

## 40A, 20V - 100V Schottky Barrier Rectifier

### FEATURES

- AEC-Q101 qualified available
- Low power loss, high efficiency
- Guard ring for overvoltage protection
- High surge current capability
- UL Recognized File # E-326243
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

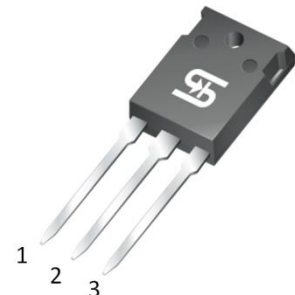
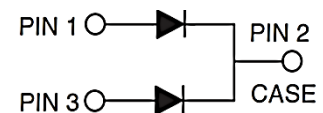
### APPLICATIONS

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

### MECHANICAL DATA

- Case: TO-247AD (TO-3P)
- 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
- Mounting torque: 1.13 N·m maximum
- Polarity: As marked
- Weight: 6.10g (approximately)

| KEY PARAMETERS |                  |      |
|----------------|------------------|------|
| PARAMETER      | VALUE            | UNIT |
| $I_F$          | 40               | A    |
| $V_{RRM}$      | 20 - 100         | V    |
| $I_{FSM}$      | 400              | A    |
| $T_{JMAX}$     | 125, 150         | °C   |
| Package        | TO-247AD (TO-3P) |      |
| Configuration  | Dual dies        |      |


**TO-247AD (TO-3P)**


| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)       |              |             |            |             |            |            |            |             |      |
|---|--------------|-------------|------------|-------------|------------|------------|------------|-------------|------|
| PARAMETER   | SYMBOL       | SR 4020 PT  | SR 4030 PT | SR 4040 PT  | SR 4050 PT | SR 4060 PT | SR 4090 PT | SR 40100 PT | UNIT |
| Marking code on the device  |              | SR 4020 PT  | SR 4030 PT | SR 4040 PT  | SR 4050 PT | SR 4060 PT | SR 4090 PT | SR 40100 PT |      |
| Repetitive peak reverse voltage   | $V_{RRM}$    | 20          | 30         | 40          | 50         | 60         | 90         | 100         | V    |
| Reverse voltage, total rms value  | $V_{R(RMS)}$ | 14          | 21         | 28          | 35         | 42         | 63         | 70          | V    |
| Forward current   | $I_F$        | 40          |            |             |            |            |            |             | A    |
| Surge peak forward current 8.3ms single half sine wave superimposed on rated load | $I_{FSM}$    | 400         |            |             |            |            |            |             | A    |
| 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 thermal resistance | $R_{\theta JC}$ | 1.2        | °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 per diode <sup>(1)</sup>  | SR4020PT<br>SR4030PT<br>SR4040PT                         | $I_F = 20\text{A}, T_J = 25^\circ\text{C}$ | $V_F$         | -          | 0.55       | V             |
|   | SR4050PT<br>SR4060PT                                     |  |               | -          | 0.70       | V             |
|   | SR4090PT<br>SR40100PT                                    |  |               | -          | 0.90       | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup>                              | SR4020PT<br>SR4030PT<br>SR4040PT<br>SR4050PT<br>SR4060PT | $T_J = 25^\circ\text{C}$                   | $I_R$         | -          | 1000       | $\mu\text{A}$ |
|   | SR4090PT<br>SR40100PT                                    | $T_J = 100^\circ\text{C}$                  |               | -          | 500        | $\mu\text{A}$ |
|   | SR4020PT<br>SR4030PT<br>SR4040PT                         |  |               | -          | 30         | mA            |
|   | SR4050PT<br>SR4060PT                                     |  |               | -          | 20         | mA            |
|   | SR4090PT<br>SR40100PT                                    | $T_J = 125^\circ\text{C}$                  |               | -          | -          | mA            |
|   | SR4020PT<br>SR4030PT<br>SR4040PT<br>SR4050PT<br>SR4060PT |  |               | -          | -          | mA            |
|   | SR4090PT<br>SR40100PT                                    |  |               | -          | 10         | 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> |
| SR40xPT                                | TO-247AD (TO-3P) | 30 / Tube      |
| SR40xPTH                               | TO-247AD (TO-3P) | 30 / Tube      |

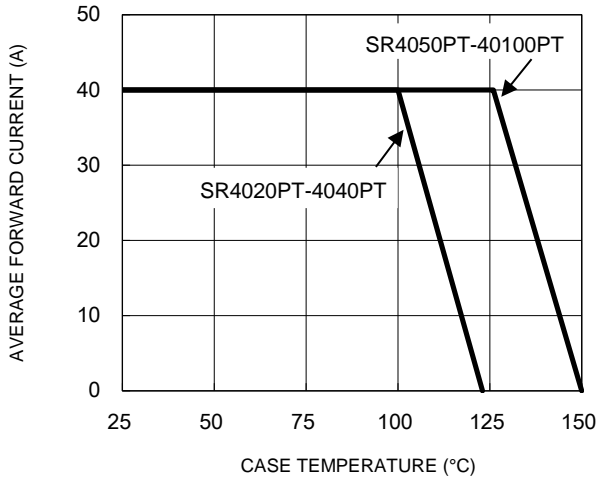
**Notes:**

1. "x" defines voltage from 20V(SR4020PT) to 100V(SR40100PT)
2. "H" means ACE-Q101 qualified

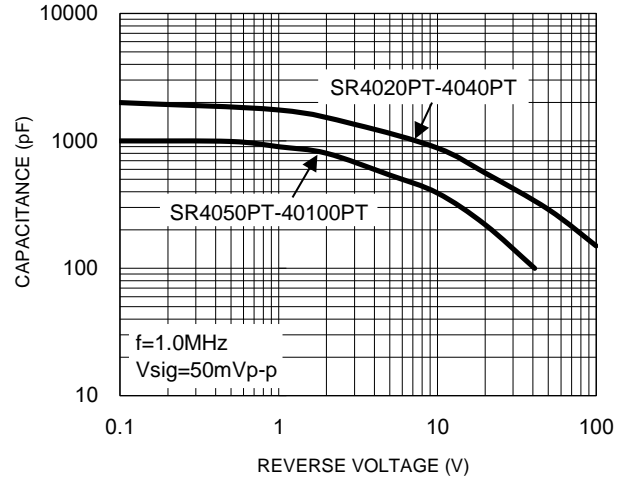
**CHARACTERISTICS CURVES**

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

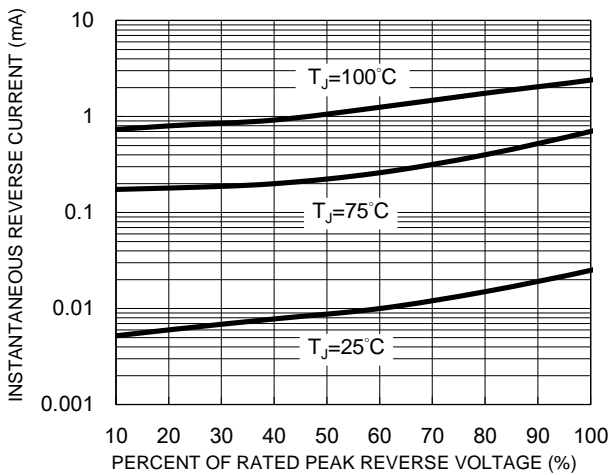
**Fig.1 Forward Current Derating Curve**



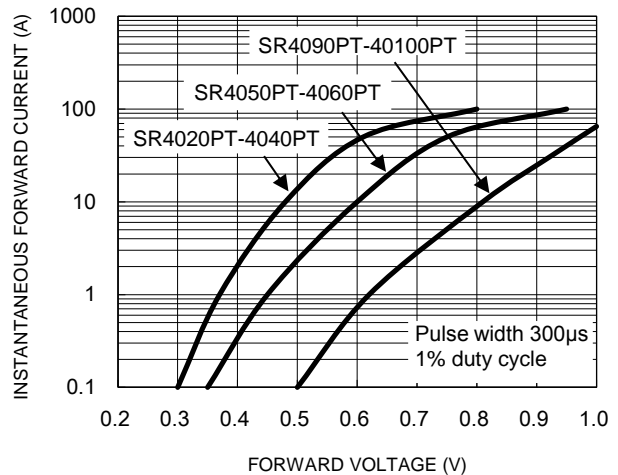
**Fig.2 Typical Junction Capacitance**



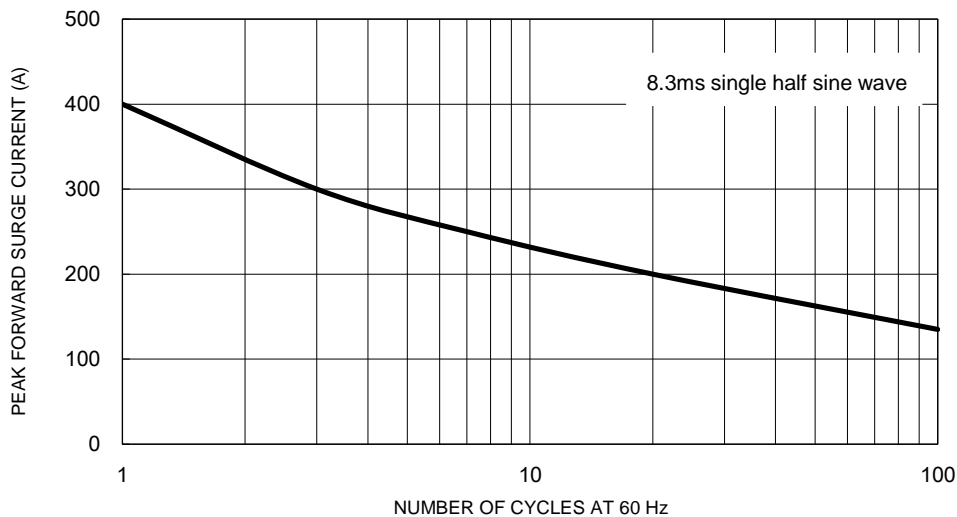
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Forward Characteristics**



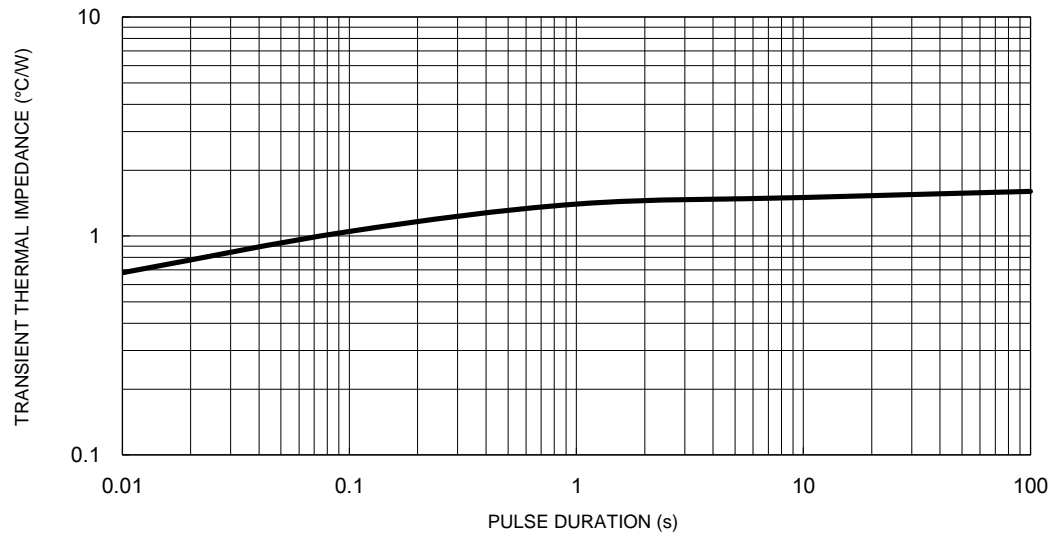
**Fig.5 Maximum Non-Repetitive Forward Surge Current**



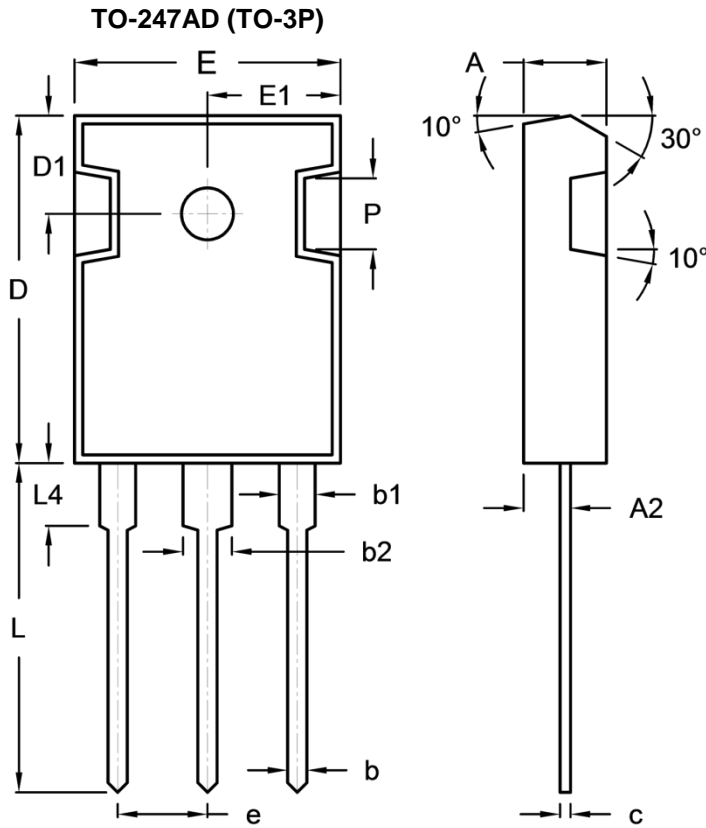
**CHARACTERISTICS CURVES**

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

**Fig.6 Typical Transient Thermal Impedance**

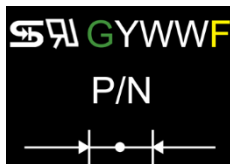


**PACKAGE OUTLINE DIMENSIONS**



| DIM | Unit (mm) |       | Unit (inch) |       |
|-----|-----------|-------|-------------|-------|
|     | Min       | Max   | Min         | Max   |
| A   | 4.90      | 5.16  | 0.193       | 0.203 |
| A2  | 2.70      | 3.00  | 0.106       | 0.118 |
| b   | 1.12      | 1.22  | 0.044       | 0.048 |
| b1  | 1.93      | 2.18  | 0.076       | 0.086 |
| b2  | 2.97      | 3.22  | 0.117       | 0.127 |
| c   | 0.51      | 0.76  | 0.020       | 0.030 |
| D   | 20.80     | 21.30 | 0.819       | 0.839 |
| D1  | 5.70      | 6.20  | 0.224       | 0.244 |
| E   | 15.90     | 16.40 | 0.626       | 0.646 |
| E1  | 7.90      | 8.20  | 0.311       | 0.323 |
| e   | 5.20      | 5.70  | 0.205       | 0.224 |
| H   | 2.90      | 3.40  | 0.114       | 0.134 |
| L   | 19.70     | 20.20 | 0.776       | 0.795 |
| L4  | 3.50      | 4.10  | 0.138       | 0.161 |
| P   | -         | 4.30  | -           | 0.169 |

**MARKING DIAGRAM**



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