



SMFxx(C)AL-AU Series 400W Transient Voltage Suppressor

Rev.1.2



TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

Low profile package.

Low inductance.

Excellent clamping capability.

400W peak pulse power capability at 10/1000 μ s waveform.

Typical I_R less than 1 μ A above 10V.

Fast response time: typically less than 1.0ps from 0V to V_{BR} min.

High temperature reflow soldering: 260 °C/40s at terminals.

Plastic package has underwriters laboratory flammability 94V-0.

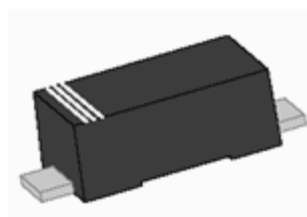
Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C.

Terminal: solder plated, solderable per J-STD-002.

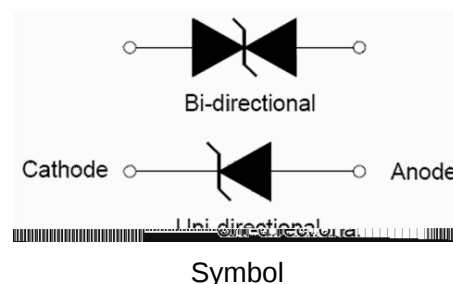
IEC61000-4-2 (ESD) $\pm$ 30kV (air), $\pm$ 30kV (contact).

For surface mounted applications in order to optimize board space.

High reliability application and automotive grade (AEC-Q101 qualified).



SOD-123FL



($T_A=25^\circ\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/T_J	-55 to +150	
Peak pulse power dissipation at 10/1000 μ s waveform	P_{PP}	400	W
Maximum instantaneous forward voltage at 20A for unidirectional	V_F	5.0	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	100	/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	220	/W

10CLH

10CLH : Device Marking Code

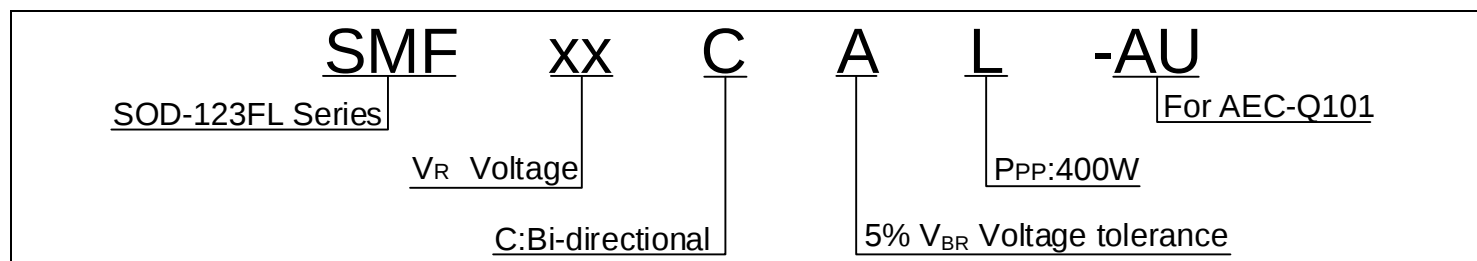
(T_A=25 °C)

Part Number		Marking		V _R	I _R @ V _R	V _{BR} @ I _T		I _T	V _C @ I _{PP}	I _{PP}
Uni-Polar	Bi-Polar	Uni	Bi	V	Max (μA)	Min (V)	Max (V)	mA	Max (V)	A
SMF10AL-AU	SMF10CAL-AU	AXH	10CLH	10.0	2	11.10	12.30	1	17.0	23.5
SMF11AL-AU	SMF11CAL-AU	AZH	11CLH	11.0	1	12.20	13.50	1	18.2	22.0
SMF12AL-AU	SMF12CAL-AU	BEH	12CLH	12.0	1	13.30	14.70	1	19.9	20.1
SMF13AL-AU	SMF13CAL-AU	BGH	13CLH	13.0	1	14.40	15.90	1	21.5	18.6
SMF14AL-AU	SMF14CAL-AU	BKH	14CLH	14.0	1	15.60	17.20	1	23.2	17.2
SMF15AL-AU	SMF15CAL-AU	BMH	15CLH	15.0	1	16.70	18.50	1	24.4	16.4
SMF16AL-AU	SMF16CAL-AU	BPH	16CLH	16.0	1	17.80	19.70	1	26.0	15.4
SMF17AL-AU	SMF17CAL-AU	BRH	17CLH	17.0	1	18.90	20.90	1	27.6	14.5
SMF18AL-AU	SMF18CAL-AU	BTH	18CLH	18.0	1	20.00	22.10	1	29.2	13.7
SMF20AL-AU	SMF20CAL-AU	BVH	20CLH	20.0	1	22.20	24.50	1	32.4	12.3
SMF22AL-AU	SMF22CAL-AU	BXH	22CLH	22.0	1	24.40	26.90	1	35.5	11.3
SMF24AL-AU	SMF24CAL-AU	BZH	24CLH	24.0	1	26.70	29.50	1	38.9	10.3
SMF26AL-AU	SMF26CAL-AU	CEH	26CLH	26.0	1	28.90	31.90	1	42.1	9.5
SMF28AL-AU	SMF28CAL-AU	CGH	28CLH	28.0	1	31.10	34.40	1	45.4	8.8
SMF30AL-AU	SMF30CAL-AU	CKH	30CLH	30.0	1	33.30	36.80	1	48.4	8.3
SMF33AL-AU	SMF33CAL-AU	CMH	33CLH	33.0	1	36.70	40.60	1	53.3	7.5
SMF36AL-AU	SMF36CAL-AU	CPH	36CLH	36.0	1	40.00	44.20	1	58.1	6.9
SMF40AL-AU	SMF40CAL-AU	CRH	40CLH	40.0	1	44.40	49.10	1	64.5	6.2
SMF43AL-AU	SMF43CAL-AU	CTH	43CLH	43.0	1	47.80	52.80	1	69.4	5.8
SMF45AL-AU	SMF45CAL-AU	CVH	45CLH	45.0	1	50.00	55.30	1	72.7	5.5
SMF48AL-AU	SMF48CAL-AU	CXH	48CLH	48.0	1	53.30	58.90	1	77.4	5.2
SMF51AL-AU	-	CZH	-	51.0	1	56.70	62.70	1	82.4	4.9
SMF54AL-AU	-	DCH	-	54.0	1	60.00	66.30	1	87.1	4.6

(T_A=25 ,continued)

Part Number		Marking		V _R	I _R @ V _R	V _{BR} @ I _T		I _T	V _C @ I _{PP}	I _{PP}
Uni-Polar	Bi-Polar	Uni	Bi	V	Max (μA)	Min (V)	Max (V)	mA	Max (V)	A
SMF58AL-AU	-	DEH	-	58.0	1	64.40	71.20	1	93.6	4.3
SMF60AL-AU	-	DGH	-	60.0	1	66.70	73.70	1	96.8	4.1
SMF64AL-AU	-	DMH	-	64.0	1	71.10	78.60	1	103.0	3.9
SMF70AL-AU	-	DPH	-	70.0	1	77.80	86.00	1	113.0	3.5
SMF75AL-AU	-	DRH	-	75.0	1	83.30	92.10	1	121.0	3.3
SMF78AL-AU	-	DTH	-	78.0	1	86.70	95.80	1	126.0	3.2
SMF85AL-AU	-	DVH	-	85.0	1	94.40	104.00	1	137.0	2.9

Surge waveform: 10/1000μs

V_R: Stand-off voltage -- maximum voltage that can be appliedV_{BR}: Breakdown voltageV_C: Clamping voltage -- peak voltage measured across the suppressor at a specified I_{PP}I_R: Reverse leakage current

($T_A=25^\circ\text{C}$, unless otherwise noted)

FIG.1:V- I curve characteristics
(Uni-directional)

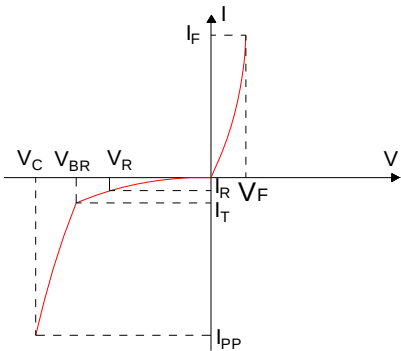


FIG.2:V- I curve characteristics
(Bi-directional)

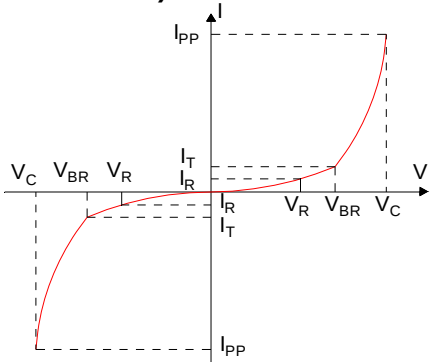


FIG.3: Pulse waveform

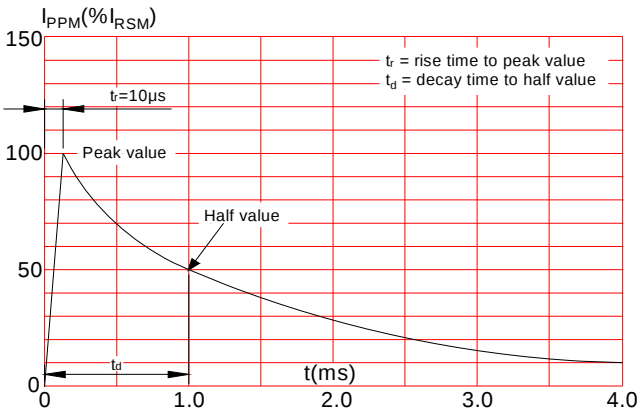


FIG.4: Pulse derating curve

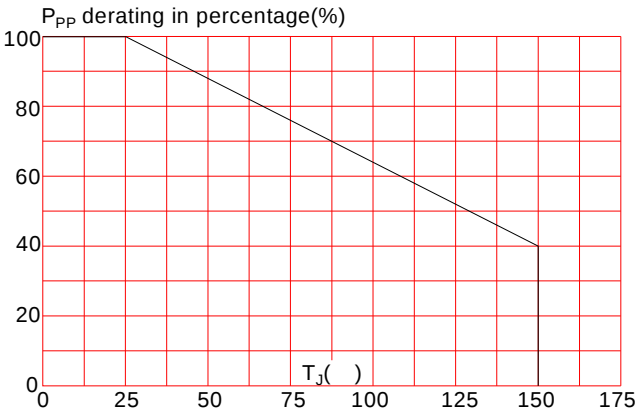
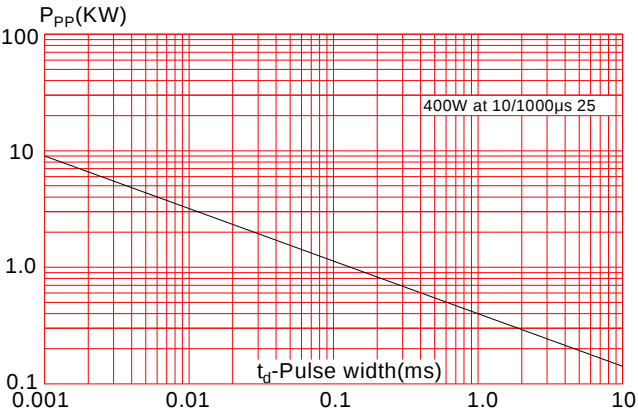
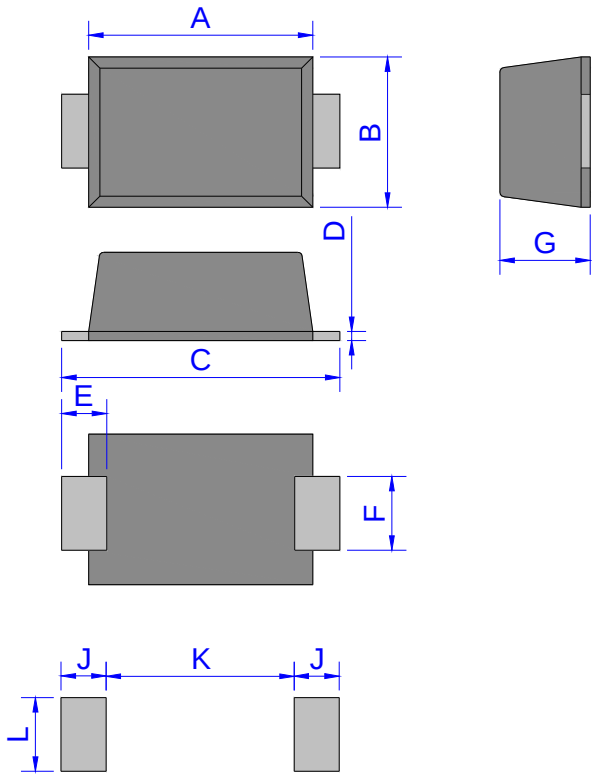
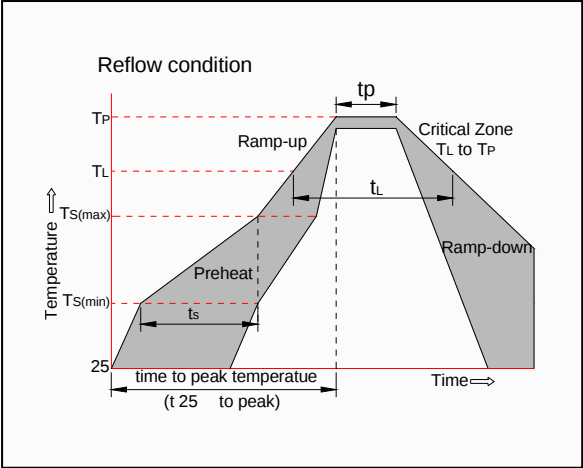


FIG.5:Peak pulse power dissipation vs. pulse width

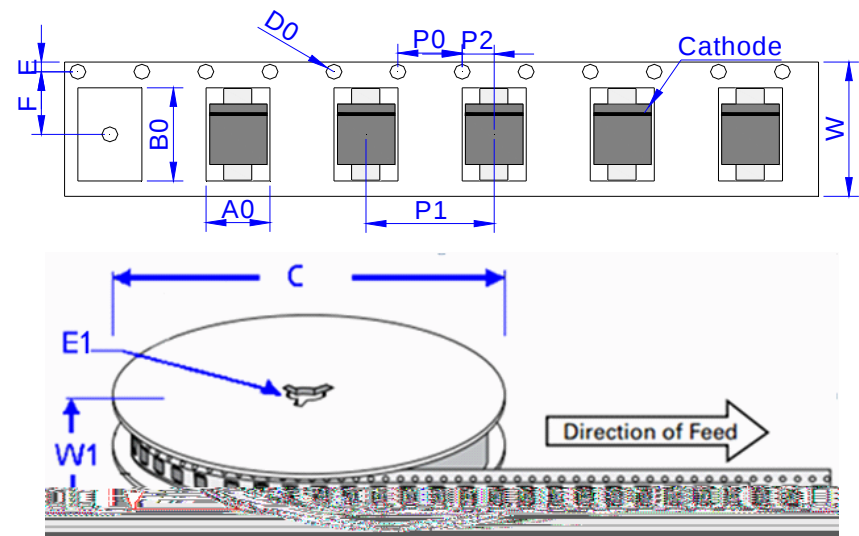


Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150
	-Temperature Max($T_{s(max)}$)	+200
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3 /sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 /sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)
Time within 5 of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6 /sec. Max
Time 25 to Peak Temp (T_p)		8 min. Max
Do not exceed		+260



SOD-123FL

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	1.60	2.00	0.063	0.079
C	3.45	3.95	0.136	0.156
D	0.10	0.25	0.004	0.01
E	0.3	0.9	0.012	0.035
F	0.80	1.20	0.031	0.047
G	0.95	1.35	0.037	0.053
J	1.30		0.051	
K		1.70		0.067
L	1.30		0.051	



Ref.	Dimensions	
	Millimeters	Inches
A0	1.95 ± 0.3	0.077± 0.012
B0	3.95 ± 0.3	0.156 ± 0.012
C	178	7.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524± 0.012
F	3.50 ± 0.2	0.138 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	4.00 ± 0.2	0.157 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	8.0± 0.2	0.315 ± 0.008
W1	11.5 ± 1.0	0.453 ± 0.039

PART No.	UNIT WEIGHT (g/PCS) TYP	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SMFxxA/CAL-AU	0.0144	3000	150,000	7 inch reel pack

JieJie products are not designed for, and shall not be used for, any purpose (including, without limitation, automotive, military, aerospace, medical, life-saving, life-sustaining or nuclear facility applications, devices intended for surgical implant into the body, or any other application in which the failure or lack of desired operation of the product may result in personal injury, death, or property damage) other than those expressly set forth in applicable JieJie product documentation. Warranties granted by JieJie shall be deemed void for products used for any purpose not expressly set forth in applicable JieJie documentation. JieJie shall not be liable for any claims or damages arising out of products used in applications not expressly intended by JieJie as set forth in applicable JieJie documentation. The sale and use of JieJie products is subject to JieJie terms and conditions of sale, unless otherwise agreed by JieJie.

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co., Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.

Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.

Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.

This document is the 1.2nd version which is made in 16-Oct.-2023. This document supersedes and replaces all information previously supplied.

 is a registered trademark of Jiangsu JieJie Microelectronics Co., Ltd.

Copyright ©2023 Jiangsu JieJie Microelectronics Co., Ltd. Printed All rights reserved.