400W, 10V - 100V Surface Mount Transient Voltage Suppressor

FEATURES

- AEC-Q101 qualified
- Low profile package
- Photo Glass passivated junction
- Excellent clamping capability
- Moisture sensitivity level: level 1, per J-STD-020
- 400 watts peak pulse power capability with a 10 / 1000 μs waveform (300W above 78V)
- 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**
V_{WM}	10 - 100	V
V_{BR}	11.7 - 117	V
$T_{J\ MAX}$	175	°C
Package	DO-214AC (SMA)	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE



DO-214AC (SMA)

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

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 2 whisker test
- Polarity: As marked
- Weight: 0.06 g (approximately)

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation (Note 1)	P_{PPM}	400	W
Steady state power dissipation	P_D	1	W
Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	40	A
Maximum instantaneous forward voltage at 25 A for unidirectional only	V_F	3.5	V
Operating junction temperature range	T_J	-55 to +175	°C
Storage temperature range	T_{STG}	-55 to +175	°C

Notes:
1. Non-repetitive Current Pulse Per Fig.3 and derated above T_A=25°C Per Fig.2. Rating is 300 W for V_{WM} > 78 V

Devices for Bi-directional Applications
1. For Bi-directional use CA suffix (e.g. PGSMAJ10CA).
2. Electrical Characteristics Apply in Both Directions

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP.	UNIT
Junction-to-lead thermal resistance per diode	$R_{\Theta JL}$	29	°C/W
Junction-to-ambient thermal resistance per diode	$R_{\Theta JA}$	120	°C/W
Junction-to-case thermal resistance per diode	$R_{\Theta JC}$	31	°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)

Part number	Marking code	Breakdown voltage $V_{BR}@I_T$ (V) (Note 1)		Test current I_T (mA)	Working stand-off voltage V_{WM} (V)	Maximum reverse leakage current $I_R@V_{WM}$ (μA) (Note 1)	Maximum peak impulse current I_{PPM} (A) tp =10/1000 μs	Maximum clamping voltage $V_C@I_{PPM}$ (V) tp =10/1000 μs
		Min.	Max.					
PGSMAJ10A	PAX	11.1	12.30	1	10	5	23.5	17.0
PGSMAJ11A	PAZ	12.2	13.50	1	11	1	22.0	18.2
PGSMAJ12A	PBE	13.3	14.70	1	12	1	20.1	19.9
PGSMAJ13A	PBG	14.4	15.90	1	13	1	18.6	21.5
PGSMAJ14A	PBK	15.6	17.20	1	14	1	17.2	23.2
PGSMAJ15A	PBM	16.7	18.50	1	15	1	16.4	24.4
PGSMAJ16A	PBP	17.8	19.70	1	16	1	15.4	26.0
PGSMAJ17A	PBR	18.9	20.90	1	17	1	14.5	27.6
PGSMAJ18A	PBT	20.0	22.10	1	18	1	13.7	29.2
PGSMAJ20A	PBV	22.2	24.50	1	20	1	12.3	32.4
PGSMAJ22A	PBX	24.4	26.90	1	22	1	11.3	35.5
PGSMAJ24A	PBZ	26.7	29.50	1	24	1	10.3	38.9
PGSMAJ26A	PCE	28.9	31.90	1	26	1	9.5	42.1
PGSMAJ28A	PCG	31.1	34.40	1	28	1	8.8	45.4
PGSMAJ30A	PCK	33.3	36.8	1	30	1	8.3	48.4
PGSMAJ33A	PCM	36.7	40.6	1	33	1	7.5	53.3
PGSMAJ36A	PCP	40.0	44.2	1	36	1	6.9	58.1
PGSMAJ40A	PCR	44.4	49.1	1	40	1	6.2	64.5
PGSMAJ43A	PCT	47.8	52.8	1	43	1	5.8	69.4
PGSMAJ45A	PCV	50.0	55.3	1	45	1	5.5	72.7
PGSMAJ48A	PCX	53.3	58.9	1	48	1	5.2	77.4
PGSMAJ51A	PCZ	56.7	62.7	1	51	1	4.9	82.4
PGSMAJ54A	PRE	60.0	66.3	1	54	1	4.6	87.1
PGSMAJ58A	PRG	64.4	71.2	1	58	1	4.3	93.6
PGSMAJ60A	PRK	66.7	73.7	1	60	1	4.1	96.8
PGSMAJ64A	PRM	71.1	78.6	1	64	1	3.9	103
PGSMAJ70A	PRP	77.8	86	1	70	1	3.5	113
PGSMAJ75A	PRR	83.3	92.1	1	75	1	3.3	121
PGSMAJ78A	PRT	86.7	95.8	1	78	1	3.2	126
PGSMAJ85A	PRV	94.4	104	1	85	1	2.2	137
PGSMAJ90A	PRX	100	111	1	90	1	2.1	146
PGSMAJ100A	PRZ	111	123	1	100	1	1.9	162

Notes:

1. Non-repetitive current pulse, per Fig. 3 and derated above TA=25°C per Fig. 2
2. Mounted on 5 x 5mm copper pads to each terminal
3. Lead temperature at T_L=75°C
4. Measure on 8.3ms single half sine-wave duty cycle=4 pulses per minutes maximum
5. Peak pulse power waveform is 10/1000 μs

ORDERING INFORMATION		
ORDERING CODE (Note 1)	**PACKAGE**	**PACKING**
PGSMAJxxxAHE3G	Clip SMA	1,800 / 7” Plastic reel
PGSMAJxxxAHE2G	Clip SMA	7,500 / 13” Plastic reel
PGSMAJxxxA E3G	Clip SMA	1,800 / 7” Plastic reel
PGSMAJxxxA E2G	Clip SMA	7,500 / 13” Plastic reel
PGSMAJxxxCAHE3G	Clip SMA	1,800 / 7” Plastic reel
PGSMAJxxxCAHE2G	Clip SMA	7,500 / 13” Plastic reel
PGSMAJxxxCA E3G	Clip SMA	1,800 / 7” Plastic reel
PGSMAJxxxCA E2G	Clip SMA	7,500 / 13” Plastic reel
PGSMAJxxxA R3G	SMA	1,800 / 7” Plastic reel
PGSMAJxxxAHR3G	SMA	1,800 / 7” Plastic reel
PGSMAJxxxA M2G	SMA	7,500 / 13” Plastic reel
PGSMAJxxxAHM2G	SMA	7,500 / 13” Plastic reel

Note 1:
"xxx" defines voltage from 10V (PGSMAJ10A) to 100V (PGSMAJ100A)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

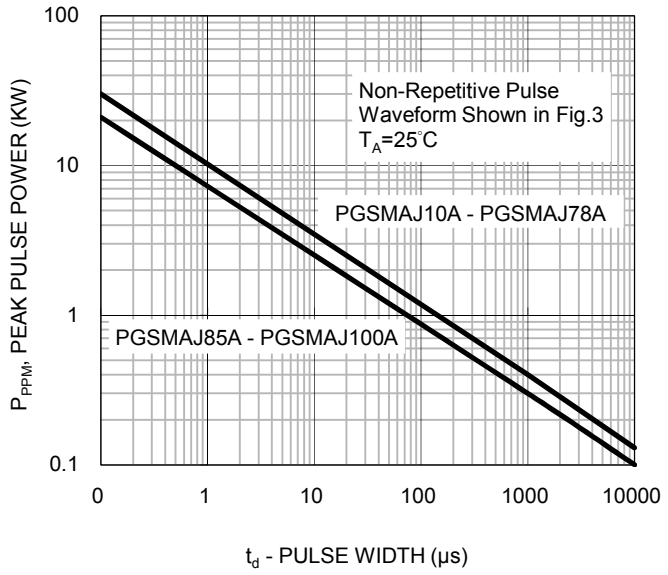


Fig.2 Pulse Derating Curve

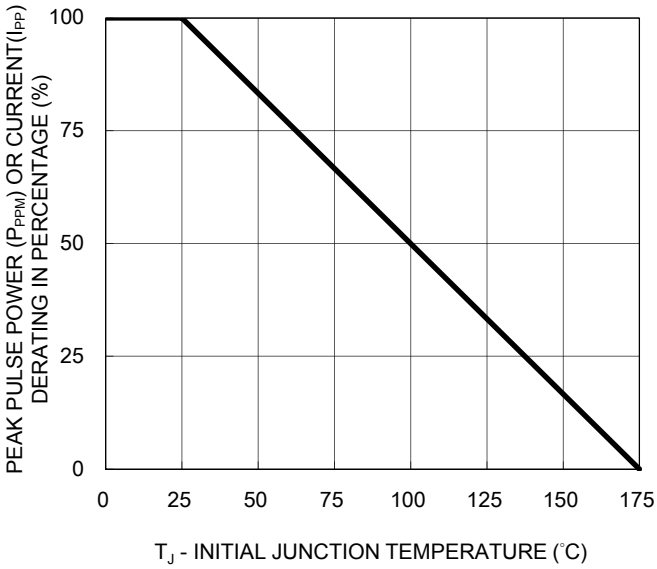


Fig.3 Clamping Power Pulse Waveform

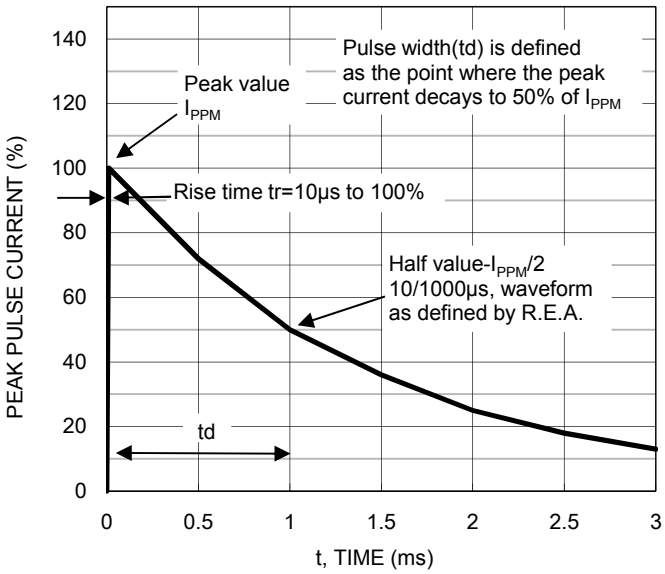
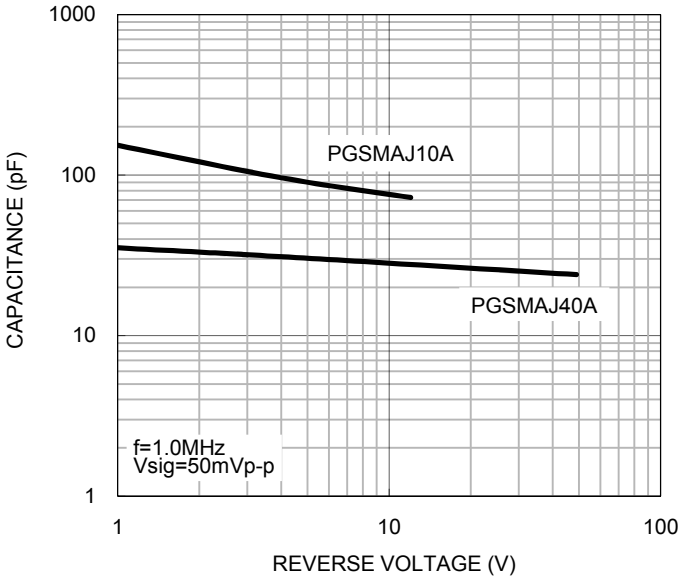
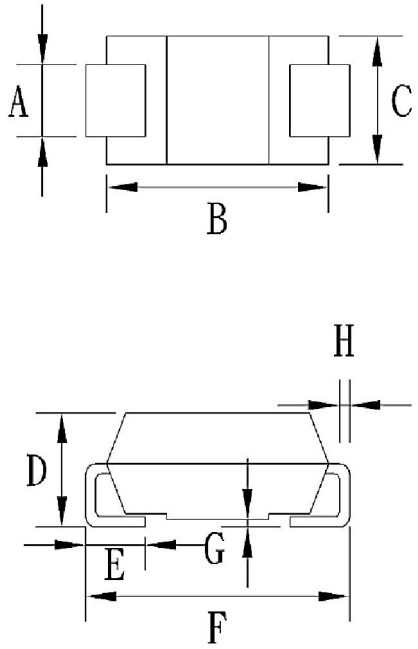


Fig.4 Typical Junction Capacitance



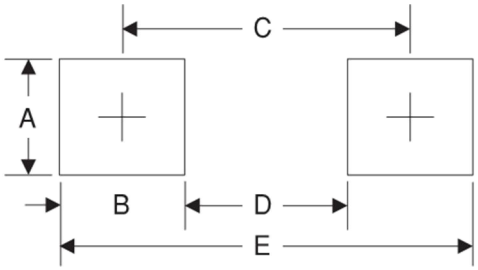
PACKAGE OUTLINE DIMENSIONS

DO-214AC (SMA)



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.27	1.58	0.050	0.062
B	4.06	4.60	0.160	0.181
C	2.29	2.83	0.090	0.111
D	1.99	2.50	0.078	0.098
E	0.90	1.41	0.035	0.056
F	4.95	5.33	0.195	0.210
G	0.10	0.20	0.004	0.008
H	0.15	0.31	0.006	0.012

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.68	0.066
B	1.52	0.060
C	3.93	0.155
D	2.41	0.095
E	5.45	0.215

MARKING DIAGRAM



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

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