400W Surface Mount Transient Voltage Suppressors

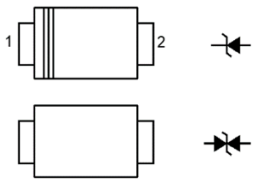
SOD-123FL

Features

- AEC-Q101 Qualified
- Glass passivated junction
- 400 W peak pulse power capability with a 10/1000 μs waveform repetitive rate(duty cycle): 0.01%
- Compatible with industrial standard package SOD-123FL
- For surface mounted applications to optimize board space
- Low profile: maximum height of 1mm
- Low inductance, excellent clamping capability
- Typical failure mode is short from over-specified voltage or current
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Fast response time: typically less than 1.0ns from 0 Volts to V_{BR} min
- Component in accordance to RoHS
- Solder dip 265℃ max. 10s, per JESD 22-B106

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode



Top View
Simplified outline SOD-123FL and symbol

Applications

Use is sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for automotive.

PRIMARY CHARACTERISTICS	
V_{BR}	6.4V to 104V
VWM	5V to 85V
PPPM (10 x 1000 us)	400 W
TJ max.	150 °C
Package	SOD-123FL

Absolute Maximum Ratings (T_a = 25℃ unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation (10/1000us waveform)	P_{PPM}	400	W
Peak Pulse Power Dissipation (8/20us waveform)		2000	W
Peak pulse current (with a 10/1000us waveform) 1)	I_{PPM}	(See Next Table)	A
Power dissipation, on infinite heat sink T_L=50℃	P_D	1.0	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	220	℃/W
Thermal Resistance Junction to Lead	$R_{\Theta jL}$	100	℃/W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	℃

1) Non-repetitive current pulse per Fig.4 and derated above TJ(initial)= 25℃ per Fig.3
2) V4TVS5.0A~V4TVS8.5A Peak Pulse Power Dissipation is 370W min, 400W typical @10/1000us
3) V4TVS5.0A~V4TVS8.5A Peak Pulse Power Dissipation is 1850W min, 2000W typical @8/20us

Electrical Characteristics (T_a = 25℃ unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Marking Code (Uni)	Marking Code (Bi)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R [3](μA) at V_{WM}	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Peak Pulse Current I_{PP} [2] (A)	Maximum Clamping Voltage V_C(V) at I_{PPM}
				Min (V)	Max (V)	I_T (mA)				
V4TVS5.0A	V4TVS5.0CA	AE	WE	6.40	7.00	10	800	5	43.47	9.2
V4TVS6.0A	V4TVS6.0CA	AG	WG	6.67	7.37	10	800	6	38.83	10.3
V4TVS6.5A	V4TVS6.5CA	AK	WK	7.22	7.98	10	500	6.5	35.70	11.2
V4TVS7.0A	V4TVS7.0CA	AM	WM	7.78	8.60	10	200	7	33.33	12.0
V4TVS7.5A	V4TVS7.5CA	AP	WP	8.33	9.21	1	100	7.5	31.00	12.9
V4TVS8.0A	V4TVS8.0CA	AR	WR	8.89	9.83	1	50	8	29.41	13.6
V4TVS8.5A	V4TVS8.5CA	AT	WT	9.44	10.4	1	20	8.5	27.77	14.4
V4TVS9.0A	V4TVS9.0CA	AV	WV	10.0	11.1	1	10	9	25.97	15.4
V4TVS10A	V4TVS10CA	AX	WX	11.1	12.3	1	5	10	23.52	17.0
V4TVS11A	V4TVS11CA	AZ	WZ	12.2	13.5	1	1.0	11	21.97	18.2
V4TVS12A	V4TVS12CA	BE	XE	13.3	14.7	1	1.0	12	20.10	19.9
V4TVS13A	V4TVS13CA	BG	XG	14.4	15.9	1	1.0	13	18.60	21.5
V4TVS14A	V4TVS14CA	BK	XK	15.6	17.2	1	1.0	14	17.24	23.2
V4TVS15A	V4TVS15CA	BM	XM	16.7	18.5	1	1.0	15	16.39	24.4
V4TVS16A	V4TVS16CA	BP	XP	17.8	19.7	1	1.0	16	15.38	26.0
V4TVS17A	V4TVS17CA	BR	XR	18.9	20.9	1	1.0	17	14.49	27.6
V4TVS18A	V4TVS18CA	BT	XT	20.0	22.1	1	1.0	18	13.69	29.2
V4TVS20A	V4TVS20CA	BV	XV	22.2	24.5	1	1.0	20	12.34	32.4
V4TVS22A	V4TVS22CA	BX	XX	24.4	26.9	1	1.0	22	11.26	35.5
V4TVS24A	V4TVS24CA	BZ	XZ	26.7	29.5	1	1.0	24	10.28	38.9
V4TVS26A	V4TVS26CA	CE	YE	28.9	31.9	1	1.0	26	9.50	42.1
V4TVS28A	V4TVS28CA	CG	YG	31.1	34.4	1	1.0	28	8.81	45.4
V4TVS30A	V4TVS30CA	CK	YK	33.3	36.8	1	1.0	30	8.26	48.4
V4TVS33A	V4TVS33CA	CM	YM	36.7	40.6	1	1.0	33	7.50	53.3
V4TVS36A	V4TVS36CA	CP	YP	40.0	44.2	1	1.0	36	6.88	58.1
V4TVS40A	V4TVS40CA	CR	YR	44.4	49.1	1	1.0	40	6.20	64.5
V4TVS43A	V4TVS43CA	CT	YT	47.8	52.8	1	1.0	43	5.76	69.4
V4TVS45A	V4TVS45CA	CV	YV	50.0	55.3	1	1.0	45	5.50	72.7
V4TVS48A	V4TVS48CA	CX	YX	53.3	58.9	1	1.0	48	5.16	77.4
V4TVS51A	V4TVS51CA	CZ	YZ	56.7	62.7	1	1.0	51	4.85	82.4
V4TVS54A	V4TVS54CA	RE	ZE	60.0	66.3	1	1.0	54	4.59	87.1
V4TVS58A	V4TVS58CA	RG	ZG	64.4	71.2	1	1.0	58	4.27	93.6
V4TVS60A	V4TVS60CA	RK	ZK	66.7	73.7	1	1.0	60	4.13	96.8
V4TVS64A	V4TVS64CA	RM	ZM	71.1	78.6	1	1.0	64	3.88	103
V4TVS70A	V4TVS70CA	RP	ZP	77.8	86.0	1	1.0	70	3.53	113
V4TVS75A	V4TVS75CA	RR	ZR	83.3	92.1	1	1.0	75	3.30	121
V4VS78A	V4TVS78CA	RT	ZT	86.7	95.8	1	1.0	78	3.17	126
V4TVS85A	V4TVS85CA	RV	ZV	94.4	104	1	1.0	85	2.91	137

Electrical Characteristics Curves

Fig. 1 - TVS Transients Clamping Waveform

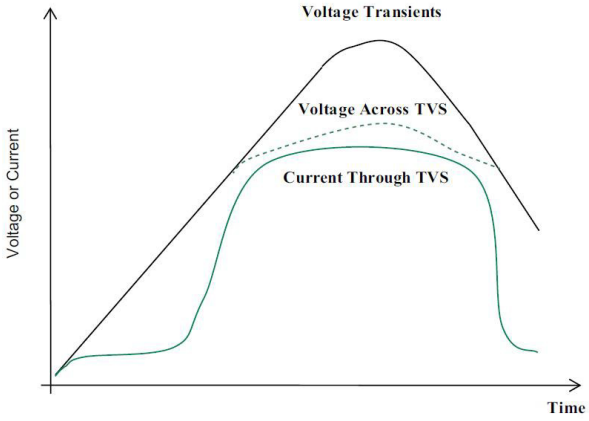


Fig. 2 - Peak Pulse Power Rating Curve

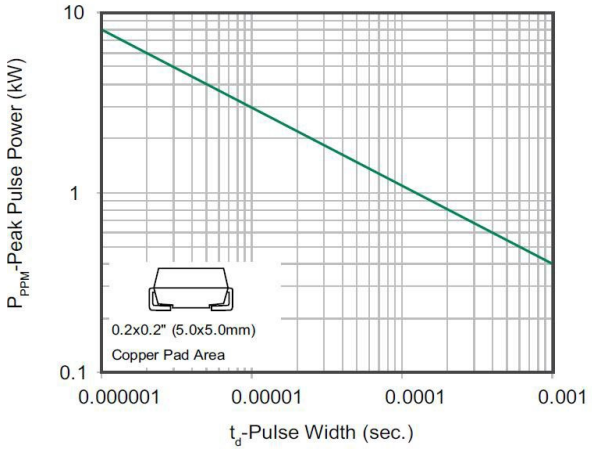


Fig. 3 - Peak Pulse Power Derating Curve

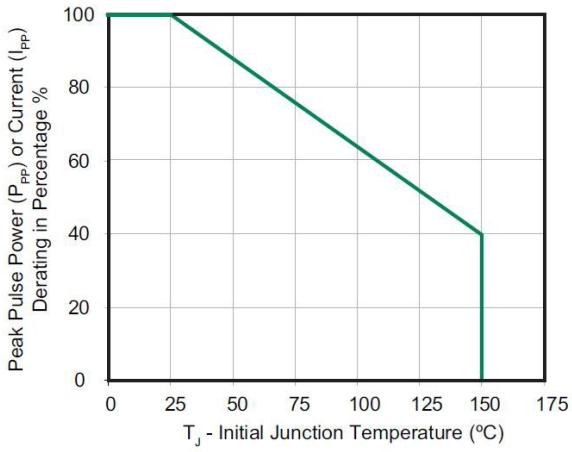
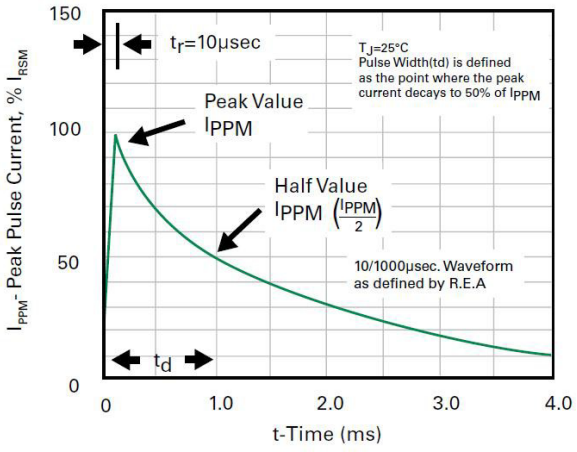


Fig. 4 - Pulse Waveform - 10/1000uS



Electrical Characteristics Curves

Fig. 5 - Forward Voltage

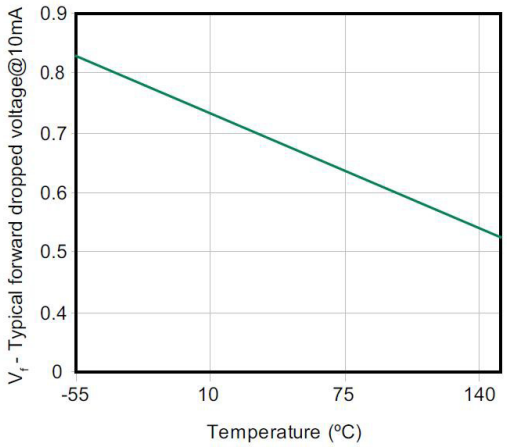


Fig. 6 - Typical Junction Capacitance

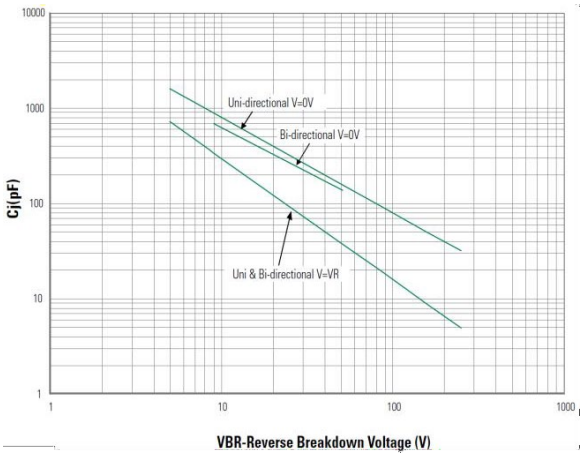


Fig. 7 - Peak Forward Voltage Drop vs. Peak Forward Current

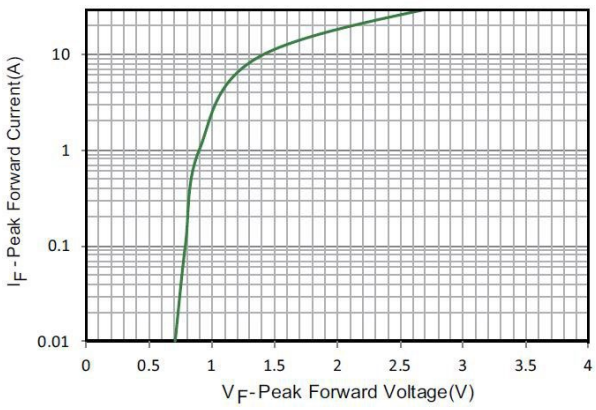
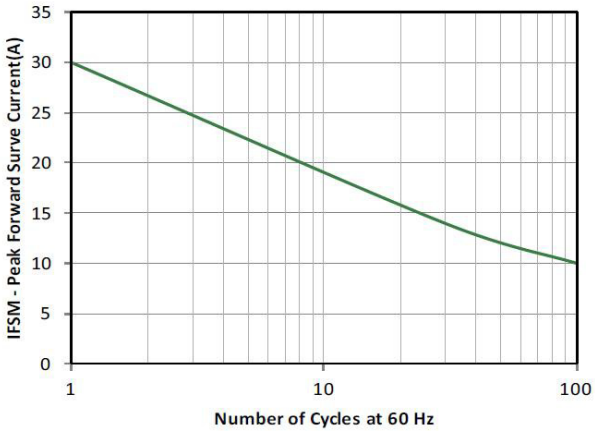
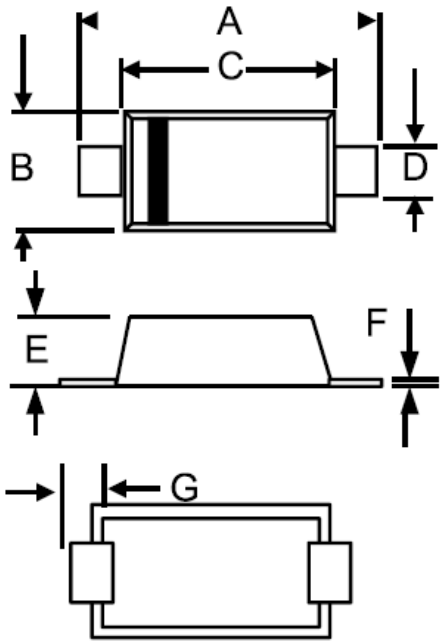


Fig. 8 - Maximum Non-Repetitive Forward Surge Current only Uni



Package Outline Dimensions in inches (millimeters) **SOD-123FL**



DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.138	0.154	3.50	3.90
B	0.069	0.077	1.75	1.95
C	0.102	0.114	2.60	2.90
D	0.031	0.043	0.80	1.10
E	0.037	0.045	0.95	1.15
F	0.004	0.008	0.10	0.20
G	0.028	0.035	0.70	0.90

Packing information

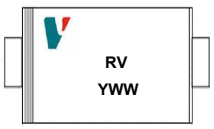
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOD-123FL	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

" RV " = Part No.

" YWW " = Date Code Marking

" Y " = Last digit of year (ex: 2 = 2022)

" WW " = Week Code (ex: 24 = the 24th week of the year)

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