

NXP transient voltage suppressor (TVS) diodes



400 W TVS diodes in FlatPower packages

The 400 W unidirectional transient voltage suppressor (TVS) diodes are designed for transient over-voltage protection. They are available in the new FlatPower (SOD123W) package, a small, surface-mounted device (SMD) plastic package with flat leads and a low profile.

Key features

- Rated peak pulse power:
 P_{PPM} = 400 W (350 W for 3.3 V)
- Small plastic package / very low height:
 2.7 x 1.7 x 1 mm
- Reverse standoff voltage range: V_{RWM} = 3.3 to 64 V
- Reverse current: $I_{RM} = 0.001 \ \mu A$
- ► AEC-Q101 qualified

Applications

- Power supplies
- Data or signal lines
- Telecommunication circuits

decision	Competitive advantage	Customers benefit from
Surge capability	Highest (up to 2x competition) surge capability over a small area, with dissipation of approximately 67 W/mm ² surge per PCB area (versus the typical 34 W/mm ²)	 optimum power performance while saving space being able to integrate more functions on PCB
Lowest leakage current	Maximum leakage currents in the range of 0.1 $\mu\text{A},$ one tenth of typical ratings	 extended battery life for all kinds of mobile devices
Saving space	FlatPower SOD123W saves half the height and length versus equivalent types in standard SMA package	▶ increased layout flexibility and more PCB space
Field quality	Long-time leadership in Zener and ESD protection diodes ensures low product failure rate	▶ reliable products



Product series

Power (W) (10/1000-µs waveform)	V _{RWM} (V)	I _{RM typ.} (μΑ) @V _{RWM}	I _{RM} max (μA) @ V _{RWM}	V _{BR} min (V) @ I _R	V _{BR} typ (V) @ I _R	V _{BR} max (V) @ I _R	l _, (mA)	V _{ci} max (V) @ I _{pp}	I _{pp} (A)	Туре	Package Size P _{tot}
350	3.3	5	600	5.2	5.6	6	10	8	43.8	PTVS3V3S1UR	
	5	5	400	6.4	6.7	7	10	9.2	43.5	PTVS5V0S1UR	
	6	5	400	6.67	7.02	7.37	10	10.3	38.8	PTVS6V0S1UR	
	6.5	5	250	7.22	7.6	7.98	10	11.2	35.7	PTVS6V5S1UR	
	7	3	100	7.78	8.2	8.6	10	12	33.3	PTVS7V0S1UR	
	7.5	0.2	50	8.33	8.77	9.21	1	12.9	31.0	PTVS7V5S1UR	
	8	0.03	25	8.89	9.36	9.83	1	13.6	29.4	PTVS8V0S1UR	
	8.5	0.01	10	9.44	9.92	10.4	1	14.4	27.8	PTVS8V5S1UR	
	9	0.005	5	10	10.55	11.1	1	15.4	26.0	PTVS9V0S1UR	
	10	0.005	2.5	11.1	11.7	12.3	1	17	23.5	PTVS10VS1UR	
	11	0.005	2.5	12.2	12.85	13.5	1	18.2	22.0	PTVS11VS1UR	
	12	0.005	2.5	13.3	14	14.7	1	19.9	20.1	PTVS12VS1UR	
	13	0.001	0.1	14.4	15.15	15.9	1	21.5	18.6	PTVS13VS1UR	SOD123W 2.6×1.7×1.0 mm 950 mW
	14	0.001	0.1	15.6	16.4	17.2	1	23.2	17.2	PTVS14VS1UR	
	15	0.001	0.1	16.7	17.6	18.5	1	24.4	16.4	PTVS15VS1UR	
	16	0.001	0.1	17.8	18.75	19.7	1	26	15.4	PTVS16VS1UR	
	17	0.001	0.1	18.9	19.9	20.9	1	27.6	14.5	PTVS17VS1UR	
	18	0.001	0.1	20	21	22.1	1	29.2	13.7	PTVS18VS1UR	
400	20	0.001	0.1	22.2	23.35	24.5	1	32.4	12.3	PTVS20VS1UR	
	22	0.001	0.1	24.4	25.6	26.9	1	35.5	11.3	PTVS22VS1UR	
	24	0.001	0.1	26.7	28.1	29.5	1	38.9	10.3	PTVS24VS1UR	
	26	0.001	0.1	28.9	30.4	31.9	1	42.1	9.5	PTVS26VS1UR	
	28	0.001	0.1	31.1	32.8	34.4	1	45.4	8.8	PTVS28VS1UR	
	30	0.001	0.1	33.3	35.1	36.8	1	48.4	8.3	PTVS30VS1UR	
	33	0.001	0.1	36.7	38.7	40.6	1	53.3	7.5	PTVS33VS1UR	
	36	0.001	0.1	40	42.1	44.2	1	58.1	6.9	PTVS36VS1UR	
	40	0.001	0.1	44.4	46.8	49.1	1	64.5	6.2	PTVS40VS1UR	
	43	0.001	0.1	47.8	50.3	52.8	1	69.4	5.8	PTVS43VS1UR	
	45	0.001	0.1	50	52.65	55.3	1	72.7	5.5	PTVS45VS1UR	
	48	0.001	0.1	53.3	56.1	58.9	1	77.4	5.2	PTVS48VS1UR	
	51	0.001	0.1	56.7	59.7	62.7	1	82.4	4.9	PTVS51VS1UR	
	54	0.001	0.1	60	63.15	66.3	1	87.1	4.6	PTVS54VS1UR	
	58	0.001	0.1	64.4	67.8	71.2	1	93.6	4.3	PTVS58VS1UR	
	60	0.001	0.1	66.7	70.2	73.7	1	96.8	4.1	PTVS60VS1UR	
	64	0.001	0.1	71.1	74.85	78.6	1	103	3.9	PTVS64VS1UR	

NXP 400 W TVS diodes in SOD123W compared with TVS diodes in equivalent FlatPower packages

Supplier	Type range in SOD123W/equivalent package	Power (W)	V _{RWM} (V)	Body dimensions (mm)		
NXP	PTVSxS1UR series	400	3.3 - 64	2.6 x 1.7 x 1.0		
ON Semiconductor	SMF5.0AT1 series	200	5 - 58	2.7 x 1.65 x 0.95		
Vishay	SMF5V0A series	200	5 - 51	2.8 x 1.9 x 1.0		
Diodes Inc.	DLFT5V0A series	225	5 - 51	2.8 x 1.78 x 1.0		
NVP advantage: Highert surge capability widest voltage range						

NXP advantage: Highest surge capability, widest voltage range

NXP 400 W TVS diodes in SOD123W compared with TVS diodes in SMA packages

Supplier	Type range in SOD123W/SMA package	Power (W)	V _{RWM} (V)	Body dimensions (mm)
NXP	PTVSxS1UR series	400	3.3 - 64	2.6 x 1.7 x 1.0
ON Semi	1SMAxxC series		5 - 78	4.32 x 2.6 x 2.17
Vishay	SMAJxx series	400	5 - 188	4.25 2.4 2.4
	P4SMA series	400	5.8 - 185	4.23 X 2.0 X 2.1
Diodes Inc.	SMAJxx series		5 - 170	4.3 x 2.6 x 2.15
ST Microelectronics	SM2T series	200	3.3 - 24	1.9 x 1.9 x 1.0
	SMM series	400	5 - 33	2.95 x 1.9 x 0.85
	SMAJ series	400	5 - 188	4.27 x 2.6 x 1.96

NXP advantage: Smallest package with competitive surge capability

Package information





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