

N24UT1006B-Q1

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495W Surface Mount TVS Uni-Directional For ESD Protection - 24V

Features

- 495 Watts Peak Pulse Power per Line ($t_p = 8/20\mu s$).
- Protects one I/O or power line.
- AEC-Q101 Qualified.
- Provide transient protection:
 - IEC 61000-4-2 (ESD) Level 4, $\pm 30KV$ (Air), $\pm 30KV$ (Contact).
 - IEC 61000-4-4 (EFT) 40A (5/50ns).
 - IEC 61000-4-5 (lightning) 9A(8/20 μs).
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.N24UT1006B-Q1-H.

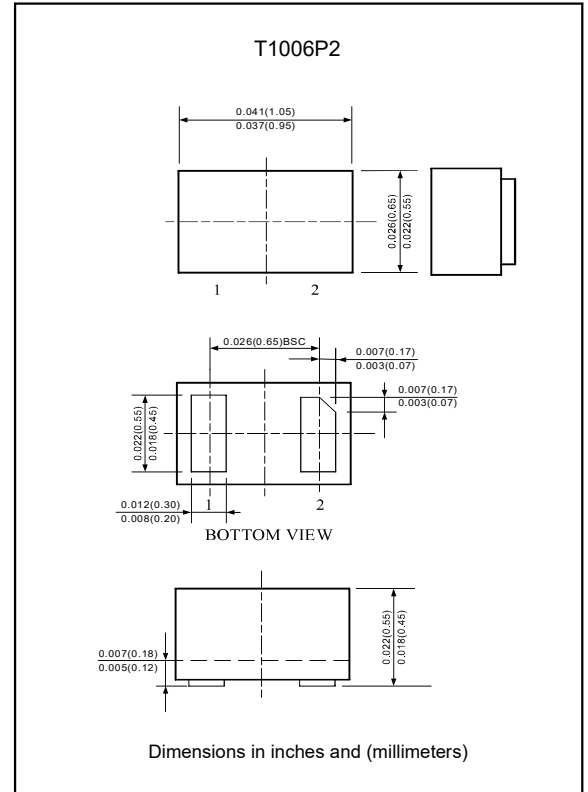
Applications

- Cellular Handsets & Accessories.
- Personal Digital Assistants (PDAs).
- Notebooks & Handholds.
- Portable Instrumentation.
- Digital Cameras.
- MP3 players.

Mechanical data

- Package : T1006P2.
- Molding compound flammability rating : UL94V-0.
- Making part number, data code.
- Packaging : Tape and reel.
- Weight : Approximated 0.73 mg.

Package outline



Maximum ratings (at $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power ($t_p = 8/20\mu s$)	P_{PP}	495	W
Peak pulse current ($t_p = 8/20\mu s$)	I_{PP}	9	A
Operating temperature	T_J	+125	$^\circ C$
Storage temperature	T_{STG}	-55 to +150	$^\circ C$

Electrical characteristics (at $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				24	V
Breakdown voltage	V_{BR}	$I_T = 1mA$	26.7			V
Reverse leakage current	I_R	$V_{RWM} = 24V$			500	nA
Forward voltage	V_F	$I_F = 10mA$	0.5		1.0	V
Dynamic resistance (Note 1, 2)	R_{DYN}	TLP=0.2/100ns		0.4		Ω
Clamping voltage	V_{C1}	$I_{PP} = 9A, t_p = 8/20\mu s$		51	55	V
ESD Clamping voltage (Note 1)	V_{C2}	$I_{PP} = 4A, t_p = 0.2/100ns$ (TLP)		33		V
ESD Clamping voltage (Note 1)	V_{C3}	$I_{PP} = 16A, t_p = 0.2/100ns$ (TLP)		38		V
Junction capacitance	C_{ESD}	$V_R = 0V, f = 1MHz$		45	55	pF

Note : 1. TLP Setting : $t_p = 100ns, t_r = 0.2ns, I_{TLP}$ and V_{TLP} sample window : $t_1 = 70ns$ to $t_2 = 90ns$.
 2. Dynamic resistance calculated from $I_{PP} = 4A$ to $I_{PP} = 16A$ using "Best Fit".

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Rating and characteristic curves

Figure 1: Peak Pulse Power vs. Pulse Time

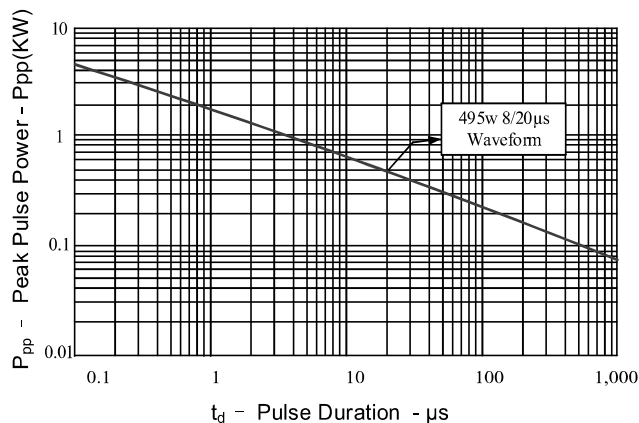


Figure 2: Power Derating Curve

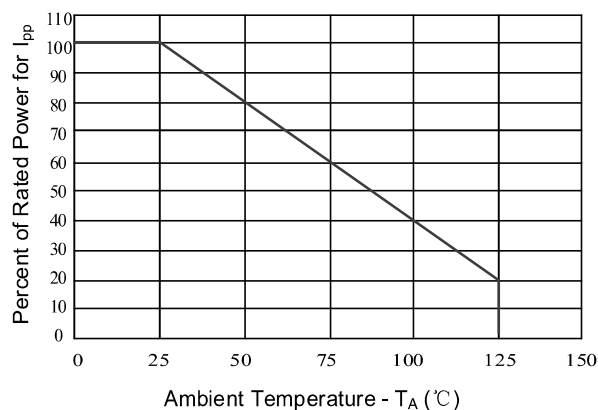


Figure 3: Clamping Voltage vs. Peak Pulse Current

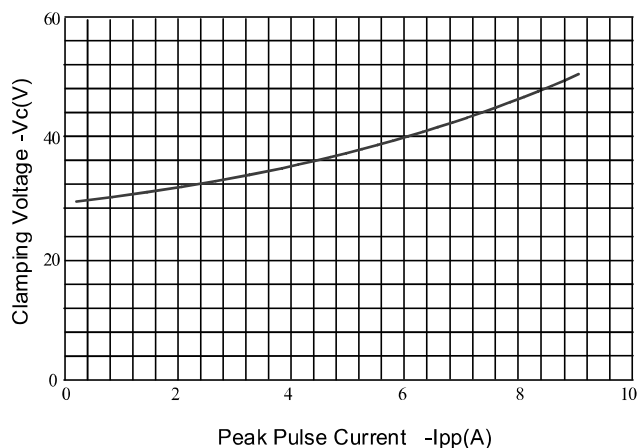


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

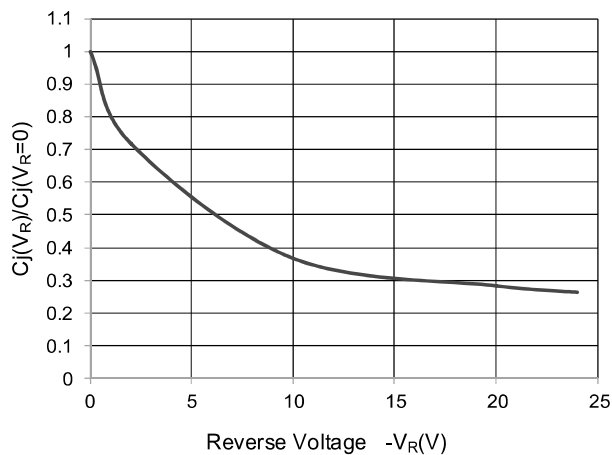


Figure 5: 8/20 μs Pulse Waveform

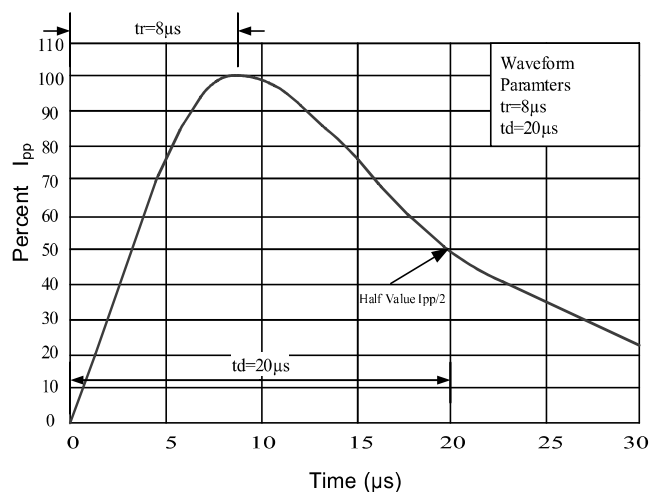
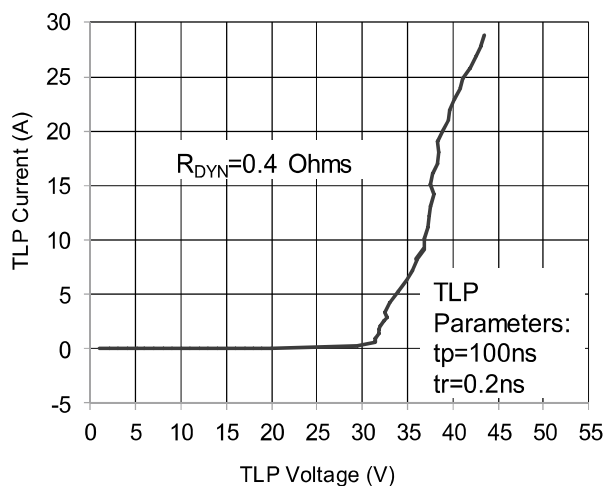


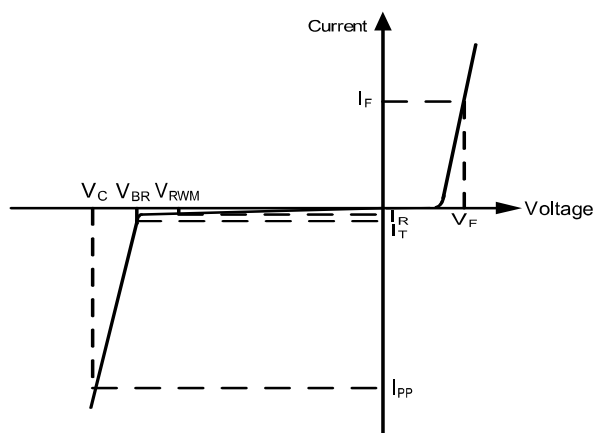
Figure 6: TLP I-V Curve



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Electrical Parameters ($T_A=25^{\circ}\text{C}$)

Symbol	Parameter
V_{RWM}	Nominal reverse working voltage
I_R	Reverse leakage current @ V_{RWM}
V_{BR}	Reverse breakdown voltage @ I_T
I_T	Test current for reverse breakdown
V_C	Clamping voltage @ I_{PP}
I_{PP}	Maximum peak pulse current
C_{ESD}	Parasitic capacitance
V_R	Reverse voltage
f	Small signal frequency
I_F	Forward current
V_F	Forward voltage @ I_F

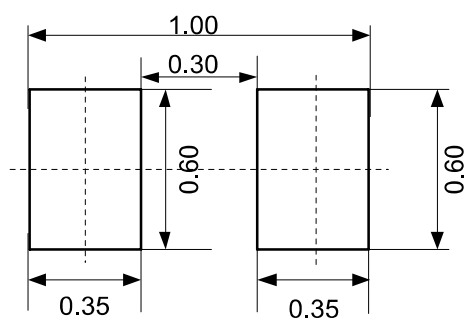


Uni-Directional TVS

Pinning information

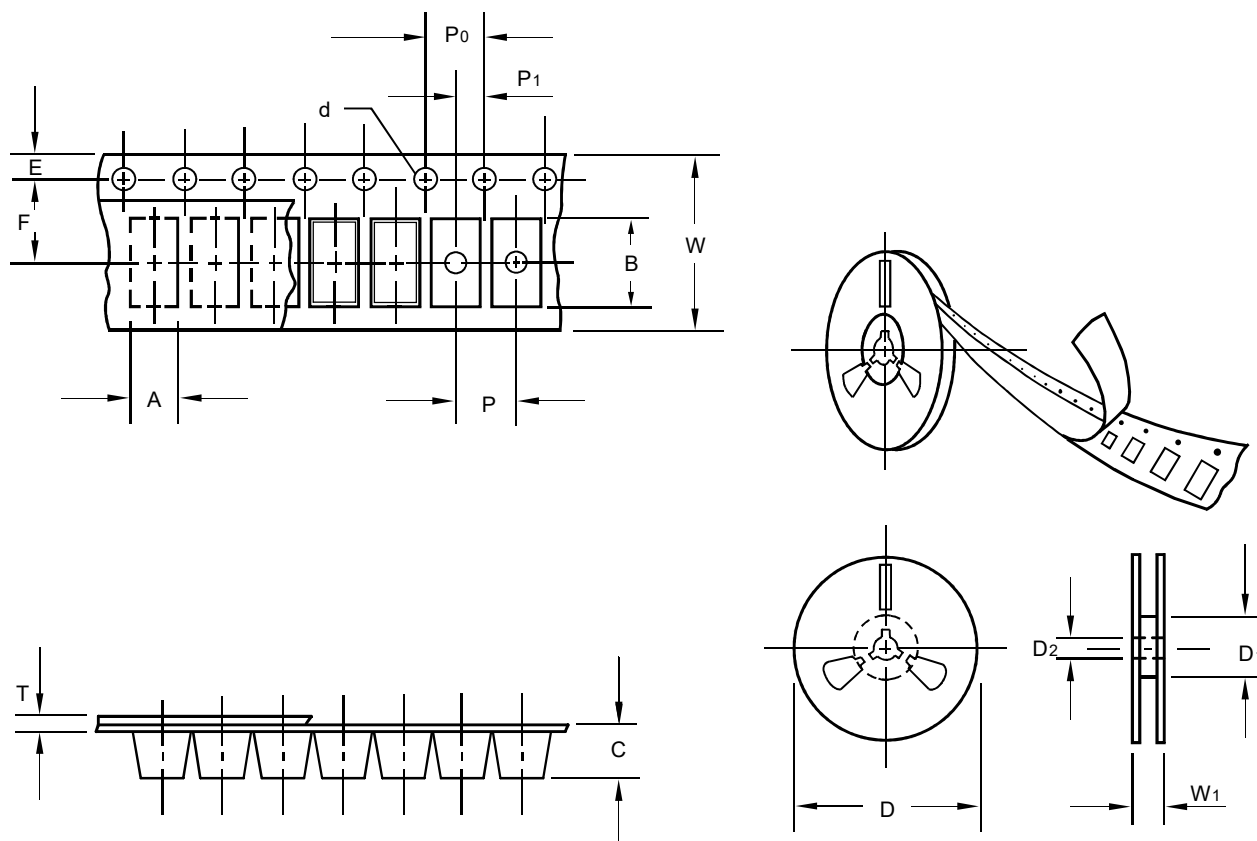
Marking Code	Symbol

Suggested solder pad layout



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Packing information



unit:mm

Item	Symbol	Tolerance	T1006P2
Carrier width	A	0.1	0.66
Carrier length	B	0.1	1.15
Carrier depth	C	0.1	0.66
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	55.00
Feed hole diameter	D2	0.5	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	9.50

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

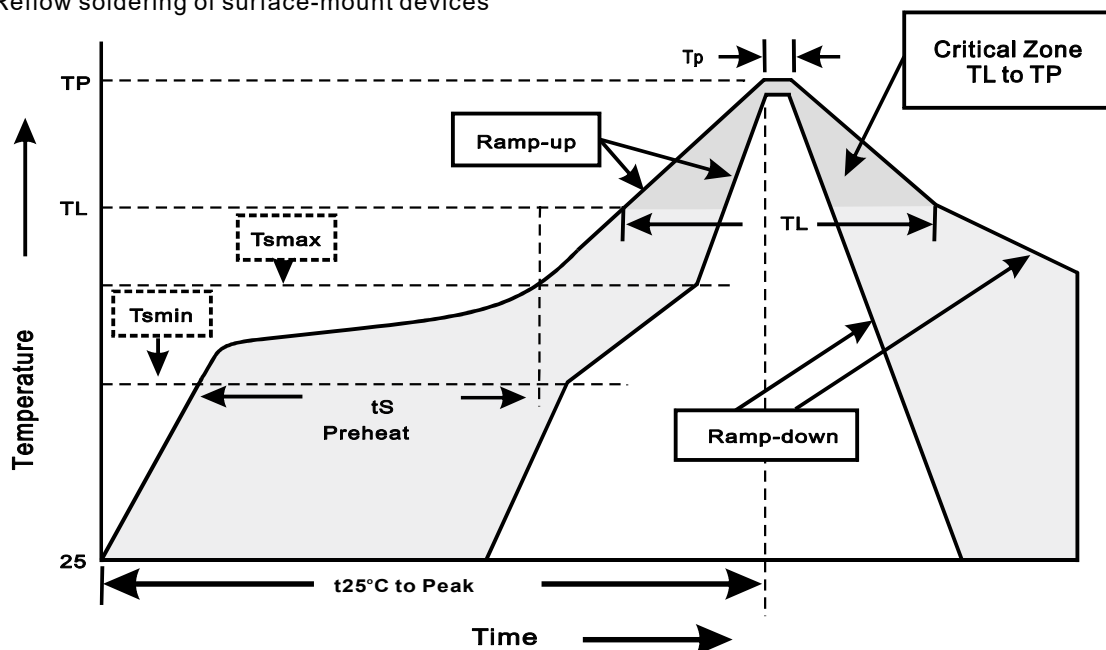
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Reel packing

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)	APPROX. GROSS WEIGHT (kg)
T1006P2	7"	10,000	4.0	100,000	183*123*183	178	382*257*387	800,000	15.0

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(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} 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