

5A, 40V - 200V Schottky Barrier Surface Mount Rectifier

FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

MECHANICAL DATA

- Case: Thin SMA
- 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: 0.028g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	5	A
V_{RRM}	40 - 200	V
I_{FSM}	110	A
T_{JMAX}	150	°C
Package	Thin SMA	
Configuration	Single die	



Thin SMA



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	SS54 ALH	SS56 ALH	SS510 ALH	SS515 ALH	SS520 ALH	UNIT
Marking code on the device		54ALH	56ALH	510ALH	515ALH	520ALH	
Repetitive peak reverse voltage	V_{RRM}	40	60	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	28	42	70	105	140	V
Forward current	I_F	5					A
Surge peak forward current, single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	110					A
	$t = 1.0\text{ms}$	285					A
Junction temperature	T_J	-55 to +150					°C
Storage temperature	T_{STG}	-55 to +150					°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	17	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	78	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	18	°C/W

Thermal Performance Note: Units mounted on PCB (5mm x 5mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	SS54ALH	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.48	-	V
		$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.58	0.65	V
		$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.42	-	V
		$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.53	0.62	V
	SS56ALH	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$		0.49	-	V
		$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.59	0.70	V
		$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.43	-	V
		$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.54	0.63	V
	SS510ALH	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$		0.68	-	V
		$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.76	0.85	V
		$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.55	-	V
		$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.63	0.80	V
	SS515ALH	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$		0.75	-	V
		$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.81	0.95	V
		$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.60	-	V
		$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.67	0.77	V
	SS520ALH	$I_F = 2.5\text{A}, T_J = 25^\circ\text{C}$		0.78	-	V
		$I_F = 5.0\text{A}, T_J = 25^\circ\text{C}$		0.84	0.95	V
		$I_F = 2.5\text{A}, T_J = 125^\circ\text{C}$		0.64	-	V
		$I_F = 5.0\text{A}, T_J = 125^\circ\text{C}$		0.70	0.78	V
Reverse current @ rated V_R ⁽²⁾	SS54ALH SS56ALH	$T_J = 25^\circ\text{C}$	I_R	-	200	μA
		$T_J = 125^\circ\text{C}$		-	40	mA
	SS510ALH SS515ALH SS520ALH	$T_J = 25^\circ\text{C}$		-	10	μA
		$T_J = 125^\circ\text{C}$		-	1	mA
Junction capacitance	SS54ALH	1MHz, $V_R = 4.0\text{V}$	C_J	256	-	pF
	SS56ALH			245	-	pF
	SS510ALH			164	-	pF
	SS515ALH			126	-	pF
	SS520ALH			100	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE⁽¹⁾	PACKAGE	PACKING
SS5xALH	Thin SMA	14,000 / Tape & Reel

Notes:

1. "x" defines voltage from 40V(SS54ALH) to 200V(SS520ALH)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

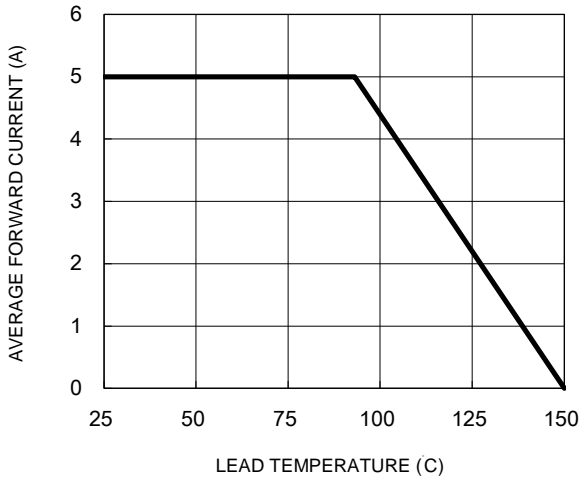


Fig.2 Typical Junction Capacitance

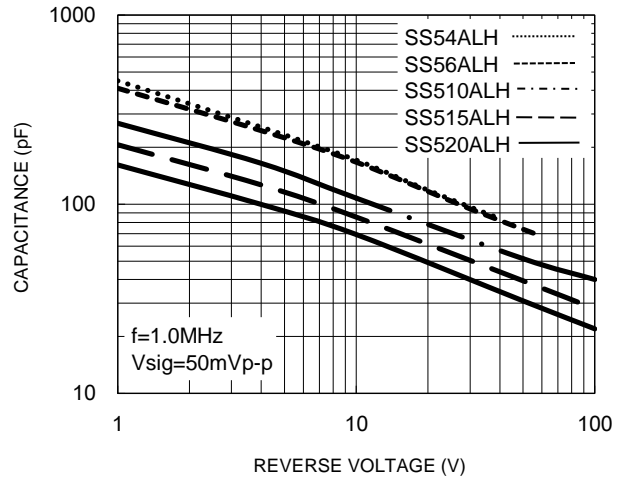


Fig.3 Typical Reverse Characteristics

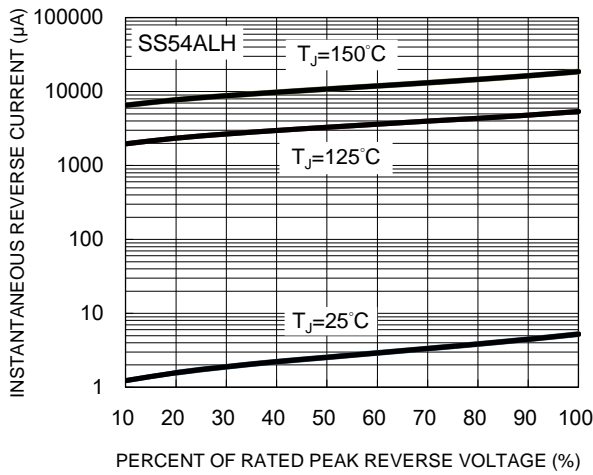


Fig.4 Typical Forward Characteristics

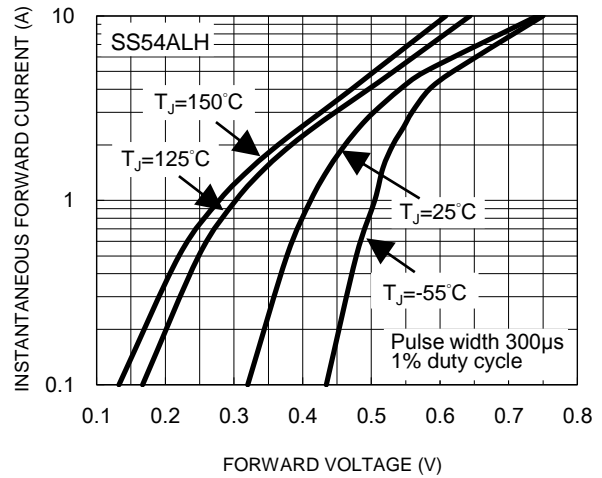


Fig.5 Typical Reverse Characteristics

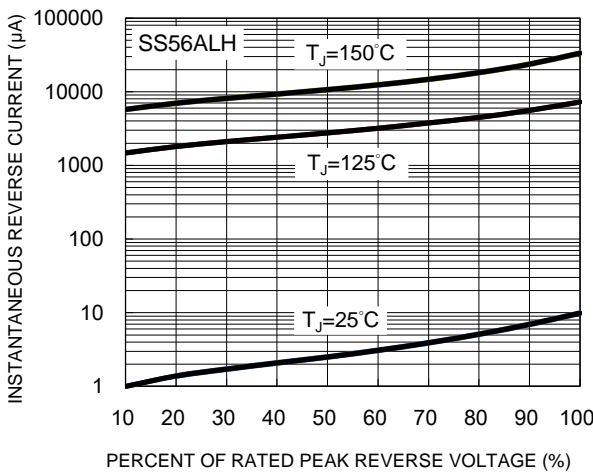
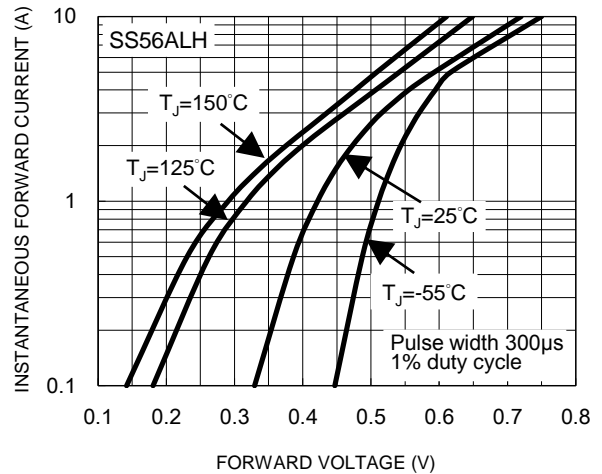


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

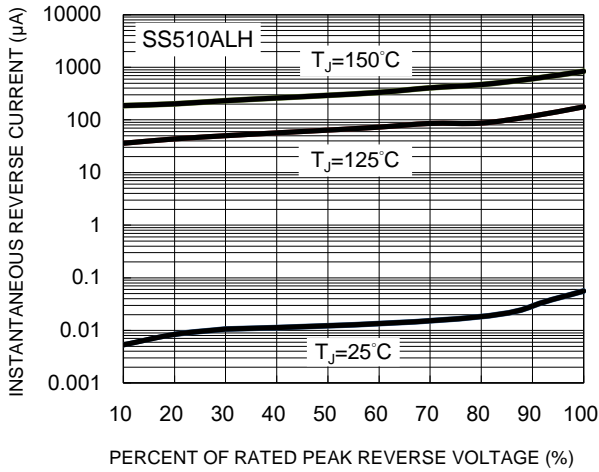


Fig.9 Typical Reverse Characteristics

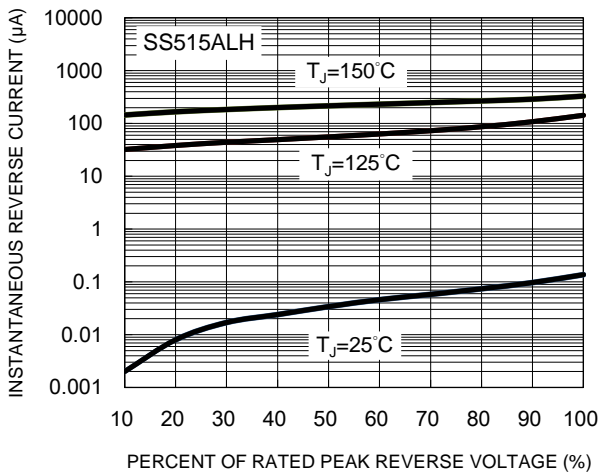


Fig.11 Typical Reverse Characteristics

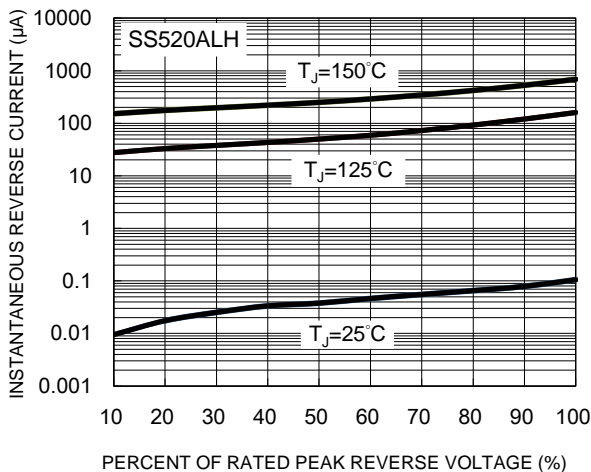


Fig.8 Typical Forward Characteristics

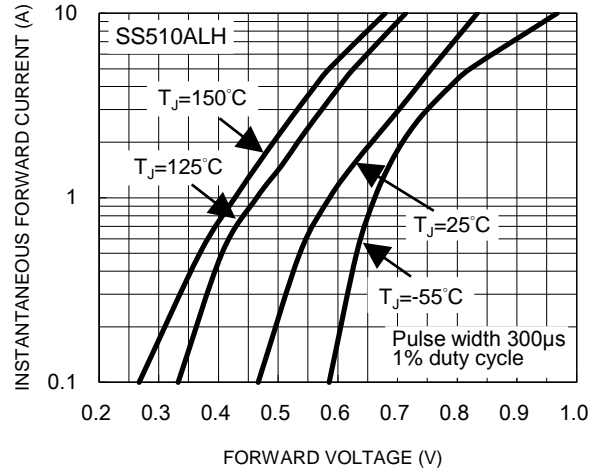


Fig.10 Typical Forward Characteristics

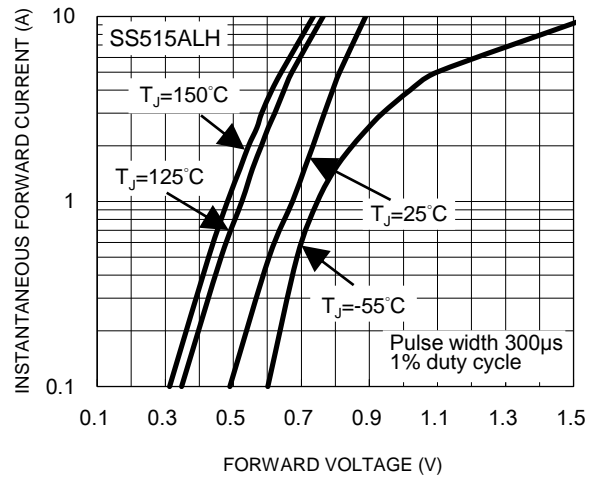
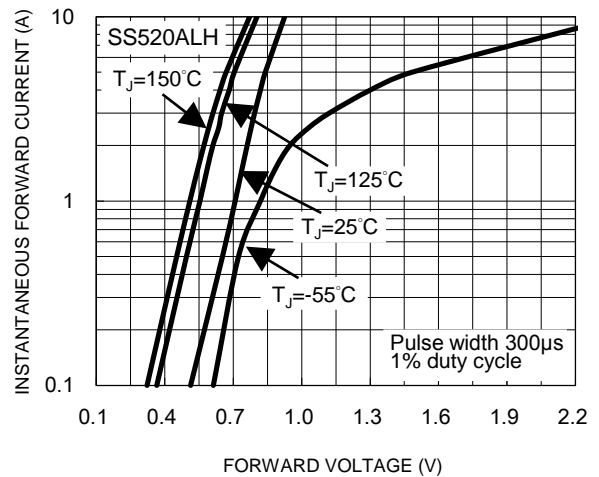


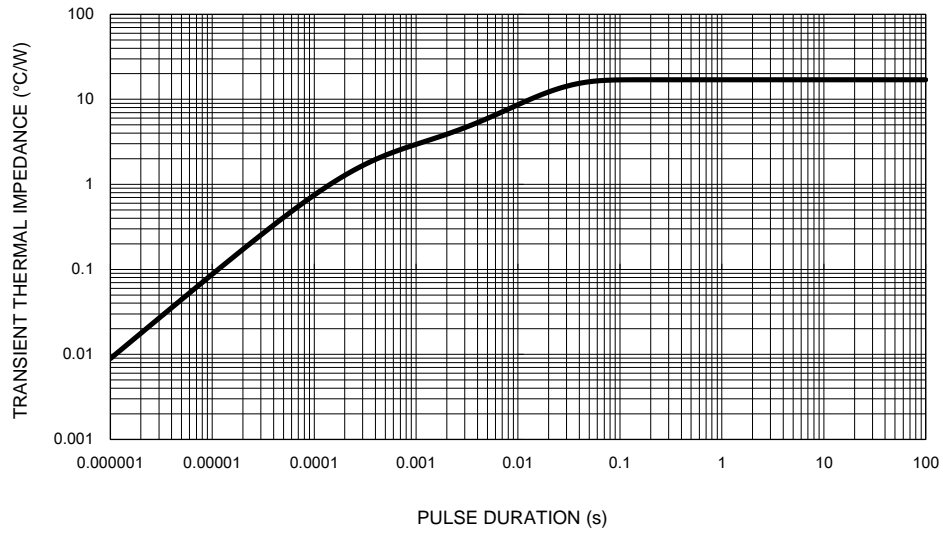
Fig.12 Typical Forward Characteristics



CHARACTERISTICS CURVES

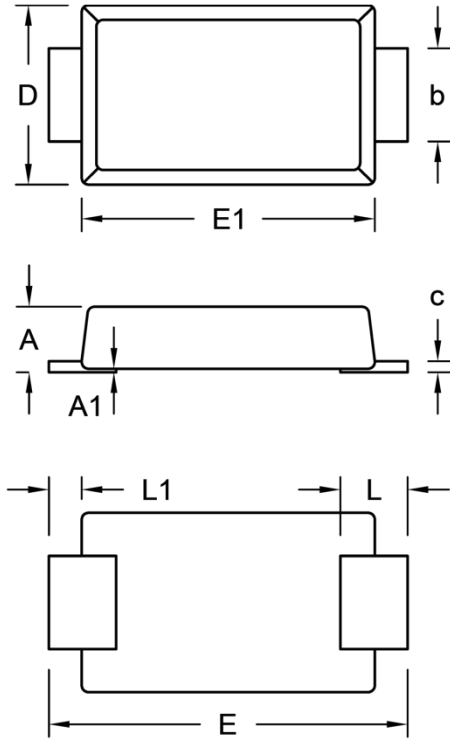
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.13 Typical Transient Thermal Impedance



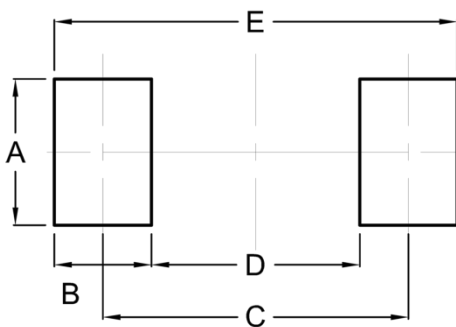
PACKAGE OUTLINE DIMENSIONS

Thin SMA



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.00	0.035	0.039
A1	0.00	0.10	0.000	0.004
b	1.25	1.45	0.049	0.057
c	0.10	0.22	0.004	0.009
D	2.50	2.70	0.098	0.106
E	5.05	5.35	0.199	0.211
E1	4.15	4.35	0.163	0.171
L	0.75	1.20	0.030	0.047
L1	0.30	0.60	0.012	0.024

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.10	0.083
B	1.40	0.055
C	4.40	0.173
D	3.00	0.118
E	5.80	0.228

MARKING DIAGRAM



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

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