

2A, 200V-600V Super Fast Recovery 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

APPLICATIONS

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

MECHANICAL DATA

- Case: DO-214AC (SMA)
- 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: 0.06 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	2	A
V_{RRM}	200-600	V
I_{FSM}	50	A
T_{JMAX}	150	°C
Package	DO-214AC (SMA)	



DO-214AC (SMA)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ES2DA-T	ES2GA-T	ES2JA-T	UNIT
Marking code on the device		ES2DA	ES2GA	ES2JA	V
Repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	V
DC blocking voltage	V_{DC}	200	400	600	V
Forward current	I_F	2			A
Surge peak forward current single half sine-wave superimposed on rated load per diode	8.3 ms at $T_A = 25^\circ\text{C}$	I_{FSM}	50		A
	1.0 ms at $T_A = 25^\circ\text{C}$		124		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 per diode	$R_{\theta JL}$	14	°C/W
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	86	°C/W
Junction-to-case thermal resistance per diode	$R_{\theta JC}$	23	°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 per diode ⁽¹⁾	ES2DA-T	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$	V_F	0.83	-	V
		$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		0.91	0.95	V
		$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.69	-	V
		$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		0.78	0.91	V
	ES2GA-T	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$		0.97	-	V
		$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		1.09	1.25	V
		$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.78	-	V
		$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		0.92	1.05	V
	ES2JA-T	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$		1.23	-	V
		$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		1.44	1.7	V
		$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.92	-	V
		$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		1.12	1.26	V
Reverse current @ rated V_R per diode ⁽²⁾		$T_J = 25^\circ\text{C}$	I_R	-	5	μA
		$T_J = 125^\circ\text{C}$		-	100	μA
Reverse recovery time		$I_F=0.5\text{A}, I_R=1.0\text{A}, I_{rr}=0.25\text{A}$	t_{rr}	-	35	ns
Junction capacitance per diode	ES2DA-T	1 MHz, $V_R=4.0\text{V}$	C_J	26	-	pF
	ES2GA-T			19	-	pF
	ES2JA-T			11	-	pF

Notes:

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

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

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
ES2XA-T R3G ⁽¹⁾	SMA	1,800 / 7" Plastic reel
ES2XA-T M2G ⁽¹⁾	SMA	7,500 / 13" Plastic reel
ES2XA-T R2G ⁽¹⁾	SMA	7,500 / 13" Paper reel

Notes:

(1) "X" defines voltage from 200V(ES2DA-T) to 600V(ES2JA-T)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

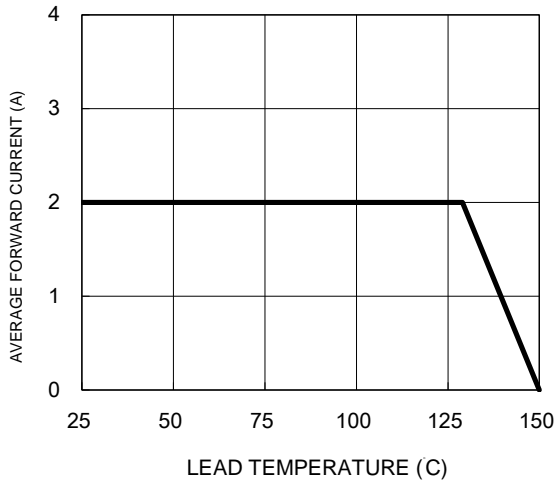


Fig.2 Typical Junction Capacitance

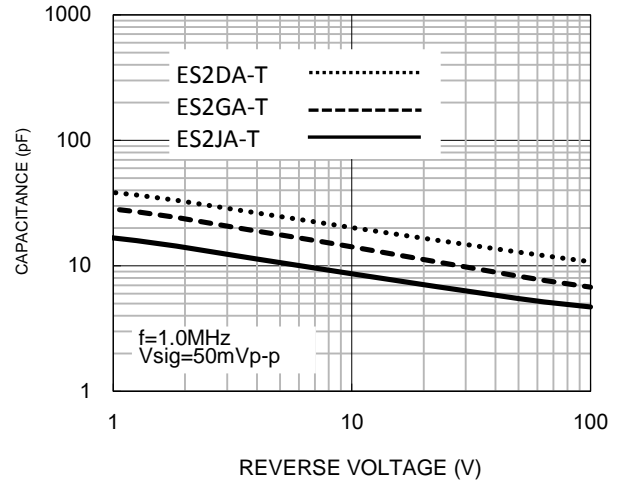


Fig.3 Typical Reverse Characteristics

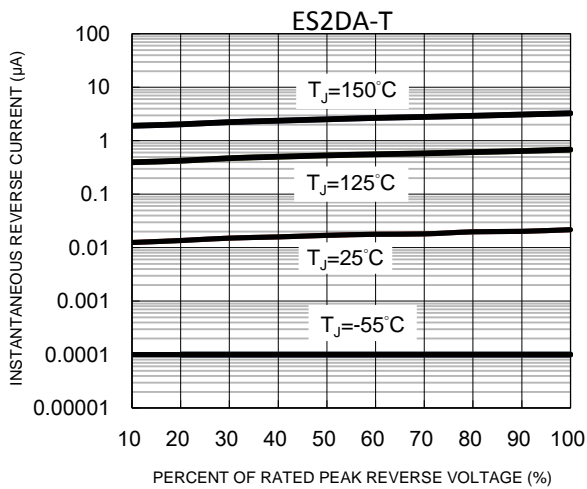


Fig.4 Typical Forward Characteristics

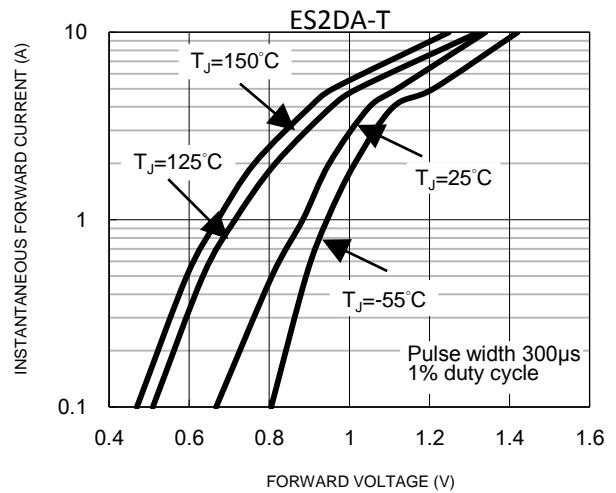


Fig.5 Typical Reverse Characteristics

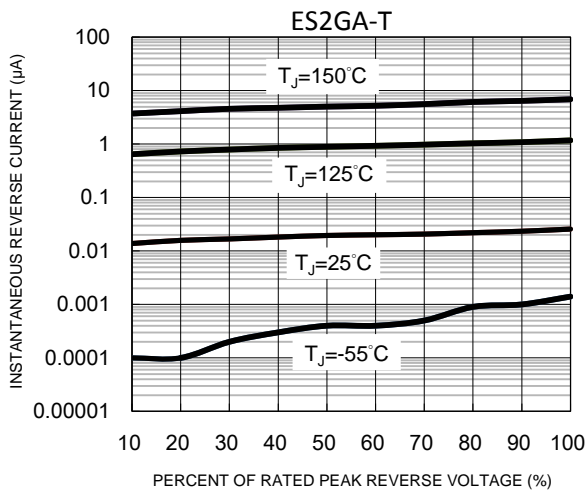


Fig.6 Typical Forward Characteristics

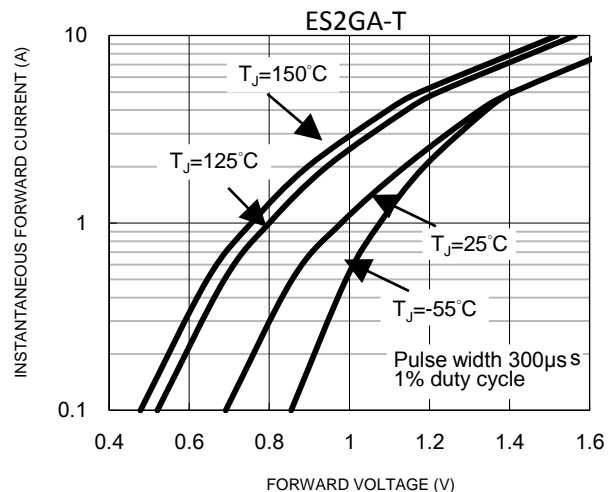


Fig.7 Typical Reverse Characteristics

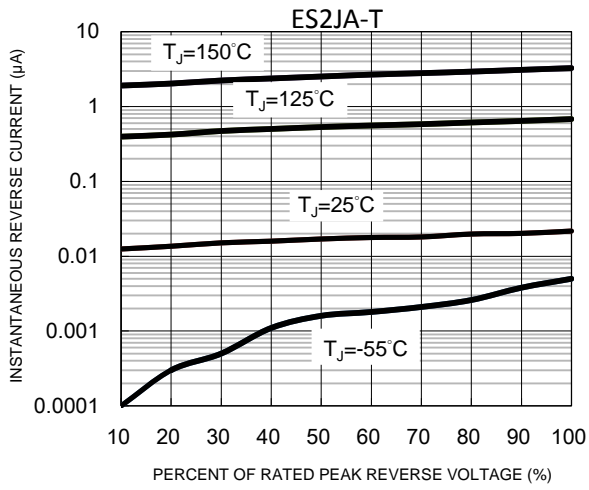


Fig.8 Typical Forward Characteristics

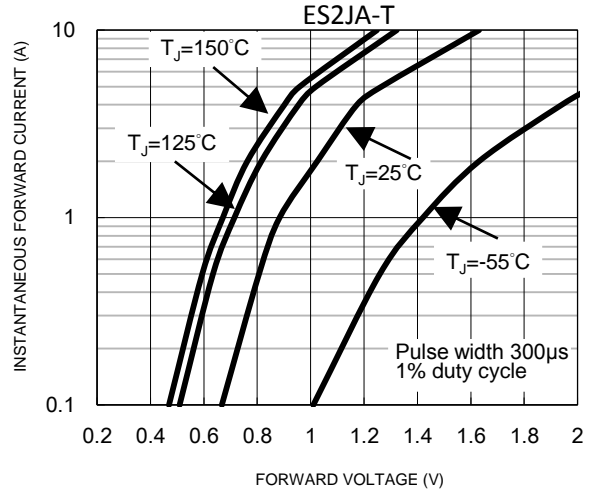
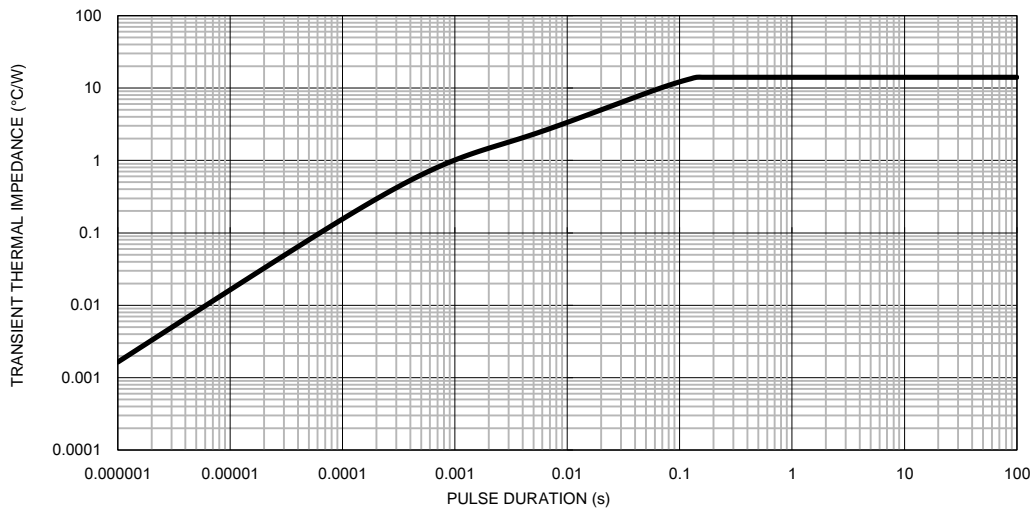
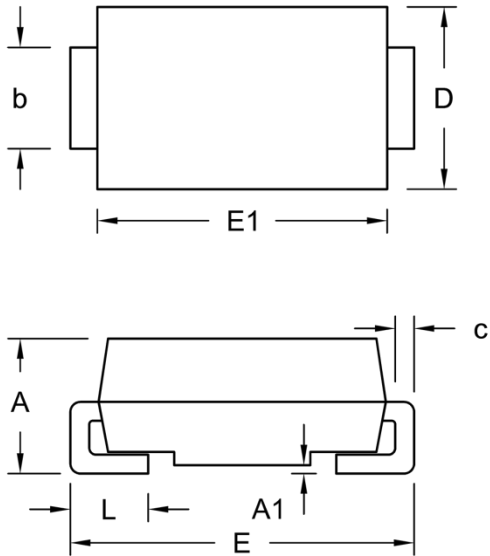


Fig.9 Typical Transient Thermal Impedance



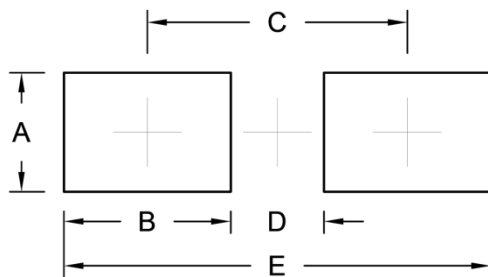
PACKAGE OUTLINE DIMENSIONS

DO-214AC (SMA)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.70	2.30	0.067	0.091
A1	0.05	0.20	0.002	0.008
b	1.20	1.80	0.047	0.071
c	0.15	0.41	0.006	0.016
D	2.40	3.00	0.094	0.118
E	4.80	5.40	0.189	0.213
E1	4.00	4.60	0.157	0.181
L	0.75	1.60	0.030	0.063

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.82	0.072
B	2.56	0.101
C	3.99	0.157
D	1.43	0.056
E	6.55	0.258

MARKING DIAGRAM



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

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