N36UT1610

List

N36UT1610

1,250W Surface Mount Uni-directional TVS For ESD Protection : 36V

Features

- Solid-state silicon-avalanche technology.
- Normal capacitance (C_J=500pF).
- Protection one data/power line to:
  IEC 61000-4-2 (ESD) ±30kV(Contact) / ±30kV (Air).
  IEC 61000-4-4 (EFT) 40A (5/50ns).
  IEC 61000-4-5 (Lightning) 17.7A (8/20μs).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.N36UT1610-H.

Applications

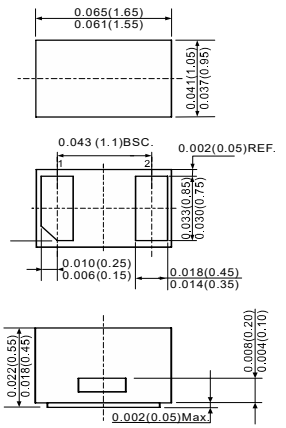
- Charager protection.
- Parallel and serial port pratection.
- Personal digital assistant (PDA).
- Microcontroller input protection and I^2C bus protection.
- Cellular phones.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant.
- Case : Molded plastic, DFN1610-2 (T1610P2).
- Terminals : High temperature soldering guaranteed, 260°C/10sec.

Package outline

DFN1610-2 (T1610P2)



Dimensions in inches and (millimeters)

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

Parameter	Symbol	Value	Unit
Peak pulse power (T_P=8/20μs)	P_{PP}	1250	W
Peak pulse current (T_P=8/20μs)	I_{PP}	17.7	A
Electrostatic discharge voltage (IEC61000-4-2 Contact / Air)	V_{ESD}	30/30	kV
Operating temperature range	T_J	-40 to +125	°C
Storage temperature	T_{STG}	-55 to +150	°C

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			36	V
Reverse leakage current	V_R = 36V	I_R			1	μA
Reverse breakdown voltage	I_T = 1mA	V_{BR}	40			V
Clamping voltage (IEC 61000-4-5)	I_{PP} = 1A	V_C			55	V
	I_{PP} = 10A				60.8	
	I_{PP} = 17.7A				70.5	
Junction capacitance	V_R=0V, f=1.0MHz	C_J		500		pF

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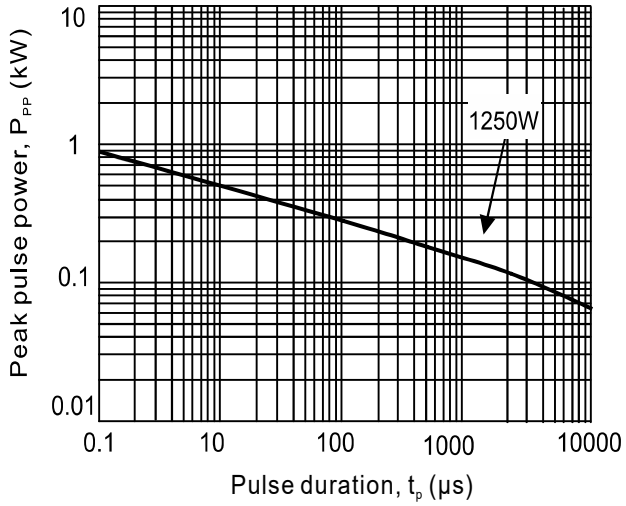
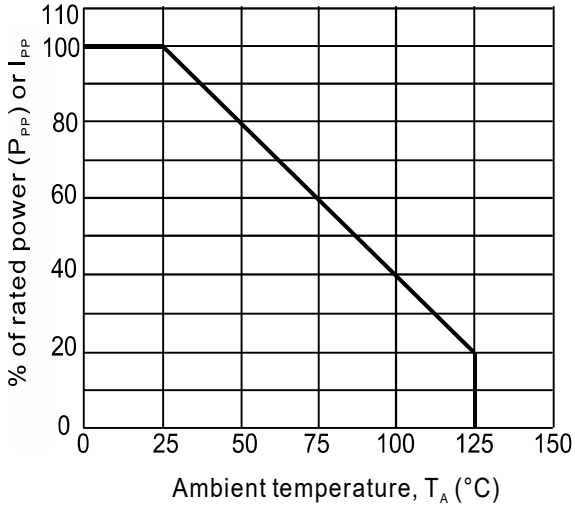
Typical performance characteristics

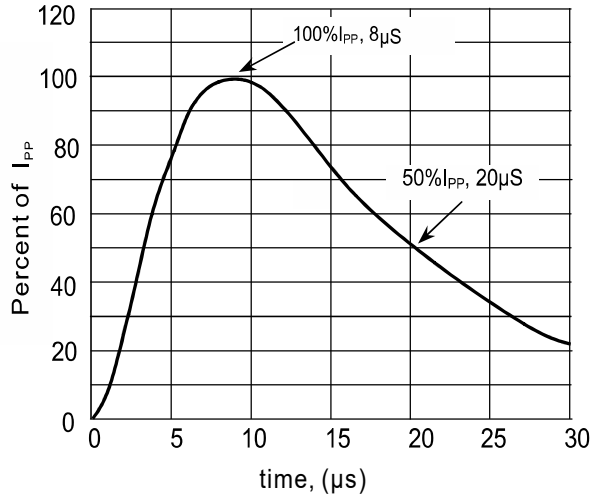
Peak pulse power rating curve



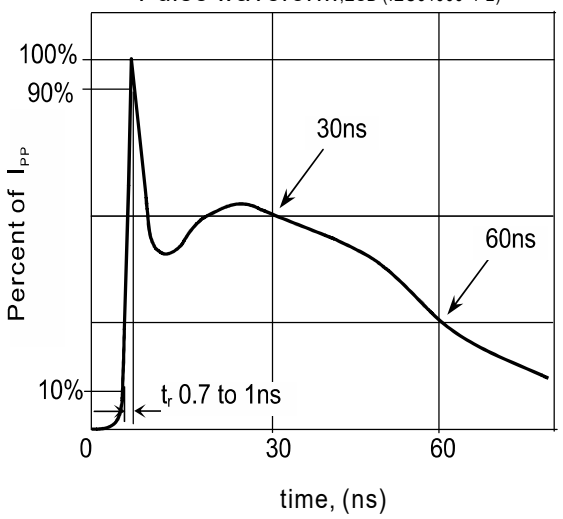
Pulse de-rating curve



Pulse waveform (8/20μs)



Pulse waveform,ESD (IEC61000-4-2)



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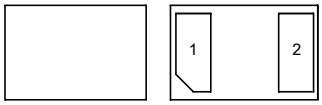
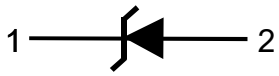
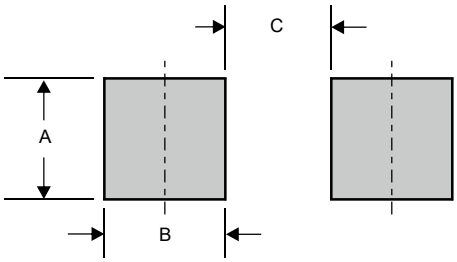
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
N36UT1610	UTJ

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
DFN1610-2 (T1610P2)	0.039 (1.00)	0.025 (0.625)	0.024 (0.60)

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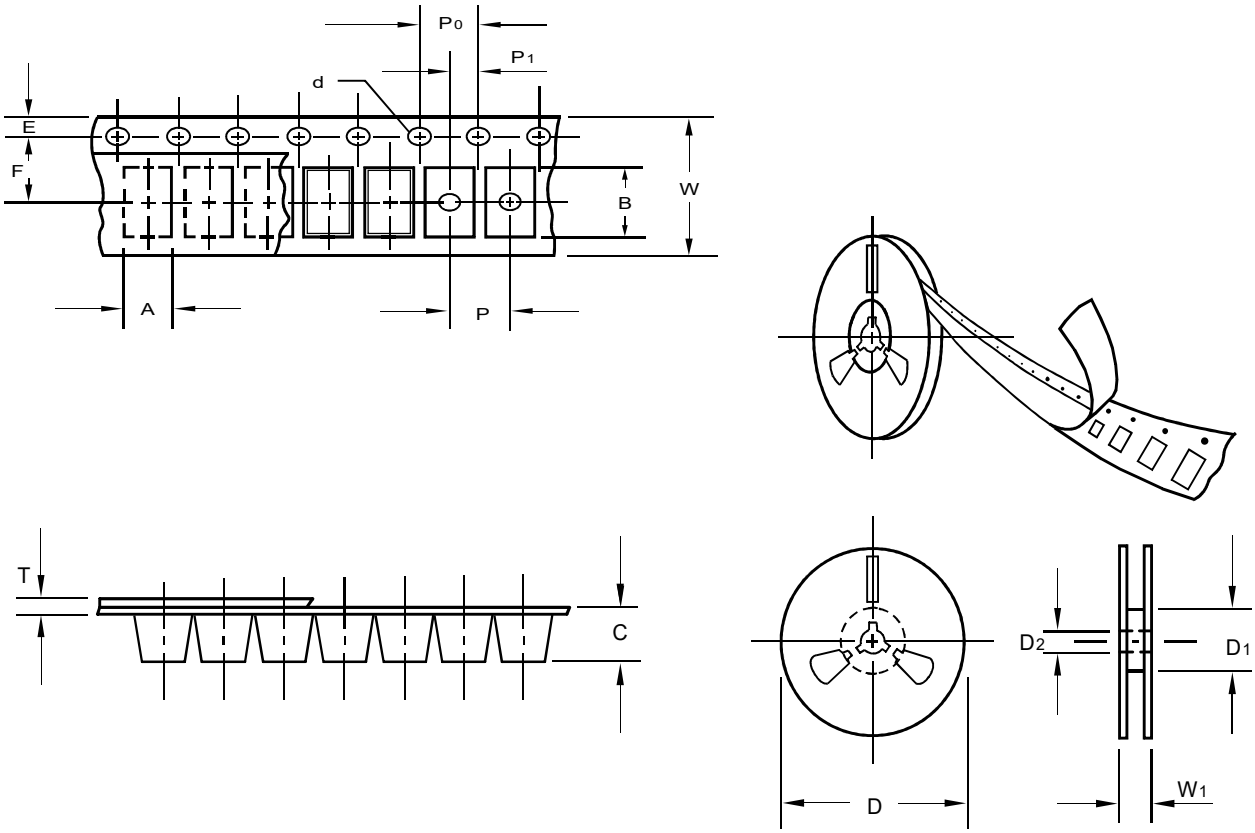
Packing information



unit:mm

Item	Symbol	Tolerance	DFN1610-2 (T1610P2)
Carrier width	A	0.1	1.15
Carrier length	B	0.1	1.80
Carrier depth	C	0.1	0.63
Sprocket hole	d	0.1	1.55
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	50.00
Feed hole diameter	D_2	0.2	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	2.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.20
Tape width	W	0.3	8.00
Reel width	W_1	1.0	9.50

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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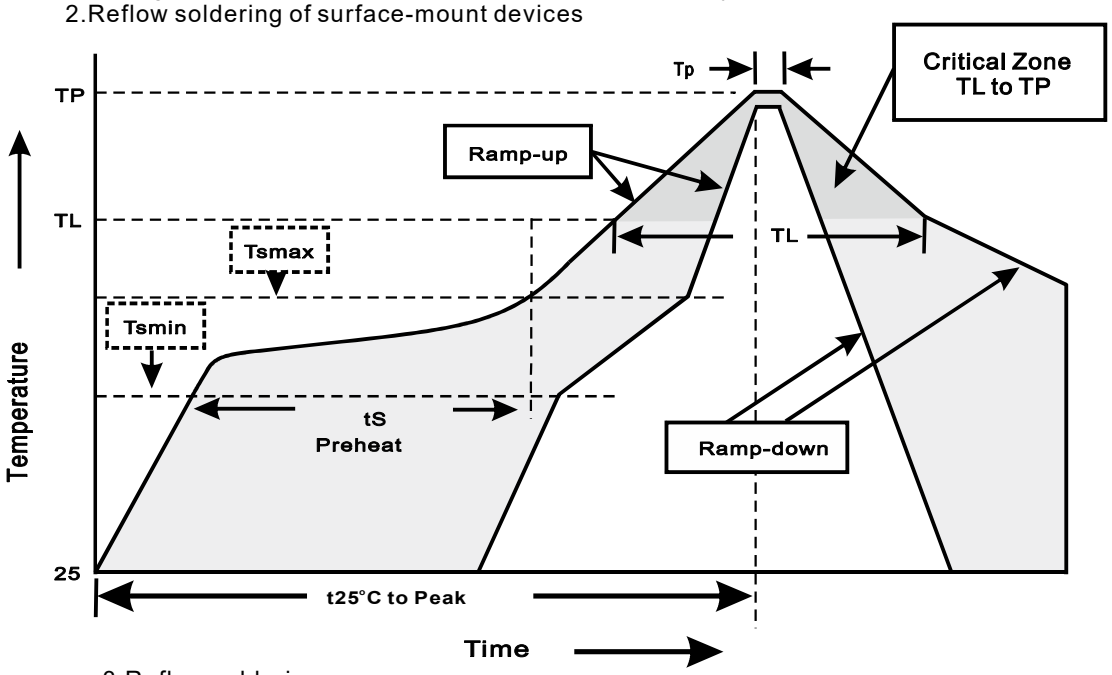
Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)
DFN1610-2 (T1610P2)	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	 217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec.	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_{BR}= V_{BR} Min * 80% at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
7. High Temperature Storage Life	at 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031