

## 2A, 200V-1000V High Efficient Surface Mount Rectifier

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	2	A
$V_{RRM}$	200-1000	V
$I_{FSM}$	50	A
$T_{JMAX}$	150	°C
Package	SMAF	

### APPLICATIONS

- Switch Mode Power Supply
- Inverters and Converters
- Free Wheeling diodes



### MECHANICAL DATA

- Case: SMAF
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.035 g (approximately)



SMAF



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

PARAMETER	SYMBOL	HS2D AF-T	HS2G AF-T	HS2J AF-T	HS2K AF-T	HS2M AF-T	UNIT
Marking code on the device		HS2DAF	HS2GAF	HS2JAF	HS2KAF	HS2MAF	
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
DC blocking voltage	$V_{DC}$	200	400	600	800	1000	V
Forward current	$I_F$	2					A
Surge peak forward current single half sine-wave superimposed on rated load	$I_{FSM}$	8.3 ms at $T_A = 25^\circ\text{C}$					A
		1.0 ms at $T_A = 25^\circ\text{C}$					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	$R_{\theta JL}$	15	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	22	$^{\circ}\text{C/W}$

**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>	HS2DAF-T	$I_F = 1\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	0.84	-	V
		$I_F = 2\text{A}, T_J = 25^{\circ}\text{C}$		0.91	1.0	V
		$I_F = 1\text{A}, T_J = 125^{\circ}\text{C}$		0.68	-	V
		$I_F = 2\text{A}, T_J = 125^{\circ}\text{C}$		0.78	0.94	V
	HS2GAF-T	$I_F = 1\text{A}, T_J = 25^{\circ}\text{C}$		0.94	-	V
		$I_F = 2\text{A}, T_J = 25^{\circ}\text{C}$		1.04	1.4	V
		$I_F = 1\text{A}, T_J = 125^{\circ}\text{C}$		0.77	-	V
		$I_F = 2\text{A}, T_J = 125^{\circ}\text{C}$		0.88	1.07	V
	HS2JAF-T HS2KAF-T HS2MAF-T	$I_F = 1\text{A}, T_J = 25^{\circ}\text{C}$		1.19	-	V
		$I_F = 2\text{A}, T_J = 25^{\circ}\text{C}$		1.33	1.7	V
		$I_F = 1\text{A}, T_J = 125^{\circ}\text{C}$		0.96	-	V
		$I_F = 2\text{A}, T_J = 125^{\circ}\text{C}$		1.10	1.31	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^{\circ}\text{C}$	$I_R$	-	5	$\mu\text{A}$
		$T_J = 125^{\circ}\text{C}$		-	250	$\mu\text{A}$
Reverse recovery time	HS2DAF-T HS2GAF-T	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$	$t_{rr}$	-	50	ns
	HS2JAF-T HS2KAF-T HS2MAF-T			-	75	ns
Junction capacitance	HS2DAF-T	1 MHz, $V_R = 4.0\text{V}$	$C_J$	27	-	pF
	HS2GAF-T			21	-	pF
	HS2JAF-T HS2KAF-T HS2MAF-T			12	-	pF

**Notes:**

(1) Pulse test with  $PW = 0.3\text{ ms}$

(2) Pulse test with  $PW = 30\text{ ms}$

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b>	<b>PACKAGE</b>	<b>PACKING</b>
HS2XAF-T R3G <sup>(1)</sup>	SMAF	1,800 / 7" Plastic reel
HS2XAF-T M2G <sup>(1)</sup>	SMAF	7,500 / 13" Plastic reel
HS2XAF-T R2G <sup>(1)</sup>	SMAF	7,500 / 13" Paper reel

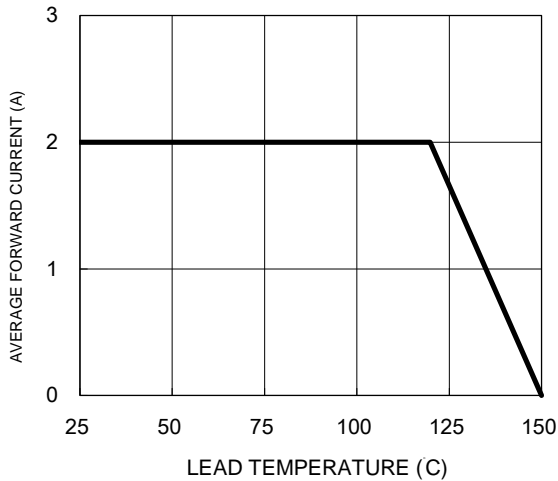
**Notes:**

(1) "X" defines voltage from 200V(HS2DAF-T) to 1000V(HS2MAF-T)

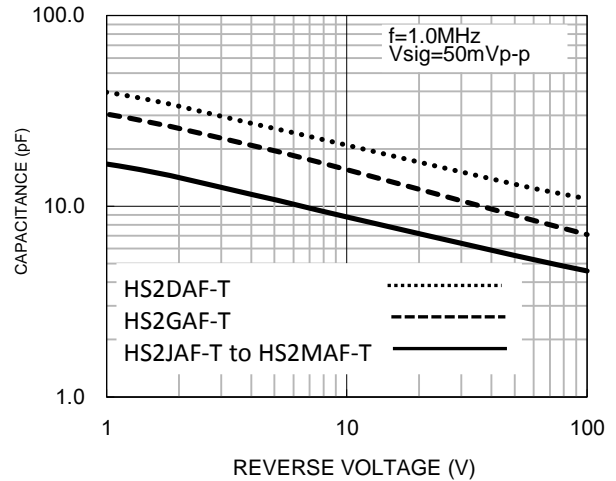
**CHARACTERISTICS CURVES**

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

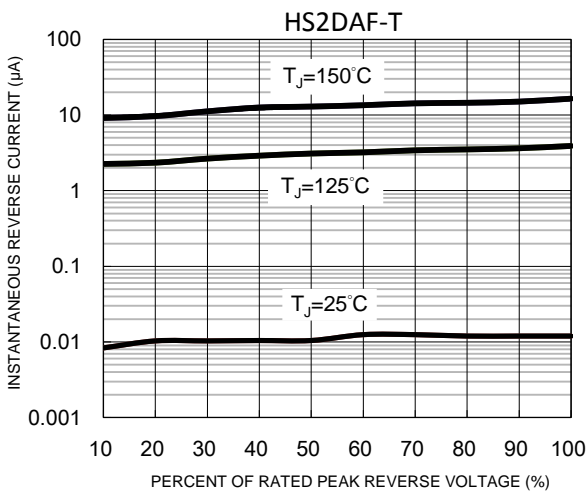
**Fig.1 Forward Current Derating Curve**



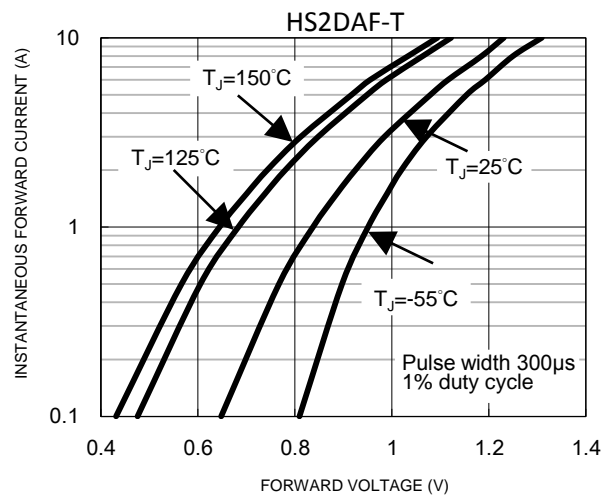
**Fig.2 Typical Junction Capacitance**



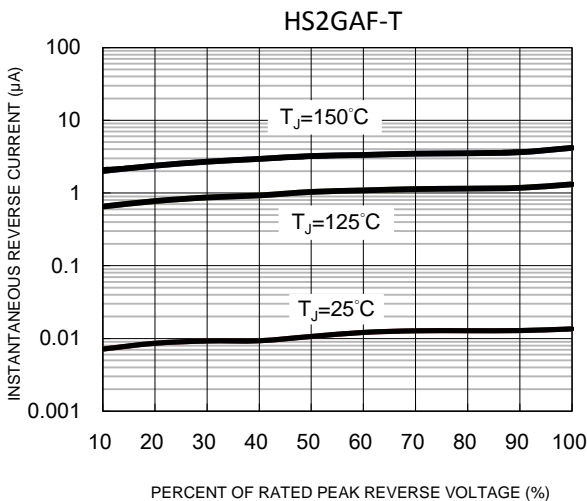
**Fig.3 Typical Reverse Characteristics**



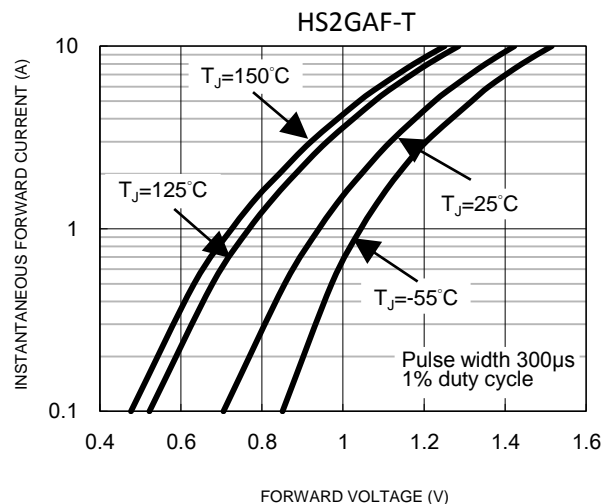
**Fig.4 Typical Forward Characteristics**



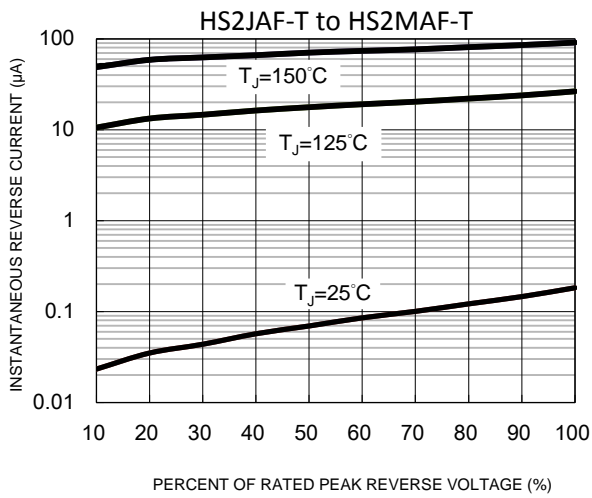
**Fig.5 Typical Reverse Characteristics**



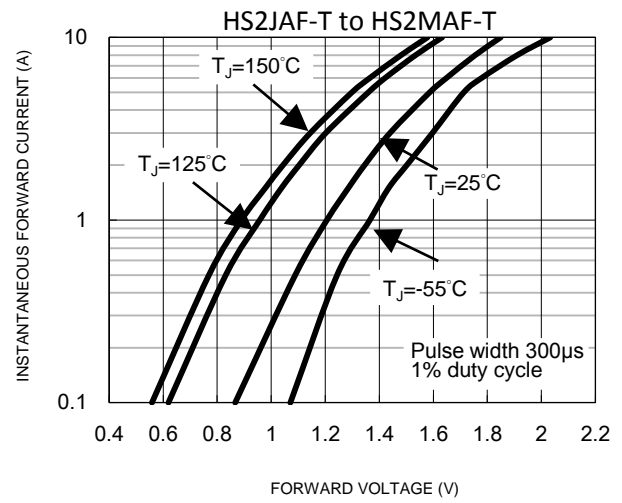
**Fig.6 Typical Forward Characteristics**



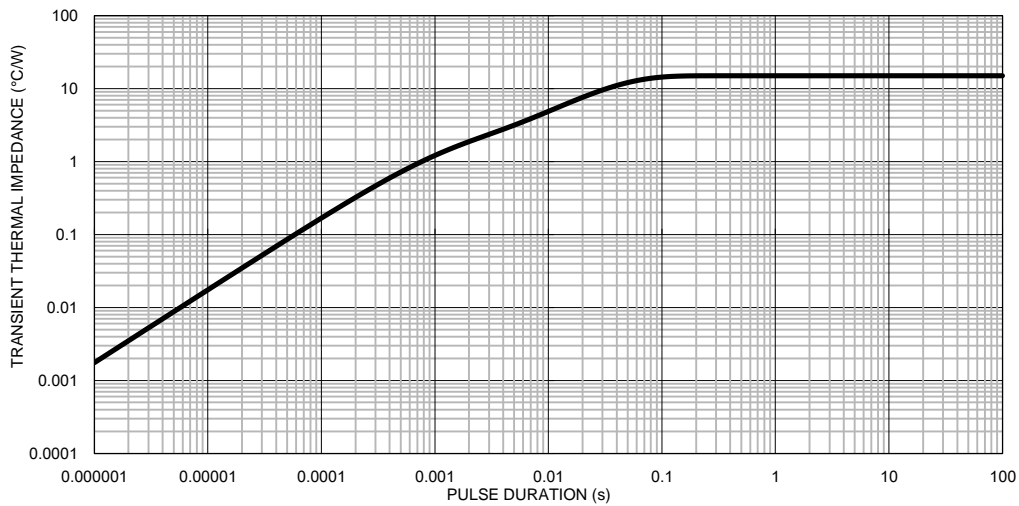
**Fig.7 Typical Reverse Characteristics**



**Fig.8 Typical Forward Characteristics**

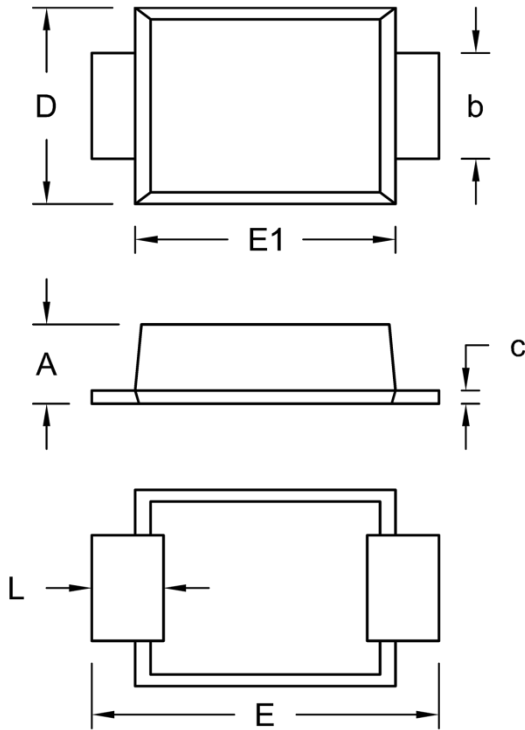


**Fig.9 Typical Transient Thermal Impedance**



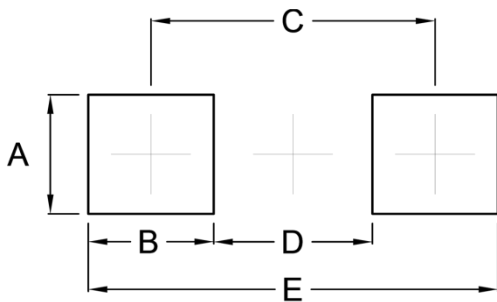
**PACKAGE OUTLINE DIMENSIONS** (Unit: Millimeters)

**SMAF**



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.00	1.10	0.039	0.043
b	1.30	1.50	0.051	0.059
c	0.10	0.25	0.004	0.010
D	2.40	2.80	0.094	0.110
E	4.40	4.80	0.173	0.189
E1	3.25	3.65	0.128	0.144
L	0.70	1.20	0.028	0.047

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.57	0.062
B	1.66	0.065
C	3.76	0.148
D	2.10	0.083
E	5.42	0.213

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

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