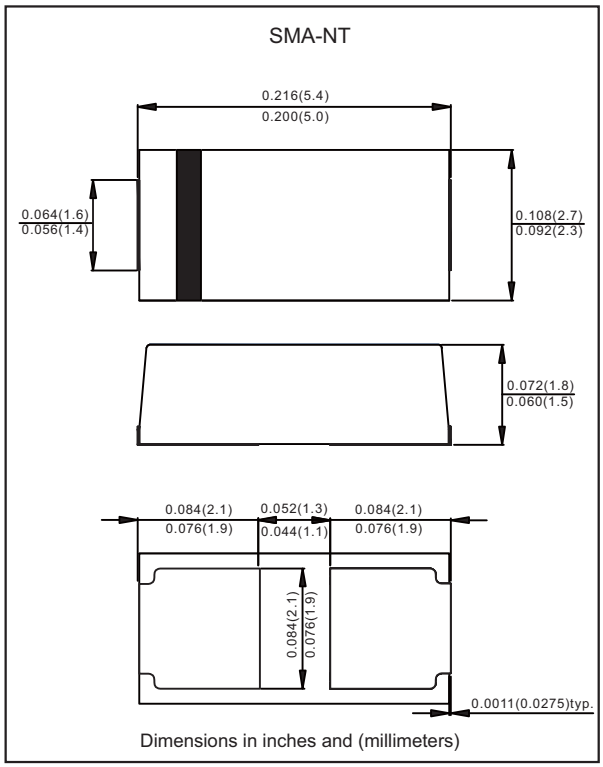
P10SMANT Series

1000W Dual Flat No-Lead Unidirectional and Bidirectional Transient Voltage Suppressors 20V-220V

Features

- Well package design with solder pad on the bottom for best thermal performance
- Leads on two opposing sides of the body
- 1000W 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

Package outline



Dimensions in inches and (millimeters)

Mechanical data

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

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}	1000	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	$P_{M(AV)}$	4.0	W
Peak forward surge current	8.3ms single half sine-wave, Note 3	I_{FSM}	70	A
Typical thermal resistance	Junction to case Junction to ambient	$R_{\theta JC}$ $R_{\theta JA}$	30 50	°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
3. Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

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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
P10SMANT20A	P10SMANT20CA	17.1	19.00	21.00	1.0	27.7	36.10	5	K20A	K20C
P10SMANT22A	P10SMANT22CA	18.8	20.90	23.10	1.0	30.6	32.67	5	K22A	K22C
P10SMANT24A	P10SMANT24CA	20.5	22.80	25.20	1.0	33.2	30.12	5	K24A	K24C
P10SMANT27A	P10SMANT27CA	23.1	25.65	28.35	1.0	37.5	26.66	5	K27A	K27C
P10SMANT30A	P10SMANT30CA	25.6	28.50	31.50	1.0	41.4	24.15	5	K30A	K30C
P10SMANT33A	P10SMANT33CA	28.2	31.35	34.65	1.0	45.7	21.88	5	K33A	K33C
P10SMANT36A	P10SMANT36CA	30.8	34.20	37.80	1.0	49.9	20.04	5	K36A	K36C
P10SMANT39A	P10SMANT39CA	33.3	37.05	40.95	1.0	53.9	18.55	5	K39A	K39C
P10SMANT43A	P10SMANT43CA	36.8	40.85	45.15	1.0	59.3	16.86	5	K43A	K43C
P10SMANT47A	P10SMANT47CA	40.2	44.65	49.35	1.0	64.8	15.43	5	K47A	K47C
P10SMANT51A	P10SMANT51CA	43.6	48.45	53.55	1.0	70.1	14.26	5	K51A	K51C
P10SMANT56A	P10SMANT56CA	47.8	53.20	58.80	1.0	77.0	12.98	5	K56A	K56C
P10SMANT62A	P10SMANT62CA	53.0	58.90	65.10	1.0	85.0	11.76	5	K62A	K62C
P10SMANT68A	P10SMANT68CA	58.1	64.60	71.40	1.0	92.0	10.86	5	K68A	K68C
P10SMANT75A	P10SMANT75CA	64.1	71.25	78.75	1.0	103.0	9.70	5	K75A	K75C
P10SMANT82A	P10SMANT82CA	70.1	77.90	86.10	1.0	113.0	8.84	5	K82A	K82C
P10SMANT91A	P10SMANT91CA	77.8	86.45	95.55	1.0	125.0	8.00	5	K91A	K91C
P10SMANT100A	P10SMANT100CA	85.5	95.00	105.0	1.0	137.0	7.29	5	K100A	K100C
P10SMANT110A	P10SMANT110CA	94.0	104.5	115.5	1.0	152.0	6.57	5	K110A	K110C
P10SMANT120A	P10SMANT120CA	102.0	114.0	126.0	1.0	165.0	6.06	5	K120A	K120C
P10SMANT130A	P10SMANT130CA	111.0	123.5	136.5	1.0	179.0	5.58	5	K130A	K130C
P10SMANT150A	P10SMANT150CA	128.0	142.5	157.5	1.0	207.0	4.83	5	K150A	K150C
P10SMANT160A	P10SMANT160CA	136.0	152.0	168.0	1.0	219.0	4.56	5	K160A	K160C
P10SMANT170A	P10SMANT170CA	145.0	161.5	178.5	1.0	234.0	4.27	5	K170A	K170C
P10SMANT180A	P10SMANT180CA	154.0	171.0	189.0	1.0	246.0	4.06	5	K180A	K180C
P10SMANT200A	P10SMANT200CA	171.0	190.0	210.0	1.0	274.0	3.64	5	K200A	K200C
P10SMANT220A	P10SMANT220CA	185.0	209.0	231.0	1.0	328.0	3.04	5	K220A	K220C

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

Rating and characteristic curves

Fig.1 - Pealk Pulse Power Rating Curve

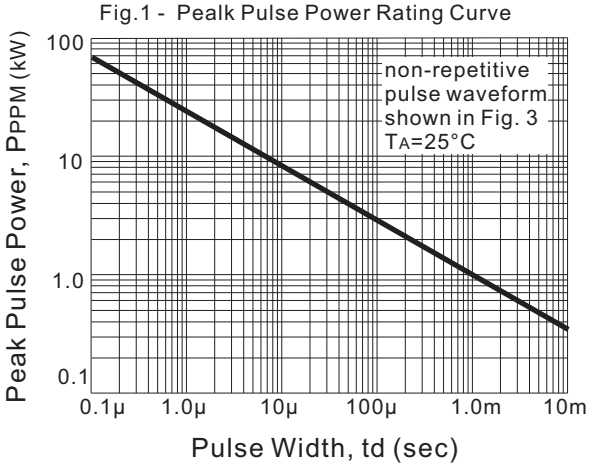


Fig.2 - Pulse Derating Curve

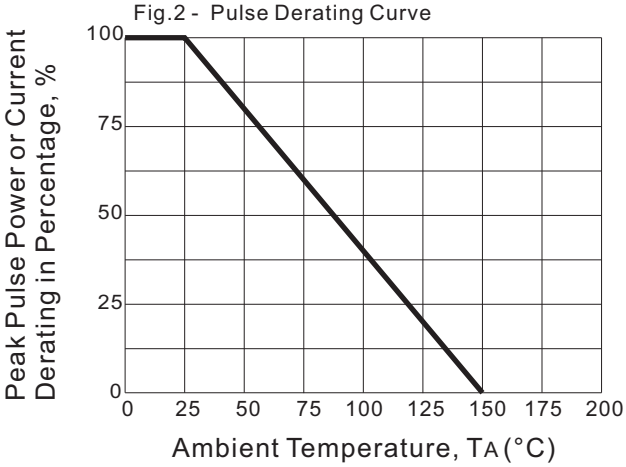


Fig.3 - Pulse Waveform

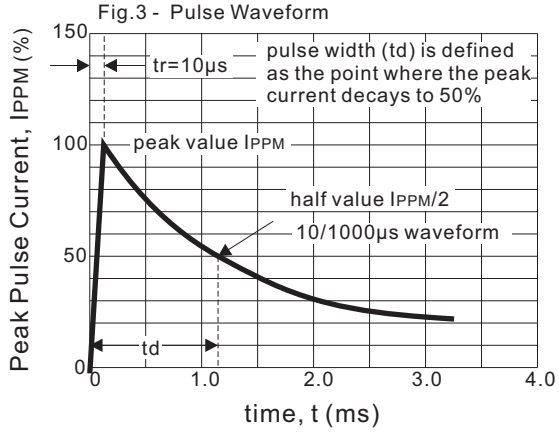


Fig.4 - Typical Junction Capacitance

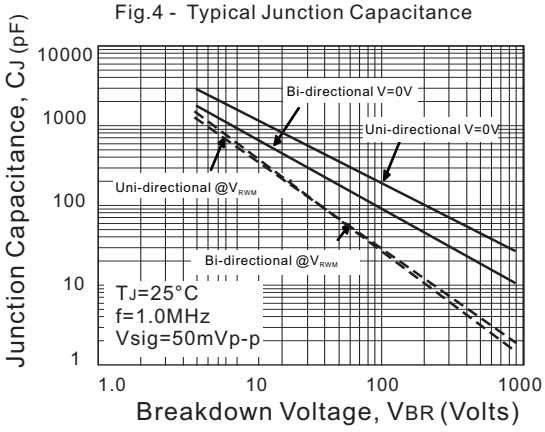


Fig.5 - Steady State Power Derating Curve

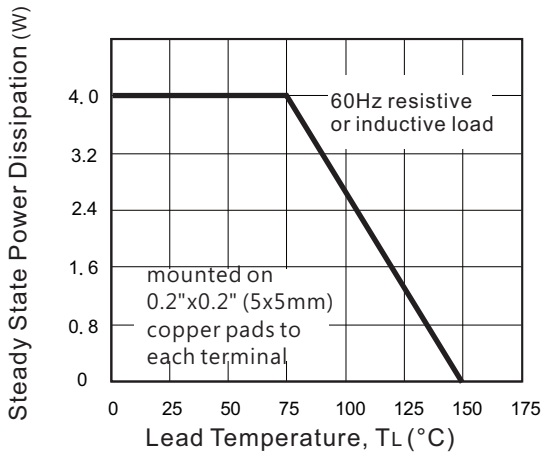
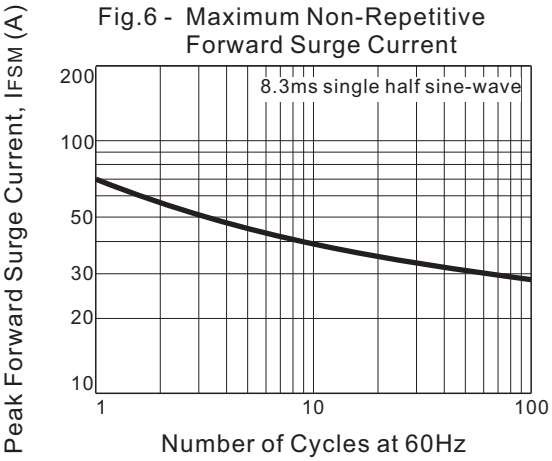


Fig.6 - Maximum Non-Repetitive Forward Surge Current



Rating and characteristic curves

Fig. 7 - Transients of several thousand volts can be clamped to a safe level by the TVS

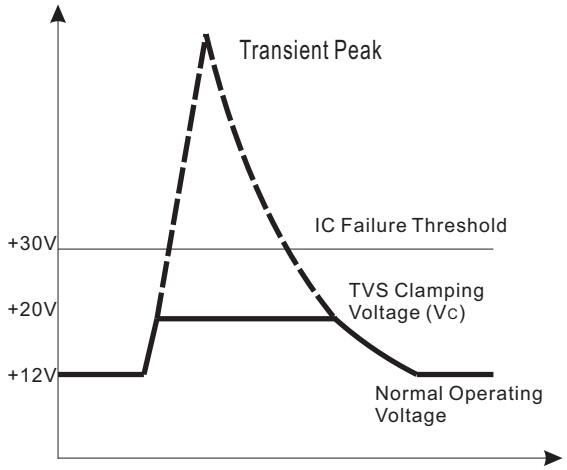
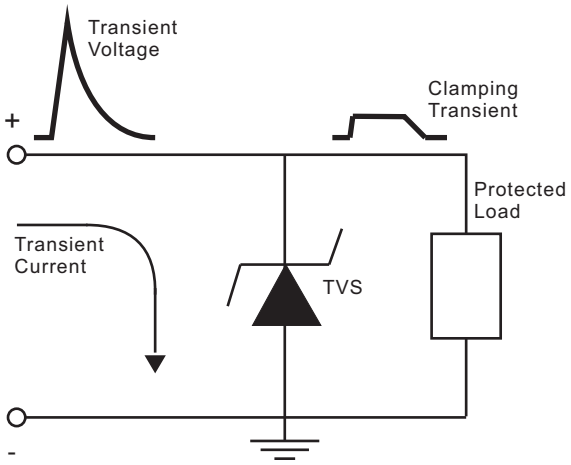


Fig. 8 - Transient current is divered to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level



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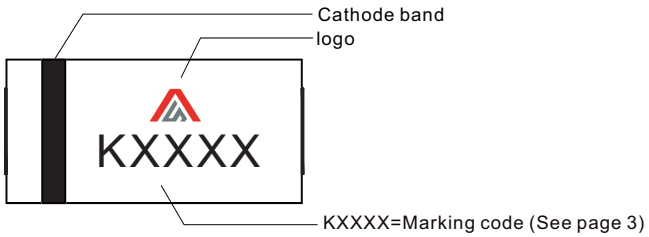
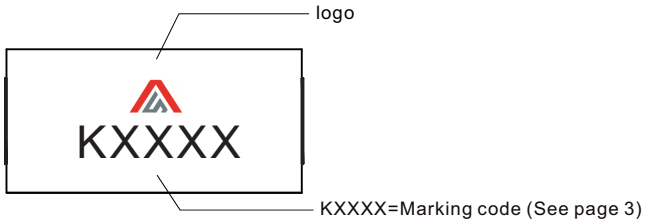
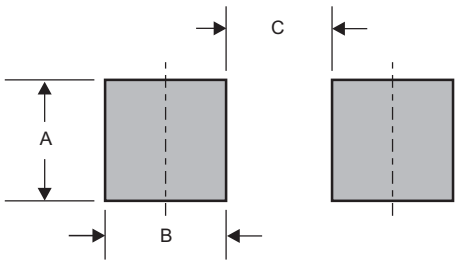
Pinning information

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
SMA-NT	0.084 (2.10)	0.084 (2.10)	0.044 (1.10)