0.95       | V             |
| Reverse current @ rated $V_R$ <sup>(2)</sup>  | SRA820<br>SRA830<br>SRA840<br>SRA850<br>SRA860 | $T_J = 25^\circ\text{C}$                  | $I_R$         | -                         | 500        | $\mu\text{A}$ |
|   | SRA890<br>SRA8100<br>SRA8150                   | $T_J = 100^\circ\text{C}$                 |               | -                         | 100        | $\mu\text{A}$ |
|   | SRA820<br>SRA830<br>SRA840                     |   |               | $T_J = 125^\circ\text{C}$ | -          | 15            |
|   | SRA850<br>SRA860                               | -   |               |                           | 10         | mA            |
|   | SRA890<br>SRA8100<br>SRA8150                   | -   |               |                           | -          | mA            |
|   | SRA820<br>SRA830<br>SRA840<br>SRA850<br>SRA860 | $T_J = 125^\circ\text{C}$                 |               |                           | -          | -             |
|   | SRA890<br>SRA8100<br>SRA8150                   |   |               | -                         | 5          | mA            |

**Notes:**

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

| <b>ORDERING INFORMATION</b>            |                |                |
|--|----------------|----------------|
| <b>ORDERING CODE</b> <sup>(1)(2)</sup> | <b>PACKAGE</b> | <b>PACKING</b> |
| SRA8x                                  | TO-220AC       | 50 / Tube      |
| SRA8xH                                 | TO-220AC       | 50 / Tube      |

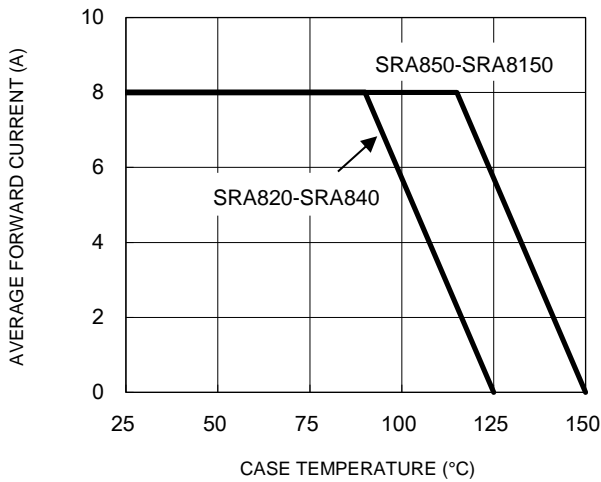
**Notes:**

1. "x" defines voltage from 20V(SRA820) to 150V(SRA8150)
2. "H" means AEC-Q101 qualified

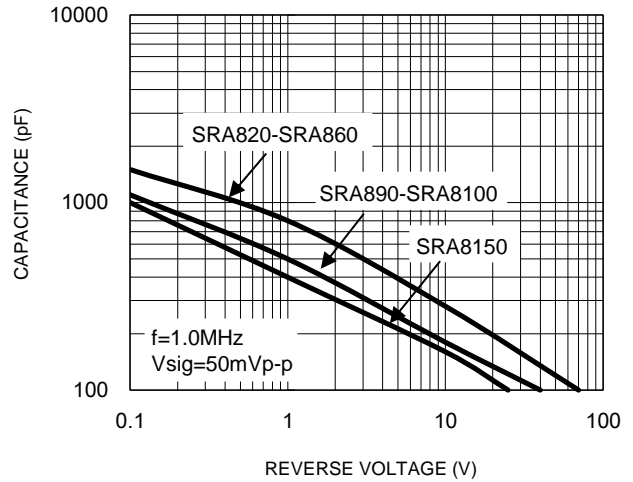
**CHARACTERISTICS CURVES**

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

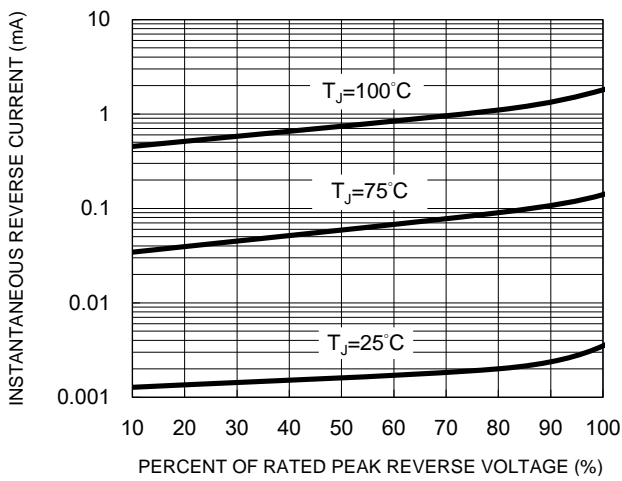
**Fig.1 Forward Current Derating Curve**



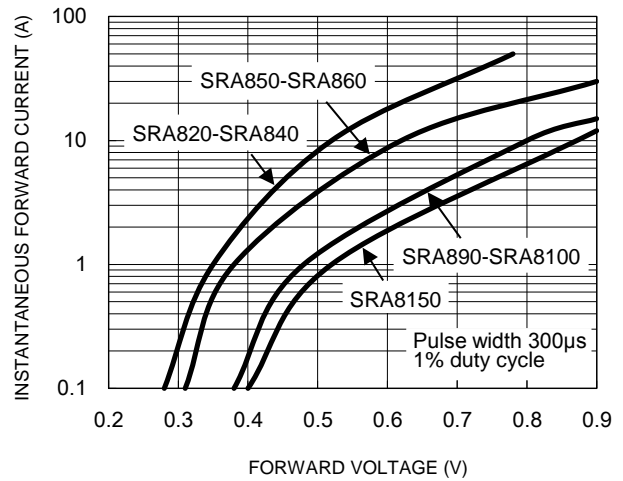
**Fig.2 Typical Junction Capacitance**



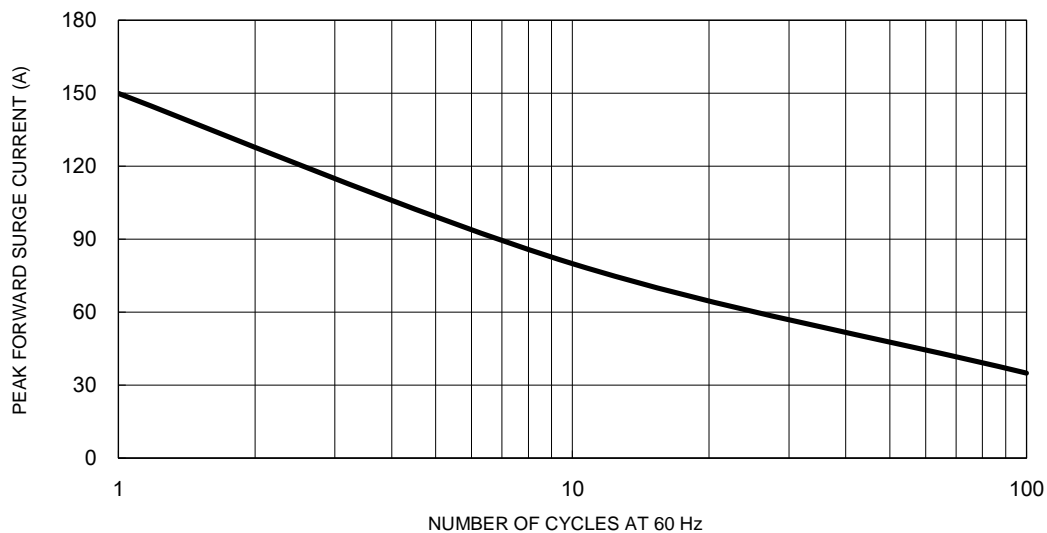
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



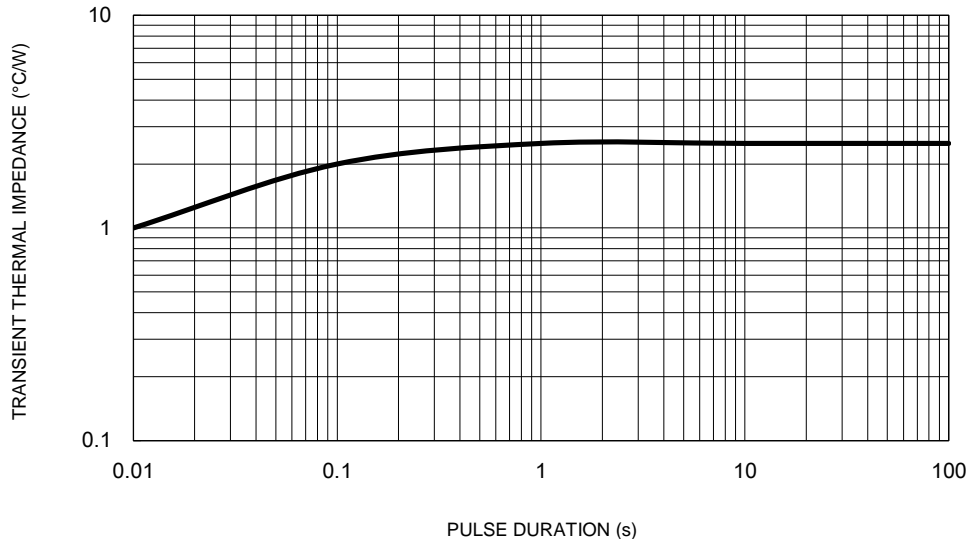
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



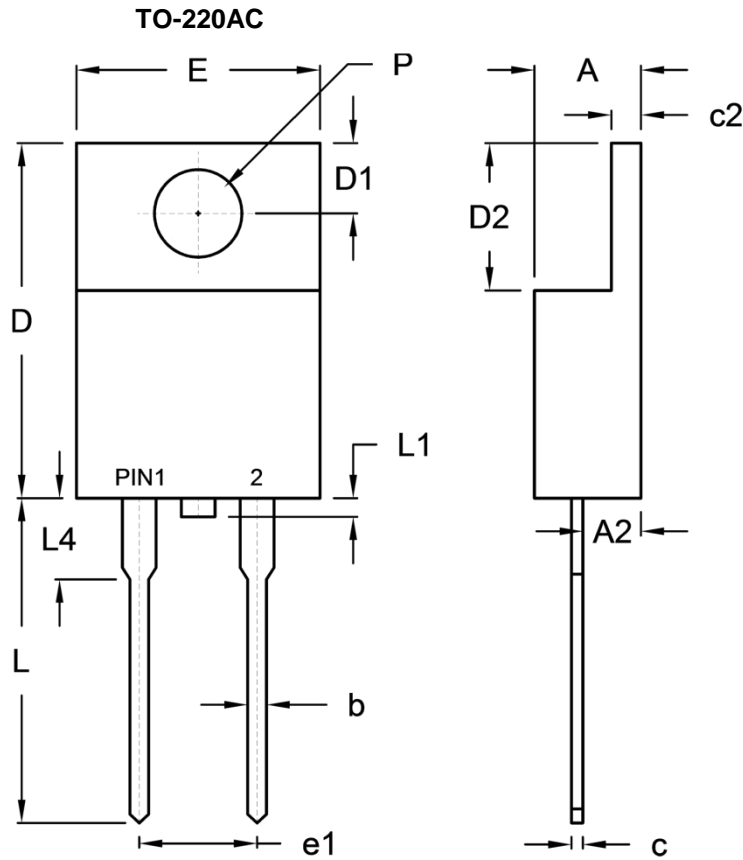
**CHARACTERISTICS CURVES**

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

**Fig.6 Typical Transient Thermal Impedance**



**PACKAGE OUTLINE DIMENSIONS**



| DIM. | Unit (mm) |       | Unit (inch) |       |
|------|-----------|-------|-------------|-------|
|      | Min.      | Max.  | Min.        | Max.  |
| A    | 4.42      | 4.76  | 0.174       | 0.187 |
| A2   | 2.20      | 2.80  | 0.087       | 0.110 |
| b    | 0.68      | 0.94  | 0.027       | 0.037 |
| c    | 0.35      | 0.64  | 0.014       | 0.025 |
| c2   | 1.14      | 1.40  | 0.045       | 0.055 |
| D    | 14.60     | 16.00 | 0.575       | 0.630 |
| D1   | 2.62      | 3.44  | 0.103       | 0.135 |
| D2   | 5.84      | 6.86  | 0.230       | 0.270 |
| E    | -         | 10.50 | -           | 0.413 |
| e1   | 4.95      | 5.20  | 0.195       | 0.205 |
| L    | 13.19     | 14.79 | 0.519       | 0.582 |
| L1   | 0.00      | 1.60  | 0.000       | 0.063 |
| L4   | 2.80      | 4.20  | 0.110       | 0.165 |
| P    | 3.54      | 4.00  | 0.139       | 0.157 |

**MARKING DIAGRAM**



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

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