Features

-400W peak pulse power capability at 10/1000μs waveform,

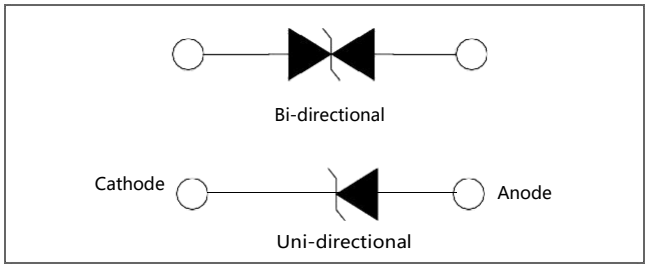
repetition rate (duty cycles):0.01%

- 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

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}	400	W
Power Dissipation on Infinite Heat Sink at T_L=50°C	P_D	1	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I_{FSM}	30	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V_F	3.5	V
Operating Temperature Range	T_J	-55 to 150	°C
Storage Temperature Range	T_{STG}	-55 to 150	°C

AGENCY	AGENCY FILE NUMBER
®RU	Pending

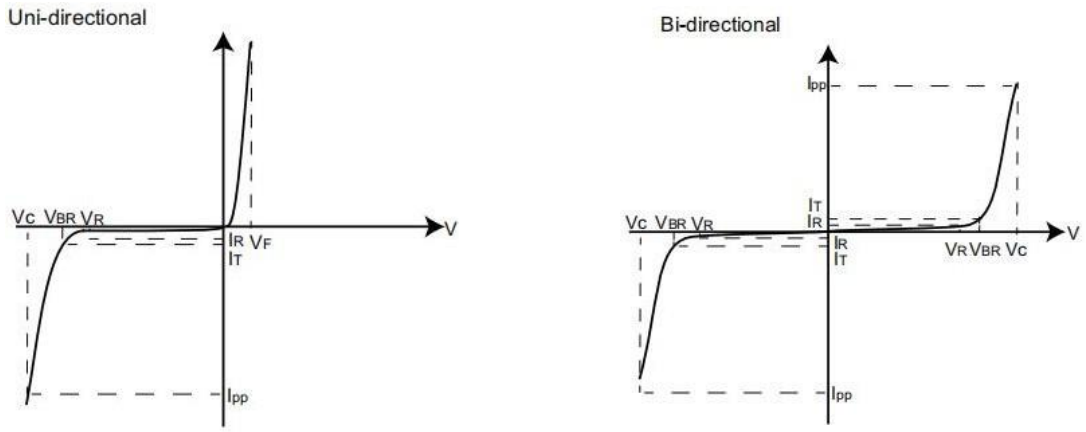
Notes:

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	Key Marking BI	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T MIN	Breakdown Voltage V_{BR} (Volts) @ I_T MAX	Test Current I_T (mA)	Maximum Clamping Voltage V_C@ I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R@ V_R (μA)	Agency Approval
HSMF4L5.5A	HSMF4L5.5CA	5F	5F	5.5	6.67	7.37	10	10.3	35.9	400	

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)

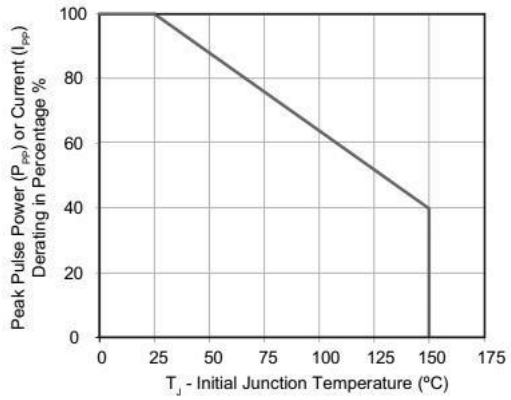


Figure 1. Peak pulse power derating curve

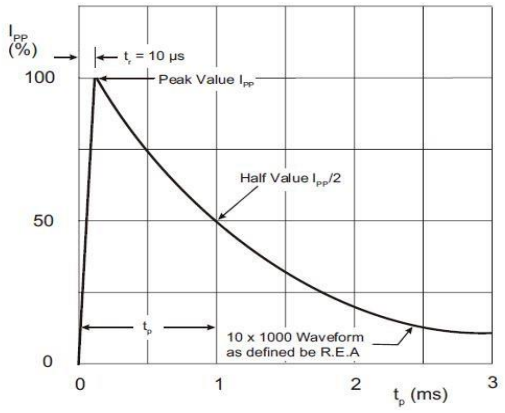


Figure2. Pulse waveform

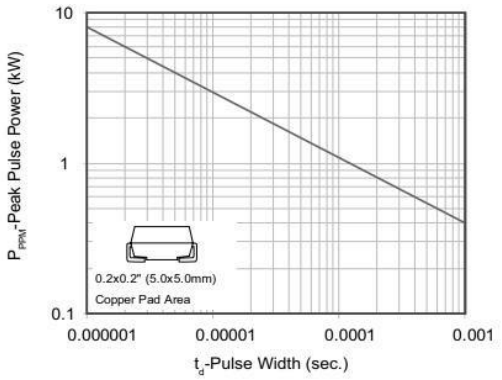


Figure3. Peak pulse power rating curve

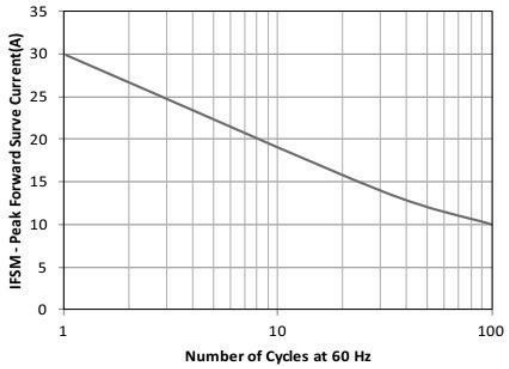
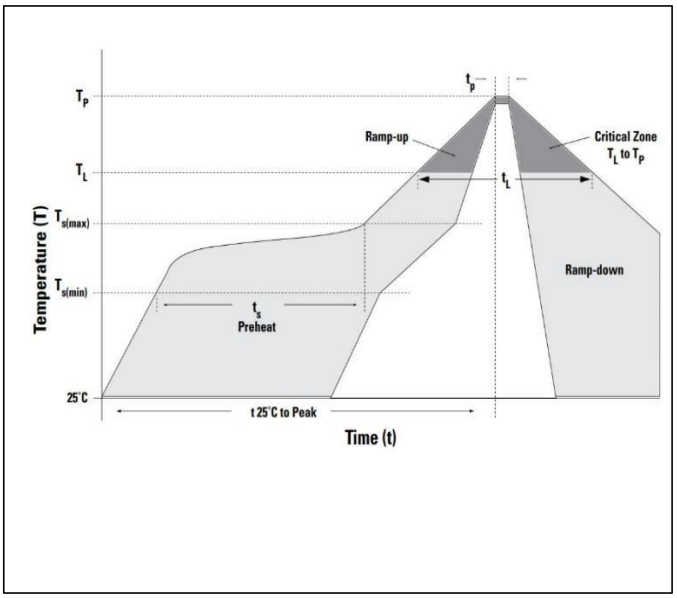


Figure4. Maximum non-repetitive surge current

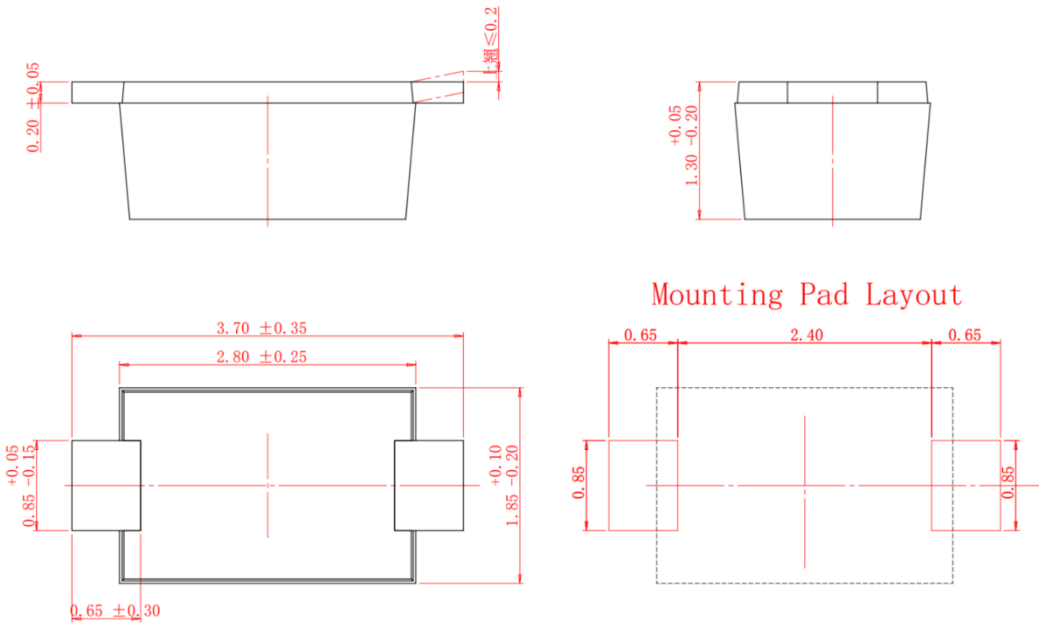
Soldering Parameters

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_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

Soldering profile



Dimensions

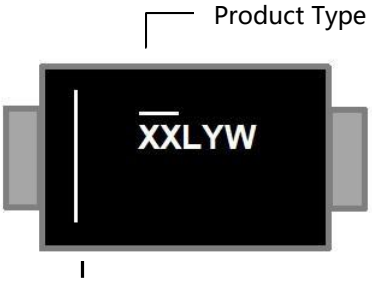


Part Numbering

HSMF4L xx xx

- xx (A: Uni-directional, CA: Bi-directional)
- xx (Reverse Standard off Voltage V_R)
- HSMF4L (Product series)

Part Marking

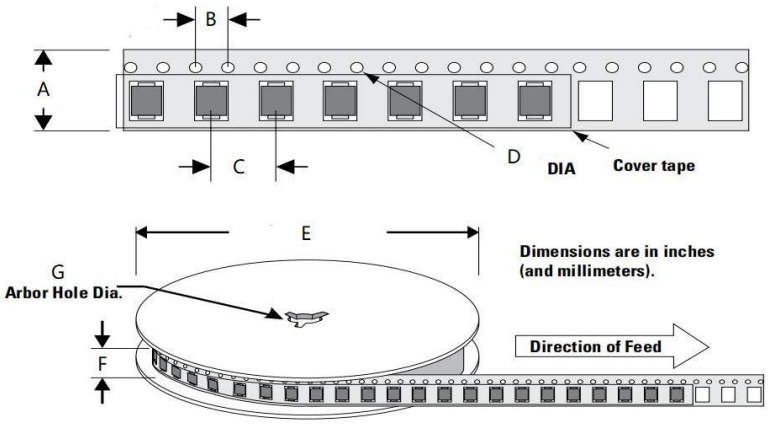


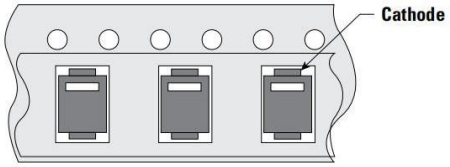
(for uni-directional products only)

Packing

Part number	Package name	Small packing quantity	Packing method
HSMF4LXXXX	SOD123F	3000	Tape & Reel

Tape and Reel Specification





Symbol	Millimeter
A	8.00±0.10
B	4.00±0.10
C	4.00±0.10
D	1.55±0.05
E	177.80±2.00
F	11.50±1.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Mar-2022
1.1	Update Package Sizes	4 -Jan- 2024