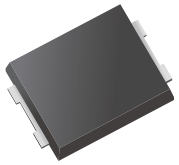
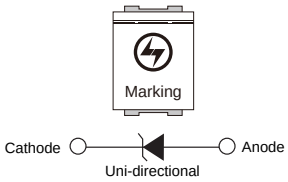
LTVxxA(C)T Series

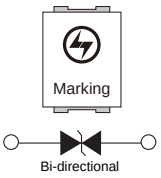
Transient Voltage Suppressors (TVS) Data Sheet

Features



- 5000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020
- Typical I_R less than 5μA above 11V
- For surface mounted applications in order to optimize board space
- Low inductance
- Fast response time
- Low profile package
- Glass passivated junction
- Excellent clamping capability
- Built-in strain relief
- Lead free in comply with EU RoHS 2011/65/EU directives





Mechanical Data

- Case: PDFN7656
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types
- Approx. Weight: 0.183g

Applications

- I/O interface
- AC/DC power supply
- Vcc bus
- Low frequency signal transmission line (RS232, RS485, etc.)

Ordering Information

Part Number	Marking	Shipping	Reel
LTVxxA(C)T	See the Table	5000PCS Tape&Reel	13 inchs

Maximum Ratings and Characteristics

Ratings at 25℃ ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak pulse power dissipation at 10/1000μs waveform (Note1, Note2, Fig.1)	P_{PPM}	Minimum 5000	W
Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)	I_{PPM}	See Table	A
Steady state power dissipation at T_A=50℃ (Fig.5)	$P_{M(AV)}$	6.5	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note3, Fig.6)	I_{FSM}	300	A
Operating junction and Storage Temperature Range	T_J,T_{STG}	-55 to +150	℃
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	℃/W

Notes: (1) Non-repetitive current pulse, per Fig.3 and derated above T_A=25℃ per Fig.2.
(2) Mounted on 8.0mm×8.0mm (0.03mm thick) copper pads to each terminal.
(3) 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum, unidirectional only.

Electrical Characteristics (T_A=25℃)

Part Number (Uni)	Part Number (Bi)	Marking	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @V_R (μA)
				Min	Max				
LTV11AT	LTV11CT	11T	11.0	12.20	13.50	10	18.2	275.00	800
LTV12AT	LTV12CT	12T	12.0	13.30	14.70	10	19.9	252.00	800
LTV13AT	LTV13CT	13T	13.0	14.40	15.90	10	21.5	233.00	500
LTV14AT	LTV14CT	14T	14.0	15.60	17.20	10	23.2	216.00	200
LTV15AT	LTV15CT	15T	15.0	16.70	18.50	1	24.4	205.00	100
LTV16AT	LTV16CT	16T	16.0	17.80	19.70	1	26.0	193.00	50
LTV17AT	LTV17CT	17T	17.0	18.90	20.90	1	27.6	181.00	20
LTV18AT	LTV18CT	18T	18.0	20.00	22.10	1	29.2	172.00	10
LTV20AT	LTV20CT	20T	20.0	22.20	24.50	1	32.4	155.00	5
LTV22AT	LTV22CT	22T	22.0	24.40	26.90	1	35.5	141.00	5
LTV24AT	LTV24CT	24T	24.0	26.70	29.50	1	38.9	129.00	5
LTV26AT	LTV26CT	26T	26.0	28.90	31.90	1	42.1	119.00	5
LTV28AT	LTV28CT	28T	28.0	31.10	34.40	1	45.4	110.00	5
LTV30AT	LTV30CT	30T	30.0	33.30	36.80	1	48.4	103.00	5
LTV33AT	LTV33CT	33T	33.0	36.70	40.60	1	53.3	93.90	5
LTV36AT	LTV36CT	36T	36.0	40.00	44.20	1	58.1	86.10	5
LTV40AT	LTV40CT	40T	40.0	44.40	49.10	1	64.5	77.60	5
LTV43AT	LTV43CT	43T	43.0	47.80	52.80	1	69.4	72.10	5
LTV45AT	LTV45CT	45T	45.0	50.00	55.30	1	72.7	68.08	5
LTV48AT	LTV48CT	48T	48.0	53.30	59.90	1	77.4	64.70	5
LTV51AT	LTV51CT	51T	51.0	56.70	62.70	1	82.4	60.70	5
LTV54AT	LTV54CT	54T	54.0	60.00	66.30	1	87.1	57.50	5
LTV58AT	LTV58CT	58T	58.0	64.40	71.20	1	93.6	53.50	5
LTV60AT	LTV60CT	60T	60.0	66.70	73.70	1	96.8	51.70	5
LTV64AT	LTV64CT	64T	64.0	71.10	78.60	1	103.0	48.60	5
LTV70AT	LTV70CT	70T	70.0	77.80	86.00	1	113.0	44.30	5
LTV75AT	LTV75CT	75T	75.0	83.30	92.10	1	121.0	41.40	5
LTV78AT	LTV78CT	78T	78.0	86.70	95.80	1	126.0	39.70	5
LTV85AT	LTV85CT	85T	85.0	94.40	104.00	1	137.0	36.50	5
LTV90AT	LTV90CT	90T	90.0	100.00	111.00	1	146.0	34.30	5
LTV100AT	LTV100CT	100T	100.0	111.00	123.00	1	162.0	30.90	5
LTV110AT	LTV110CT	110T	110.0	122.00	135.00	1	177.0	28.30	5
LTV120AT	LTV120CT	120T	120.0	133.00	147.00	1	193.0	26.00	5
LTV130AT	LTV130CT	130T	130.0	144.00	159.00	1	209.0	24.00	5
LTV150AT	LTV150CT	150T	150.0	167.00	185.00	1	243.0	20.60	5
LTV160AT	LTV160CT	160T	160.0	178.00	197.00	1	259.0	19.30	5
LTV170AT	LTV170CT	170T	170.0	189.00	209.00	1	275.0	18.20	5

Notes: For bidirectional type having V_R of 11V and less, the I_R limit is double.

Characteristics Curves (T_A=25°C unless otherwise noted)

FIG.1 PEAK PULSE POWER RATING CURVE

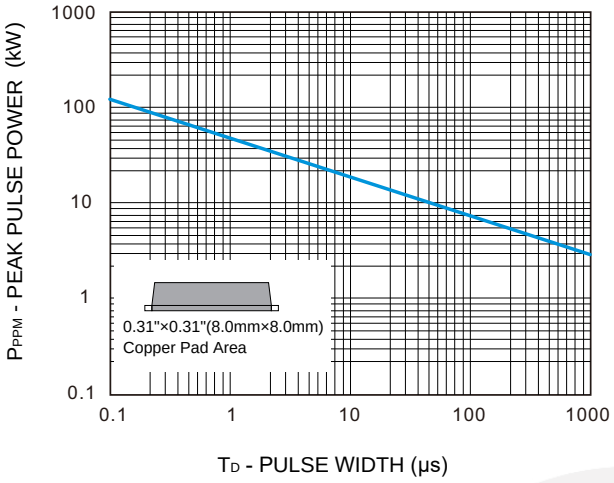


FIG.2 PULSE DERATING CURVE

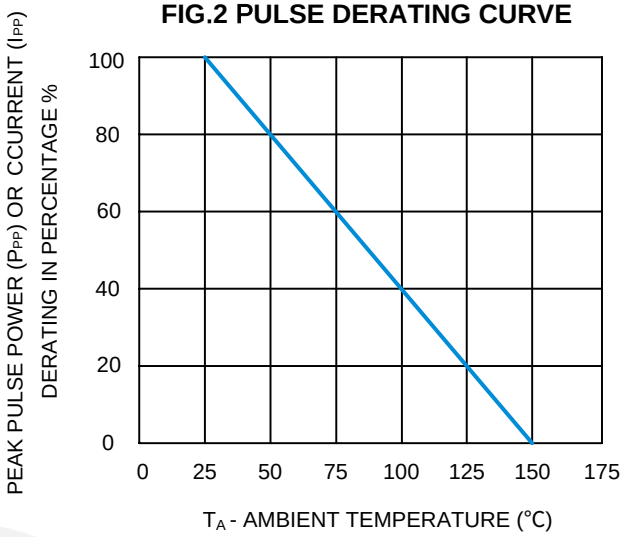


FIG.3 PULSE WAVEFORM

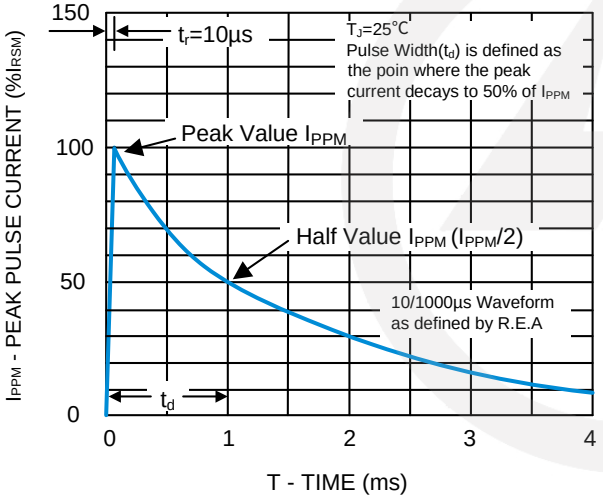


FIG.4 TYPICAL JUNCTION CAPACITANCE

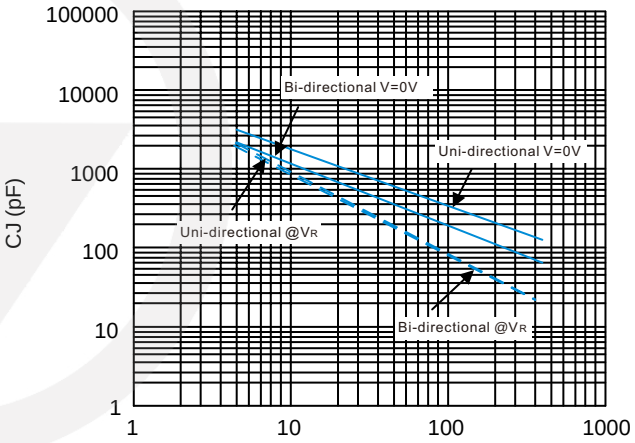


FIG.5 STEADY STATE POWER DISSIPATION DERATING CURVE

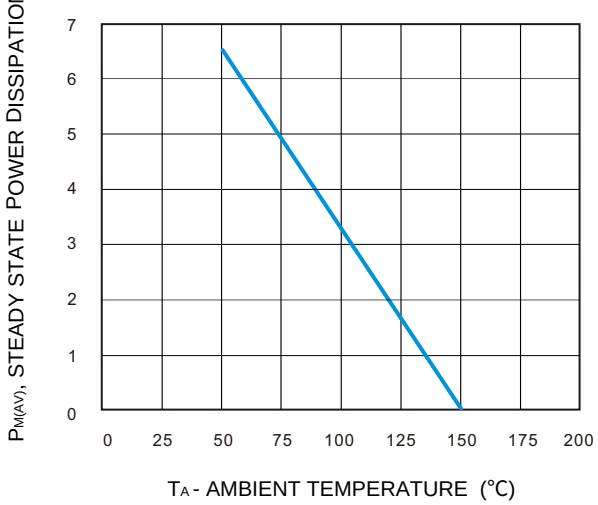
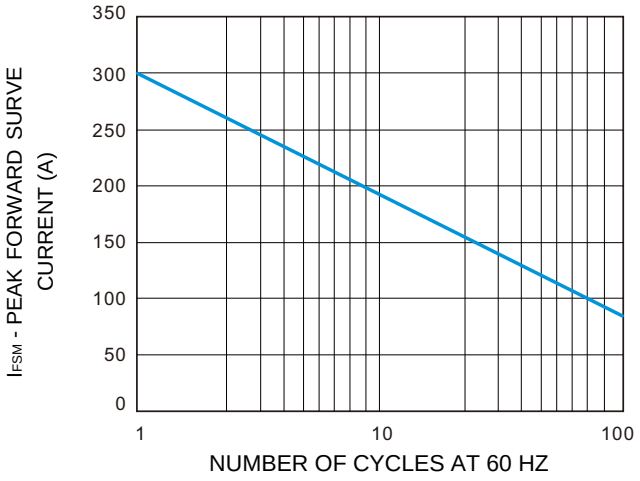


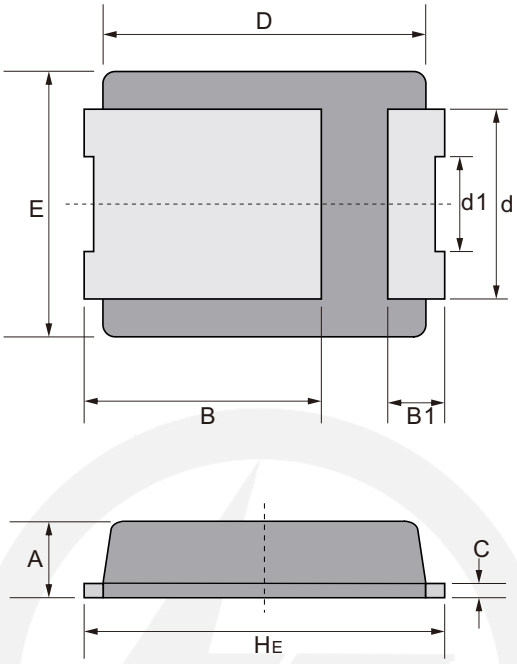
FIG.6 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNI-DIRECTIONAL ONLY



Package Outline

PDFN7656

Unit：mm

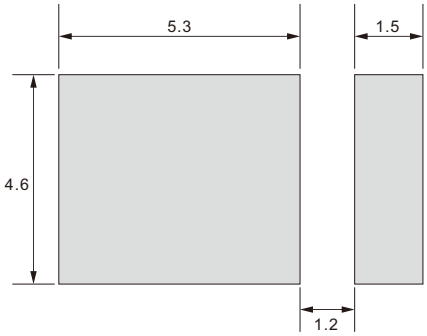


UNIT		A	B	B1	C	D	d	d1	E	HE
mm	max	1.70	5.20	1.40	0.40	7.00	4.20	2.10	5.80	7.80
	min	1.30	4.80	1.00	0.20	6.60	3.80	1.90	5.40	7.40

Suggested Pad Layout

PDFN7656

Unit：mm

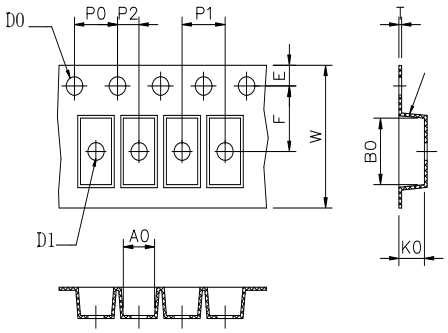


Note:

1. Controlling dimension:in millimeters.
2. General tolerance:±0.05mm
3. The pad layout is for reference purpose only.

Carrier Tape Dimensions

Unit：mm

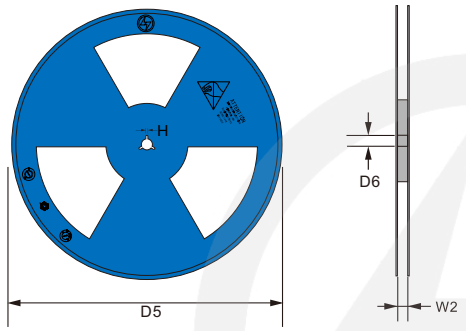


Symbol	Spec	Symbol	Spec
W	12.00±0.10	P1	8.00±0.10
E	1.75±0.10	P2	2.00±0.05
F	5.50±0.05	T	0.25±0.02
D0	1.55±0.05	A0	5.90±0.10
D1	1.55±0.10	B0	8.00±0.10
P0	4.00±0.10	K0	1.75±0.05

Reel Dimensions

Unit：mm

13” Reel

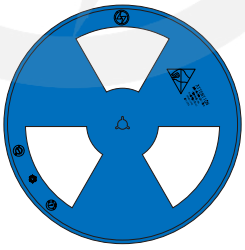


D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	12±2.0
Quantity: 5000PCS	

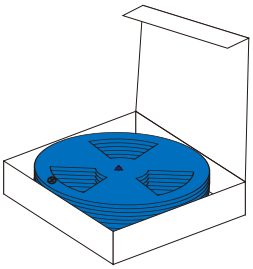
Packaging

PDFN7656

5000PCS/Reel



5Reel/Inner Box
25KPCS/Inner Box



Dim(Unit:mm)
340mm*340mm*85mm

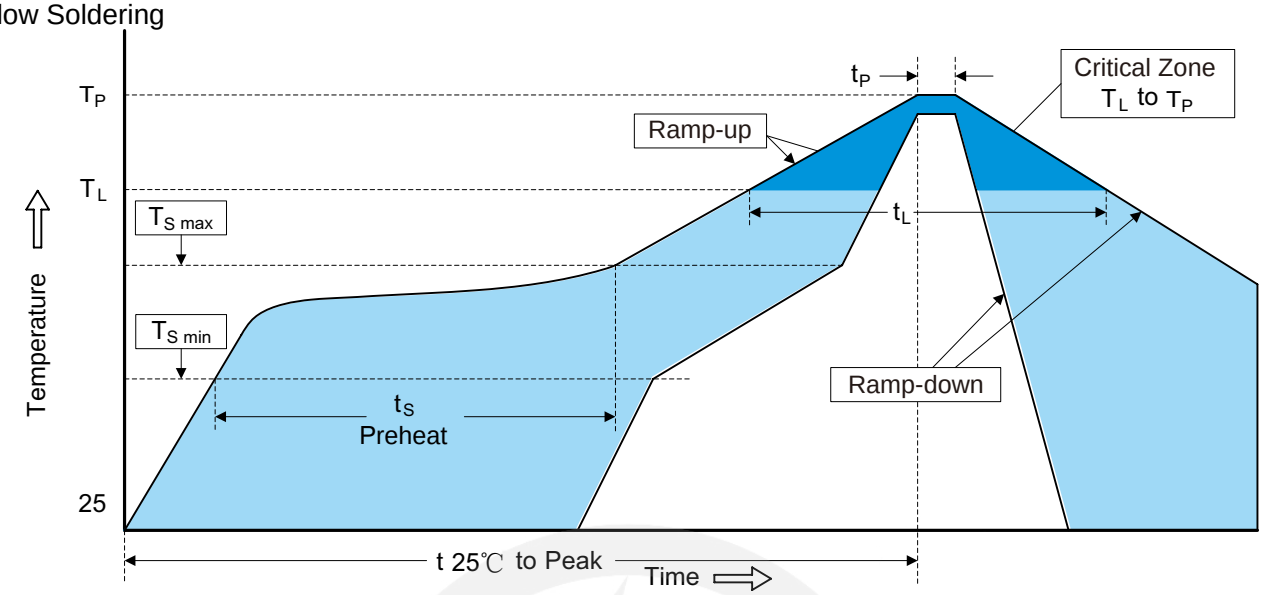
4 Boxs per carton
100KPCS per carton

Dim(Unit:mm)
360mm*360mm*355mm

13 inchs Reel

Recommended Soldering Conditons

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

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Version Update Iformation

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision Content	Revision Reason	Revision Person	Note
01	2024.03.01	2024.03.01	1.0	New file	/	Ding	
02	2026.02.10	2026.02.10	1.1	Modify Package Outline	/	Ding	