AS6NT-Q1 Series

600W Dual Flat No-Lead Unidirectional and Bidirectional Transient Voltage Suppressors 22V- 220V

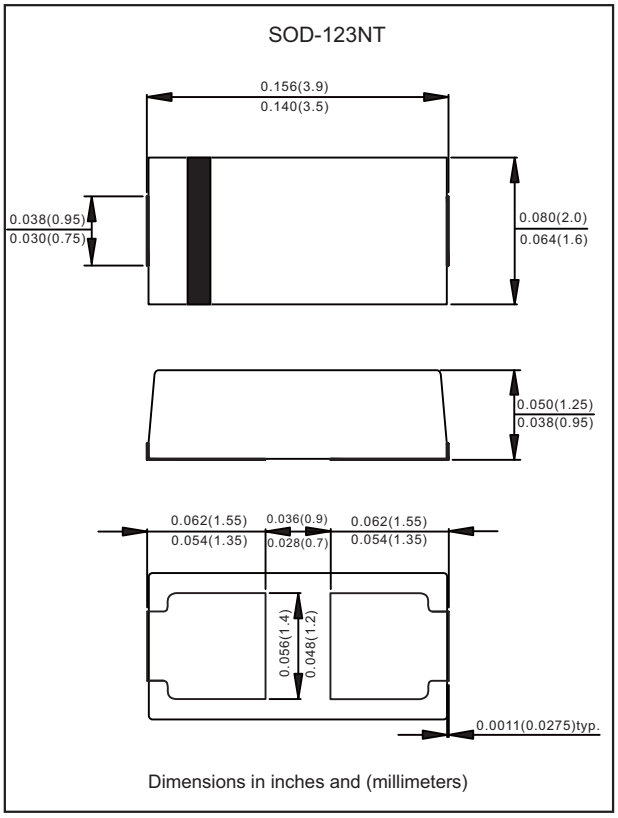
Features

- Well package design with solder pad on the bottom for best thermal performance
- Leads on two opposing sides of the body
- Tiny plastic DFN package
- 600W peak pulse power capability with a 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Uni and Bidirectional unit
- Glass passivated chip junction
- Excellent clamping capability
- Low incremental surge resistance
- Lead-free parts meet RoHS requirements
- Compliant to Halogen-free
- Suffix “-Q1” for AEC-Q101

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123NT
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band(Uni-directional types only)
- Mounting Position : Any

Package outline



Maximum ratings (AT T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Peak power dissipation	with a 10/1000μs waveform, Note 1, 2 & Fig. 1	P_{PPM}	600	W
Peak pulse current	with a 10/1000μs waveform	I_{PPM}	See Table	A
Steady state power dissipation	at T_L=75°C, Note 2	$P_{M(AV)}$	1.5	W
Typical thermal resistance	Junction to case Junction to ambient	$R_{\theta JC}$ $R_{\theta JA}$	32 58	°C/W
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-65 to +175	°C

Notes 1: Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2
2: Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5

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Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}		Maximum Reverse Leakage Current	Marking Code	
		V_{RWM}	$V_{BR\,Min}$	$V_{BR\,Max}$	I_T	V_C	I_{PP}	I_R@V_{RWM}		
		Volts	Volts	Volts	mA	Volts	A	μA	Uni	Bi
AS6NT22A-Q1	AS6NT22CA-Q1	22	24.4	26.9	1.0	35.5	16.91	5	6LX	6BX
AS6NT24A-Q1	AS6NT24CA-Q1	24	26.7	29.5	1.0	38.9	15.43	5	6LZ	6BZ
AS6NT26A-Q1	AS6NT26CA-Q1	26	28.9	31.9	1.0	42.1	14.26	5	6ME	6CE
AS6NT28A-Q1	AS6NT28CA-Q1	28	31.1	34.4	1.0	45.4	13.22	5	6MG	6CG
AS6NT30A-Q1	AS6NT30CA-Q1	30	33.3	36.8	1.0	48.4	12.40	5	6MK	6CK
AS6NT33A-Q1	AS6NT33CA-Q1	33	36.7	40.6	1.0	53.3	11.26	5	6MM	6CM
AS6NT36A-Q1	AS6NT36CA-Q1	36	40.0	44.2	1.0	58.1	10.33	5	6MP	6CP
AS6NT40A-Q1	AS6NT40CA-Q1	40	44.4	49.1	1.0	64.5	9.31	5	6MR	6CR
AS6NT43A-Q1	AS6NT43CA-Q1	43	47.8	52.8	1.0	69.4	8.65	5	6MT	6CT
AS6NT45A-Q1	AS6NT45CA-Q1	45	50.0	55.3	1.0	72.7	8.26	5	6MV	6CV
AS6NT48A-Q1	AS6NT48CA-Q1	48	53.3	58.9	1.0	77.4	7.76	5	6MX	6CX
AS6NT51A-Q1	AS6NT51CA-Q1	51	56.7	62.7	1.0	82.4	7.29	5	6MZ	6CZ
AS6NT54A-Q1	AS6NT54CA-Q1	54	60.0	66.3	1.0	87.1	6.89	5	6NE	6DE
AS6NT58A-Q1	AS6NT58CA-Q1	58	64.4	71.2	1.0	93.6	6.42	5	6NG	6DG
AS6NT60A-Q1	AS6NT60CA-Q1	60	66.7	73.7	1.0	96.8	6.20	5	6NK	6DK
AS6NT64A-Q1	AS6NT64CA-Q1	64	71.1	78.6	1.0	103	5.83	5	6NM	6DM
AS6NT70A-Q1	AS6NT70CA-Q1	70	77.8	86.0	1.0	113	5.31	5	6NP	6DP
AS6NT75A-Q1	AS6NT75CA-Q1	75	83.3	92.1	1.0	121	4.96	5	6NR	6DR
AS6NT78A-Q1	AS6NT78CA-Q1	78	86.7	95.8	1.0	126	4.77	5	6NT	6DT
AS6NT85A-Q1	AS6NT85CA-Q1	85	94.4	104	1.0	137	4.38	5	6NV	6DV
AS6NT90A-Q1	AS6NT90CA-Q1	90	100	111	1.0	146	4.11	5	6NX	6DX
AS6NT100A-Q1	AS6NT100CA-Q1	100	111	123	1.0	162	3.71	5	6NZ	6DZ
AS6NT110A-Q1	AS6NT110CA-Q1	110	122	135	1.0	177	3.39	5	6PE	6EE
AS6NT120A-Q1	AS6NT120CA-Q1	120	133	147	1.0	193	3.11	5	6PG	6EG
AS6NT130A-Q1	AS6NT130CA-Q1	130	144	159	1.0	209	2.88	5	6PK	6EK
AS6NT150A-Q1	AS6NT150CA-Q1	150	167	185	1.0	243	2.47	5	6PM	6EM
AS6NT160A-Q1	AS6NT160CA-Q1	160	178	197	1.0	259	2.32	5	6PP	6EP
AS6NT170A-Q1	AS6NT170CA-Q1	170	189	209	1.0	275	2.19	5	6PR	6ER
AS6NT180A-Q1	AS6NT180CA-Q1	180	201	222	1.0	292	2.06	5	6PT	6ET
AS6NT200A-Q1	AS6NT200CA-Q1	200	224	247	1.0	324	1.86	5	6PV	6EV
AS6NT220A-Q1	AS6NT220CA-Q1	220	246	272	1.0	356	1.69	5	6PX	6EX

Notes 1: Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices

2: Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon pn junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 6 & Fig. 7

Rating and characteristic curves

Fig.1 - Pealk Pulse Power Rating Curve

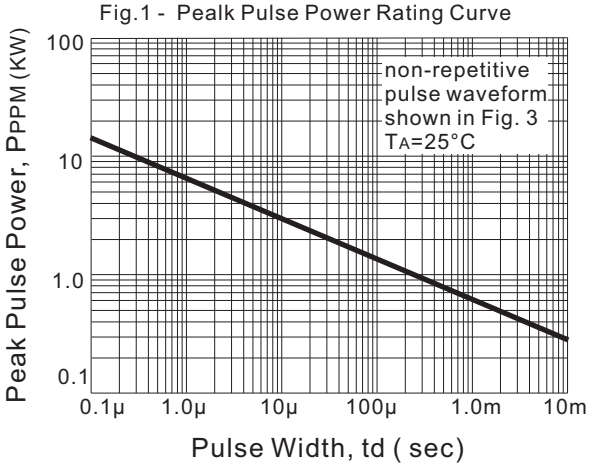


Fig.2 - Pulse Derating Curve

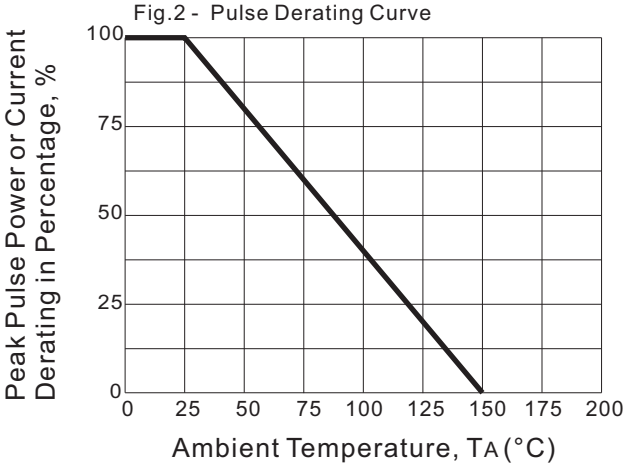


Fig.3 - Pulse Waveform

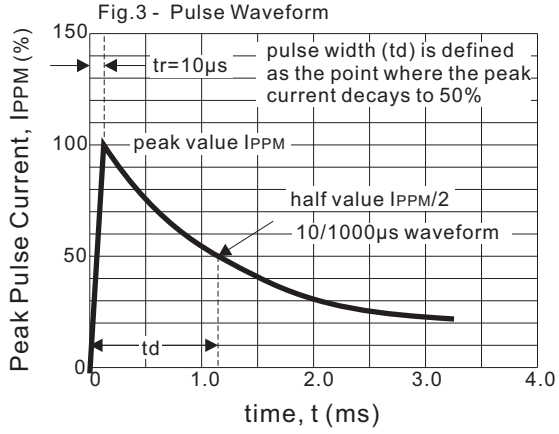


Fig.4 - Typical Junction Capacitance

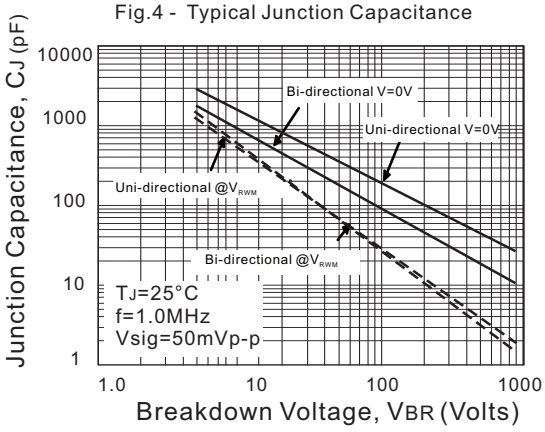
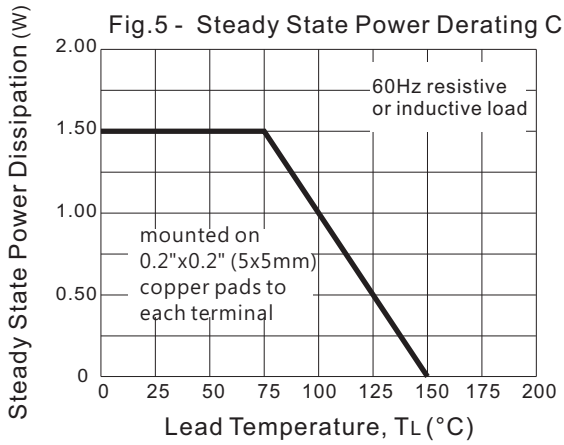


Fig.5 - Steady State Power Derating Curve



Rating and characteristic curves

Fig. 6 - Transients of several thousand volts can be clamped to a safe level by the TVS

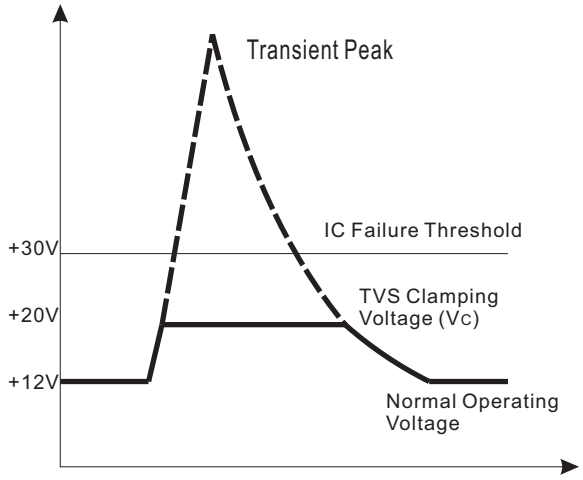
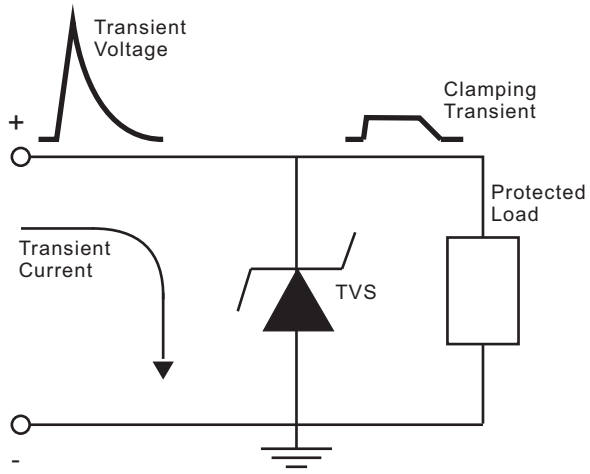


Fig. 7 - Transient current is divered to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level



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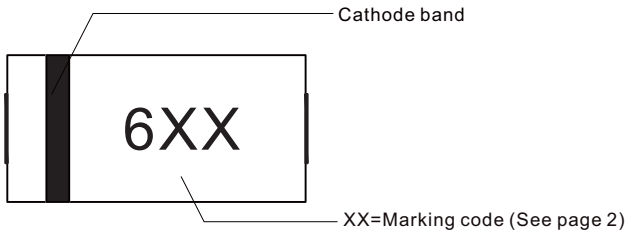
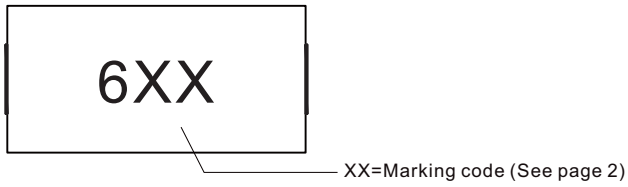
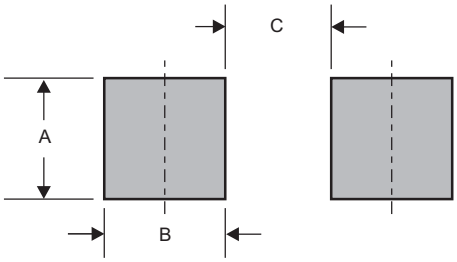
Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

Marking

Type number	Example
Uni-Directional	
Bi-Directional	

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123NT	0.056 (1.40)	0.062(1.55)	0.028 (0.70)