

Features

- 1500W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

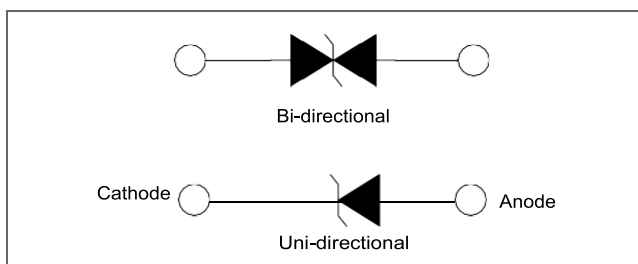
RoHS
Compliant



Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Function Diagram



Maximum Ratings and Thermal Characteristics (T _A =25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T _A =25°C by 10/1000 μ s Waveform (Fig.3)	P _{PPM}	1500	W
Power Dissipation on Infinite Heat Sink at T _L =50°C	P _D	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I _{FSM}	200	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2)	V _F	3.5/5	V
Operating Temperature Range	T _J	-55 to 150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

AGENCY	AGENCY FILE NUMBER
	Pending

Notes:

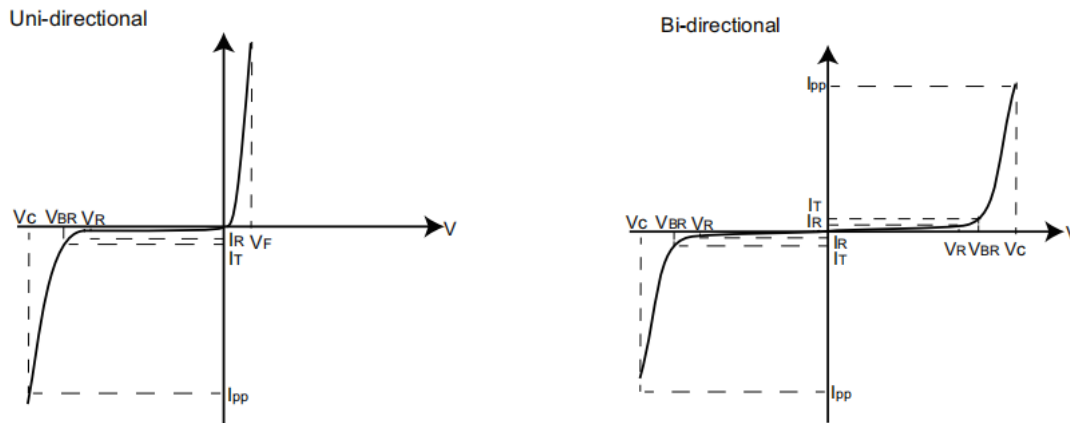
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
2. V_F < 3.5V for single die parts and V_F < 5V for stacked-die parts.

Characteristics (T = 25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking UNI BI		Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{nn} (V)	Maximum Peak Pulse Current I _{pp} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Agency Approval 
					MIN	MAX					
1.5SMC6.8A	1.5SMC6.8CA	F106E	F106E	5.80	6.45	7.14	10	10.5	144.8	1000	
1.5SMC7.5A	1.5SMC7.5CA	F107F	F107F	6.40	7.13	7.88	10	11.3	134.5	500	
1.5SMC8.2A	1.5SMC8.2CA	F108T	F108T	7.02	7.79	8.61	10	12.1	125.6	200	
1.5SMC9.1A	1.5SMC9.1CA	F109O	F109O	7.78	8.65	9.50	1	13.4	113.4	50	
1.5SMC10A	1.5SMC10CA	F1010	F1010	8.55	9.50	10.50	1	14.5	104.8	10	
1.5SMC11A	1.5SMC11CA	F1011	F1011	9.40	10.50	11.60	1	15.6	97.4	5	
1.5SMC12A	1.5SMC12CA	F1012	F1012	10.2	11.4	12.60	1	16.7	91.0	5	
1.5SMC13A	1.5SMC13CA	F1013	F1013	11.1	12.4	13.70	1	18.2	83.5	1	
1.5SMC15A	1.5SMC15CA	F1015	F1015	12.8	14.3	15.80	1	21.2	71.7	1	
1.5SMC16A	1.5SMC16CA	F1016	F1016	13.6	15.2	16.80	1	22.5	67.6	1	
1.5SMC18A	1.5SMC18CA	F1018	F1018	15.3	17.1	18.90	1	25.2	60.3	1	
1.5SMC20A	1.5SMC20CA	F1020	F1020	17.1	19.00	21.00	1	27.7	54.9	1	
1.5SMC22A	1.5SMC22CA	F1022	F1022	18.8	20.9	23.10	1	30.6	49.7	1	
1.5SMC24A	1.5SMC24CA	F1024	F1024	20.5	22.8	25.20	1	33.2	45.8	1	
1.5SMC27A	1.5SMC27CA	F1027	F1027	23.1	25.7	28.40	1	37.5	40.5	1	
1.5SMC30A	1.5SMC30CA	F1030	F1030	25.6	28.5	31.50	1	41.4	36.7	1	
1.5SMC33A	1.5SMC33CA	F1033	F1033	28.2	31.4	34.70	1	45.7	33.3	1	
1.5SMC36A	1.5SMC36CA	F1036	F1036	30.8	34.2	37.80	1	49.9	30.5	1	
1.5SMC39A	1.5SMC39CA	F1039	F1039	33.3	37.1	41.00	1	53.9	28.2	1	
1.5SMC43A	1.5SMC43CA	F1043	F1043	36.8	40.9	45.20	1	59.3	25.6	1	
1.5SMC47A	1.5SMC47CA	F1047	F1047	40.2	44.7	49.40	1	64.8	23.5	1	
1.5SMC51A	1.5SMC51CA	F1051	F1051	43.6	48.5	53.60	1	70.1	21.7	1	
1.5SMC56A	1.5SMC56CA	F1056	F1056	47.8	53.2	58.80	1	77.0	19.7	1	
1.5SMC62A	1.5SMC62CA	F1062	F1062	53.0	58.9	65.10	1	85.0	17.9	1	
1.5SMC68A	1.5SMC68CA	F1068	F1068	58.1	64.6	71.40	1	92.0	16.5	1	
1.5SMC75A	1.5SMC75CA	F1075	F1075	64.1	71.3	78.80	1	103.0	14.8	1	
1.5SMC82A	1.5SMC82CA	F1082	F1082	70.1	77.9	86.10	1	113.0	13.5	1	
1.5SMC91A	1.5SMC91CA	F1091	F1091	77.8	86.5	95.50	1	125.0	12.2	1	
1.5SMC100A	1.5SMC100CA	F1100	F1100	85.5	95.0	105.0	1	137.0	11.1	1	
1.5SMC110A	1.5SMC110CA	F1110	F1110	94.0	105.0	116.0	1	152.0	10.0	1	
1.5SMC120A	1.5SMC120CA	F1120	F1120	102.0	114.0	126.0	1	165.0	9.2	1	
1.5SMC130A	1.5SMC130CA	F1130	F1130	111.0	124.0	137.0	1	179.0	8.5	1	
1.5SMC150A	1.5SMC150CA	F1150	F1150	128.0	143.0	158.0	1	207.0	7.3	1	
1.5SMC160A	1.5SMC160CA	F1160	F1160	136.0	152.0	168.0	1	219.0	6.9	1	
1.5SMC170A	1.5SMC170CA	F1170	F1170	145.0	162.0	179.0	1	234.0	6.5	1	
1.5SMC180A	1.5SMC180CA	F1180	F1180	154.0	171.0	189.0	1	246.0	6.2	1	
1.5SMC200A	1.5SMC200CA	F1200	F1200	171.0	190.0	210.0	1	274.0	5.5	1	
1.5SMC220A	1.5SMC220CA	F1220	F1220	185.0	209.0	231.0	1	328.0	4.6	1	
1.5SMC250A	1.5SMC250CA	F1250	F1250	214.0	237.0	263.0	1	344.0	4.4	1	
1.5SMC300A	1.5SMC300CA	F1300	F1300	256.0	285.0	315.0	1	414.0	3.7	1	
1.5SMC350A	1.5SMC350CA	F1350	F1350	299.3	332.5	367.5	1	482.0	3.1	1	
1.5SMC380A	1.5SMC380CA	F1380	F1380	324.9	361.0	399.0	1	524.4	2.9	1	

Part Number (Uni)	Part Number (Bi)	Key Marking		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{pp} (V)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Reverse Leakage IR @ V_R (μA)	Agency Approval 
		UNI	BI		MIN	MAX					
1.5SMC400A	1.5SMC400CA	F1400	F1400	342.0	380.0	420.0	1	548.0	2.7	1	
1.5SMC440A	1.5SMC440CA	F1440	F1440	376.2	418.0	462.0	1	602.0	2.5	1	
1.5SMC500A	1.5SMC500CA	F1500	F1500	427.5	475.0	525.0	1	690.0	2.2	1	
1.5SMC520A	1.5SMC520CA	F1520	F1520	444.6	494.0	546.0	1	717.6	2.1	1	
1.5SMC540A	1.5SMC540CA	F1540	F1540	460.0	513.0	567.0	1	740.0	2.0	1	
1.5SMC550A	1.5SMC550CA	F1550	F1550	470.3	522.5	577.5	1	759.0	2.0	1	
1.5SMC600A	1.5SMC600CA	F1600	F1600	513.0	570.0	630.0	1	828.0	1.8	1	

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional

Ratings and Characteristic Curves ($T = 25^{\circ}\text{C}$ unless otherwise noted)

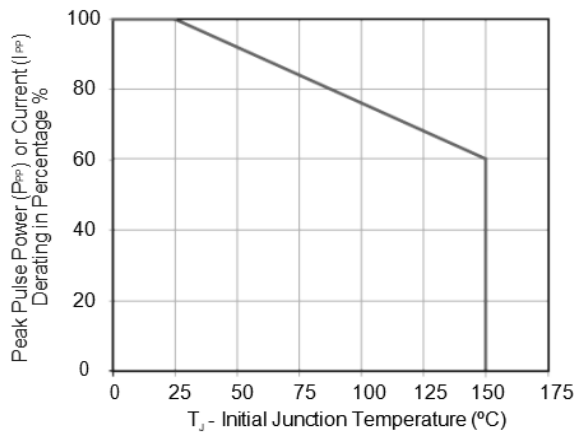


Figure 1. Peak pulse power derating curve

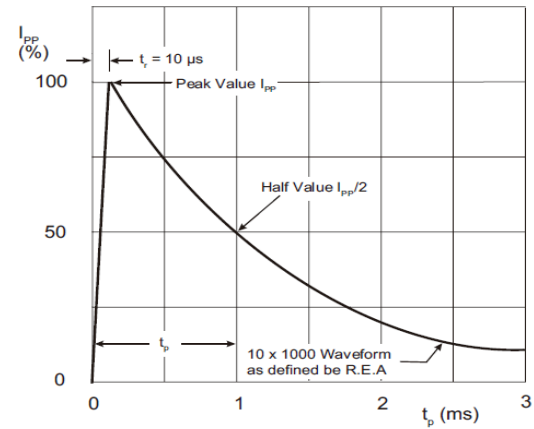


Figure2. Pulse waveform

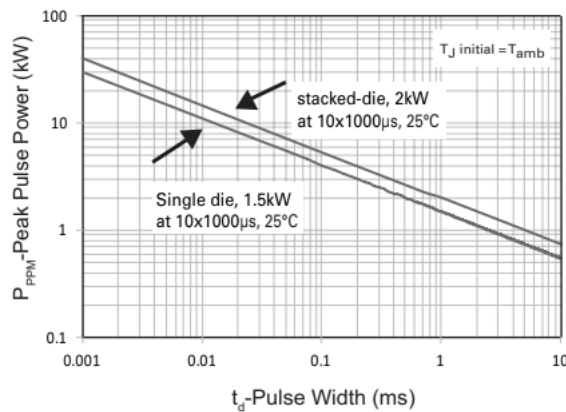


Figure 3. Peak pulse power rating curve

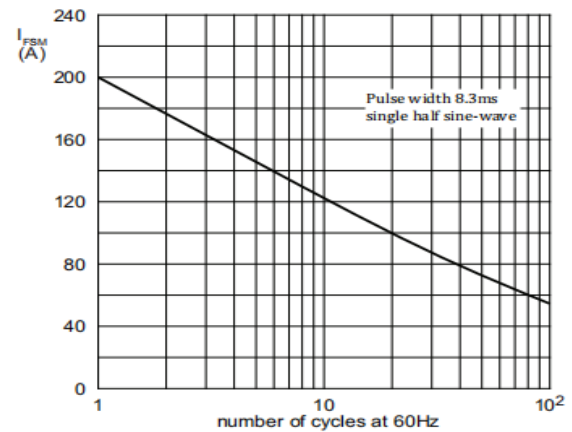
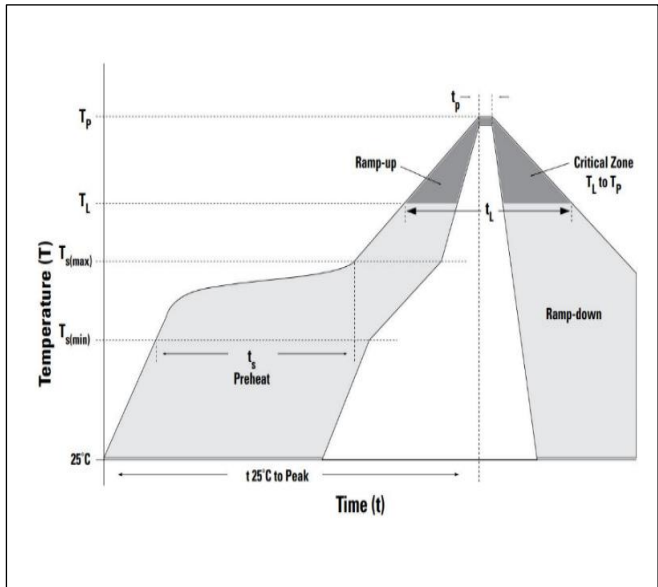


Figure 4. Maximum non-repetitive surge current

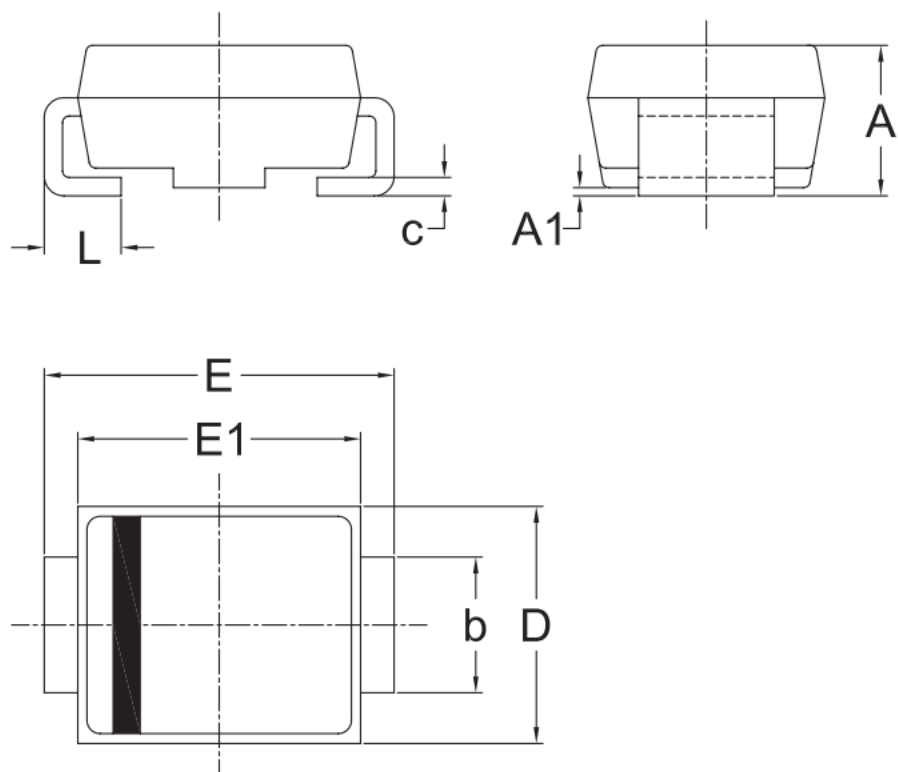
Soldering Parameters

Soldering profile

Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C

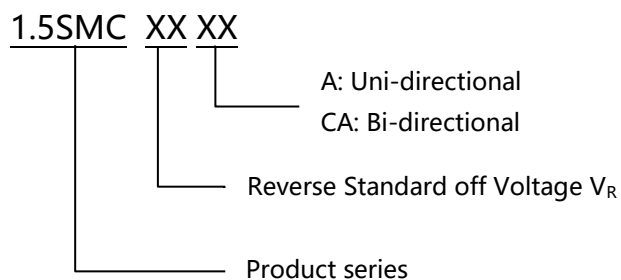


Dimensions

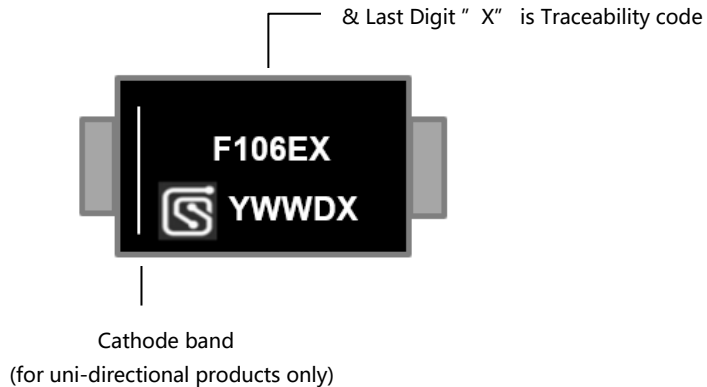


unit		A	A1	b	c	D	E	E1	L
max	mm	2.95	0.30	3.30	0.30	6.22	8.40	7.11	1.60
min		1.99	0.01	2.70	0.00	5.50	7.40	6.50	0.76

Part Numbering



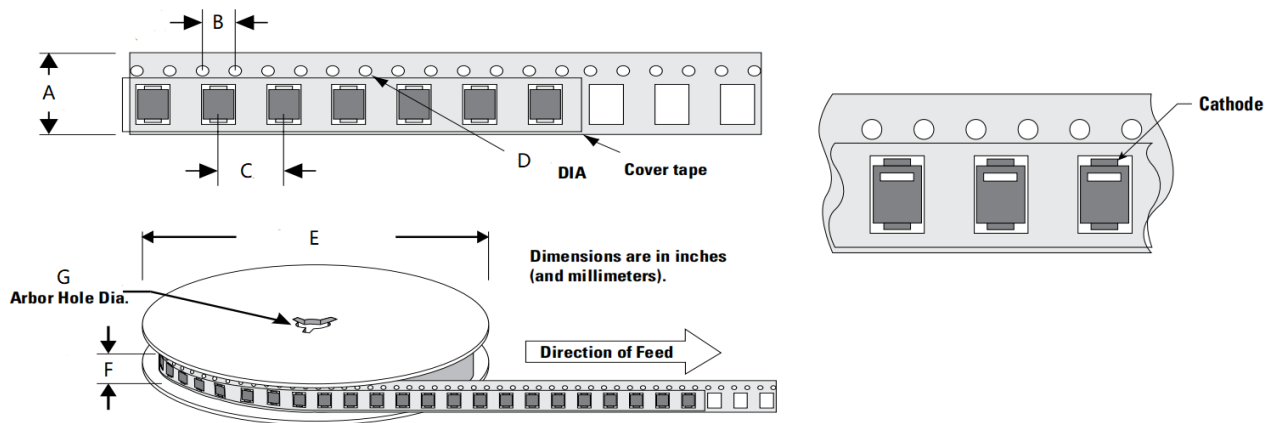
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
1.5SMCXXXX	DO-214AB	3000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	16.00±0.10
B	4.00±0.10
C	8.00±0.10
D	1.55±0.05
E	330.20±2.00
F	19.70±2.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Aug-2021
1.1	Update Marking	24-Jun-2024