

50A, 45V High Current Button Rectifier

FEATURES

- Low forward voltage drop, high efficiency
- $T_J=175^{\circ}\text{C}$ capability in DC forward mode suitable for high reliability and automotive requirements
- Using Planar SKY barrier chip
- High surge capability
- Low cost construction utilizing void-free molded plastic technique
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC

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

APPLICATIONS

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in computer, automotive and telecommunication.



ARS

MECHANICAL DATA

- Case: ARS
- Molding compound meets UL 94V-0 flammability rating
- Part No. with suffix "H" means AEC-Q101 qualified
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Weight: 1.73 g (approximately)

| 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 | $V_{R(RMS)}$ | 32 | V |
| Maximum DC blocking voltage | V_{DC} | 45 | V |
| Forward current | $I_{F(AV)}$ | 50 | A |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | 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 | LIMIT | 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 per diode ⁽¹⁾ | $I_F = 50\text{A}$, $T_J = 25^\circ\text{C}$ | V_F | - | 0.55 | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | $T_J = 25^\circ\text{C}$ | I_R | - | 500 | μA |
| Junction capacitance | 1 MHz, $V_R = 4.0\text{V}$ | 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 $PW = 0.3\text{ ms}$
2. Pulse test with $PW = 30\text{ ms}$

| ORDERING INFORMATION | | | | |
|-----------------------------|---------------------------|---------------------|----------------|----------------------|
| PART NO. | PART NO. SUFFIX(*) | PACKING CODE | PACKAGE | PACKING |
| ARS5045 | H | B0 | ARS | 1,000 / Bulk packing |

*: Optional available

| EXAMPLE P/N | | | | |
|--------------------|-----------------|------------------------|---------------------|--------------------|
| EXAMPLE P/N | PART NO. | PART NO. SUFFIX | PACKING CODE | DESCRIPTION |
| ARS5045HB0 | ARS5045 | H | B0 | AEC-Q101 qualified |

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

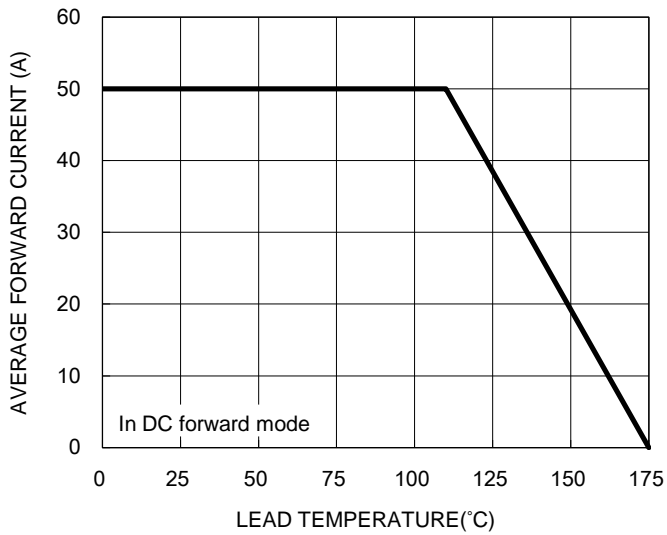


Fig.2 Typical Junction Capacitance

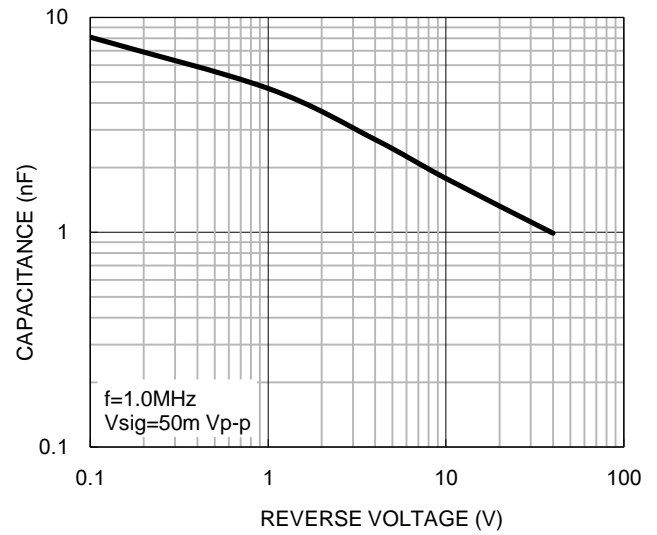


Fig.3 Typical Reverse Characteristics

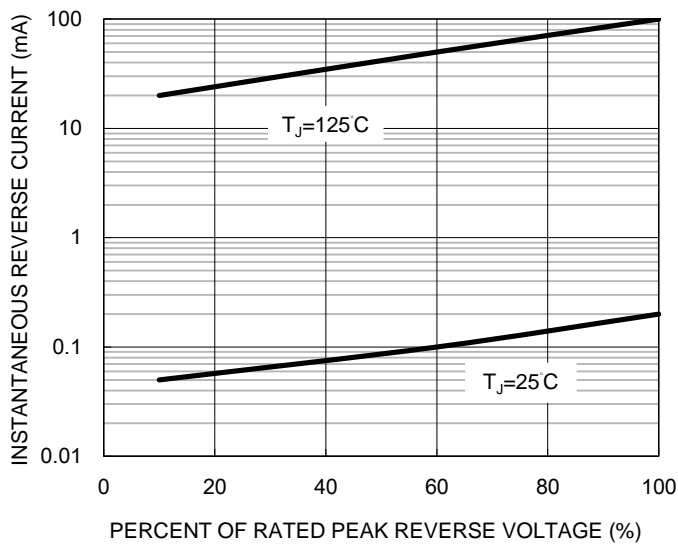
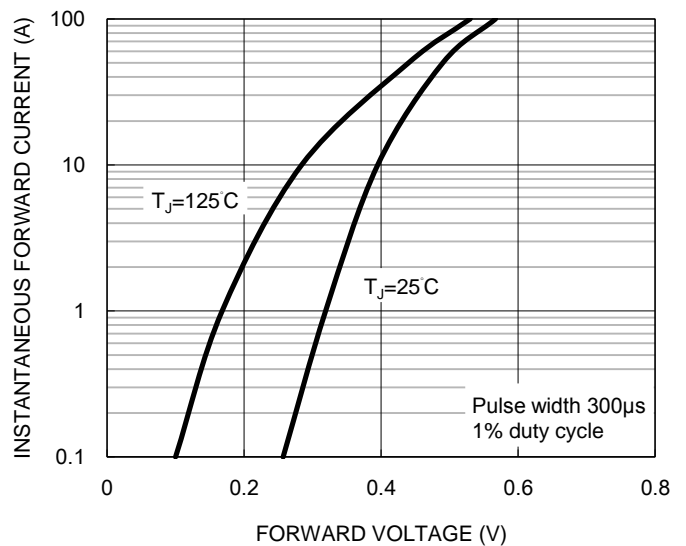


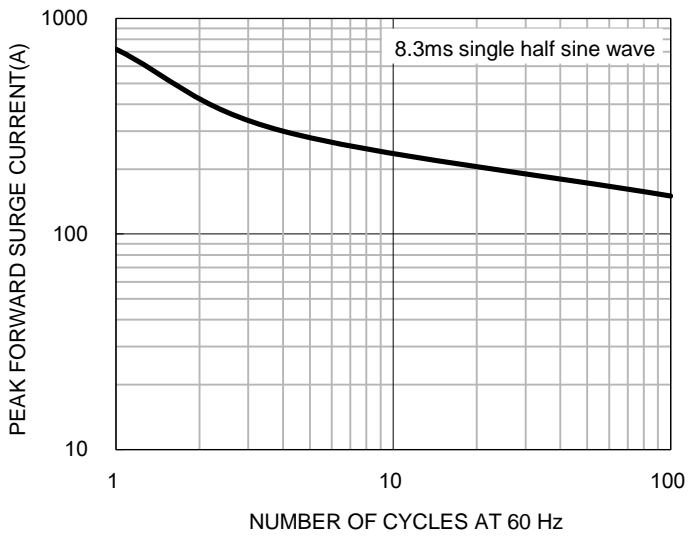
Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Maximum Non-repetitive Forward Surge Current

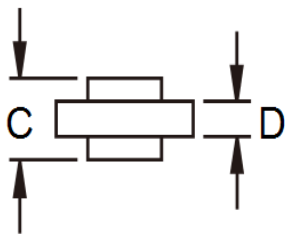


PACKAGE OUTLINE DIMENSIONS

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 | 6.15 | 0.230 | 0.242 |
| D | 4.20 | 4.70 | 0.165 | 0.185 |



MARKING DIAGRAM



P/N = S45
 YW = Date Code
 F = Factory Code

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