

N03UT1006-Q1-H

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210W Normal Capacitance Uni-Directional TVS For ESD Protection : 3.3V

Features

- Fast response time.
- Complies with following standards
IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (Air), $\pm 25\text{kV}$ (Contact).
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21) .

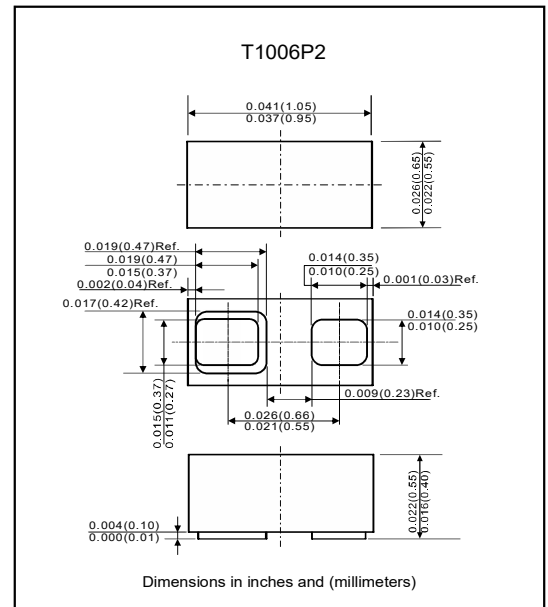
Applications

- Computers, peripherals, and portable electronics.
- Audio, video equipment, cellular handsets, and accessories.
- Other electronics equipment communication systems.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case: T1006P2 (DFN1006-2) package.
- Weight : Approximated 0.8mg.

Package outline



Maximum ratings (At $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Units
Peak pulse power (Note2)	P_{PK}	210	W
Peak pulse current (Note2)	I_{PP}	16	A
ESD per IEC61000-4-2 (Note1) (Air)	V_{ESD}	± 25	kV
ESD per IEC61000-4-2 (Note1) (Contact)		± 25	
ESD per JESD22-A114-B (Note1) (Per human body)		± 16	
ESD voltage per machine model (Note1)		± 0.4	
Lead solder temperature (10 seconds duration)	T_L	260	$^\circ\text{C}$
Operating temperature range	T_J	+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (At $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse working voltage (Note3)		V_{RWM}			3.3	V
Reverse leakage current	$V_{RWM}=3.3\text{V}$	I_R			1	μA
Reverse breakdown voltage	$I_T=1\text{mA}$	V_{BR}	5.0		5.9	V
Forward voltage	$I_F=10\text{mA}$	V_F			0.9	V
Clamping voltage (Note2)	$I_{PP}=16\text{A}$	V_C			13	V
Junction capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$	C_J		120		pF

Note: 1. Device stressed with ten non-repetitive ESD pulses.
 2. Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.
 3. Other voltages available upon request.

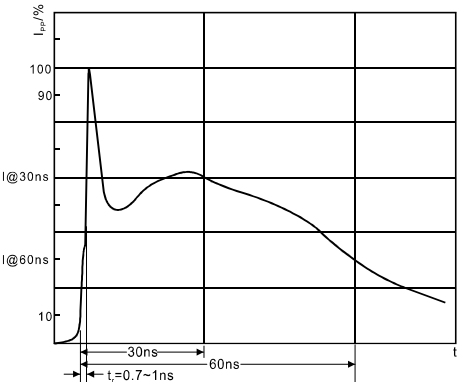
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Rating and characteristic curves (ESD standards compliance)

IEC61000-4-2 standard

Contact discharge		Air discharge	
Level	Test voltage (kV)	Level	Test voltage (kV)
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

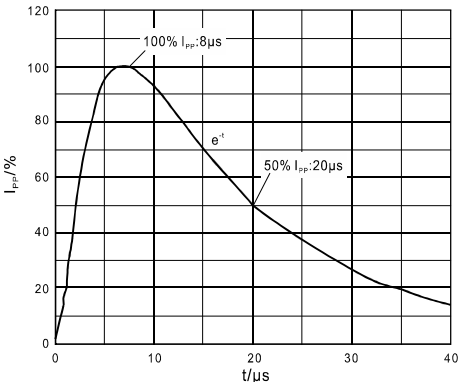
ESD pulse waveform according to IEC61000-4-2



JESD22-A114-B standard

ESD class	Human body discharge (V)
0	0 ~ 249
1A	250 ~ 499
1B	500 ~ 999
1C	1000 ~ 1999
2	2000 ~ 3999
3A	4000 ~ 7999
3B	8000 ~ 15999

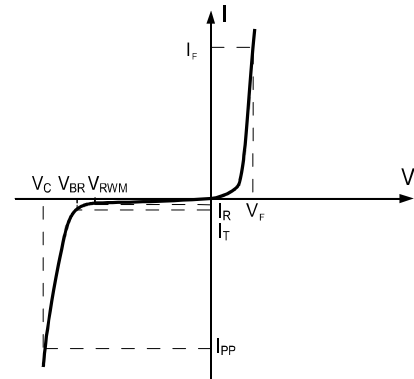
8/20μs pulse waveform according to IEC61000-4-5



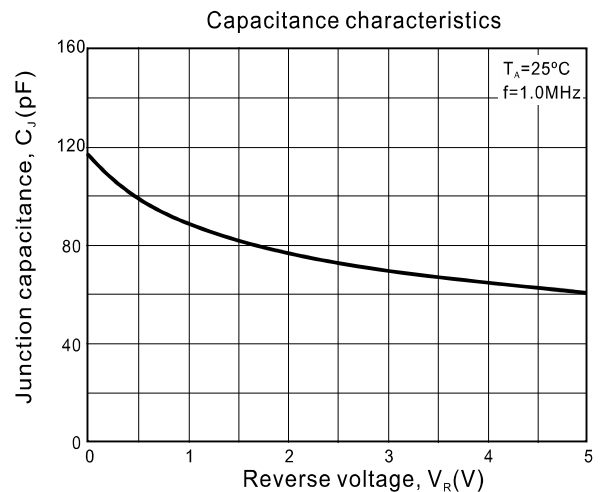
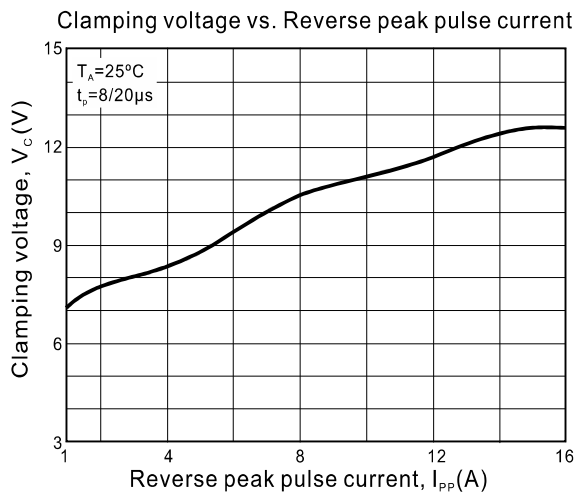
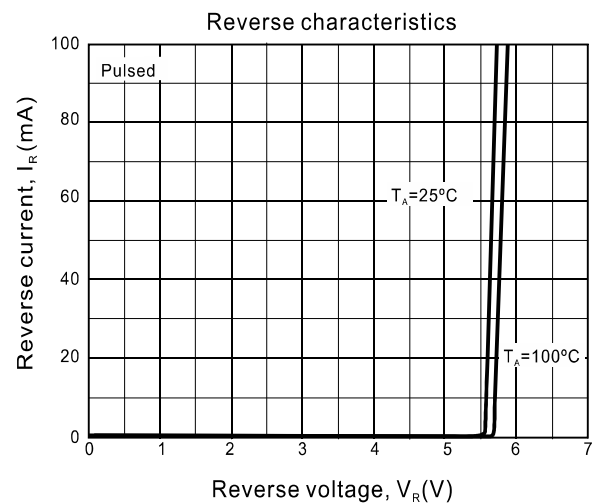
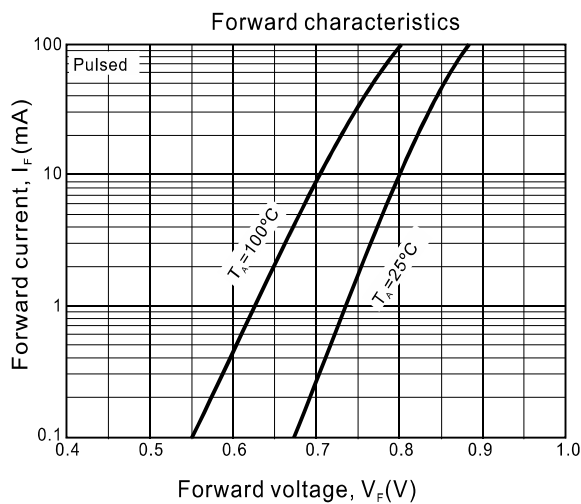
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Rating and characteristic curves

Symbol	Parameter
V_C	Clamping voltage@ I_{PP}
I_{PP}	Peak pulse current
V_{BR}	Breakdown voltage@ I_T
I_T	Test current
I_R	Reverse leakage current @ V_{RWM}
V_{RWM}	Reverse working voltage
V_F	Forward voltage @ I_F
I_F	Forward current

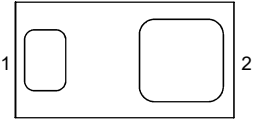
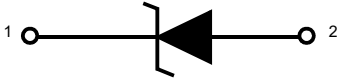


V-I characteristics for a Uni-directional TVS

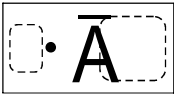


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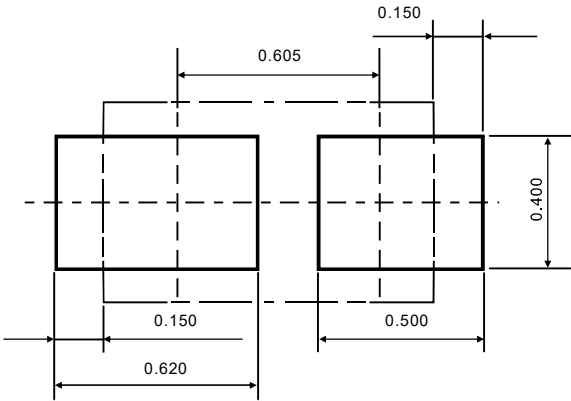
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
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Suggested solder pad layout

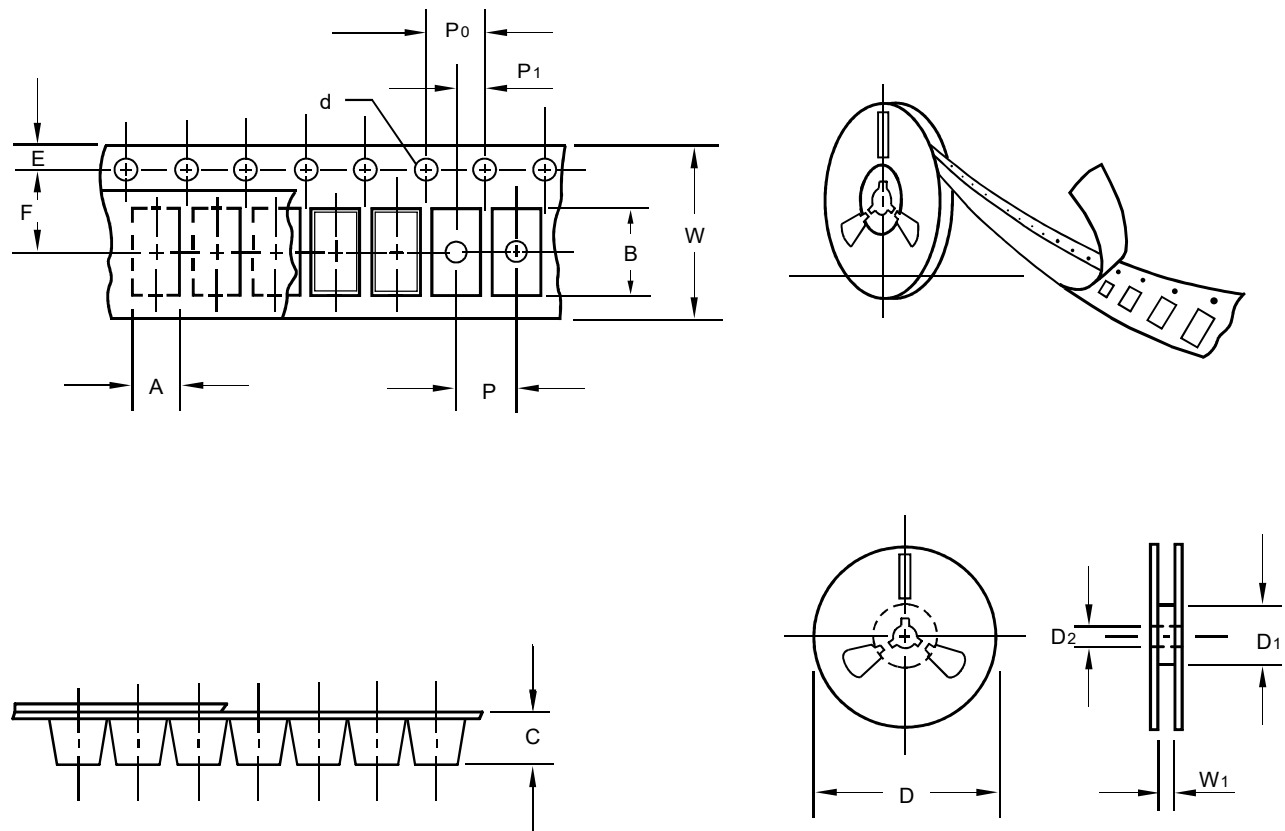


Dimensions in millimeters

- Note:
- 1.Controlling dimension in millimeters.
 - 2.General tolerance: $\pm 0.05\text{mm}$.
 - 3.The pad layout is for reference purpose only.

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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	54.40
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
Tape width	W	0.3	8.00
Reel width	W1	1.0	9.50

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

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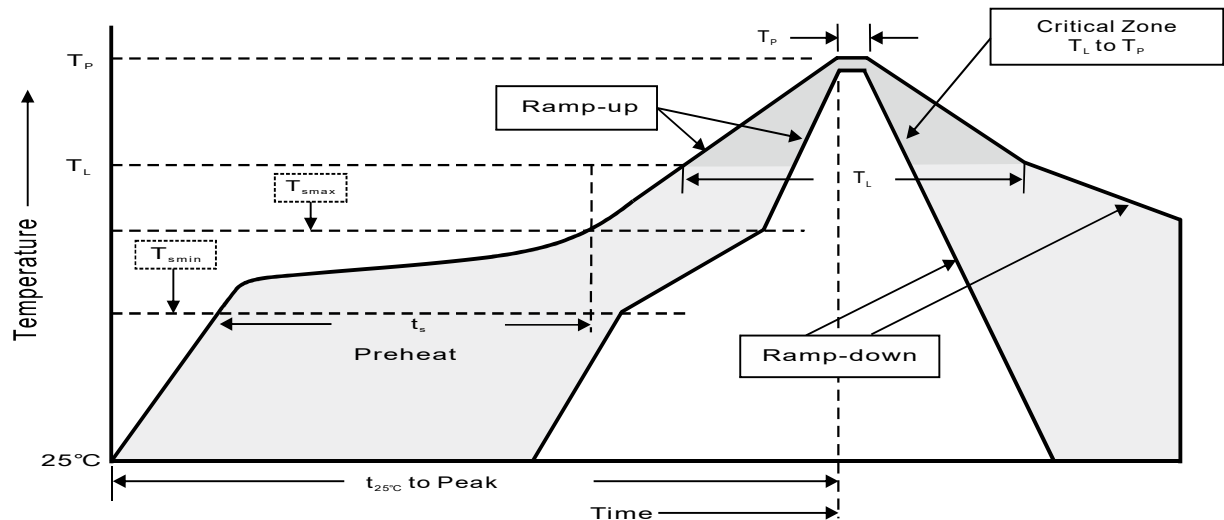
Reel packing

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)
T1006P2	7"	10,000	4.0	100,000	183*123*183	178	382*257*387	800,000

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 (T_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	150°C 200°C 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	< 3 °C/sec
Time maintained above : - Temperature (T_L) - Time (T_L)	217°C 60 ~ 260 sec
Peak temperature (T_P)	255 °C -0/+5°C
Time with 5°C of actual peak temperature (T_P)	10 ~30 sec
Ramp-down rate	< 6 °C/sec
Time 25°C to peak temperature	< 6 minutes