



Surface Mount Transient Voltage Suppressors (TVS)

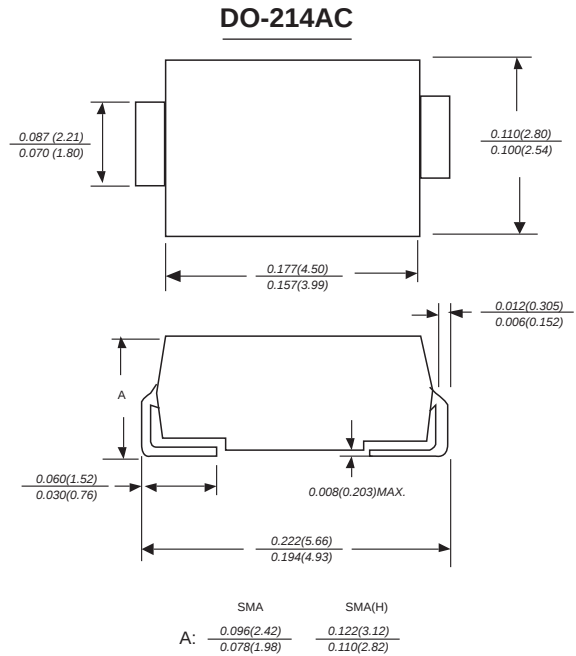
Features

- Glass Passivated Die Construction
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Material: UL Flammability

Classification Rating 94V-0

Mechanical Data

- Case: SMA/DO-214AC, Molded Plastic
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number
- Weight: 0.064 grams (approx.)



Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Non repetitive current pulse derated above $T_A = 25^\circ\text{C}$) (Note 1)	P_{PK}	400	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Notes 1, 2, & 3)	I_{FSM}	40	A
Instantaneous Forward Voltage @ $I_{PP} = 35\text{A}$ (Notes 1, 2, & 3)	V_F	3.5	V
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

- Notes:
1. Valid provided that terminals are kept at ambient temperature.
 2. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
 3. Unidirectional units only.

ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$, continued

TYPE		Reverse Stand-Off Voltage	Breakdown Voltage Min. @ I_T	Breakdown Voltage Max. @ I_T	Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
(Uni)	(Bi)	V_{RWM} (V)	$V_{BR\ MIN}(V)$	$V_{BR\ MAX}(V)$	I_T (mA)	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
1SMA5.0	1SMA5.0C	5.0	6.40	7.55	10.0	9.6	41.7	800.0
1SMA5.0A	1SMA5.0CA	5.0	6.40	7.25	10.0	9.2	43.5	800.0
1SMA6.0	1SMA6.0C	6.0	6.67	8.45	10.0	11.4	35.1	800.0
1SMA6.0A	1SMA6.0CA	6.0	6.67	7.67	10.0	10.3	38.8	800.0
1SMA6.5	1SMA6.5C	6.5	7.22	9.14	10.0	12.3	32.5	500.0
1SMA6.5A	1SMA6.5CA	6.5	7.22	8.30	10.0	11.2	35.7	500.0
1SMA7.0	1SMA7.0C	7.0	7.78	9.86	10.0	13.3	30.1	200.0
1SMA7.0A	1SMA7.0CA	7.0	7.78	8.95	10.0	12.0	33.3	200.0
1SMA7.5	1SMA7.5C	7.5	8.33	10.67	1.0	14.3	28.0	100.0
1SMA7.5A	1SMA7.5CA	7.5	8.33	9.58	1.0	12.9	31.0	100.0
1SMA8.0	1SMA8.0C	8.0	8.89	11.3	1.0	15.0	26.7	50.0
1SMA8.0A	1SMA8.0CA	8.0	8.89	10.23	1.0	13.6	29.4	50.0
1SMA8.5	1SMA8.5C	8.5	9.44	11.92	1.0	15.9	25.2	20.0
1SMA8.5A	1SMA8.5CA	8.5	9.44	10.82	1.0	14.4	27.8	20.0
1SMA9.0	1SMA9.0C	9.0	10.0	12.6	1.0	16.9	23.7	10.0
1SMA9.0A	1SMA9.0CA	9.0	10.0	11.5	1.0	15.4	26.0	10.0
1SMA10	1SMA10C	10	11.1	14.1	1.0	18.8	21.3	5.0
1SMA10A	1SMA10CA	10	11.1	12.8	1.0	17.0	23.5	5.0
1SMA11	1SMA11C	11	12.2	15.4	1.0	20.1	19.9	5.0
1SMA11A	1SMA11CA	11	12.2	14.0	1.0	18.2	22.0	5.0
1SMA12	1SMA12C	12	13.3	16.9	1.0	22.0	18.2	5.0
1SMA12A	1SMA12CA	12	13.3	15.3	1.0	19.9	20.1	5.0
1SMA13	1SMA13C	13	14.4	18.2	1.0	23.8	16.8	5.0
1SMA13A	1SMA13CA	13	14.4	16.5	1.0	21.5	18.6	5.0
1SMA14	1SMA14C	14	15.6	19.8	1.0	25.8	15.5	5.0
1SMA14A	1SMA14CA	14	15.6	17.9	1.0	23.2	17.2	5.0
1SMA15	1SMA15C	15	16.7	21.1	1.0	26.9	14.9	5.0
1SMA15A	1SMA15CA	15	16.7	19.2	1.0	24.4	16.4	5.0
1SMA16	1SMA16C	16	17.8	22.6	1.0	28.8	13.9	5.0
1SMA16A	1SMA16CA	16	17.8	20.5	1.0	26.0	15.4	5.0
1SMA17	1SMA17C	17	18.9	23.9	1.0	30.5	13.1	5.0
1SMA17A	1SMA17CA	17	18.9	21.7	1.0	27.6	14.5	5.0
1SMA18	1SMA18C	18	20.0	25.3	1.0	32.2	12.4	5.0
1SMA18A	1SMA18CA	18	20.0	23.3	1.0	29.2	13.7	5.0
1SMA20	1SMA20C	20	22.2	28.1	1.0	35.8	11.2	5.0
1SMA20A	1SMA20CA	20	22.2	25.5	1.0	32.4	12.3	5.0
1SMA22	1SMA22C	22	24.4	30.9	1.0	39.4	10.2	5.0
1SMA22A	1SMA22CA	22	24.4	28.0	1.0	35.5	11.3	5.0

TYPE		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
(Uni)	(Bi)	R _{WM} (V)	V _{BR} MIN(V)	V _{BR} MAX (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
1SMA24	1SMA24C	24	26.7	33.8	1.0	43.0	9.3	5.0
1SMA24A	1SMA24CA	24	26.7	30.7	1.0	38.9	10.3	5.0
1SMA26	1SMA26C	26	28.9	36.6	1.0	46.6	8.6	5.0
1SMA26A	1SMA26CA	26	28.9	33.2	1.0	42.1	9.5	5.0
1SMA28	1SMA28C	28	31.1	39.4	1.0	50.0	8.0	5.0
1SMA28A	1SMA28CA	28	31.1	35.8	1.0	45.4	8.8	5.0
1SMA30	1SMA30C	30	33.3	42.2	1.0	53.5	7.5	5.0
1SMA30A	1SMA30CA	30	33.3	38.3	1.0	48.4	8.3	5.0
1SMA33	1SMA33C	33	36.7	46.5	1.0	59.0	6.8	5.0
1SMA33A	1SMA33CA	33	36.7	42.2	1.0	53.3	7.5	5.0
1SMA36	1SMA36C	36	40.0	50.7	1.0	64.3	6.2	5.0
1SMA36A	1SMA36CA	36	40.0	46.0	1.0	58.1	6.9	5.0
1SMA40	1SMA40C	40	44.4	56.3	1.0	71.4	5.6	5.0
1SMA40A	1SMA40CA	40	44.4	51.1	1.0	64.5	6.2	5.0
1SMA43	1SMA43C	43	47.7	60.5	1.0	76.7	5.2	5.0
1SMA43A	1SMA43CA	43	47.8	54.9	1.0	69.4	5.8	5.0
1SMA45	1SMA45C	45	50.0	63.3	1.0	80.3	5.0	5.0
1SMA45A	1SMA45CA	45	50.0	57.5	1.0	72.7	5.5	5.0
1SMA48	1SMA48C	48	53.3	67.5	1.0	85.5	4.7	5.0
1SMA48A	1SMA48CA	48	53.3	61.3	1.0	77.4	5.2	5.0
1SMA51	1SMA51C	51	56.7	71.8	1.0	91.1	4.4	5.0
1SMA51A	1SMA51CA	51	56.7	65.2	1.0	82.4	4.9	5.0
1SMA54	1SMA54C	54	60.0	76.0	1.0	96.3	4.2	5.0
1SMA54A	1SMA54CA	54	60.0	69.0	1.0	87.1	4.6	5.0
1SMA58	1SMA58C	58	64.4	81.6	1.0	103	3.9	5.0
1SMA58A	1SMA58CA	58	64.4	74.1	1.0	93.6	4.3	5.0
1SMA60	1SMA60C	60	66.7	84.5	1.0	107	3.7	5.0
1SMA60A	1SMA60CA	60	66.7	76.7	1.0	96.8	4.1	5.0
1SMA64	1SMA64C	64	71.1	90.1	1.0	114	3.5	5.0
1SMA64A	1SMA64CA	64	71.1	81.8	1.0	103	3.9	5.0
1SMA70	1SMA70C	70	77.8	98.6	1.0	125	3.2	5.0
1SMA70A	1SMA70CA	70	77.8	89.5	1.0	113	3.5	5.0
1SMA75	1SMA75C	75	83.0	105.7	1.0	134	3.0	5.0
1SMA75A	1SMA75CA	75	83.0	95.8	1.0	121	3.3	5.0
1SMA78	1SMA78C	78	86.0	109.8	1.0	139	2.9	5.0
1SMA78A	1SMA78CA	78	86.0	99.7	1.0	126	3.2	5.0
1SMA85	1SMA85C	85	94.0	119.2	1.0	151	2.6	5.0
1SMA85A	1SMA85CA	85	94.0	108.2	1.0	137	2.9	5.0

TYPE		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I _T	Breakdown Voltage Max. @ I _T	Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
(Uni)	(Bi)	V _{RWM} (V)	V _{BR MIN} (V)	V _{BR MAX} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (uA)
1SMA90	1SMA90C	90	100	126.5	1.0	160	2.5	5.0
1SMA90A	1SMA90CA	90	100	115.5	1.0	146	2.7	5.0
1SMA100	1SMA100C	100	111	141.0	1.0	179	2.2	5.0
1SMA100A	1SMA100CA	100	111	128.0	1.0	162	2.5	5.0
1SMA110	1SMA110C	110	122	154.5	1.0	196	2.0	5.0
1SMA110A	1SMA110CA	110	122	140.5	1.0	177	2.3	5.0
1SMA120	1SMA120C	120	133	169.0	1.0	214	1.9	5.0
1SMA120A	1SMA120CA	120	133	153.0	1.0	193	2.1	5.0
1SMA130	1SMA130C	130	144	182.5	1.0	231	1.7	5.0
1SMA130A	1SMA130CA	130	144	165.5	1.0	209	1.9	5.0
1SMA150	1SMA150C	150	167	211.5	1.0	268	1.5	5.0
1SMA150A	1SMA150CA	150	167	192.5	1.0	243	1.6	5.0
1SMA160	1SMA160C	160	178	226.0	1.0	287	1.4	5.0
1SMA160A	1SMA160CA	160	178	205.0	1.0	259	1.5	5.0
1SMA170	1SMA170C	170	189	239.5	1.0	304	1.3	5.0
1SMA170A	1SMA170CA	170	189	217.5	1.0	275	1.5	5.0
1SMA180	1SMA180C	180	200	253.8	1.0	321	1.2	5.0
1SMA180A	1SMA180CA	180	200	230.4	1.0	290	1.4	5.0
1SMA190	1SMA190C	190	211	267.9	1.0	339	1.2	5.0
1SMA190A	1SMA190CA	190	211	243.2	1.0	306	1.3	5.0
1SMA200	1SMA200C	200	222	282.0	1.0	356	1.1	5.0
1SMA200A	1SMA200CA	200	222	256.0	1.0	322	1.2	5.0
1SMA220	1SMA220C	220	244	310.2	1.0	392	1.0	5.0
1SMA220A	1SMA220CA	220	244	281.6	1.0	355	1.1	5.0
1SMA250	1SMA250C	250	278	342.5	1.0	447	0.9	5.0
1SMA250A	1SMA250CA	250	278	309.0	1.0	403	1.0	5.0
1SMA300	1SMA300C	300	333	411.0	1.0	535	0.7	5.0
1SMA300A	1SMA300CA	300	333	371.0	1.0	484	0.8	5.0
1SMA350	1SMA350C	350	389	479.5	1.0	624	0.6	5.0
1SMA350A	1SMA350CA	350	389	432.0	1.0	565	0.7	5.0
1SMA400	1SMA400C	400	444	548.0	1.0	687	0.6	5.0
1SMA400A	1SMA400CA	400	444	494.0	1.0	645	0.6	5.0
1SMA440	1SMA440C	440	489	602.8	1.0	786	0.5	5.0
1SMA440A	1SMA440CA	440	489	543.0	1.0	710	0.6	5.0

Characteristic Curves $T_A = 25^\circ\text{C}$ unless otherwise noted

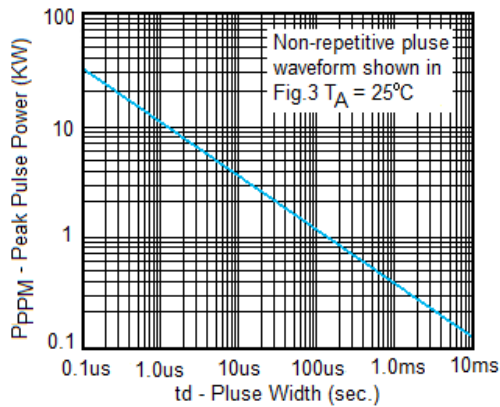


Fig. 1 Peak Pulse Power Rating

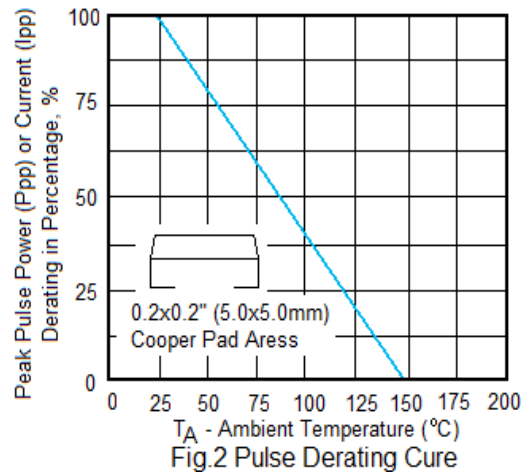


Fig. 2 Pulse Derating Curve

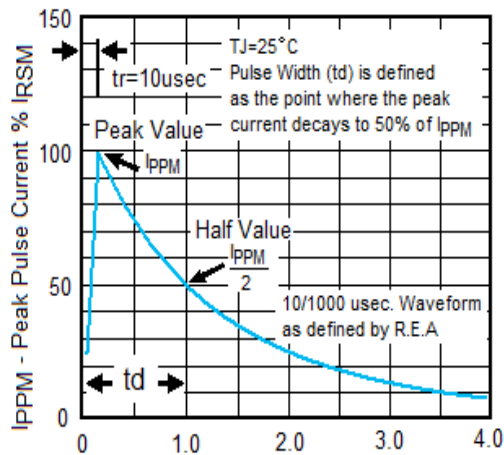


Fig. 3 Pulse Waveform

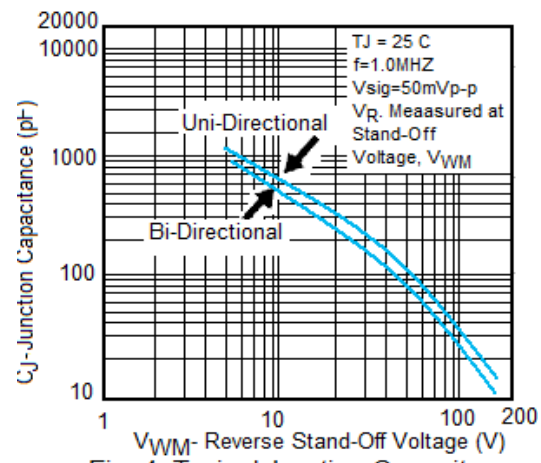
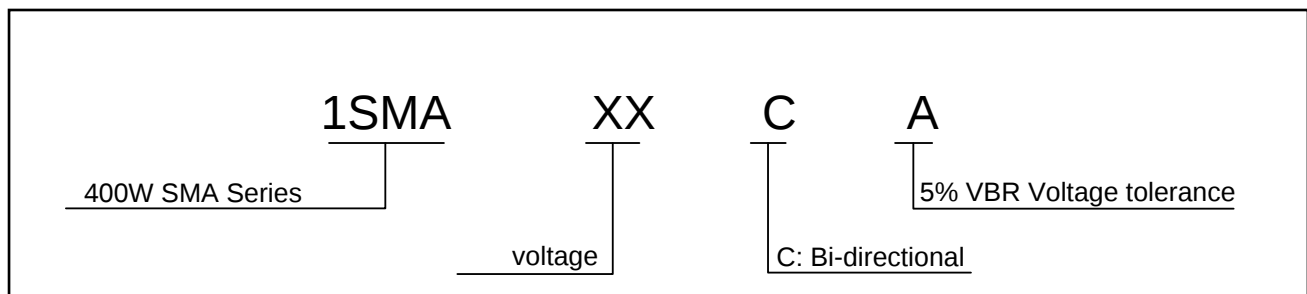


Fig. 4- Typical Junction Capacitance

Ordering Information





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