2A, 200V - 600V Super Fast Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

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: 0.035g (approximately)

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
I_F	2	A
V_{RRM}	200 - 600	V
I_{FSM}	50	A
$T_{J\ MAX}$	150	°C
Package	SMAF	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

SMAF

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)						
PARAMETER		**SYMBOL**	**ES2DAF-T**	**ES2GAF-T**	**ES2JAF-T**	**UNIT**
Marking code on the device			ES2DAF	ES2GAF	ES2JAF	
Repetitive peak reverse voltage		V_{RRM}	200	400	600	V
Reverse voltage, total rms value		$V_{R(RMS)}$	140	280	420	V
Forward current		I_F	2			A
Surge peak forward current single half sine-wave superimposed on rated load	t = 8.3ms	I_{FSM}	50			A
	t = 1.0ms		130			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	$R_{\Theta JL}$	15	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	89	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	22	°C/W

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

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage[1]	ES2DAF-T	I_F = 1A, T_J = 25°C	V_F	0.83	-	V
		I_F = 2A, T_J = 25°C		0.91	0.95	V
		I_F = 1A, T_J = 125°C		0.68	-	V
		I_F = 2A, T_J = 125°C		0.78	0.89	V
	ES2GAF-T	I_F = 1A, T_J = 25°C		1.00	-	V
		I_F = 2A, T_J = 25°C		1.13	1.25	V
		I_F = 1A, T_J = 125°C		0.80	-	V
		I_F = 2A, T_J = 125°C		0.94	1.14	V
	ES2JAF-T	I_F = 1A, T_J = 25°C		1.22	-	V
		I_F = 2A, T_J = 25°C		1.44	1.70	V
		I_F = 1A, T_J = 125°C		0.89	-	V
		I_F = 2A, T_J = 125°C		1.09	1.50	V
Reverse current @ rated V_R[2]		T_J = 25°C	I_R	-	5	μA
		T_J = 125°C		-	200	μA
Reverse recovery time		I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A	t_{rr}	-	35	ns
Junction capacitance	ES2DAF-T	1MHz, V_R = 4.0V	C_J	27	-	pF
	ES2GAF-T			21	-	pF
	ES2JAF-T			12	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
ES2xAF-T	SMAF	7,500 / Tape & Reel

Notes:

1. "x" defines voltage from 200V (ES2DAF-T) to 600V (ES2JAF-T)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

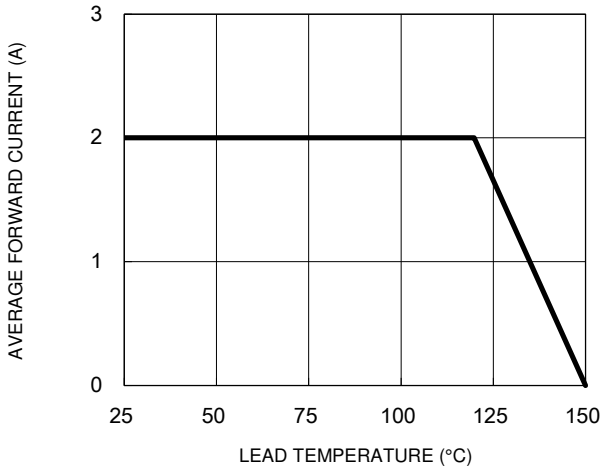


Fig.2 Typical Junction Capacitance

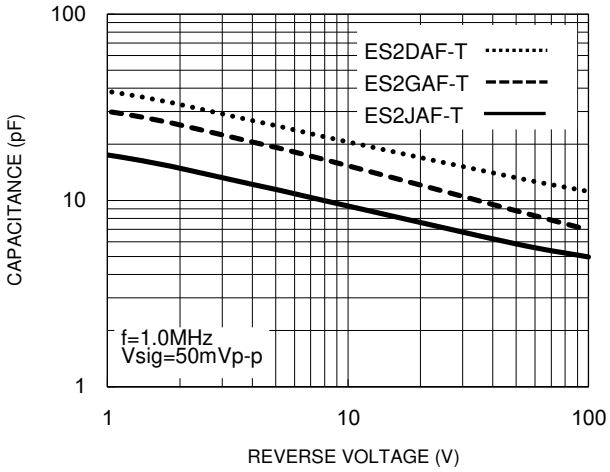


Fig.3 Typical Reverse Characteristics

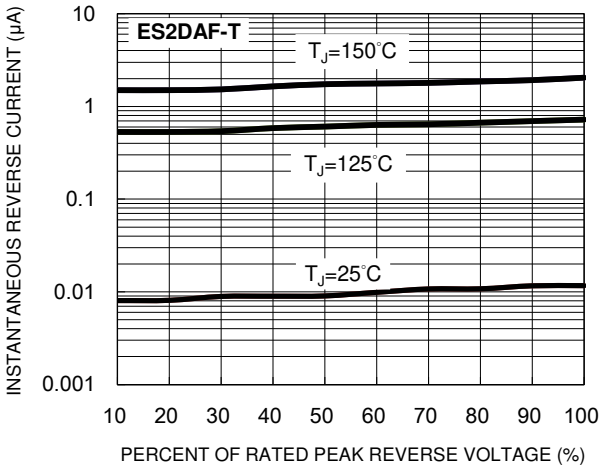


Fig.4 Typical Forward Characteristics

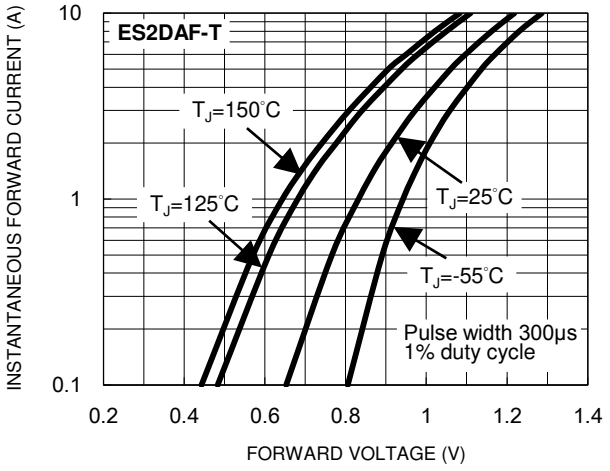


Fig.5 Typical Reverse Characteristics

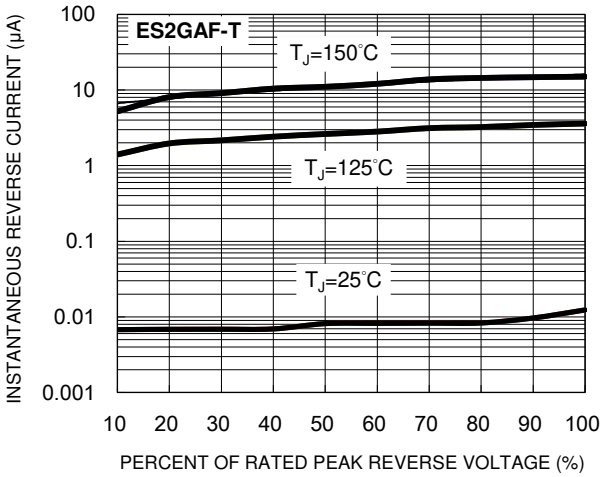
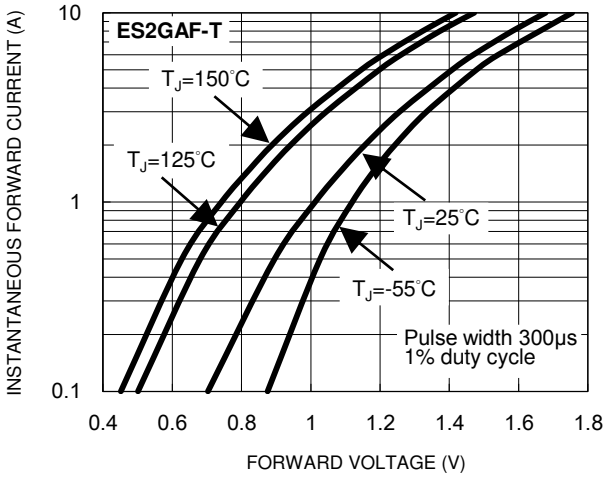


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.7 Typical Reverse Characteristics

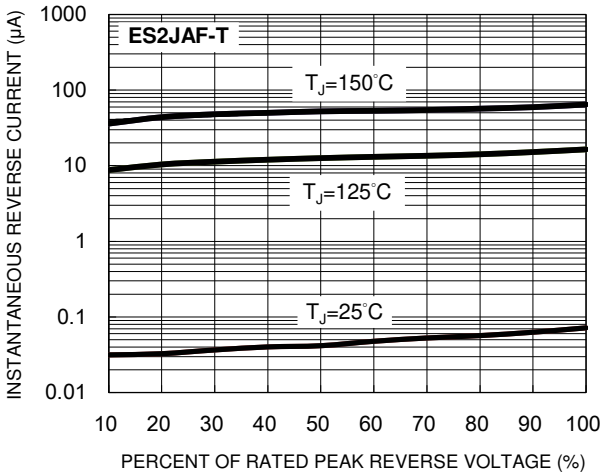


Fig.8 Typical Forward Characteristics

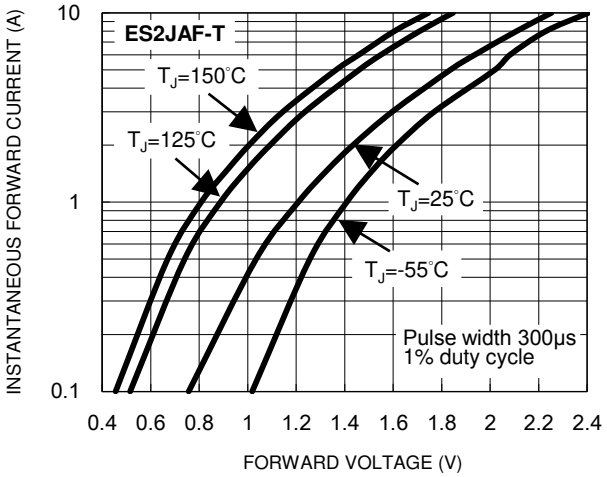
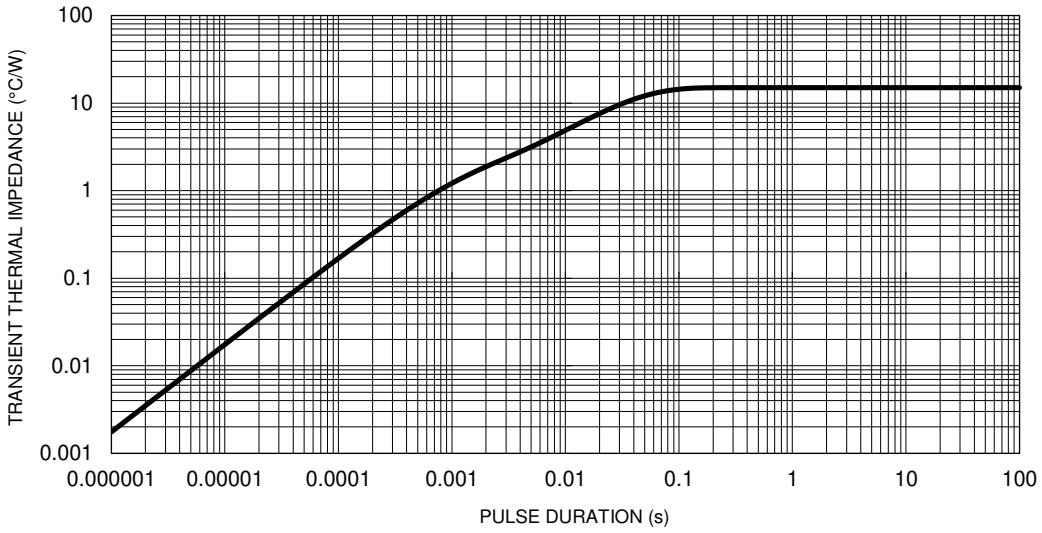
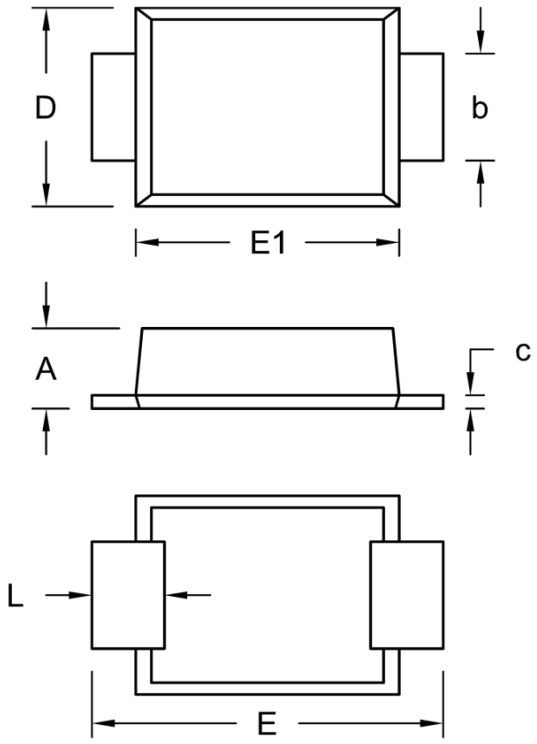


Fig.9 Typical Transient Thermal Impedance



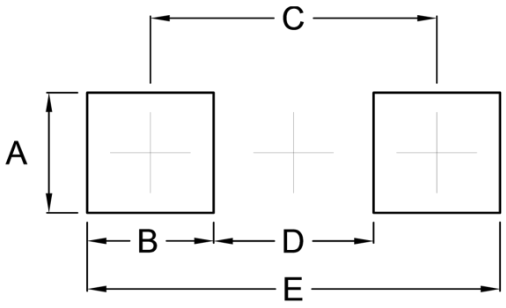
PACKAGE OUTLINE DIMENSIONS

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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