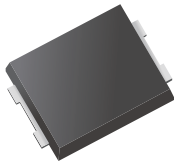
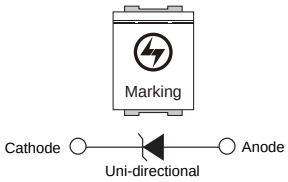
LTVxxA(C)N Series

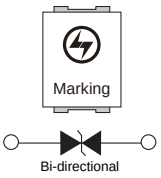
Transient Voltage Suppressors (TVS) Data Sheet

Features



- 1500W 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 1μA above 10V
- 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)N	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 1500	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}	200	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				
LTV5.0AN	LTV5.0CN	5N	5.0	6.40	7.00	10	9.2	163.0	600
LTV6.0AN	LTV6.0CN	6N	6.0	6.67	7.37	10	10.3	145.7	500
LTV6.5AN	LTV6.5CN	6N5	6.5	7.22	7.98	10	11.2	134.0	400
LTV7.0AN	LTV7.0CN	7N	7.0	7.78	8.60	10	12.0	125.0	200
LTV7.5AN	LTV7.5CN	7N5	7.5	8.33	9.21	1	12.9	116.3	100
LTV8.0AN	LTV8.0CN	8N	8.0	8.89	9.83	1	13.6	110.3	50
LTV8.5AN	LTV8.5CN	8N5	8.5	9.44	10.40	1	14.4	104.2	20
LTV9.0AN	LTV9.0CN	9N	9.0	10.00	11.10	1	15.4	97.4	10
LTV10AN	LTV10CN	10N	10.0	11.10	12.30	1	17.0	88.3	5
LTV11AN	LTV11CN	11N	11.0	12.20	13.50	1	18.2	82.5	1
LTV12AN	LTV12CN	12N	12.0	13.30	14.70	1	19.9	75.4	1
LTV13AN	LTV13CN	13N	13.0	14.40	15.90	1	21.5	69.8	1
LTV14AN	LTV14CN	14N	14.0	15.60	17.20	1	23.2	64.7	1
LTV15AN	LTV15CN	15N	15.0	16.70	18.50	1	24.4	61.5	1
LTV16AN	LTV16CN	16N	16.0	17.80	19.70	1	26.0	57.7	1
LTV17AN	LTV17CN	17N	17.0	18.90	20.90	1	27.6	54.4	1
LTV18AN	LTV18CN	18N	18.0	20.00	22.10	1	29.2	51.4	1
LTV20AN	LTV20CN	20N	20.0	22.20	24.50	1	32.4	46.3	1
LTV22AN	LTV22CN	22N	22.0	24.40	26.90	1	35.5	42.3	1
LTV24AN	LTV24CN	24N	24.0	26.70	29.50	1	38.9	38.6	1
LTV26AN	LTV26CN	26N	26.0	28.90	31.90	1	42.1	35.7	1
LTV28AN	LTV28CN	28N	28.0	31.10	34.40	1	45.4	33.1	1
LTV30AN	LTV30CN	30N	30.0	33.30	36.80	1	48.4	31.0	1
LTV33AN	LTV33CN	33N	33.0	36.70	40.60	1	53.3	28.2	1
LTV36AN	LTV36CN	36N	36.0	40.00	44.20	1	58.1	25.9	1
LTV40AN	LTV40CN	40N	40.0	44.40	49.10	1	64.5	23.3	1
LTV43AN	LTV43CN	43N	43.0	47.80	52.80	1	69.4	21.7	1
LTV45AN	LTV45CN	45N	45.0	50.00	55.30	1	72.7	20.6	1
LTV48AN	LTV48CN	48N	48.0	53.30	58.90	1	77.4	19.4	1
LTV51AN	LTV51CN	51N	51.0	56.70	62.70	1	82.4	18.2	1
LTV54AN	LTV54CN	54N	54.0	60.00	66.30	1	87.1	17.3	1
LTV58AN	LTV58CN	58N	58.0	64.40	71.20	1	93.6	16.1	1
LTV60AN	LTV60CN	60N	60.0	66.70	73.70	1	96.8	15.5	1
LTV64AN	LTV64CN	64N	64.0	71.10	78.60	1	103.0	14.6	1
LTV70AN	LTV70CN	70N	70.0	77.80	86.00	1	113.0	13.3	1
LTV75AN	LTV75CN	75N	75.0	83.30	92.10	1	121.0	12.4	1
LTV78AN	LTV78CN	78N	78.0	86.70	95.80	1	126.0	11.9	1
LTV85AN	LTV85CN	85N	85.0	94.40	104.00	1	137.0	11.0	1
LTV90AN	LTV90CN	90N	90.0	100.00	111.00	1	146.0	10.3	1
LTV100AN	LTV100CN	100N	100.0	111.00	123.00	1	162.0	9.3	1
LTV110AN	LTV110CN	110N	110.0	122.00	135.00	1	177.0	8.5	1
LTV120AN	LTV120CN	120N	120.0	133.00	147.00	1	193.0	7.8	1
LTV130AN	LTV130CN	130N	130.0	144.00	159.00	1	209.0	7.2	1
LTV150AN	LTV150CN	150N	150.0	167.00	185.00	1	243.0	6.2	1
LTV160AN	LTV160CN	160N	160.0	178.00	197.00	1	259.0	5.8	1
LTV170AN	LTV170CN	170N	170.0	189.00	209.00	1	275.0	5.5	1
LTV180AN	LTV180CN	180N	180.0	201.00	222.00	1	292.0	5.1	1
LTV190AN	LTV190CN	190N	190.0	211.00	233.00	1	308.0	4.8	1
LTV200AN	LTV200CN	200N	200.0	224.00	247.00	1	324.0	4.6	1
LTV210AN	LTV210CN	210N	210.0	237.00	263.00	1	340.0	4.4	1
LTV220AN	LTV220CN	220N	220.0	246.00	272.00	1	356.0	4.2	1
LTV250AN	LTV250CN	250N	250.0	279.00	309.00	1	405.0	3.7	1
LTV300AN	LTV300CN	300N	300.0	335.00	371.00	1	486.0	3.1	1
LTV350AN	LTV350CN	350N	350.0	391.00	432.00	1	567.0	2.6	1
LTV400AN	LTV400CN	400N	400.0	447.00	494.00	1	648.0	2.3	1
LTV440AN	LTV440CN	440N	440.0	492.00	543.00	1	713.0	2.1	1

Notes: For bidirectional type having V_R of 10V and less, the I_R limit is double.

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

FIG.1 PEAK PULSE POWER RATING CURVE

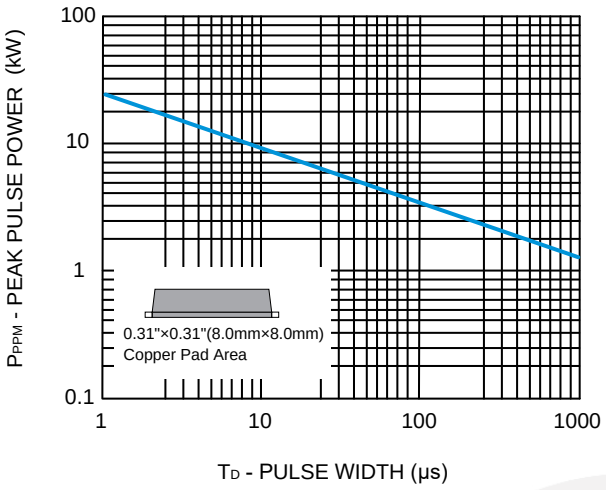


FIG.2 PULSE DERATING CURVE

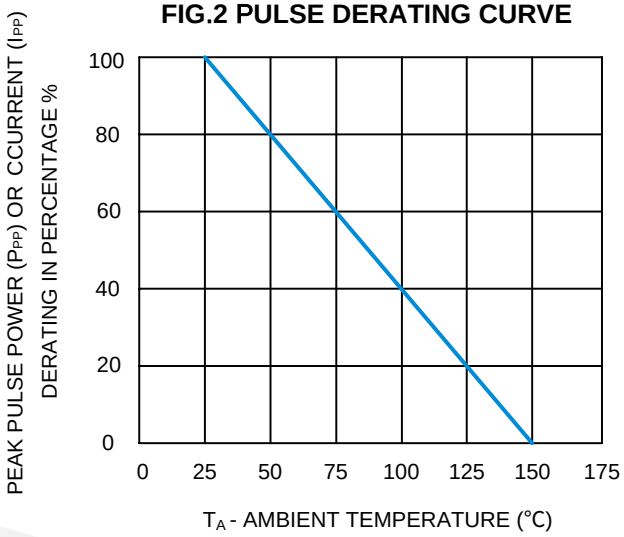


FIG.3 PULSE WAVEFORM

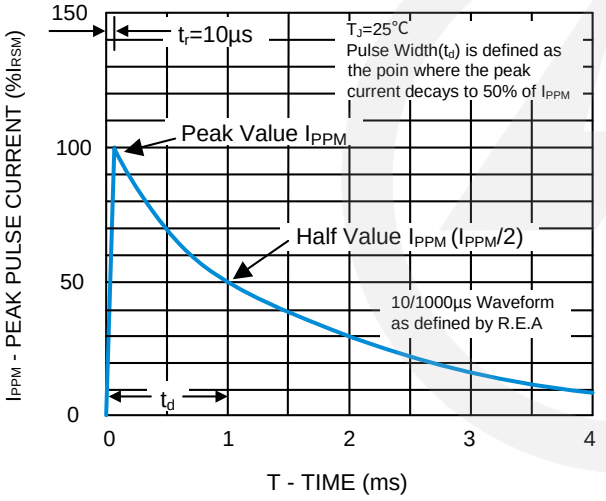


FIG.4 TYPICAL JUNCTION CAPACITANCE

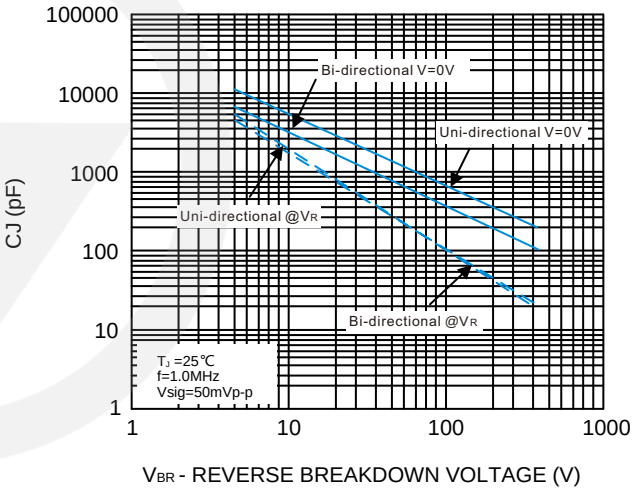


FIG.5 STEADY STATE POWER DISSIPATION DERATING CURVE

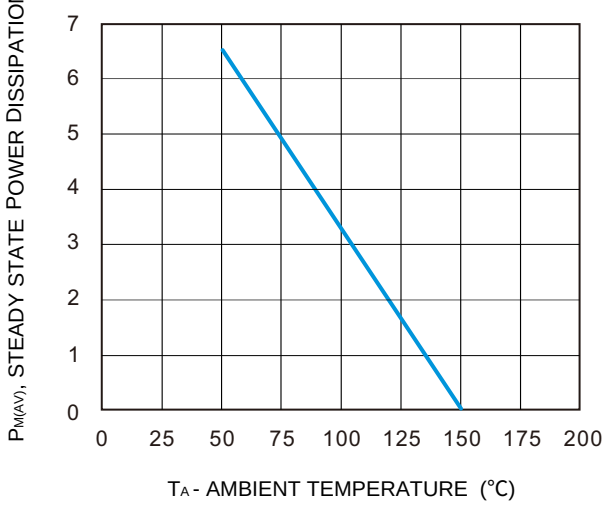
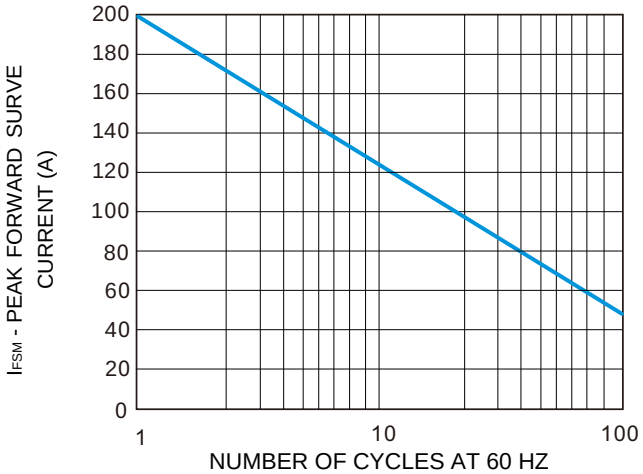


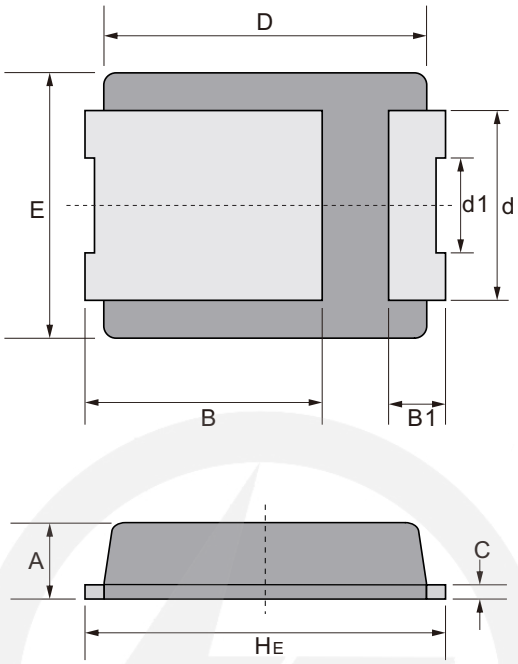
FIG.6 MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNI-DIRECTIONAL ONLY



Package Outline

PDFN7656

Unit：mm

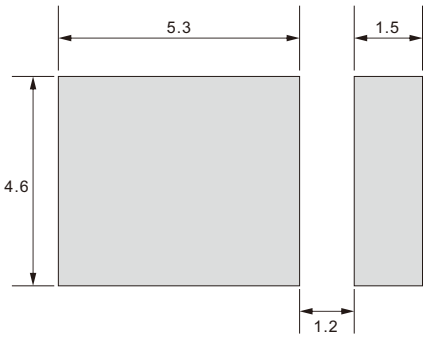


UNIT		A	B	B1	C	D	d	d1	E	HE
mm	max	1.70	5.20	1.40	0.40	7.00	4.20	2.10	5.80	7.80
	min	1.30	4.80	1.00	0.20	6.60	3.80	1.90	5.40	7.40

Suggested Pad Layout

PDFN7656

Unit：mm

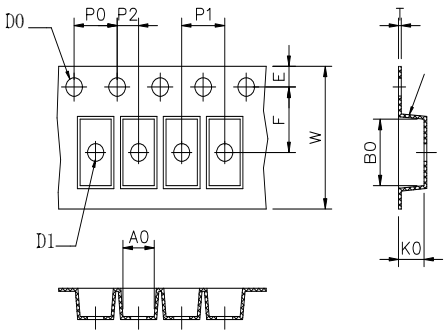


Note:

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

Carrier Tape Dimensions

Unit：mm

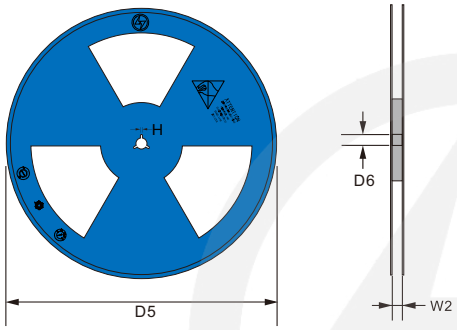


Symbol	Spec	Symbol	Spec
W	12.00±0.10	P1	8.00±0.10
E	1.75±0.10	P2	2.00±0.05
F	5.50±0.05	T	0.25±0.02
D0	1.55±0.05	A0	5.90±0.10
D1	1.55±0.10	B0	8.00±0.10
P0	4.00±0.10	K0	1.75±0.05

Reel Dimensions

Unit：mm

13” Reel

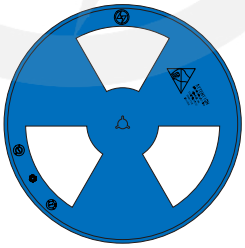


D5	Φ330.0±2.0
D6	Φ13.5±0.5
H	2.5±1.0
W2	12±1.0
Quantity: 5000PCS	

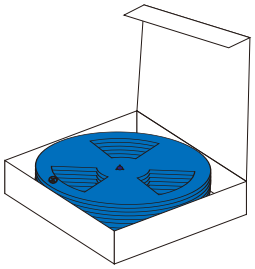
Packaging

PDFN7656

5000PCS/Reel



5Reel/Inner Box
25KPCS/Inner Box



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

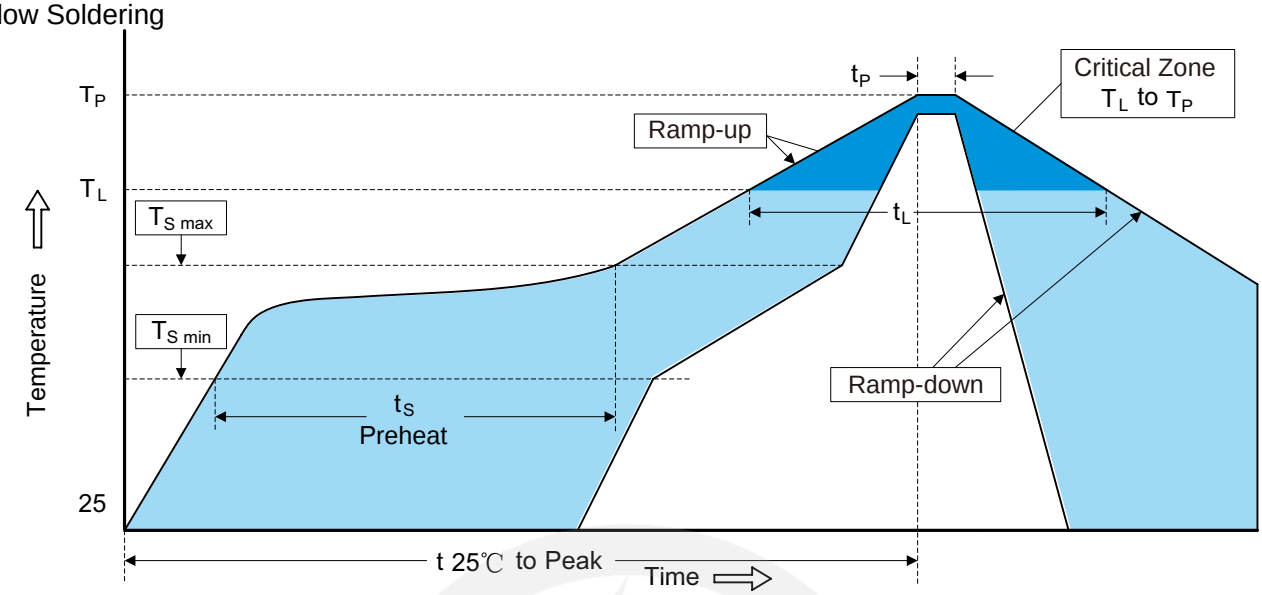
4 Boxs per carton
100KPCS per carton

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	