

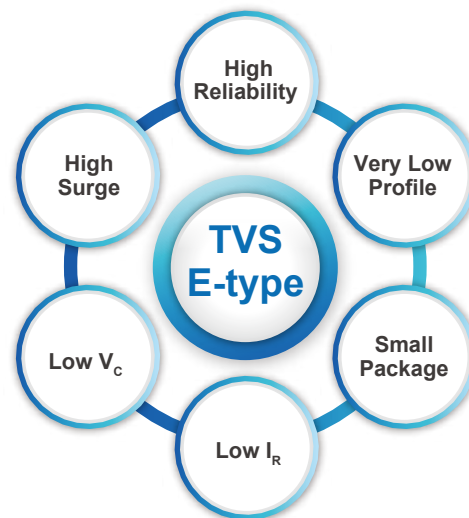
Automotive and High Reliability TVS

E-type TVS in low profile series package



► E-type Features

- High surge and low profile package
- Ultra low reverse current
- Excellent clamping capability
- EPI (Epitaxial) planar technology
- Oxide planar chip junction
- AEC-Q101 qualified
- High temperature soldering
- Lead free in compliance with EU RoHS 2.0



► Application



► E-type Family

Direction	P _{PPM} (W)	V _{RWM} (V)	Package			
			SOD-323HE	SOD-123FL	SOD-123HE	SMAF-C
UNI	150	3.3 - 36	P1CHxxA-AU	-	-	-
	200	3.3 - 40	-	P2ALxxA-AU	-	-
	400	3.3 - 64	-	P4FLxxA-AU	P4HExxA-AU	-
	600	3.3 - 64	-	-	-	*P6AFCxxA-AU

* Coming soon in Q3 2020

► Space-efficient Dimension Design

Low Profile Power Package

SOD-123FL



SOD-123HE



SOD-323HE



SMAF-C



AEC-Q101 qualified and Automotive Grade version



Low profile package:

SMAF-C : 1.0mm typical
SOD-123FL : 1.0mm typical
SOD-123HE : 0.9mm typical
SOD-323HE : 0.7mm typical

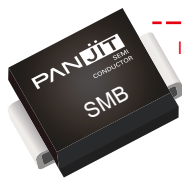
RoHS COMPLIANT

Lead free in compliance with 2011 / 65 / EU RoHS 2.0

Green molding compound as per IEC 61249 standard

HALOGEN FREE

600W E-type TVS

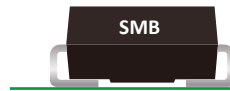


SMB: 19mm²
Footprint Area

38%
less PCB space



SMAF-C: 11.8mm²
Footprint Area



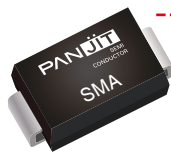
2.3 mm high



1.0 mm high

56% height reduced

400W E-type TVS



SMA: 13.5mm²
Footprint Area

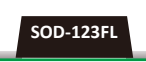
52%
less PCB space



SOD-123FL: 6.5mm²
Footprint Area



2.2 mm high



1.0 mm high

55% height reduced

150W E-type TVS



SOD-123FL: 6.5mm²
Footprint Area

49%
less PCB space



SOD-323HE: 3.3mm²
Footprint Area



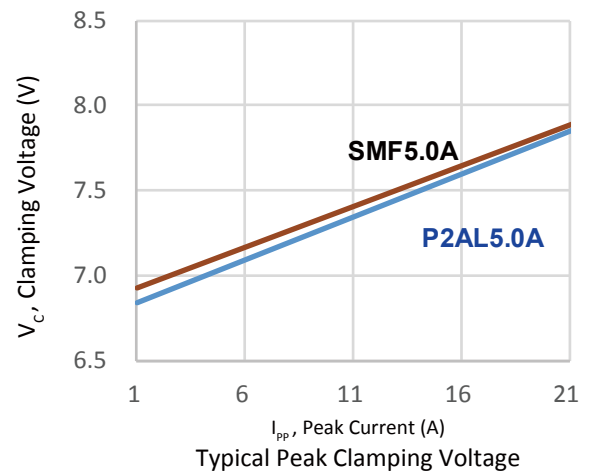
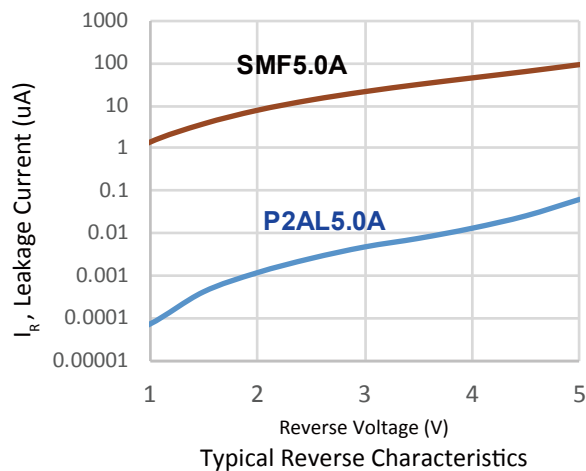
1.0 mm high




0.7 mm high

30% height reduced


► Electrical characteristic




➤ 600W E-type TVS

Part Number		V_{RWM}	$V_{BR} @ IT$ Min.	$V_{BR} @ IT$ Max.	IT	$I_R @ V_{RWM}$ UNI	$V_C @ I_{PP}$ Max.	IPP
		V	V	V	mA	μA	V	A
 SMAL-C	P6AFC3.3A-AU	3.3	5.2	6	10	100	8	75
	P6AFC5.0A-AU	5	6.4	7	10	50	9.2	65.2
	P6AFC6.0A-AU	6	6.67	7.37	10	50	10.3	58.3
	P6AFC6.5A-AU	6.5	7.22	7.98	10	40	11.2	53.6
	P6AFC7.0A-AU	7	7.78	8.6	10	40	12	50
	P6AFC7.5A-AU	7.5	8.33	9.21	1	30	12.9	46.5
	P6AFC8.0A-AU	8	8.89	9.83	1	5	13.6	44.1
	P6AFC8.5A-AU	8.5	9.44	10.4	1	5	14.4	41.7
	P6AFC9.0A-AU	9	10	11.1	1	0.5	15.4	39
	P6AFC10A-AU	10	11.1	12.3	1	0.5	17	35.3
	P6AFC11A-AU	11	12.2	13.5	1	0.5	18.2	33
	P6AFC12A-AU	12	13.3	14.7	1	0.5	19.9	30.2
	P6AFC13A-AU	13	14.4	15.9	1	0.1	21.5	27.9
	P6AFC14A-AU	14	15.6	17.2	1	0.1	23.2	25.9
	P6AFC15A-AU	15	16.7	18.5	1	0.1	24.4	24.6
	P6AFC16A-AU	16	17.8	19.7	1	0.1	26	23.1
	P6AFC17A-AU	17	18.9	20.9	1	0.1	27.6	21.7
	P6AFC18A-AU	18	20	22.1	1	0.1	29.2	20.5
	P6AFC20A-AU	20	22.2	24.5	1	0.1	32.4	18.5
	P6AFC22A-AU	22	24.4	26.9	1	0.1	35.5	16.9
	P6AFC24A-AU	24	26.7	29.5	1	0.1	38.9	15.4
	P6AFC26A-AU	26	28.9	31.9	1	0.1	42.1	14.3
	P6AFC28A-AU	28	31.1	34.4	1	0.1	45.4	13.2
	P6AFC30A-AU	30	33.3	36.8	1	0.1	48.4	12.4
	P6AFC33A-AU	33	36.7	40.6	1	0.1	53.3	11.3
	P6AFC36A-AU	36	40	44.2	1	0.1	58.1	10.3
	P6AFC40A-AU	40	44.4	49.1	1	0.1	64.5	9.3
	P6AFC43A-AU	43	47.8	52.8	1	0.1	69.4	8.6
	P6AFC45A-AU	45	50	55.3	1	0.1	72.7	8.3
	P6AFC48A-AU	48	53.3	58.9	1	0.1	77.4	7.8
	P6AFC51A-AU	51	56.7	62.7	1	0.1	82.4	7.3
	P6AFC54A-AU	54	60	66.3	1	0.1	87.1	6.9
P6AFC58A-AU	58	64.4	71.2	1	0.1	93.6	6.4	
P6AFC60A-AU	60	66.7	73.7	1	0.1	96.8	6.2	
P6AFC64A-AU	64	71.1	78.6	1	0.1	103	5.8	


➤ 400W E-type TVS

Part Number		V_{RWM}	$V_{BR} @ IT$ Min.	$V_{BR} @ IT$ Max.	IT	$I_R @ V_{RWM}$ UNI	$V_C @ I_{PP}$ Max.	IPP
		V	V	V	mA	μA	V	A
 SOD-123FL	P4FL3.3A-AU	3.3	5.2	6	10	100	8.5	47
	P4FL5.0A-AU	5	6.4	7	10	50	9.2	43.5
	P4FL6.0A-AU	6	6.67	7.37	10	50	10.3	38.8
	P4FL6.5A-AU	6.5	7.22	7.98	10	40	11.2	35.7
	P4FL7.0A-AU	7	7.78	8.6	10	40	12	33.3
	P4FL7.5A-AU	7.5	8.33	9.21	1	30	12.9	31
	P4FL8.0A-AU	8	8.89	9.83	1	5	13.6	29.4
	P4FL8.5A-AU	8.5	9.44	10.4	1	5	14.4	27.8
	P4FL9.0A-AU	9	10	11.1	1	0.5	15.4	26
	P4FL10A-AU	10	11.1	12.3	1	0.5	17	23.5
	P4FL11A-AU	11	12.2	13.5	1	0.5	18.2	22
	P4FL12A-AU	12	13.3	14.7	1	0.5	19.9	20.1
	P4FL13A-AU	13	14.4	15.9	1	0.1	21.5	18.6
	P4FL14A-AU	14	15.6	17.2	1	0.1	23.2	17.2
	P4FL15A-AU	15	16.7	18.5	1	0.1	24.4	16.4
	P4FL16A-AU	16	17.8	19.7	1	0.1	26	15.4
	P4FL17A-AU	17	18.9	20.9	1	0.1	27.6	14.5
	P4FL18A-AU	18	20	22.1	1	0.1	29.2	13.7
	P4FL20A-AU	20	22	24.5	1	0.1	32.4	12.3
	P4FL22A-AU	22	24.4	26.9	1	0.1	35.5	11.3
	P4FL24A-AU	24	26.7	29.5	1	0.1	38.9	10.3
	P4FL26A-AU	26	28.9	31.9	1	0.1	42.1	9.5
	P4FL28A-AU	28	31.1	34.4	1	0.1	45.4	8.8
	P4FL30A-AU	30	33.3	36.8	1	0.1	48.4	8.3
	P4FL33A-AU	33	36.7	40.6	1	0.1	53.3	7.5
	P4FL36A-AU	36	40	44.2	1	0.1	58.1	6.9
	P4FL40A-AU	40	44.4	49.1	1	0.1	64.5	6.2
	P4FL43A-AU	43	47.8	52.8	1	0.1	69.4	5.8
	P4FL45A-AU	45	50	55.3	1	0.1	72.7	5.5
	P4FL48A-AU	48	53.3	58.9	1	0.1	77.4	5.2
	P4FL51A-AU	51	56.7	62.7	1	0.1	82.4	4.9
	P4FL54A-AU	54	60	66.3	1	0.1	87.1	4.6
P4FL58A-AU	58	64.4	71.2	1	0.1	93.6	4.3	
P4FL60A-AU	60	66.7	73.7	1	0.1	96.8	4.1	
P4FL64A-AU	64	71.1	78.6	1	0.1	103	3.9	




► 200W E-type TVS

Part Number		V_{RWM}	$V_{BR} @ IT$ Min.	$V_{BR} @ IT$ Max.	IT	$I_R @ V_{RWM}$ UNI	$V_C @ I_{PP}$ Max.	IPP
		V	V	V	mA	μA	V	A
 SOD-123FL	P2AL3.3A-AU	3.3	5.2	6	10	50	8.5	23.5
	P2AL5.0A-AU	5	6.4	7	10	25	9.2	21.7
	P2AL6.0A-AU	6	6.67	7.37	10	25	10.3	19.4
	P2AL6.5A-AU	6.5	7.22	7.98	10	20	11.2	17.9
	P2AL7.0A-AU	7	7.78	8.6	10	20	12	16.7
	P2AL7.5A-AU	7.5	8.33	9.21	1	15	12.9	15.5
	P2AL8.0A-AU	8	8.89	9.83	1	2	13.6	14.7
	P2AL8.5A-AU	8.5	9.44	10.4	1	2	14.4	13.9
	P2AL9.0A-AU	9	10	11.1	1	0.5	15.4	13
	P2AL10A-AU	10	11.1	12.3	1	0.5	17	11.8
	P2AL11A-AU	11	12.2	13.5	1	0.5	18.2	11
	P2AL12A-AU	12	13.3	14.7	1	0.5	19.9	10.1
	P2AL13A-AU	13	14.4	15.9	1	0.1	21.5	9.3
	P2AL14A-AU	14	15.6	17.2	1	0.1	23.2	8.6
	P2AL15A-AU	15	16.7	18.5	1	0.1	24.4	8.2
	P2AL16A-AU	16	17.8	19.7	1	0.1	26	7.7
	P2AL17A-AU	17	18.9	20.9	1	0.1	27.6	7.2
	P2AL18A-AU	18	20	22.1	1	0.1	29.2	6.8
	P2AL20A-AU	20	22	24.5	1	0.1	32.4	6.2
	P2AL22A-AU	22	24.4	26.9	1	0.1	35.5	5.6
P2AL24A-AU	24	26.7	29.5	1	0.1	38.9	5.1	
P2AL26A-AU	26	28.9	31.9	1	0.1	42.1	4.8	
P2AL28A-AU	28	31.1	34.4	1	0.1	45.4	4.4	
P2AL30A-AU	30	33.3	36.8	1	0.1	48.4	4.1	
P2AL33A-AU	33	36.7	40.6	1	0.1	53.3	3.8	
P2AL36A-AU	36	40	44.2	1	0.1	58.1	3.4	
P2AL40A-AU	40	44.4	49.1	1	0.1	64.5	3.1	

► 150W E-type TVS

Part Number		V_{RWM}	$V_{BR} @ IT$ Min.	$V_{BR} @ IT$ Max.	IT	$I_R @ V_{RWM}$ UNI	$V_C @ I_{PP}$ Max.	IPP
		V	V	V	mA	μA	V	A
 SOD-323HE	P1CH3.3A-AU	3.3	5.2	6	10	50	8.5	17.6
	P1CH5.0A-AU	5	6.4	7	10	5	9.2	16.3
	P1CH6.0A-AU	6	6.67	7.37	10	5	10.3	14.5
	P1CH6.5A-AU	6.5	7.22	7.98	10	4	11.2	13.4
	P1CH7.0A-AU	7	7.78	8.6	10	4	12	12.5
	P1CH7.5A-AU	7.5	8.33	9.21	1	3	12.9	11.6
	P1CH8.0A-AU	8	8.89	9.83	1	2	13.6	11
	P1CH8.5A-AU	8.5	9.44	10.4	1	2	14.4	10.4
	P1CH9.0A-AU	9	10	11.1	1	1	15.4	9.7
	P1CH10A-AU	10	11.1	12.3	1	1	17	8.8
	P1CH11A-AU	11	12.2	13.5	1	1	18.2	8.2
	P1CH12A-AU	12	13.3	14.7	1	1	19.9	7.5
	P1CH13A-AU	13	14.4	15.9	1	0.5	21.5	7
	P1CH14A-AU	14	15.6	17.2	1	0.5	23.2	6.5
	P1CH15A-AU	15	16.7	18.5	1	0.5	24.4	6.1
	P1CH16A-AU	16	17.8	19.7	1	0.5	26	5.8
	P1CH17A-AU	17	18.9	20.9	1	0.5	27.6	5.3
	P1CH18A-AU	18	20	22.1	1	0.5	29.2	5.1
	P1CH20A-AU	20	22	24.5	1	0.5	32.4	4.6
	P1CH22A-AU	22	24.4	26.9	1	0.5	35.5	4.2
P1CH24A-AU	24	26.7	29.5	1	0.5	38.9	3.9	
P1CH26A-AU	26	28.9	31.9	1	0.5	42.1	3.6	
P1CH28A-AU	28	31.1	34.4	1	0.5	45.4	3.3	
P1CH30A-AU	30	33.3	36.8	1	0.5	48.4	3.1	
P1CH33A-AU	33	36.7	40.6	1	0.5	53.3	2.8	
P1CH36A-AU	36	40	44.2	1	0.5	58.1	2.6	

► Package

Package	Dimensions (W x L x H, Unit : mm)	Picture
SMAF-C	4.7 X 2.5 X 1.0	
SOD-123HE	3.7 X 1.8 X 0.9	
SOD-123FL	3.6 X 1.8 X 1.0	
SOD-323HE	2.5 X 1.3 X 0.7	