

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

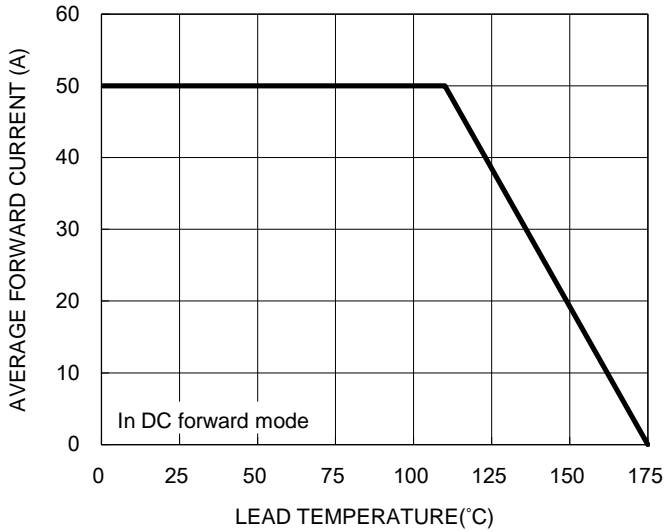


Fig.2 Typical Junction Capacitance

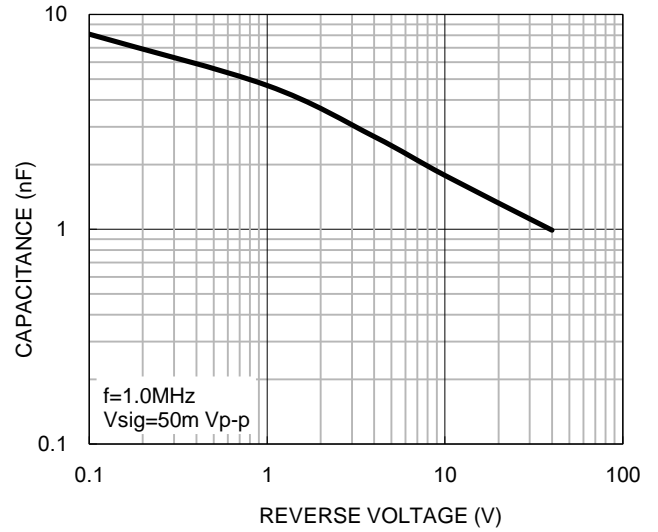


Fig.3 Typical Reverse Characteristics

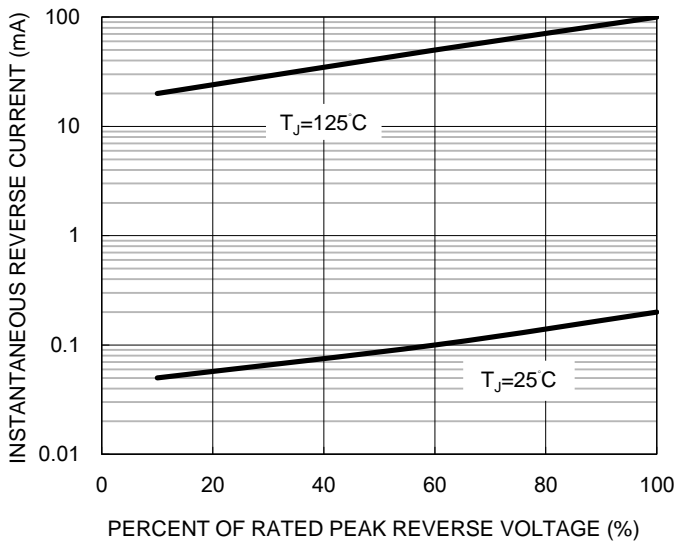
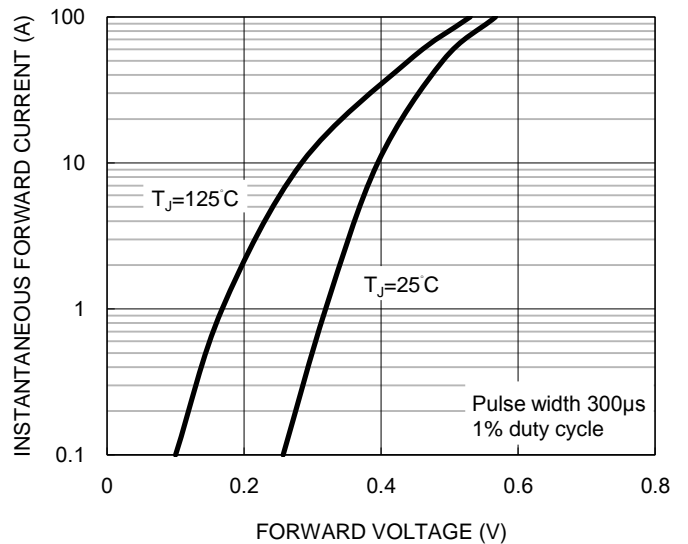


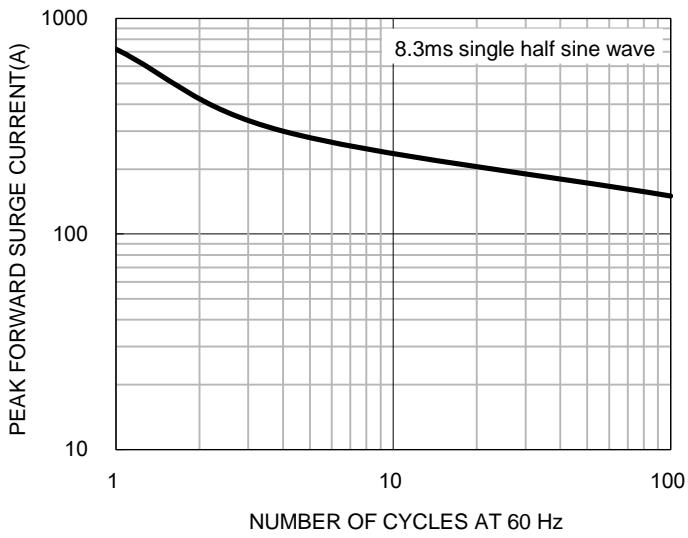
Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

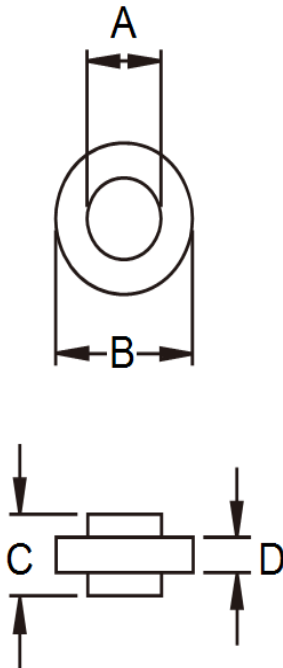
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.5 Maximum Non-repetitive Forward Surge Current



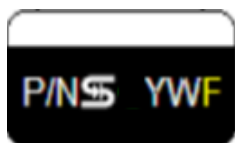
PACKAGE OUTLINE DIMENSIONS

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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