

### Features

- IEC 61000-4-2 ESD 30kV(Air), 30kV (Contact)
- For Surface Mount Applications
- Unidirectional And Bidirectional
- Fast Response Time: Typical Less Than 1ps From 0V to BV Min
- High Temp Soldering: 260°C / 10 Seconds At Terminals
- For Bidirectional Devices Add "C" To The Suffix of The Part Number: i.e.SMAF5.0CA for 5% Tolerance
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note2) ("P" Suffix Designates RoHS Compliant. See Ordering Information)

### Mechanical Data

- Polarity: Indicated by Cathode Band Except Bi-directional Types

### Maximum Ratings

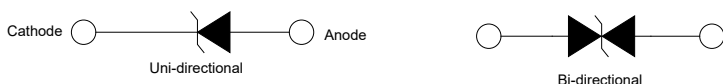
- Operating Junction Temperature Range: -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Typical Thermal Resistance: 30°C/W Junction to Lead
- Typical Thermal Resistance: 120°C/W Junction to Ambient

Peak Pulse Power Surge Current with a 10/1000µs Waveform	$I_{PPM}$	See the Table	Note 3
Peak Pulse Power Dissipation	$P_{PPM}$	400W(Min.)	Note 3,4,7
Steady State Power Dissipation	$P_{M(AV)}$	1.5 W	Note 3,6
Peak Forward Surge Current	$I_{FSM}$	40 A	8.3ms Single Half Sine-Wave Uni-directional Only <sup>(Note 5)</sup>

#### Note:

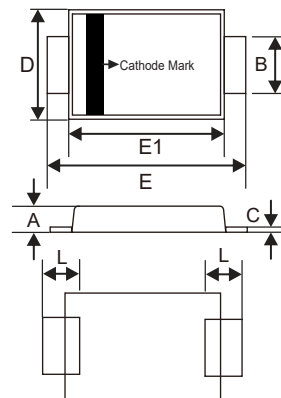
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.
3. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.4.
4. Mounted on 5.0mm<sup>2</sup> copper pads to each terminal.
5. Mounted on 0.2" x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.
6. Lead temperature at  $T_L = 75^\circ\text{C}$ .
7. Peak pulse power waveform is 10/1000us.

#### Pin Configuration:



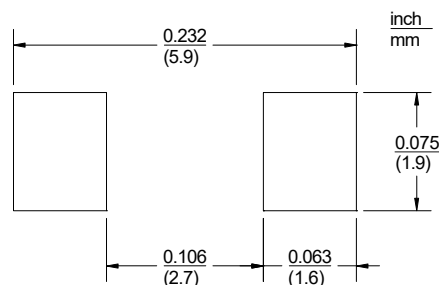
## 400 Watt TVS 5.0 to 300 Volts

### DO-221AC(SMA-FL)



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.035	0.049	0.90	1.25	
B	0.049	0.065	1.25	1.65	
C	0.004	0.016	0.10	0.40	
D	0.089	0.116	2.25	2.95	
E	0.173	0.220	4.40	5.60	
E1	0.126	0.181	3.20	4.60	
L	0.020	0.059	0.50	1.50	

#### Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

MCC PART NUMBER		REVERSE STAND-OFF VOLTAGE $V_{WM}$	BREAKDOWN VOLTAGE $V_{(BR)} @ I_T$ (VOLTS)			MAXIMUM CLAMPING VOLTAGE @ $I_{PP}$	PEAK PULSE CURRENT $I_{PP}$	MAXIMUM REVERSE LEAKAGE @ $V_{WM}$ $I_D$	MARKING CODE	
UNI-POLAR	BI-POLAR	(VOLTS)	MIN	MAX	$I_T$ (mA)	(VOLTS)	(AMPS)	( $\mu$ A)	UNI	BI
SMAF5.0A	SMAF5.0CA	5.0	6.40	7.00	10	9.2	43.5	800	AE	WE
SMAF6.0A	SMAF6.0CA	6.0	6.67	7.37	10	10.3	38.8	800	AG	WG
SMAF6.5A	SMAF6.5CA	6.5	7.22	7.98	10	11.2	35.7	500	AK	WK
SMAF7.0A	SMAF7.0CA	7.0	7.78	8.60	10	12.0	33.3	200	AM	WM
SMAF7.5A	SMAF7.5CA	7.5	8.33	9.21	1	12.9	31.0	100	AP	WP
SMAF8.0A	SMAF8.0CA	8.0	8.89	9.83	1	13.6	29.4	50	AR	WR
SMAF8.5A	SMAF8.5CA	8.5	9.44	10.4	1	14.4	27.7	20	AT	WT
SMAF9.0A	SMAF9.0CA	9.0	10.0	11.1	1	15.4	26.0	10	AV	WV
SMAF10A	SMAF10CA	10	11.1	12.3	1	17.0	23.5	5	AX	WX
SMAF11A	SMAF11CA	11	12.2	13.5	1	18.2	22.0	1	AZ	WZ
SMAF12A	SMAF12CA	12	13.3	14.7	1	19.9	20.1	1	BE	XE
SMAF13A	SMAF13CA	13	14.4	15.9	1	21.5	18.6	1	BG	XG
SMAF14A	SMAF14CA	14	15.6	17.2	1	23.2	17.2	1	BK	XK
SMAF15A	SMAF15CA	15	16.7	18.5	1	24.4	16.4	1	BM	XM
SMAF16A	SMAF16CA	16	17.8	19.7	1	26.0	15.3	1	BP	XP
SMAF17A	SMAF17CA	17	18.9	20.9	1	27.6	14.5	1	BR	XR
SMAF18A	SMAF18CA	18	20.0	22.1	1	29.2	13.7	1	BT	XT
SMAF20A	SMAF20CA	20	22.2	24.5	1	32.4	12.3	1	BV	XV
SMAF22A	SMAF22CA	22	24.4	26.9	1	35.5	11.2	1	BX	XX
SMAF24A	SMAF24CA	24	26.7	29.5	1	38.9	10.3	1	BZ	XZ
SMAF26A	SMAF26CA	26	28.9	31.9	1	42.1	9.5	1	CE	YE
SMAF28A	SMAF28CA	28	31.1	34.4	1	45.4	8.8	1	CG	YG
SMAF30A	SMAF30CA	30	33.3	36.8	1	48.4	8.3	1	CK	YK
SMAF33A	SMAF33CA	33	36.7	40.6	1	53.3	7.5	1	CM	YM
SMAF36A	SMAF36CA	36	40.0	44.2	1	58.1	6.9	1	CP	YP
SMAF40A	SMAF40CA	40	44.4	49.1	1	64.5	6.2	1	CR	YR
SMAF43A	SMAF43CA	43	47.8	52.8	1	69.4	5.7	1	CT	YT
SMAF45A	SMAF45CA	45	50.0	55.3	1	72.7	5.5	1	CV	YV
SMAF48A	SMAF48CA	48	53.3	58.9	1	77.4	5.2	1	CX	YX
SMAF51A	SMAF51CA	51	56.7	62.7	1	82.4	4.9	1	CZ	YZ
SMAF54A	SMAF54CA	54	60.0	66.3	1	87.1	4.6	1	RE	ZE
SMAF58A	SMAF58CA	58	64.4	71.2	1	93.6	4.3	1	RG	ZG
SMAF60A	SMAF60CA	60	66.7	73.7	1	96.8	4.1	1	RK	ZK
SMAF64A	SMAF64CA	64	71.1	78.6	1	103	3.9	1	RM	ZM
SMAF70A	SMAF70CA	70	77.8	86.0	1	113	3.5	1	RP	ZP
SMAF75A	SMAF75CA	75	83.3	92.1	1	121	3.3	1	RR	ZR
SMAF78A	SMAF78CA	78	86.7	95.8	1	126	2.2	1	RT	ZT
SMAF85A	SMAF85CA	85	94.4	104	1	137	2.9	1	RV	ZV
SMAF90A	SMAF90CA	90	100	111	1	146	2.7	1	RX	ZX
SMAF100A	SMAF100CA	100	111	123	1	162	2.5	1	RZ	ZZ
SMAF110A	SMAF110CA	110	122	135	1	177	2.3	1	SE	VE
SMAF120A	SMAF120CA	120	133	147	1	193	2.1	1	SG	VG
SMAF130A	SMAF130CA	130	144	159	1	209	1.9	1	SK	VK
SMAF150A	SMAF150CA	150	167	185	1	243	1.6	1	SM	VM
SMAF160A	SMAF160CA	160	178	197	1	259	1.5	1	SP	VP
SMAF170A	SMAF170CA	170	189	209	1	275	1.5	1	SR	VR
SMAF180A	SMAF180CA	180	201	222	1	292	1.4	1	ST	VT
SMAF200A	SMAF200CA	200	224	247	1	324	1.2	1	SV	VV

**Electrical Characteristics @ 25°C Unless Otherwise Specified**

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			MIN	MAX	$I_T$ (mA)				UNI	BI
UNI-POLAR	BI-POLAR	(VOLTS)				(VOLTS)	(AMPS)	( $\mu$ A)		
SMAF220A	SMAF220CA	220	246	272	1	356	1.1	1	SX	VX
SMAF250A	SMAF250CA	250	279	309	1	405	1.0	1	SZ	VZ
SMAF300A	SMAF300CA	300	335	371	1	486	0.8	1	TE	UE

For bi-directional type having  $V_{rwm}$  of 10 Volts and less, the  $I_R$  limit is double.

**Curve Characteristics**

Fig. 1 - Peak Pulse Power Rating Curve

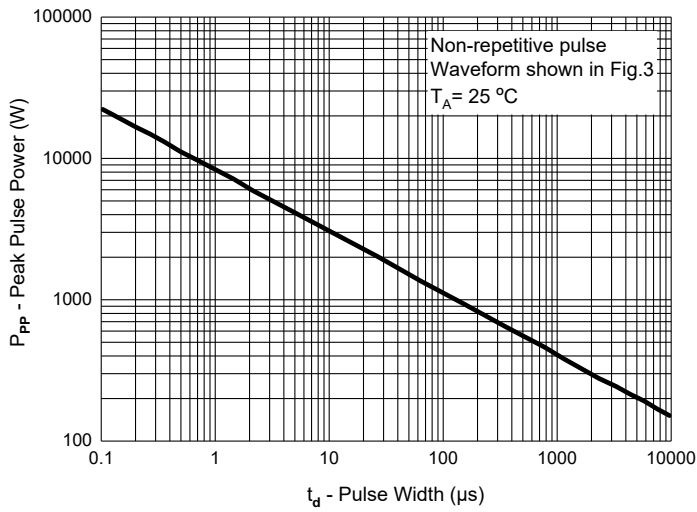


Fig. 2 - Typical Junction Capacitance

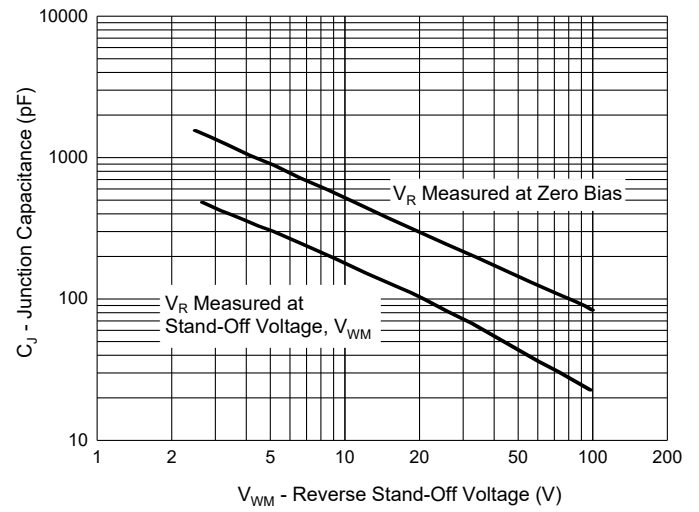


Fig. 3 - Pulse Waveform

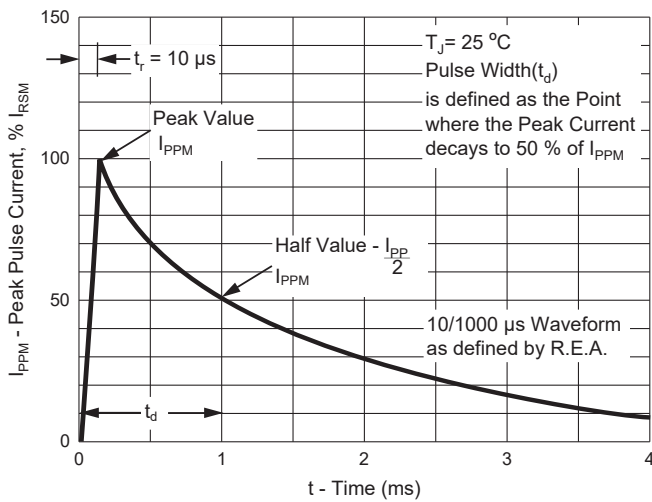


Fig. 4 - Pulse Derating Curve

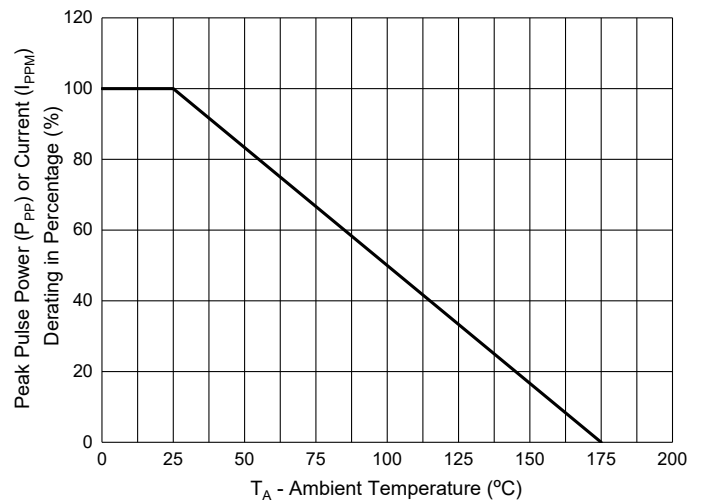
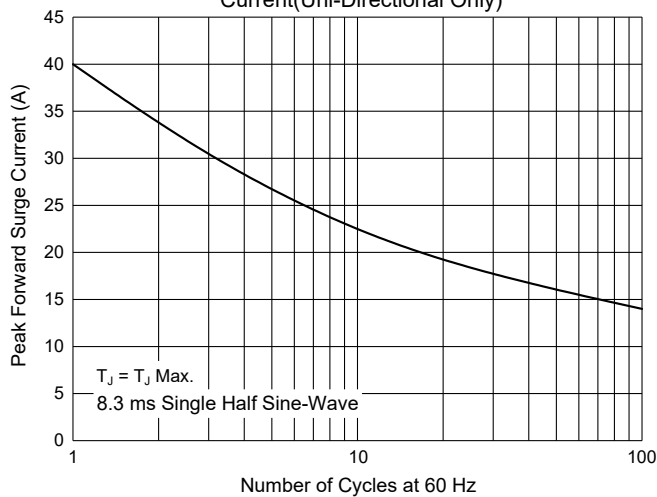


Fig. 5 - Maximum Non-Repetitive Peak Forward Surge Current(Uni-Directional Only)



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel:10Kpcs/Reel

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