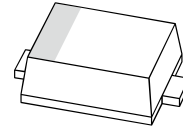


FEATURES

- ◆ Glass passivated chip
- ◆ Low leakage
- ◆ Uni and Bidirectional unit
- ◆ Excellent clamping capability
- ◆ The plastic material has U/L recognition 94V-0
- ◆ Fast response time
- ◆ AEC-Q101 qualified



MECHANICAL DATA

- ◆ Case : Molded Plastic
- ◆ Marking : Unidirectional - type number and cathode
Band Bidirectional - type number only

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

Parameter	Symbol	Value	Units
Peak Pulse Power dissipation (NOTE 1)	P_{PK}	400	Watts
Storage Temperature Range	T_{STG}	-55~150	°C
Operating Junction Temperature Range	T_J	-55~150	°C
Power Dissipation on Infinite Heat Sink at $T_L=50^{\circ}\text{C}$ (NOTE 2)	$P_{M(AV)}$	1.0	W
Peak Forward Surge Current (NOTE 3)	I_F	30	A
Maximum Instantaneous forward voltage at 25A for unidirectional devices only (NOTE 4)	V_F	3.0	V

NOTE :

1. Non-repetitive current pulse@10/1000 μs and derated above $T_A=25^{\circ}\text{C}$
2. Mounted on 5.0x5.0mm copper pad to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.
4. $V_F < 3.5\text{V}$ for $V_{BR} \leq 200\text{V}$ and $V_F < 6.5\text{V}$ for $V_{BR} \geq 201\text{V}$.

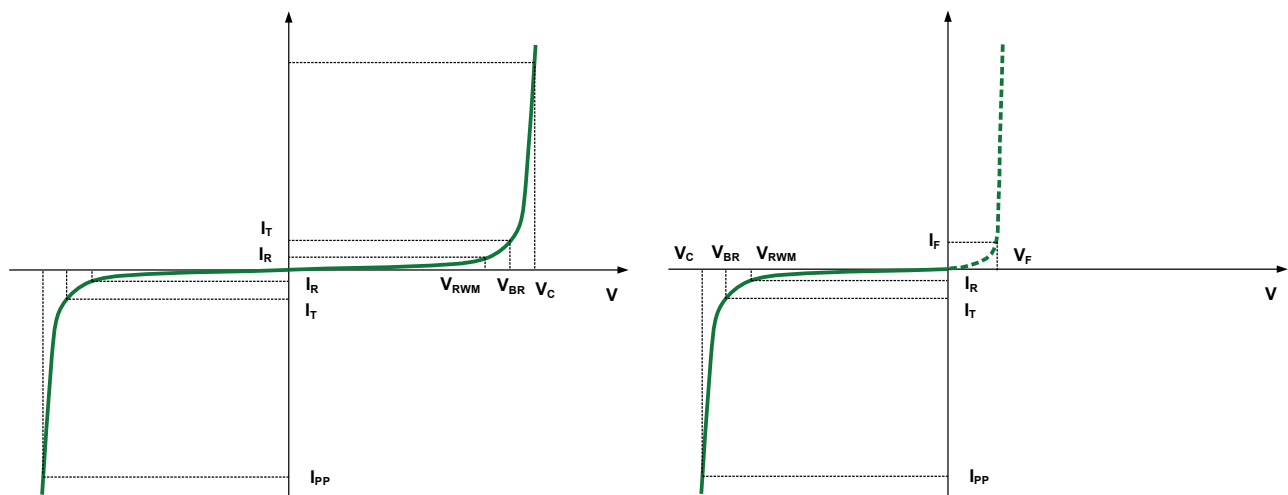
ELECTRICAL CHARACTERISTICS

Part Number		Marking Code		V _{BR} ⁽¹⁾ @I _T		I _T ⁽²⁾	V _{RM} ⁽³⁾	Maxi. I _R ⁽⁴⁾ @V _{RM}	Maxi. V _C ⁽⁵⁾ @I _{PP}	Maxi. I _{PP} ⁽⁶⁾
Uni	Bi	Uni	Bi	MIN (V)	MAX (V)	mA	V	μA	V	A
SMF5.0AL	SMF5.0CAL	AE	5CL	6.40	7.25	10	5	400	9.2	43.5
SMF6.0AL	SMF6.0CAL	AG	6CL	6.45	7.37	10	6	400	10.3	38.8
SMF6.5AL	SMF6.5CAL	AK	6VCL	7.22	7.98	10	6.5	250	11.2	35.7
SMF7.0AL	SMF7.0CAL	AM	7CL	7.78	8.6	10	7	100	12	33.3
SMF7.5AL	SMF7.5CAL	AP	7VCL	8.33	9.21	1	7.5	50	12.9	31
SMF8.0AL	SMF8.0CAL	AR	8CL	8.89	9.83	1	8	25	13.6	29.4
SMF9.0AL	SMF9.0CAL	AV	9CL	10	11.1	1	9	5	15.4	26.0
SMF10AL	SMF10CAL	AX	10CL	11.1	12.3	1	10	2.5	17	23.5
SMF11AL	SMF11CAL	AZ	11CL	12.2	13.5	1	11	2.5	18.2	22
SMF12AL	SMF12CAL	BE	12CL	13.3	14.7	1	12	2.5	19.9	20.1
SMF13AL	SMF13CAL	BG	13CL	14.4	15.9	1	13	1	21.5	18.6
SMF14AL	SMF14CAL	BK	14CL	15.6	17.2	1	14	1	23.2	17.2
SMF15AL	SMF15CAL	BM	15CL	16.7	18.5	1	15	1	24.4	16.4
SMF17AL	SMF17CAL	BN	17CL	18.9	19.9	1	17	1	27.6	14.5
SMF18AL	SMF18CAL	BT	18CL	20	22.1	1	18	1	29.2	13.7
SMF20AL	SMF20CAL	BV	20CL	22.2	24.5	1	20	1	32.4	12.3
SMF22AL	SMF22CAL	BX	22CL	24.4	26.9	1	22	1	35.5	11.3
SMF24AL	SMF24CAL	BZ	24CL	26.7	29.5	1	24	1	38.9	10.3
SMF26AL	SMF26CAL	CE	26CL	28.9	31.9	1	26	1	42.1	9.5
SMF28AL	SMF28CAL	CG	28CL	31.1	34.4	1	28	1	45.4	8.8
SMF30AL	SMF30CAL	CK	30CL	33.3	36.8	1	30	1	48.4	8.3
SMF33AL	SMF33CAL	CM	33CL	36.7	40.6	1	33	1	53.3	7.5
SMF36AL	SMF36CAL	CP	36CL	40	44.2	1	36	1	58.1	6.9
SMF40AL	SMF40CAL	CR	40CL	44.4	49.1	1	40	1	64.5	6.2
SMF43AL	SMF43CAL	CT	43CL	47.8	52.8	1	43	1	69.4	5.8
SMF45AL	SMF45CAL	CV	45CL	50	55.3	1	45	1	72.7	5.5
SMF48AL	SMF48CAL	CX	48CL	53.3	58.9	1	48	1	77.4	5.2
SMF51AL	-	CZ	-	56.7	62.7	1	51	1	82.4	4.9
SMF58AL	-	DE	-	64.4	71.2	1	58	1	93.6	4.3
SMF60AL	-	DG	-	66.7	73.7	1	60	1	96.8	4.1
SMF64AL	-	DM	-	71.1	78.6	1	64	1	103	3.9
SMF70AL	-	DP	-	77.8	86	1	70	1	113	3.5
SMF75AL	-	DR	-	83.3	92.1	1	75	1	121	3.3
SMF78AL	-	DT	-	86.7	95.8	1	78	1	126	3.2
SMF85AL	-	DV	-	94.4	104	1	85	1	137	2.9

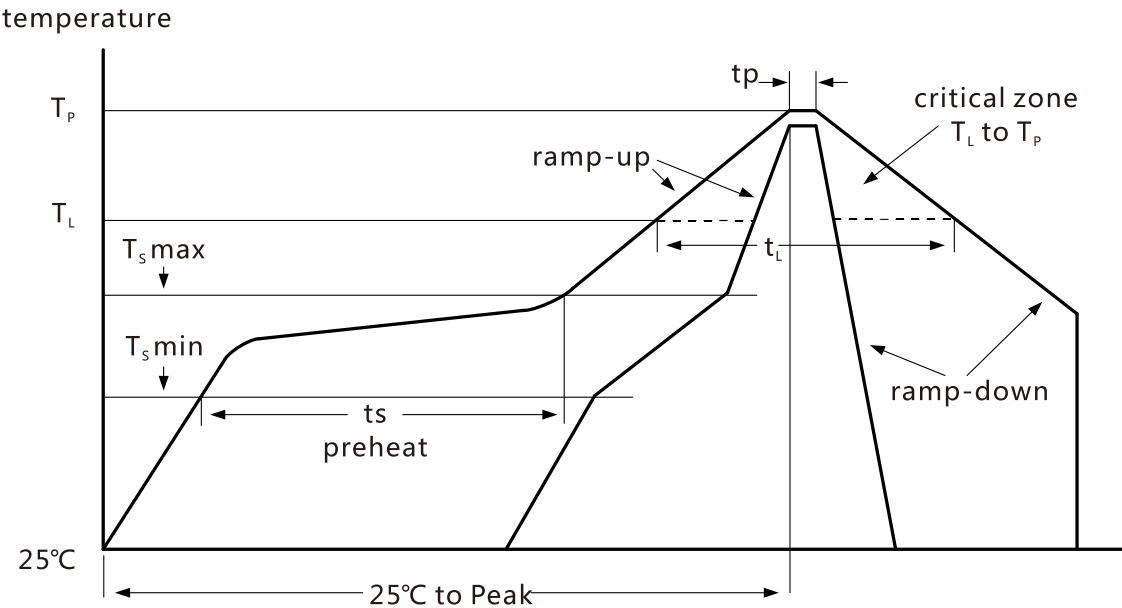
NOTE :

Symbol	Parameter	Description
(1) V_{BR}	Breakdown voltage	The Voltage that flows though the TVS at a specified test current (I_T)
(2) I_T	Test current	A specified test current that flows though the TVS
(3) V_{RM}	Stand-off voltage	Maximum voltage that can be applied to the TVS without operation
(4) I_R	Leakage current @ V_{RM}	Current measured at V_{RM}
(5) V_C	Clamping voltage	Peak voltage measured across the suppressor at a specified I_{PP} (peak impulse current)
(6) I_{PP}	Peak pulse current	The maximum surge current that flows though the TVS

I-V CURVE CHARACTERISTICS



REFLOW SOLDERING PROFILE



Profile Feature	SnPb eutectic assembly	Pb-free assembly
Average ramp-up rate (T_s max to T_p)	3°C/s maximum	3°C/s maximum
Preheat		
Temperature minimum (T_s min)	100°C	150°C
Temperature maximum (T_s max)	150°C	200°C
Time (T_s min to T_s max)	60 s to 120 s	60 s to 180 s
Time maintained above		
Temperature (T_L)	183°C	217°C
Time (t_L)	60 s to 150 s	60 s to 150 s
Peak/classification temperature (T_p)	235°C	260°C
Number of allowed reflow cycles	3	3
Time within 5 °C of actual peak temperature (t_p)	10 s to 30 s	20 s to 40 s
Ramp-down rate	6°C/s maximum	6°C/s maximum
Time 25 °C to peak temperature	6 minutes maximum	8 minutes maximum

Figure 1. Pulse Waveform

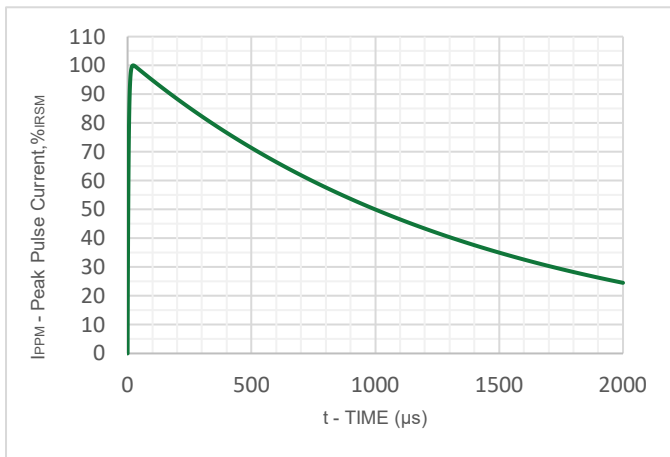


Figure 2. Pulse Derating Curve

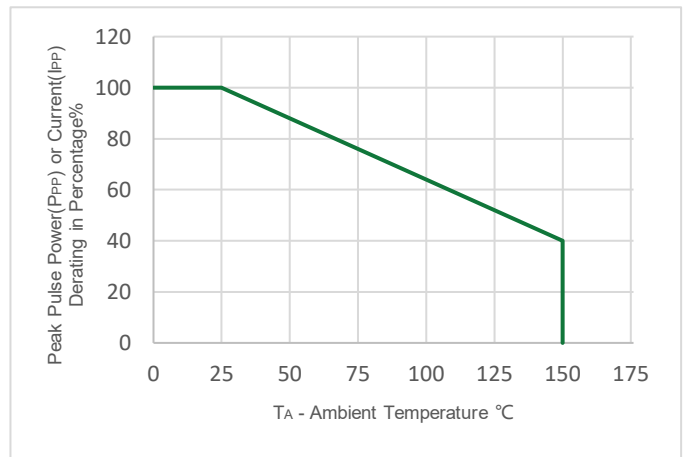


Figure 3. Peak Pulse Power Rating Curve

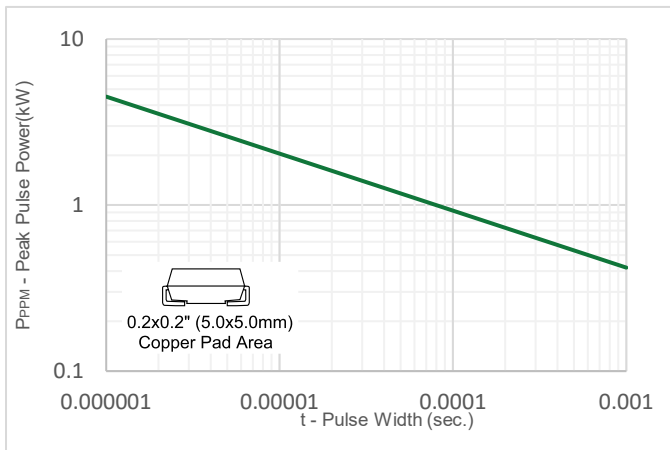
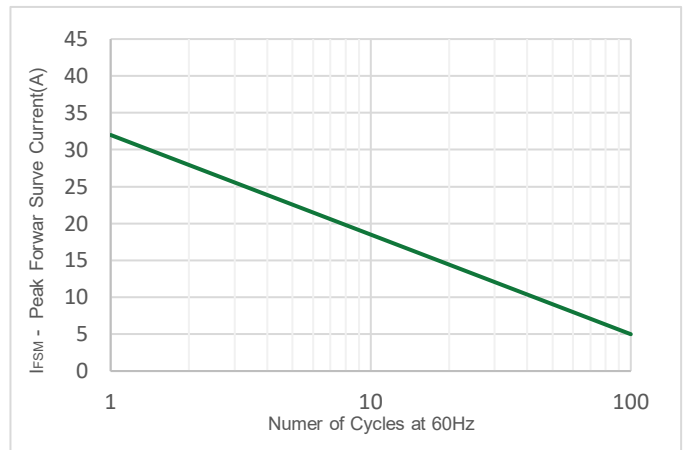
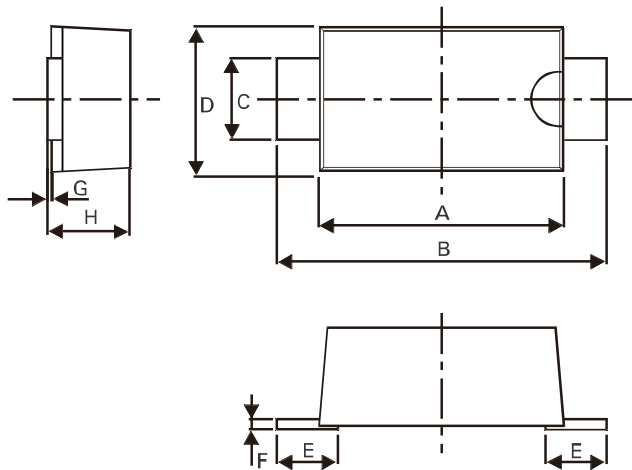


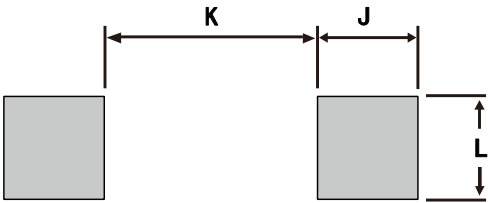
Figure 4. Maximum Non-Repetitive Surge Current



DIMENSIONS



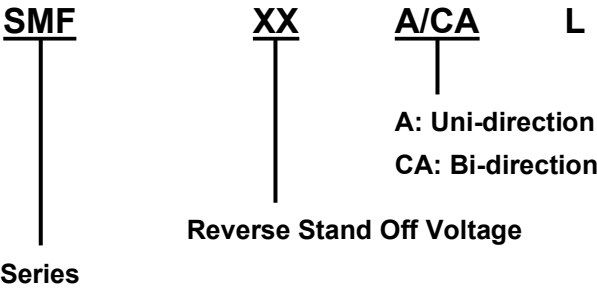
Recommended Pad Layout



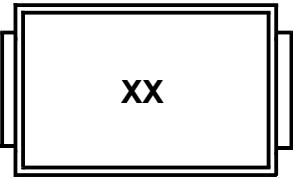
SOD123FL

DIM	Millimeters		Inch	
	Min	Max	Min	Max
A	2.500	2.900	0.0984	0.1142
B	3.400	3.900	0.1339	0.1535
C	0.700	1.200	0.0276	0.0472
D	1.500	2.000	0.0591	0.0787
E	0.350	0.900	0.0138	0.0354
F	0.050	0.260	0.0020	0.0102
G	0.000	0.100	0.0000	0.0039
H	0.950	1.400	0.0374	0.0551
J	1.400	-	0.0551	-
K	1.600	-	0.0630	-
L	1.300	-	0.0512	-

PART NUMBERING



MARKING & PACKAGING



Part Number	Package	Quantity	Packaging
SMFXX(C)AL	SOD123FL	3,000pcs	7" Reel
SMFXX(C)AL	SOD123FL	10,000pcs	13" Reel

ORDERING INFORMATION

PREFERRED P/N	Trace Code Marking	Automotive Grade AEC-Q101 Qualified
SMFXX(C)AL-H	AYYYY	Yes
SMFXX(C)AL	YYYY	-

SMFXX(C)AL SERIES