

Features

- 5000W peak pulse power capability at 10/1000μs 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

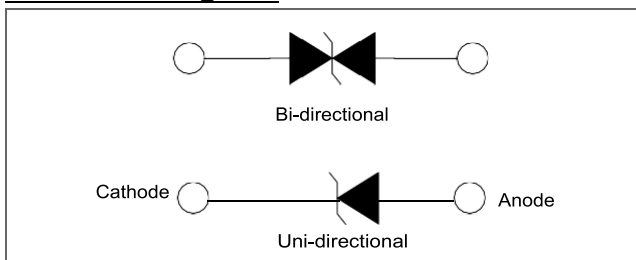
RoHS
Compliant



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 10/1000μs Waveform (Fig.3)	P _{PPM}	5000	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}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only	V _F	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:

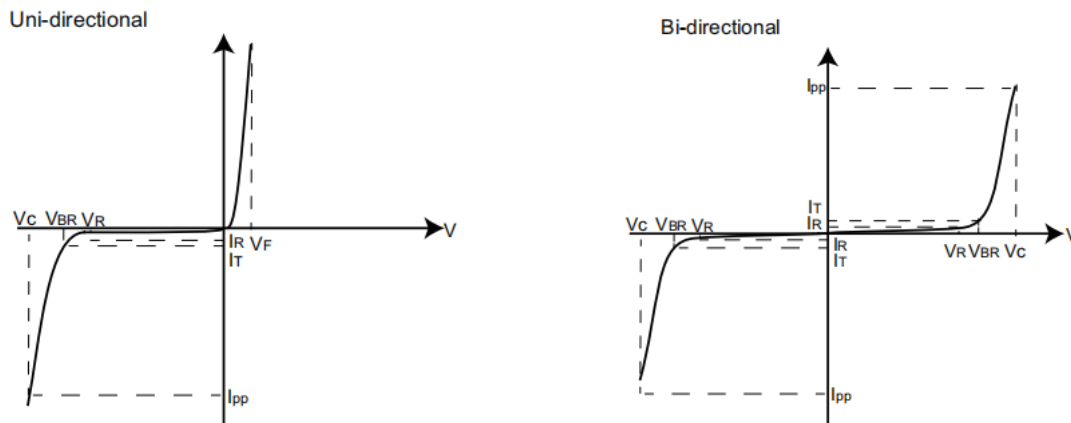
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

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 _{on} (V)	Maximum Peak Pulse Current I _{pp} (A) 10/1000uS	Maximum Clamping Voltage V _C @ I _{on} (V)	Maximum Peak Pulse Current I _{pp} (A) 8/20uS	Maximum Reverse Leakage I _R @ V _R (μA)
					MIN	MAX						
5.0SMDJ12A	5.0SMDJ12CA	5D012	5D012	12.0	13.3	14.7	10	19.9	252.0	25.7	1890.0	20
5.0SMDJ13A	5.0SMDJ13CA	5D013	5D013	13.0	14.4	15.9	10	21.5	233.0	27.8	1747.5	10
5.0SMDJ14A	5.0SMDJ14CA	5D014	5D014	14.0	15.6	17.2	10	23.2	216.0	30.0	1620.0	10
5.0SMDJ15A	5.0SMDJ15CA	5D015	5D015	15.0	16.7	18.5	1	24.4	205.0	31.5	1537.5	5
5.0SMDJ16A	5.0SMDJ16CA	5D016	5D016	16.0	17.8	19.7	1	26.0	193.0	33.6	1447.5	5
5.0SMDJ17A	5.0SMDJ17CA	5D017	5D017	17.0	18.9	20.9	1	27.6	181.0	35.7	1357.5	5
5.0SMDJ18A	5.0SMDJ18CA	5D018	5D018	18.0	20.0	22.1	1	29.2	172.0	37.7	1290.0	5
5.0SMDJ20A	5.0SMDJ20CA	5D020	5D020	20.0	22.2	24.5	1	32.4	155.0	41.9	850.0	5
5.0SMDJ22A	5.0SMDJ22CA	5D022	5D022	22.0	24.4	26.9	1	35.5	141.0	45.9	1057.5	5
5.0SMDJ24A	5.0SMDJ24CA	5D024	5D024	24.0	26.7	29.5	1	38.9	129.0	50.3	967.5	5
5.0SMDJ26A	5.0SMDJ26CA	5D026	5D026	26.0	28.9	31.9	1	42.1	119.0	54.4	892.5	5
5.0SMDJ28A	5.0SMDJ28CA	5D028	5D028	28.0	31.1	34.4	1	45.4	110.0	58.7	825.0	5
5.0SMDJ30A	5.0SMDJ30CA	5D030	5D030	30.0	33.3	36.8	1	48.4	103.0	62.5	772.5	5
5.0SMDJ33A	5.0SMDJ33CA	5D033	5D033	33.0	36.7	40.6	1	53.3	93.9	68.9	704.3	5
5.0SMDJ36A	5.0SMDJ36CA	5D036	5D036	36.0	40.0	44.2	1	58.1	86.1	75.1	645.8	5
5.0SMDJ40A	5.0SMDJ40CA	5D040	5D040	40.0	44.4	49.1	1	64.5	77.6	83.3	582.0	5
5.0SMDJ43A	5.0SMDJ43CA	5D043	5D043	43.0	47.8	52.8	1	69.4	72.1	89.7	540.8	5
5.0SMDJ45A	5.0SMDJ45CA	5D045	5D045	45.0	50.0	55.3	1	72.7	68.8	93.9	516.0	5
5.0SMDJ48A	5.0SMDJ48CA	5D048	5D048	48.0	53.3	58.9	1	77.4	64.7	100.0	485.3	5
5.0SMDJ51A	5.0SMDJ51CA	5D051	5D051	51.0	56.7	62.7	1	82.4	60.7	106.5	455.3	5
5.0SMDJ54A	5.0SMDJ54CA	5D054	5D054	54.0	60.0	66.3	1	87.1	57.5	112.5	431.3	5
5.0SMDJ58A	5.0SMDJ58CA	5D058	5D058	58.0	64.4	71.2	1	93.6	53.5	120.9	401.3	5
5.0SMDJ60A	5.0SMDJ60CA	5D060	5D060	60.0	66.7	73.7	1	96.8	51.7	125.1	387.8	5
5.0SMDJ64A	5.0SMDJ64CA	5D064	5D064	64.0	71.1	78.6	1	103.0	48.6	133.1	364.5	5
5.0SMDJ70A	5.0SMDJ70CA	5D070	5D070	70.0	77.8	86.0	1	113.0	44.3	146.0	332.3	5
5.0SMDJ75A	5.0SMDJ75CA	5D075	5D075	75.0	83.3	92.1	1	121.0	41.4	156.3	310.5	5
5.0SMDJ78A*	5.0SMDJ78CA*	5D078	5D078	78.0	86.7	95.8	1	126.0	39.7	162.8	297.8	5
5.0SMDJ85A*	5.0SMDJ85CA*	5D085	5D085	85.0	94.4	104.0	1	137.0	36.5	177.0	273.8	5
5.0SMDJ90A*	5.0SMDJ90CA*	5D090	5D090	90.0	100.0	111.0	1	146.0	34.3	188.6	257.3	5
5.0SMDJ100A*	5.0SMDJ100CA*	5D100	5D100	100.0	111.0	123.0	1	162.0	30.9	209.3	231.8	5
5.0SMDJ110A*	5.0SMDJ110CA*	5D110	5D110	110.0	122.0	135.0	1	177.0	28.3	228.7	212.3	5
5.0SMDJ120A*	5.0SMDJ120CA*	5D120	5D120	120.0	133.0	147.0	1	193.0	26.0	249.4	195.0	5
5.0SMDJ130A*	5.0SMDJ130CA*	5D130	5D130	130.0	144.0	159.0	1	209.0	24.0	270.0	180.0	5
5.0SMDJ140A*	5.0SMDJ140CA*	5D140	5D140	140.0	156.0	172.0	1	226.1	22.2	292.1	166.5	5
5.0SMDJ150A*	5.0SMDJ150CA*	5D150	5D150	150.0	167.0	185.0	1	243.0	20.6	314.0	154.5	5
5.0SMDJ160A*	5.0SMDJ160CA*	5D160	5D160	160.0	178.0	197.0	1	259.0	19.3	334.6	144.8	5
5.0SMDJ170A*	5.0SMDJ170CA*	5D170	5D170	170.0	189.0	209.0	1	275.0	18.2	355.3	136.5	5

For stacked-die parts, use * to label the part number.

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 though 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°C unless otherwise noted)

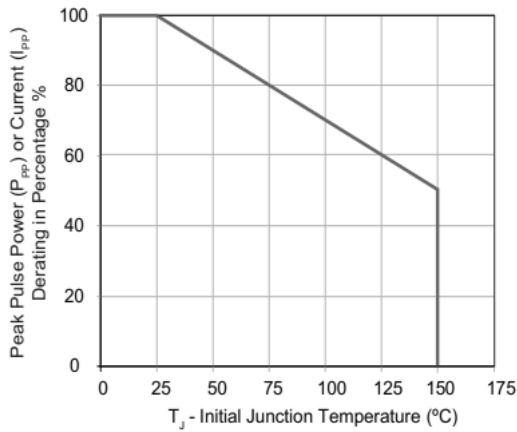


Figure 1. Peak pulse power derating curve

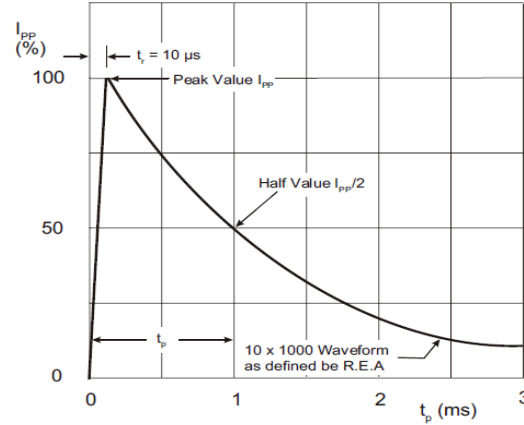


Figure2. Pulse waveform

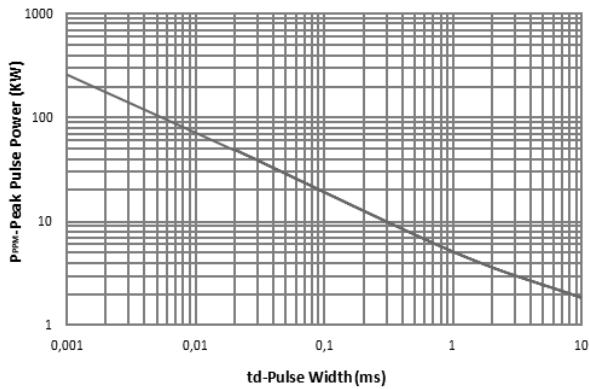


Figure 3. Peak pulse power rating curve

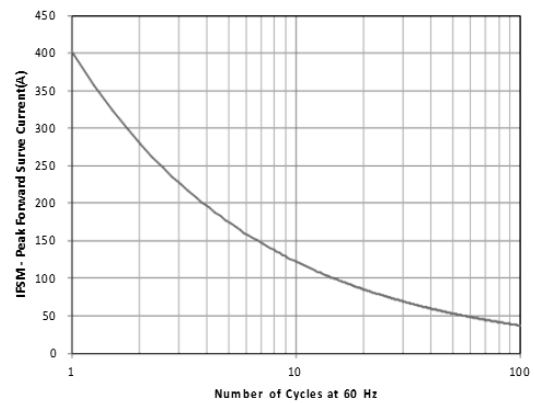
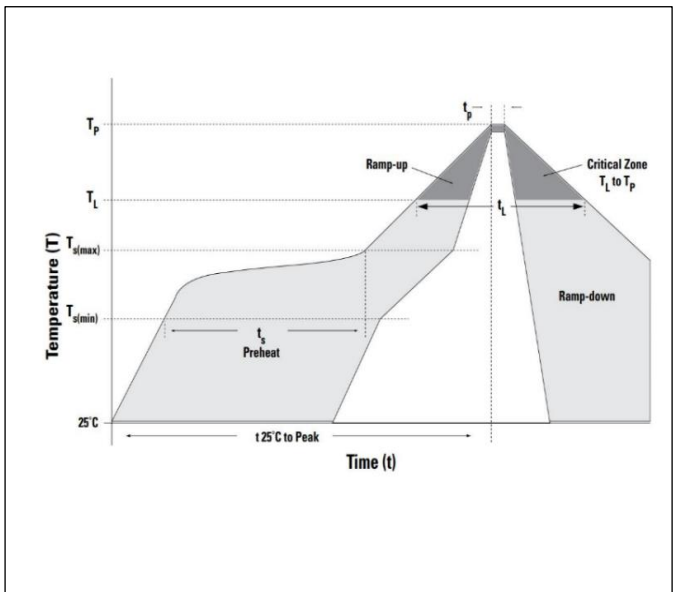


Figure 4. Maximum non-repetitive surge current

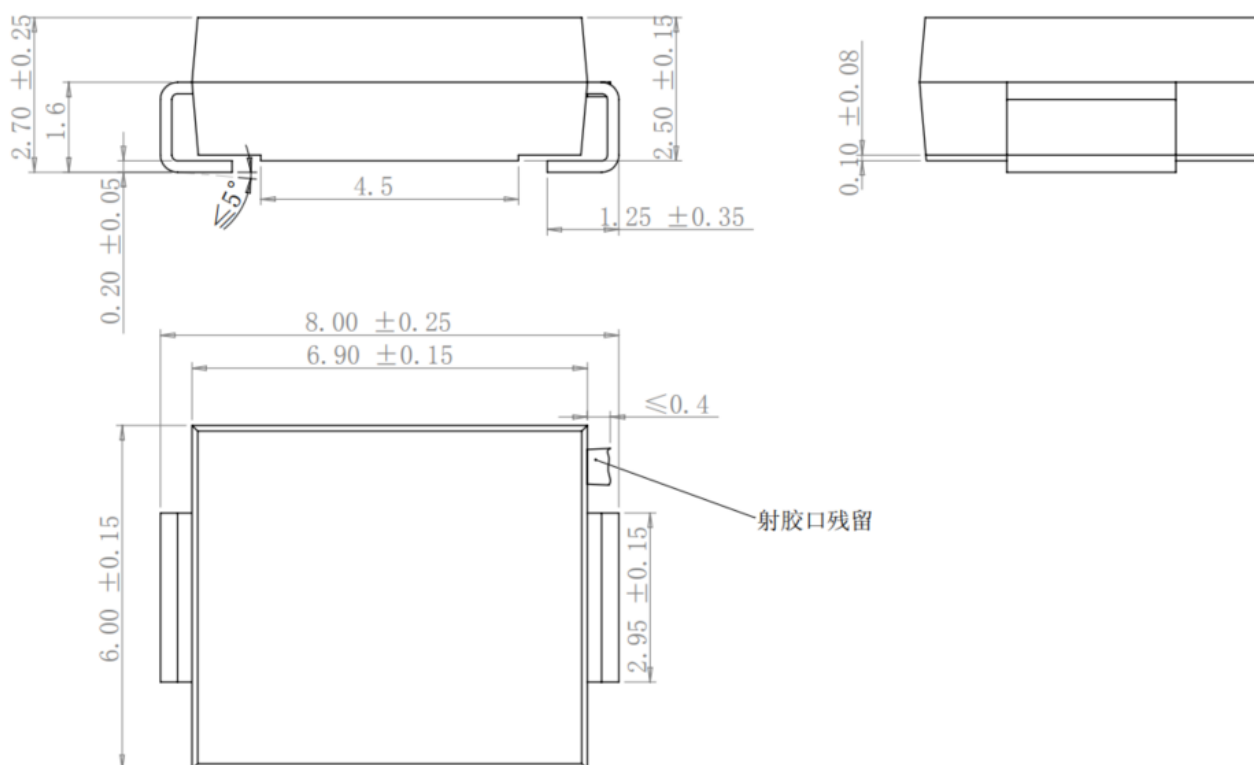
Soldering Parameters

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_r)	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

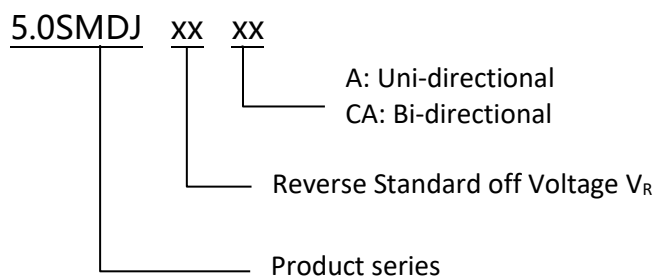
Soldering profile



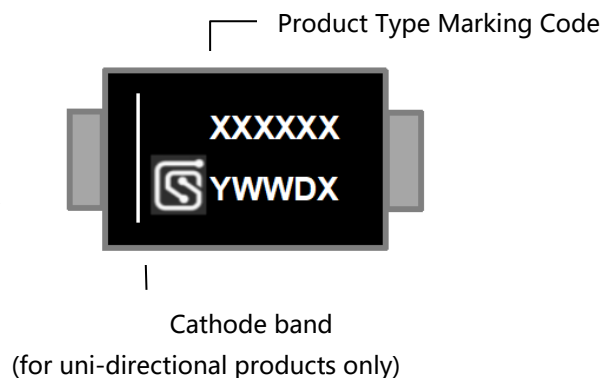
Dimensions



Part Numbering



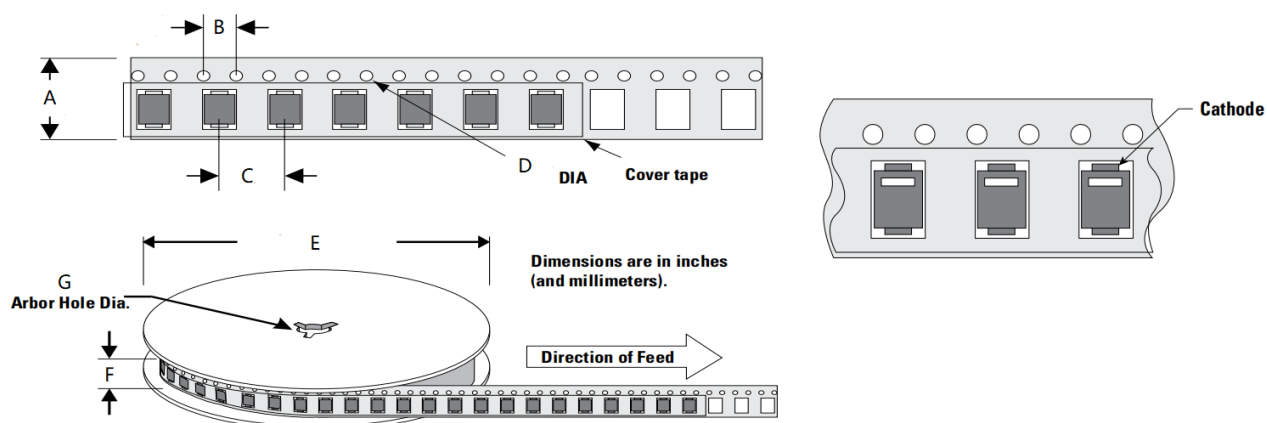
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
5.0SMDJXXXX	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	Upgrade IR Characteristics	11-Oct-2023
1.2	Update Chip Specifications	27-Feb-2025