

50A, 45V Schottky Barrier Rectifier

FEATURES

- AEC-Q101 qualified available
- Low forward voltage drop, high efficiency
- $T_J = 175^\circ\text{C}$ capability in DC forward mode suitable for high reliability
- Using planar Schottky barrier chip
- High surge capability
- Low cost construction utilizing void-free molded plastic technique
- RoHS Compliant

APPLICATIONS

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

MECHANICAL DATA

- Case: ARS
- 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: 1.73g (approximately)

| KEY PARAMETERS | | |
|-------------------|------------|------------------|
| PARAMETER | VALUE | UNIT |
| I_F | 50 | A |
| V_{RRM} | 45 | V |
| I_{FSM} | 720 | A |
| $T_{J\text{MAX}}$ | 175 | $^\circ\text{C}$ |
| Package | ARS | |
| Configuration | Single die | |



ARS



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | |
|--|--------------|--------------|------------------|
| PARAMETER | SYMBOL | ARS5045 | UNIT |
| Marking code on the device | | ARS5045 | |
| Repetitive peak reverse voltage | V_{RRM} | 45 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 31 | V |
| Forward current | I_F | 50 | A |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | I_{FSM} | 720 | A |
| Junction temperature | T_J | - 55 to +175 | $^\circ\text{C}$ |
| Storage temperature | T_{STG} | - 55 to +175 | $^\circ\text{C}$ |

| THERMAL PERFORMANCE | | | |
|-------------------------------------|-----------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 2.5 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|---|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | TYP | MAX | UNIT |
| Forward voltage ⁽¹⁾ | $I_F = 50\text{A}, T_J = 25^\circ\text{C}$ | V_F | - | 0.55 | V |
| Reverse current @ rated V_R ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 500 | μA |
| Junction capacitance | 1MHz, $V_R = 4.0\text{V}$ | C_J | 2.7 | - | nF |
| Reverse recovery time | $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$ | t_{rr} | 150 | - | ns |

Notes:

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

| ORDERING INFORMATION | | |
|------------------------------------|----------------|----------------|
| ORDERING CODE⁽¹⁾ | PACKAGE | PACKING |
| ARS5045 | ARS | 1,000 / Box |
| ARS5045H | ARS | 1,000 / Box |

Notes:

1. "H" means AEC-Q101 qualified

Not Recommended

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

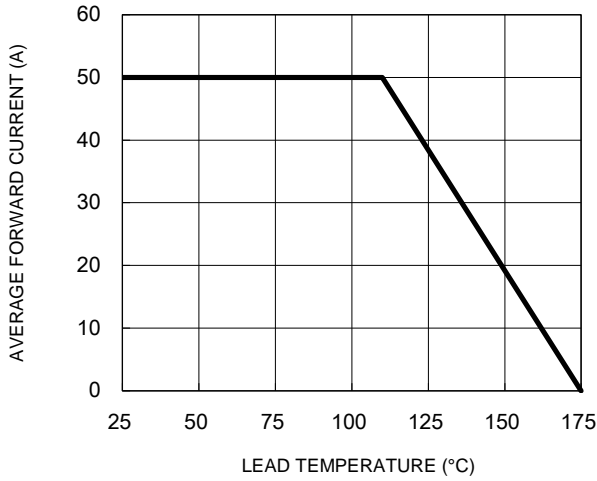


Fig.2 Typical Junction Capacitance

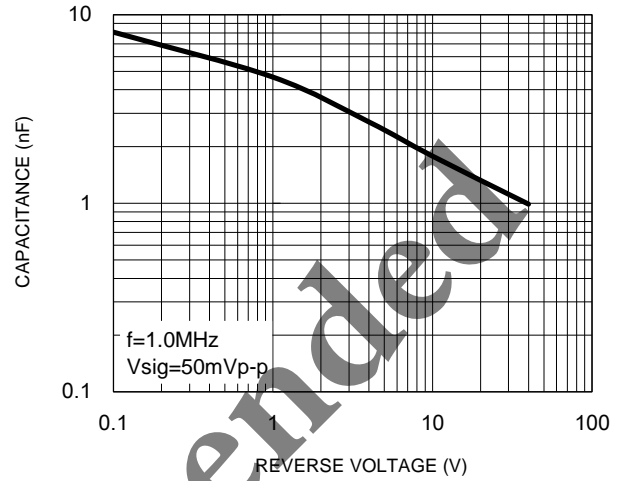


Fig.3 Typical Reverse Characteristics

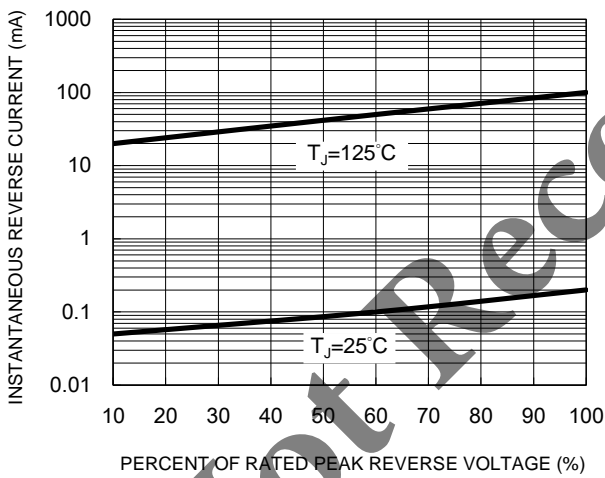


Fig.4 Typical Forward Characteristics

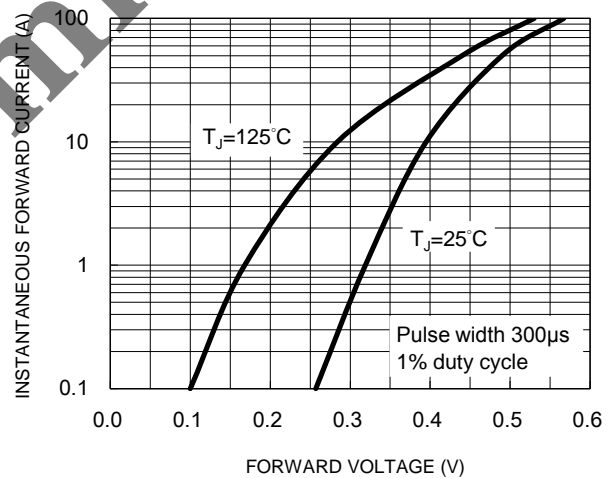
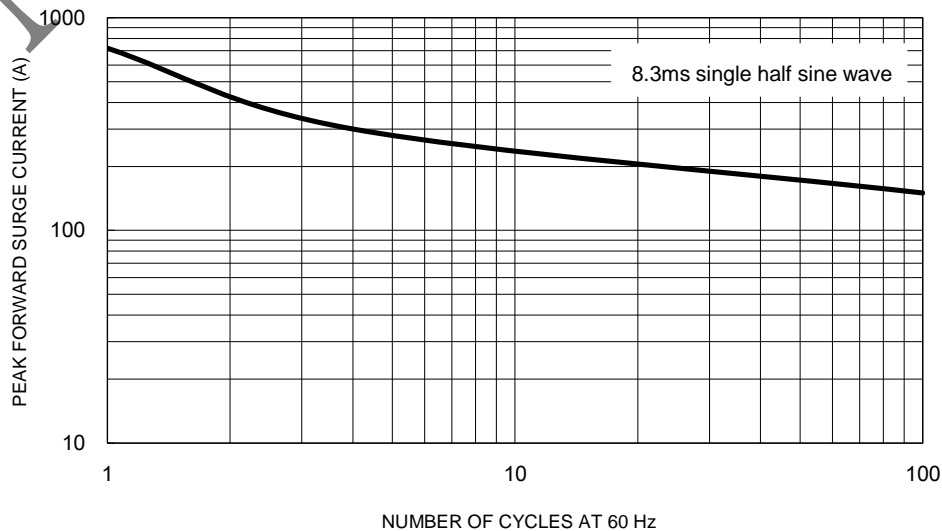
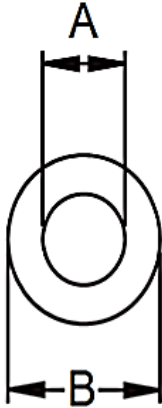


Fig.5 Maximum Non-Repetitive Forward Surge Current

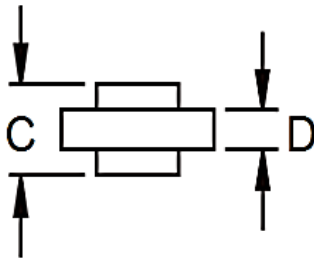


PACKAGE OUTLINE DIMENSIONS

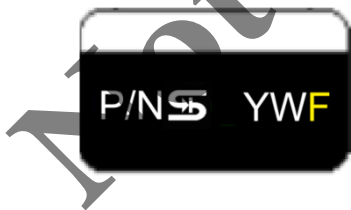
ARS



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min | Max | Min | Max |
| A | 5.50 | 5.70 | 0.217 | 0.224 |
| B | 8.30 | 8.90 | 0.327 | 0.350 |
| C | 5.85 | 6.45 | 0.230 | 0.242 |
| D | 4.20 | 4.70 | 0.165 | 0.185 |



MARKING DIAGRAM



- P/N = Marking Code
- YW = Date Code
- F = Factory Code

Not Recommended

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