

## 1A, 200V - 1000V Surface Mount Fast Recovery Rectifier

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

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

### MECHANICAL DATA

- Case: SOD-128
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.027 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	1	A
$V_{RRM}$	200 - 1000	V
$I_{FSM}$	30	A
$T_{J\ MAX}$	150	°C
Package	SOD-128	
Configuration	Single die	



SOD-128

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	RS1DFS	RS1GFS	RS1JFS	RS1KFS	RS1MFS	UNIT
Marking code on the device		RS1DFS	RS1GFS	RS1JFS	RS1KFS	RS1MFS	
Repetitive peak reverse voltage	$V_{RRM}$	200	400	600	800	1000	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	560	700	V
Forward current	$I_{F(AV)}$	1					A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	30					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>LIMIT</b>	<b>UNIT</b>
Junction-to-lead thermal resistance per diode	$R_{\theta JL}$	29	$^{\circ}C/W$
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	84	$^{\circ}C/W$
Junction-to-case thermal resistance per diode	$R_{\theta JC}$	30	$^{\circ}C/W$

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

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}C$ unless otherwise noted)							
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>	
Forward voltage per diode <sup>(1)</sup>		$I_F = 0.5A, T_J = 25^{\circ}C$	$V_F$	0.94	1.10	V	
		$I_F = 1.0A, T_J = 25^{\circ}C$		1.01	1.30		
		$I_F = 0.5A, T_J = 125^{\circ}C$		0.79	1.00		
		$I_F = 1.0A, T_J = 125^{\circ}C$		0.88	1.20		
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>		$T_J = 25^{\circ}C$	$I_R$	-	5	$\mu A$	
		$T_J = 125^{\circ}C$		-	50	$\mu A$	
Junction capacitance		1 MHz, $V_R = 4.0V$	$C_J$	7	-	pF	
Reverse recovery time		$I_F = 0.5A, I_R = 1.0A$ $I_{RR} = 0.25A$	$t_{rr}$	-	150	ns	
				RS1DFS RS1GFS	-	250	ns
				RS1JFS	-	500	ns
				RS1KFS RS1MFS	-		

**Notes:**

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

<b>ORDERING INFORMATION</b>					
<b>PART NO.</b>	<b>PART NO. SUFFIX(*)</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>PACKAGE</b>	<b>PACKING</b>
RS1xFS (Note 1, 2)	H	MW	G	SOD-128	3,500 / 7" Plastic reel
		MX		SOD-128	14,000 / 13" Plastic reel

**Notes:**

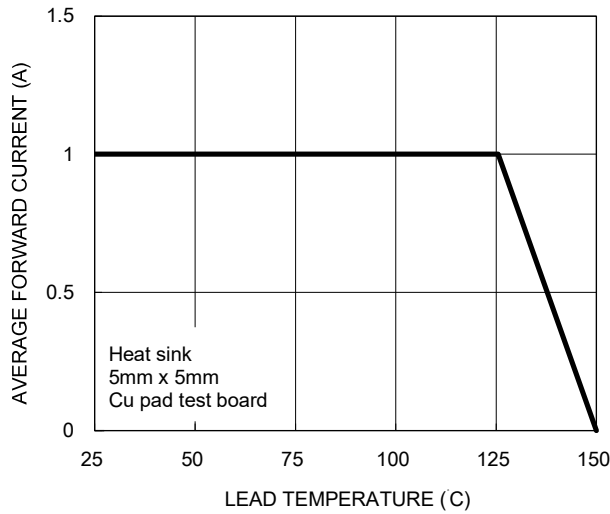
1. "xx" defines voltage from 200V (RS1DFS) to 1000V (RS1MFS)
  2. Whole series with green compound (halogen-free)
- \*: Optional available

<b>EXAMPLE P/N</b>					
<b>EXAMPLE P/N</b>	<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>DESCRIPTION</b>
RS1DFSHMWG	RS1DFS	H	MW	G	AEC-Q101 qualified Green compound

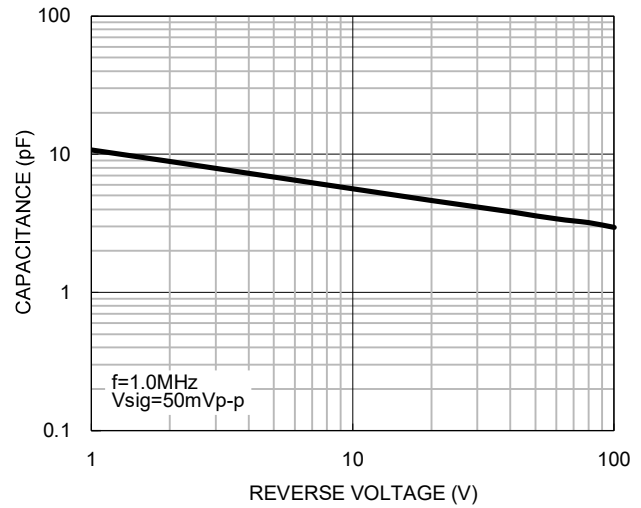
**CHARACTERISTICS CURVES**

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

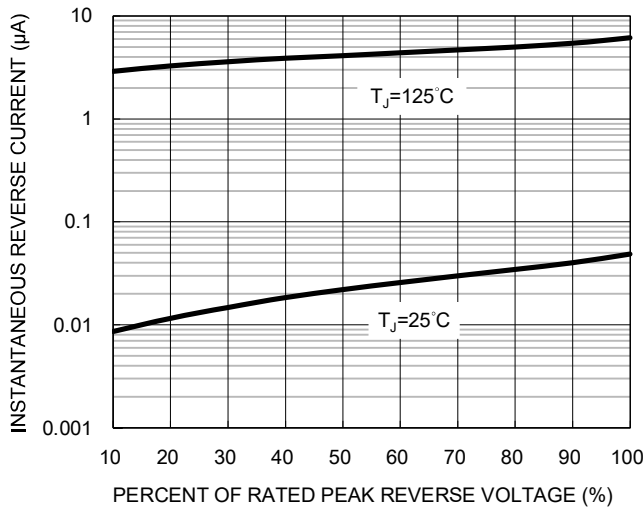
**Fig.1 Forward Current Derating Curve**



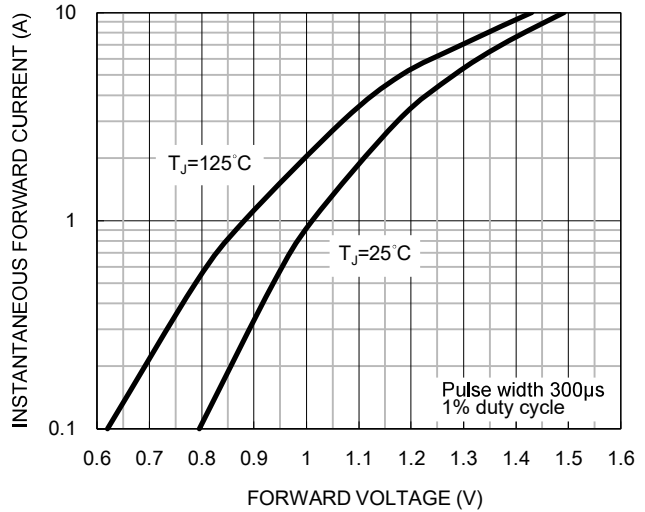
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**

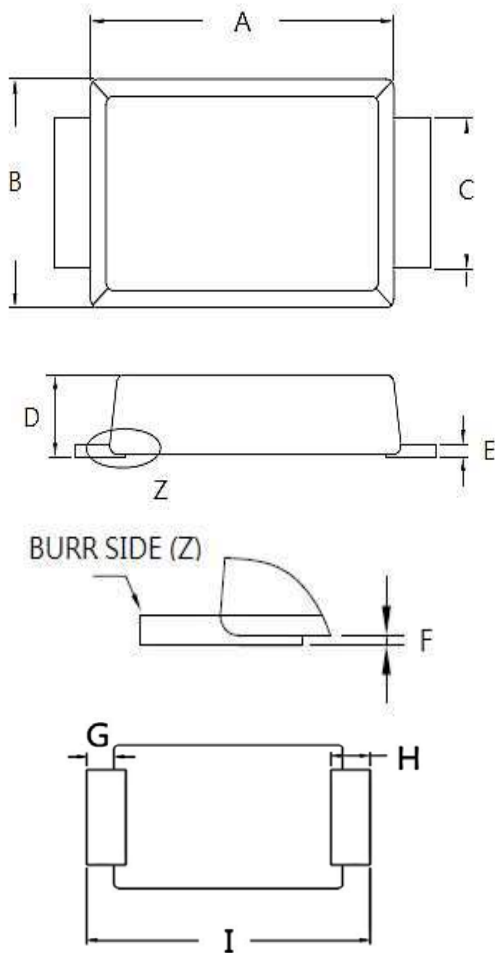


**Fig.4 Typical Forward Characteristics**



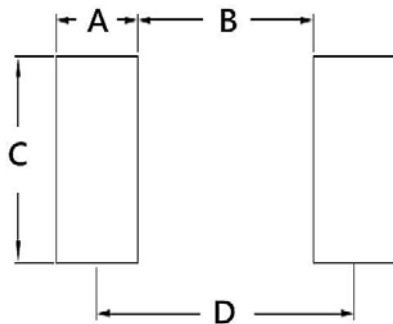
**PACKAGE OUTLINE DIMENSIONS**

SOD-128



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	3.60	4.00	0.142	0.157
B	2.30	2.70	0.091	0.106
C	1.60	1.90	0.063	0.075
D	0.90	1.10	0.035	0.043
E	0.10	0.22	0.004	0.009
F	0.00	0.10	0.000	0.004
G	0.30	0.60	0.012	0.024
H	0.40	0.80	0.016	0.031
I	4.40	5.00	0.173	0.197

**SUGGESTED PAD LAYOUT**



DIM	Unit (mm)	Unit (inch)
A	1.40	0.055
B	3.00	0.118
C	2.10	0.082
D	4.40	0.173

**MARKING DIAGRAM**



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

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