

## 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: SOD-128
- 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	SOD-128	
Configuration	Single die	


**SOD-128**


ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	SS54 FSH	SS56 FSH	SS510 FSH	SS515 FSH	SS520 FSH	UNIT
Marking code on the device		54FSH	56FSH	510FSH	515FSH	520FSH	
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

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	13	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	63	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	10	$^{\circ}\text{C/W}$

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

<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 <sup>(1)</sup>	SS54FSH	$I_F = 2.5\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	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
	SS56FSH	$I_F = 2.5\text{A}, T_J = 25^{\circ}\text{C}$		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
	SS510FSH	$I_F = 2.5\text{A}, T_J = 25^{\circ}\text{C}$		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
	SS515FSH	$I_F = 2.5\text{A}, T_J = 25^{\circ}\text{C}$		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
	SS520FSH	$I_F = 2.5\text{A}, T_J = 25^{\circ}\text{C}$		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 $V_R$ <sup>(2)</sup>	SS54FSH SS56FSH	$T_J = 25^{\circ}\text{C}$	$I_R$	-	200	$\mu\text{A}$
		$T_J = 125^{\circ}\text{C}$		-	40	mA
	SS510FSH SS515FSH SS520FSH	$T_J = 25^{\circ}\text{C}$		-	10	$\mu\text{A}$
		$T_J = 125^{\circ}\text{C}$		-	1	mA
Junction capacitance	SS54FSH	1MHz, $V_R = 4.0\text{V}$	$C_J$	256	-	pF
	SS56FSH			245	-	pF
	SS510FSH			164	-	pF
	SS515FSH			126	-	pF
	SS520FSH			100	-	pF

**Notes:**

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

**ORDERING INFORMATION**

<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
SS5xFSH	SOD-128	14,000 / Tape & Reel

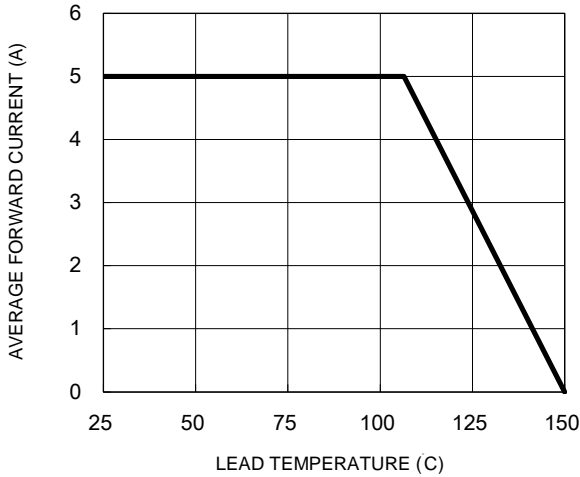
**Notes:**

1. "x" defines voltage from 40V(SS54FSH) to 200V(SS520FSH)

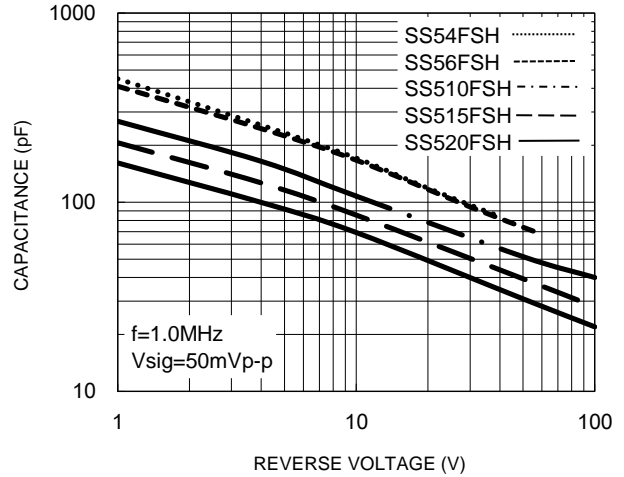
**CHARACTERISTICS CURVES**

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

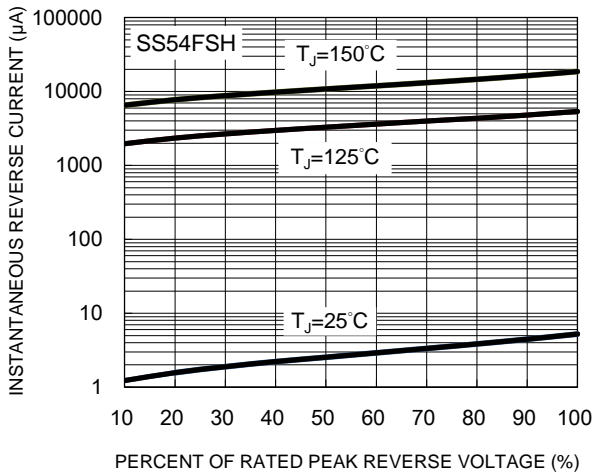
**Fig.1 Forward Current Derating Curve**



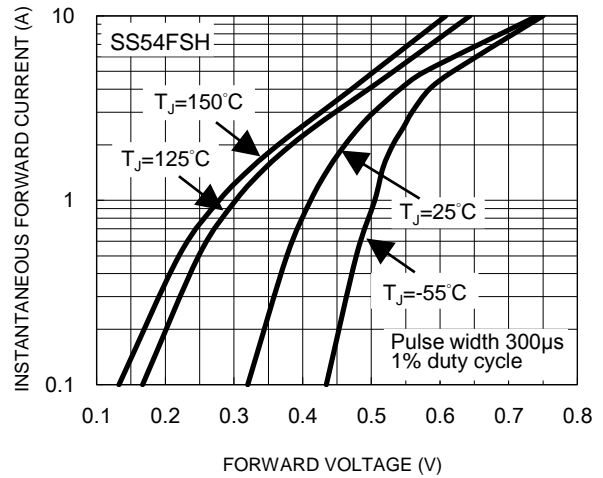
**Fig.2 Typical Junction Capacitance**



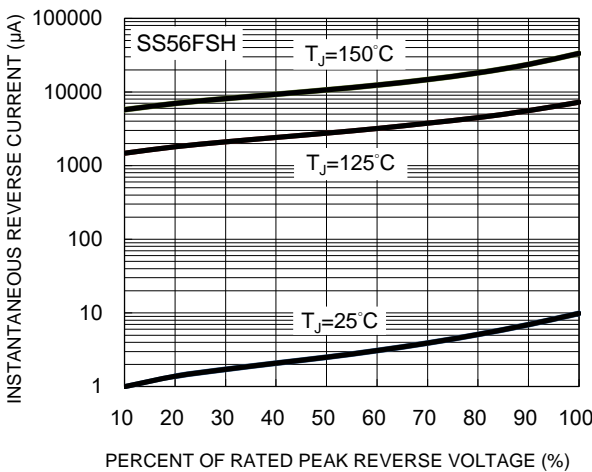
**Fig.3 Typical Reverse Characteristics**



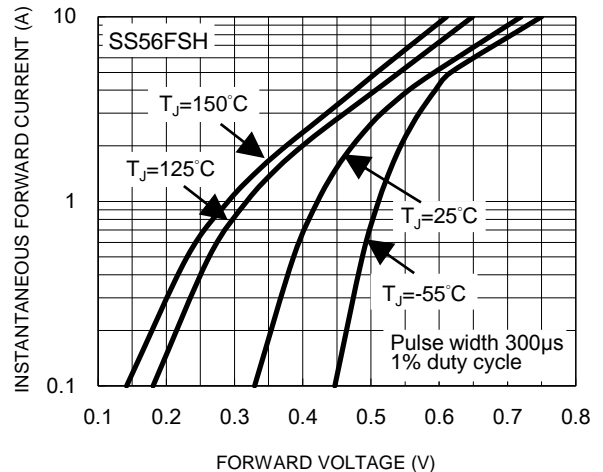
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



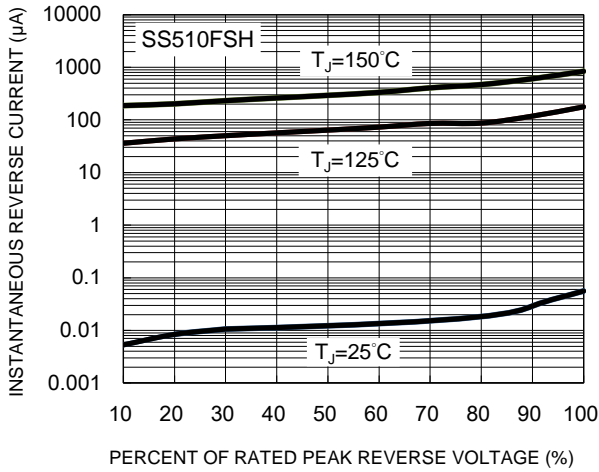
**Fig.6 Typical Forward Characteristics**



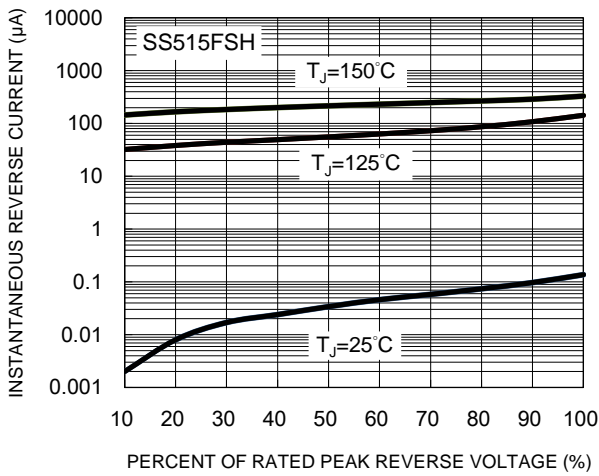
**CHARACTERISTICS CURVES**

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

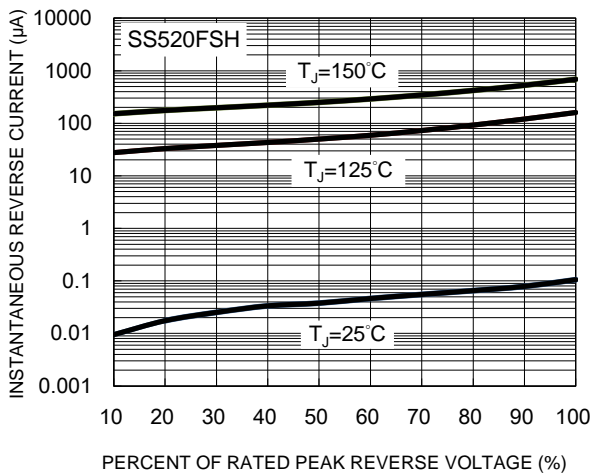
**Fig.7 Typical Reverse Characteristics**



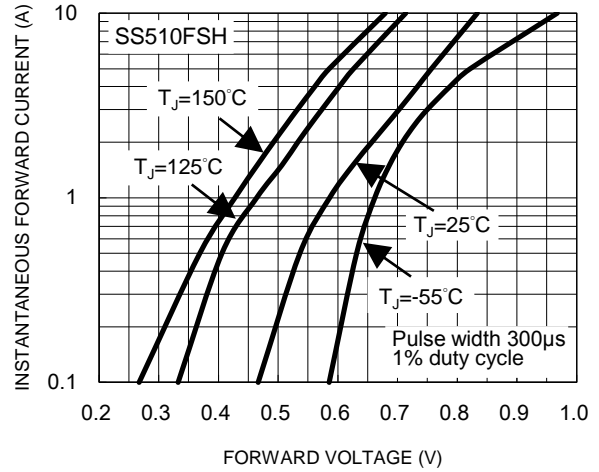
**Fig.9 Typical Reverse Characteristics**



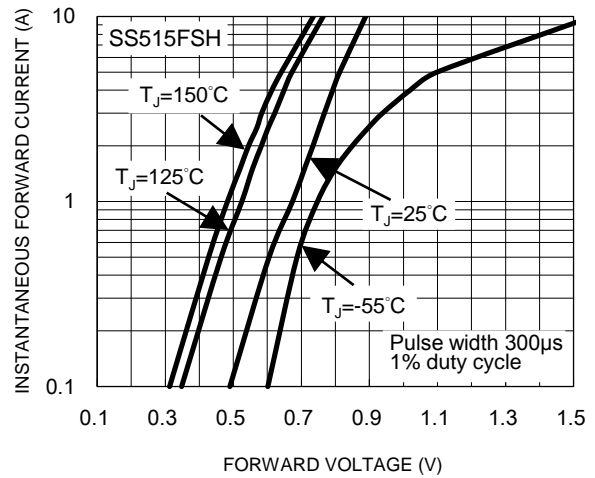
**Fig.11 Typical Reverse Characteristics**



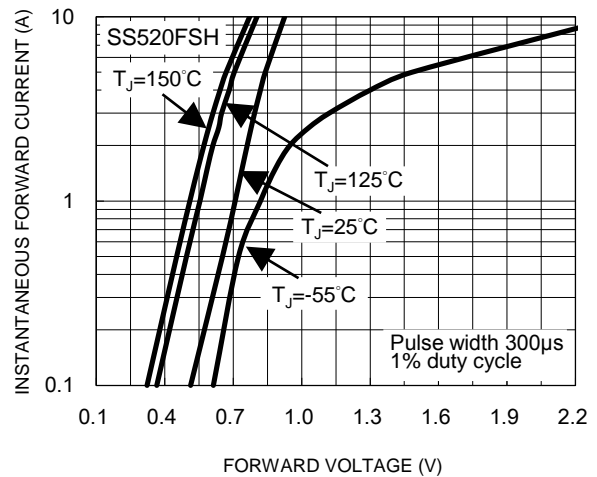
**Fig.8 Typical Forward Characteristics**



**Fig.10 Typical Forward Characteristics**



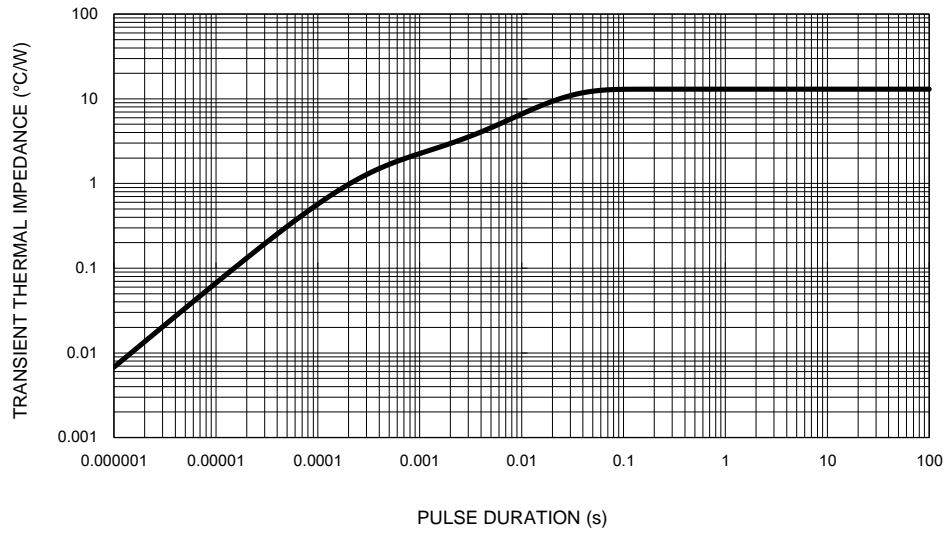
**Fig.12 Typical Forward Characteristics**



**CHARACTERISTICS CURVES**

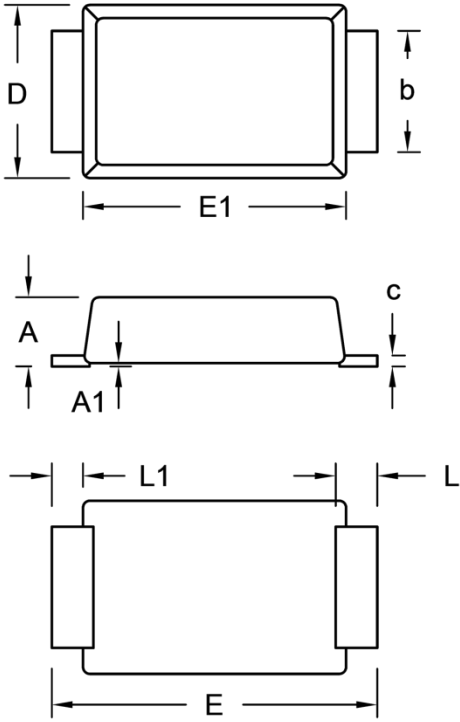
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.13 Typical Transient Thermal Impedance**



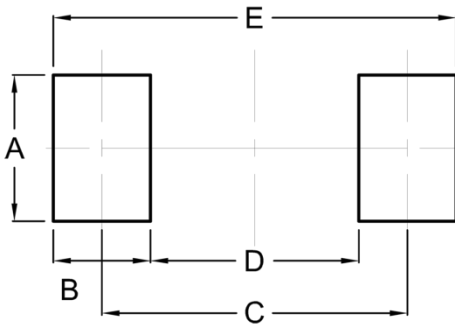
**PACKAGE OUTLINE DIMENSIONS**

SOD-128



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.00	0.10	0.000	0.004
b	1.60	1.90	0.063	0.075
c	0.10	0.22	0.004	0.009
D	2.30	2.70	0.091	0.106
E	4.40	5.00	0.173	0.197
E1	3.60	4.00	0.142	0.157
L	0.40	0.80	0.016	0.031
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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