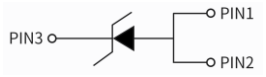
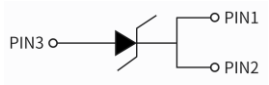
Surface Mount Transient Voltage Suppressor Diodes

N-type TVS



P-type TVS



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional
- 1500W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

Mechanical Data

- **Package**: TO-277
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity**: For uni-directional types the band denotes cathode end

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform (1)(2)	P_{PPM}	W	1500
Peak pulse current, with a 10/1000us waveform (1)	I_{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at TL=75℃ (2)	P_D	W	5.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (3)	I_{FSM}	A	180
Operating junction and storage temperature range	T_J,T_{STG}	℃	-55 to +150
Electrostatic Discharge（IEC61000-4-2 air discharge）	ESD	KV	±30
Electrostatic Discharge（IEC61000-4-2 contact discharge）			

■Electrical Characteristics（Ta=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage at 100A for unidirectional only(4)	V_{FM}	V	3.5

■Thermal Characteristics （Ta=25℃ Unless otherwise specified）

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal Resistance(Typical)	$R_{\theta J-A}$(4)	℃/W	junction to ambient	90
	$R_{\theta J-L}$	℃/W	junction to lead	18

Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T_A= 25℃ per Fig.2.
(2) Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal
(3) Measured on 8.3ms single half sine-wave or equivalent square wave,duty cycle=4 pulses per minute maximum.
(4) Mounted on minimum recommended pad layout.

■Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number (P-type)	Part Number (N-type)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(1)(mA)				
SMTJ5.0A	/	6.4	7.07	10	1000	5	163.04	9.2
SMTJ6.0A	/	6.67	7.37	10	1000	6	145.63	10.3
SMTJ6.5A	/	7.22	7.98	10	500	6.5	133.93	11.2
SMTJ7.0A	/	7.78	8.6	10	200	7	125	12
SMTJ7.5A	/	8.33	9.21	1	100	7.5	116.28	12.9
SMTJ8.0A	/	8.89	9.83	1	50	8	110.29	13.6
SMTJ8.5A	/	9.44	10.4	1	20	8.5	104.17	14.4
SMTJ9.0A	/	10	11.1	1	10	9	97.4	15.4
SMTJ10A	/	11.1	12.3	1	5	10	88.24	17
SMTJ11A	/	12.2	13.5	1	5	11	82.42	18.2
SMTJ12A	/	13.3	14.7	1	5	12	75.38	19.9
SMTJ13A	/	14.4	15.9	1	5	13	69.77	21.5
SMTJ14A	/	15.6	17.2	1	5	14	64.66	23.2
SMTJ15A	/	16.7	18.5	1	5	15	61.48	24.4
SMTJ16A	/	17.8	19.7	1	5	16	57.69	26
SMTJ17A	/	18.9	20.9	1	5	17	54.35	27.6
SMTJ18A	/	20	22.1	1	5	18	51.37	29.2
SMTJ19A	/	21.1	23.3	1	5	19	48.73	30.8
SMTJ20A	/	22.2	24.5	1	5	20	46.3	32.4
SMTJ22A	SMTJ22AN	24.4	26.9	1	1	22	42.25	35.5
SMTJ24A	SMTJ24AN	26.7	29.5	1	1	24	38.56	38.9
SMTJ26A	SMTJ26AN	28.9	31.9	1	1	26	35.63	42.1
SMTJ28A	SMTJ28AN	31.1	34.4	1	1	28	33.04	45.4
SMTJ30A	SMTJ30AN	33.3	36.8	1	1	30	30.99	48.4
SMTJ33A	SMTJ33AN	36.7	40.6	1	1	33	28.14	53.3
SMTJ36A	SMTJ36AN	40	44.2	1	1	36	25.82	58.1
/	SMTJ40AN	44.4	49.1	1	1	40	23.26	64.5
/	SMTJ43AN	47.8	52.8	1	1	43	21.61	69.4
/	SMTJ45AN	50	55.3	1	1	45	20.63	72.7
/	SMTJ48AN	53.3	58.9	1	1	48	19.38	77.4
/	SMTJ51AN	56.7	62.7	1	1	51	18.2	82.4

■Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number (P-type)	Part Number (N-type)	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(1)(mA)				
/	SMTJ54AN	60	66.3	1	1	54	17.22	87.1
/	SMTJ58AN	64.4	71.2	1	1	58	16.03	93.6
/	SMTJ60AN	66.7	73.7	1	1	60	15.5	96.8
/	SMTJ64AN	71.1	78.6	1	1	64	14.56	103
/	SMTJ70AN	77.8	86	1	1	70	13.27	113
/	SMTJ75AN	83.3	92.1	1	1	75	12.4	121
/	SMTJ78AN	86.7	95.8	1	1	78	11.9	126
/	SMTJ80AN	88.8	97.6	1	1	80	11.57	129.6
/	SMTJ85AN	94.4	104	1	1	85	10.95	137

Notes:

(1) Pulse Test：tp≤50ms Pulse test: tp≤50ms.

(2) Surge current waveform per Fig. 3 and derated per Fig.2.

■Ordering Information (Example)

PREFERED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMTJ SERIES	F1	Approximate 0.0821	5000	/	80000	13” reel

■ Characteristics(Typical)

FIG1:Peak Pulse Power Rating Curve

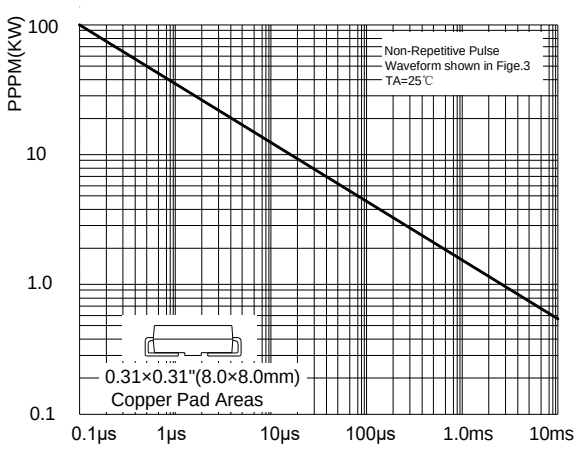


FIG2: Pulse Power or Current vs. Initial Junction Temperature

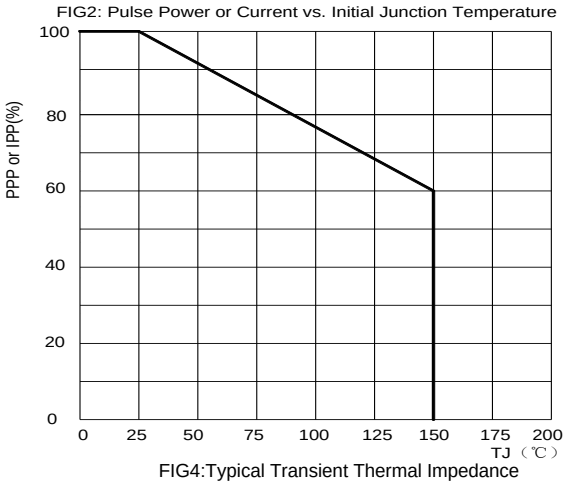


FIG3: Pulse Waveform

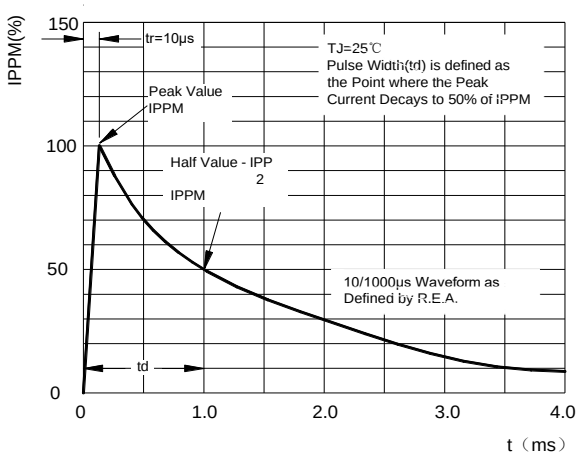


FIG4:Typical Transient Thermal Impedance

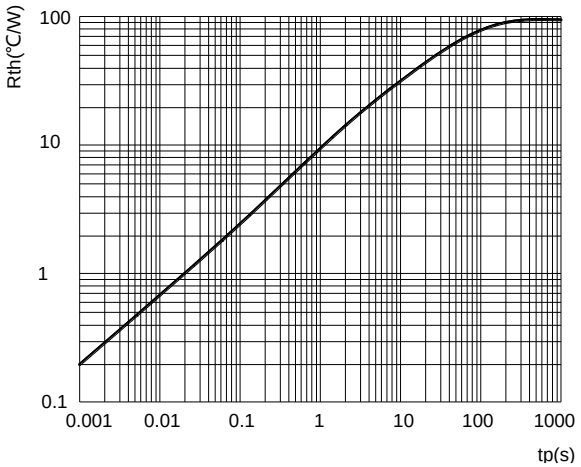


FIG5: Maximum Non-Repetitive Surge Current

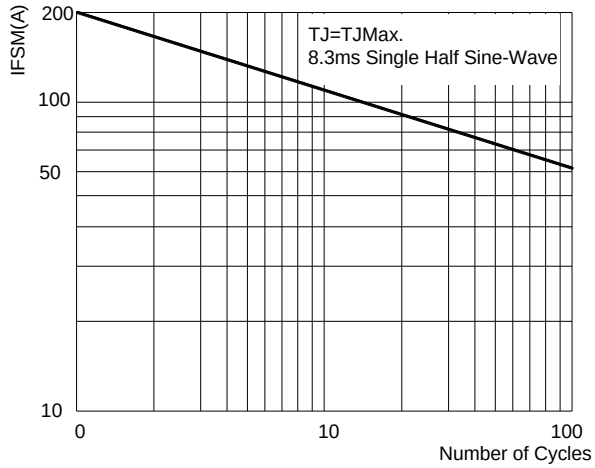
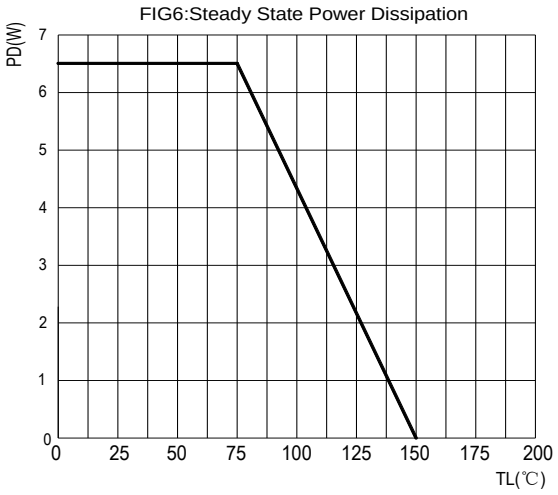
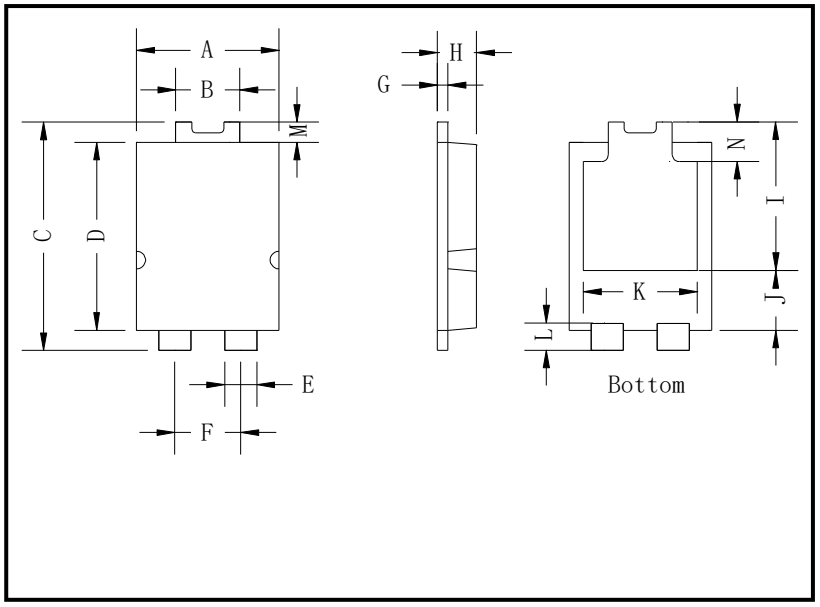


FIG6:Steady State Power Dissipation

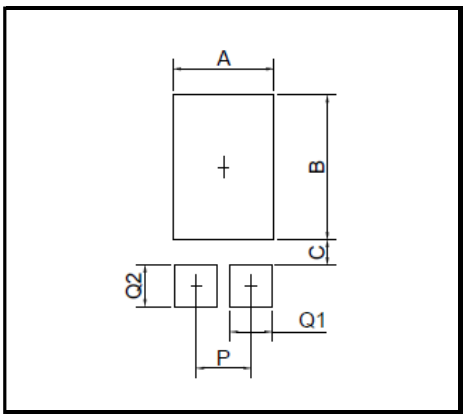


■ Outline Dimensions



TO-277		
Dim	Min(mm)	Max(mm)
A	3.90	4.10
B	1.70	1.90
C	6.40	6.60
D	5.30	5.50
E	0.80	1.00
F	1.85 ref.	
G	0.35	0.45
H	1.10	1.20
I	4.10	4.50
J	1.50	1.90
K	2.90	3.40
L	0.55	0.75
M	0.50 ref.	
N	1.15 ref.	

■ Suggested pad layout



DIM	MIN.(mm)
A	3.36
B	4.86
C	0.85
P	1.84
Q1	1.40
Q2	1.40

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