

N03BT1006G

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Surface Mount TVS Bi-Directional For ESD Protection : 3.3V

Features

- 330 Watts Peak Pulse Power per Line ($t_p=8/20\mu s$).
- Protects one I/O or power line.
- Low clamping voltage.
- Working voltage : 3.3V.
- Low leakage current.
- IEC 61000-4-2 (ESD) $\pm 30kV$ (Air), $\pm 30kV$ (Contact).
- IEC 61000-4-4 (EFT) 40A (5/50ns).
- IEC61000-4-5 (Lightning) 30A (8/20 μs).
- We declare that the material of product compliance with RoHs requirements.
- Suffix "-H" indicates Halogen-free parts, ex.N03BT1006G-H.

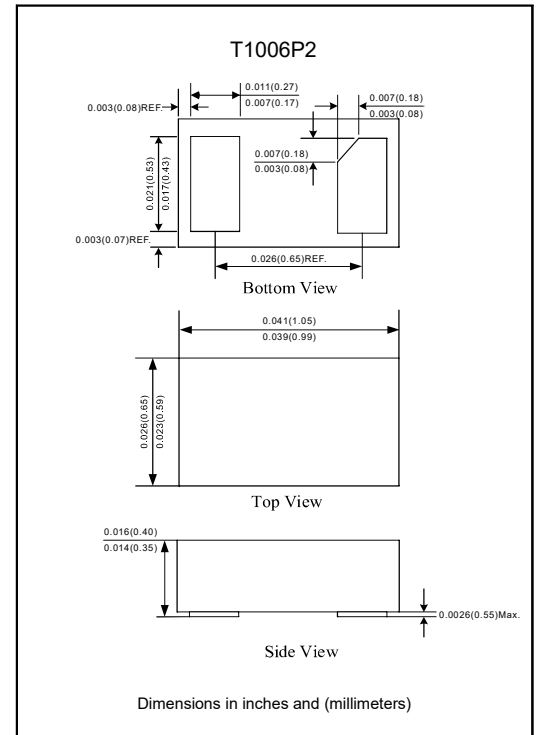
Applications

- Cellular handsets & accessories.
- Personal digital assistants (PDAs).
- Notebooks & handhelds.
- Portable instrumentation.

Mechanical data

- T1006P2 package.
- Molding compound flame ability rating : UL94V-0.
- Making part number, data code.
- Packaging : Tape and reel per EIA 481.
- 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 (8/20 μs)	P_{PK}	330	W
Peak pulse current (8/20 μs)	I_{PP}	30	A
ESD Per IEC 61000-4-2 (Air)	V_{ESD}	± 30	KV
ESD Per IEC 61000-4-2 (Contact)		± 30	
Operating temperature range	T_J	-55 ~ +125	$^\circ C$
Storage temperature	T_{STG}	-55 to +150	$^\circ C$
Maximum lead temperature for soldering during 10s	T_L	260	$^\circ C$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse working voltage	V_{RWM}				3.3	V
Breakdown voltage	V_{BR}	$I_T = 1mA$	4.0		7.0	V
Reverse leakage current	I_R	$V_{RWM} = 3.3V$			500	nA
Clamping voltage	V_C	$I_{PP} = 30A$ ($t_p = 8 / 20\mu s$)		9.4	11	V
Dynamic resistance (Note 1, 2)	R_{DYN}	TLP = 0.2/100ns		0.1		Ω
Clamping voltage 1	V_{C1}	$I_{PP1} = 4A$, $t_p = 0.2 / 100ns$		6.6		V
Clamping voltage 2	V_{C2}	$I_{PP2} = 16A$, $t_p = 0.2 / 100ns$		8.0		V
Junction capacitance	C_p	$V_R=0V$, $f=1MHz$		60	70	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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Typical performance characteristics

Figure 1: Peak Pulse Power Vs Pulse Time

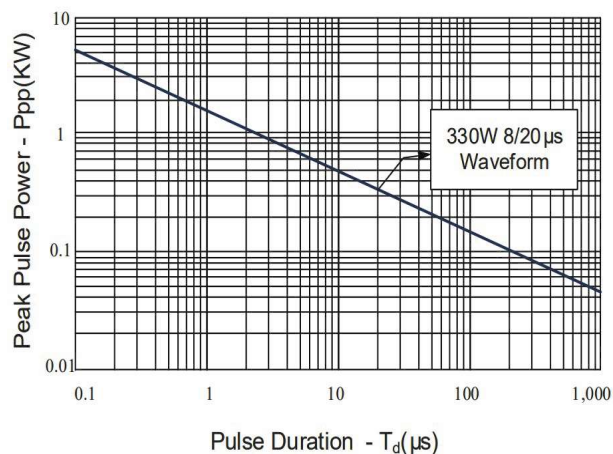


Figure 2: Power Derating Curve

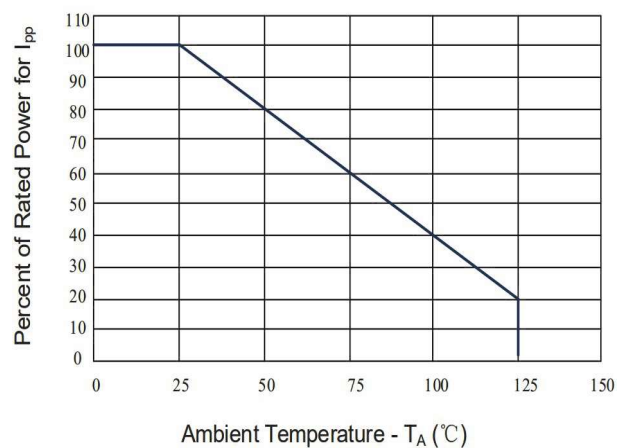


Figure 3: Clamping Voltage vs. Peak Pulse Current

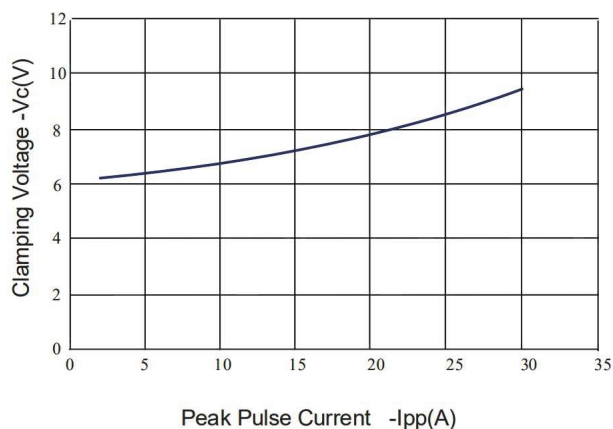


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

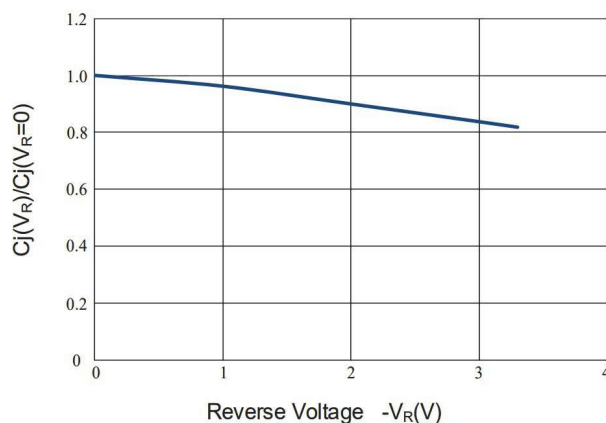


Figure 5: TLP Positive I-V Curve

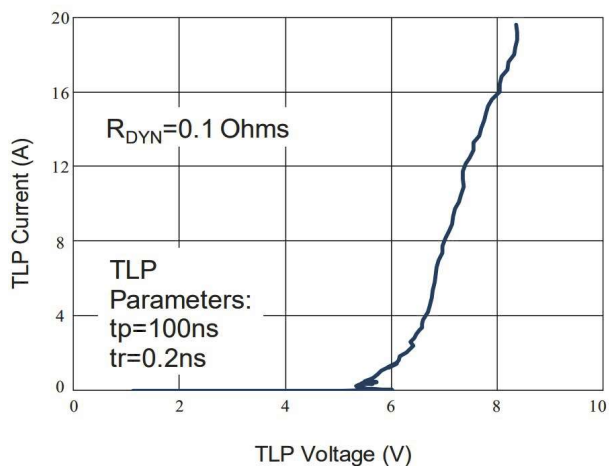
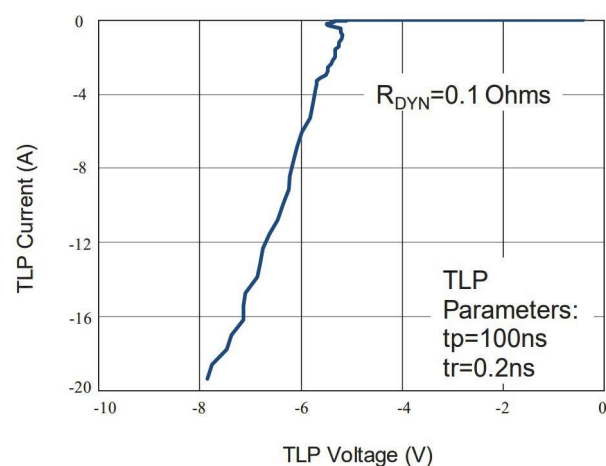


Figure 6: TLP Negative I-V Curve

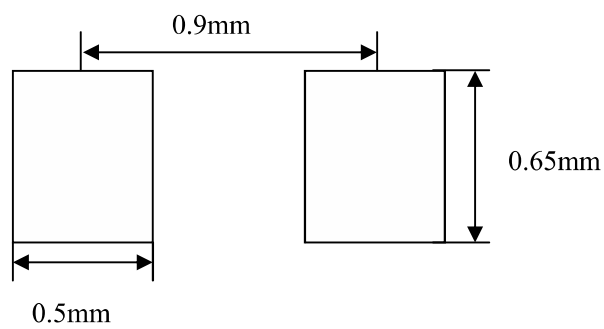


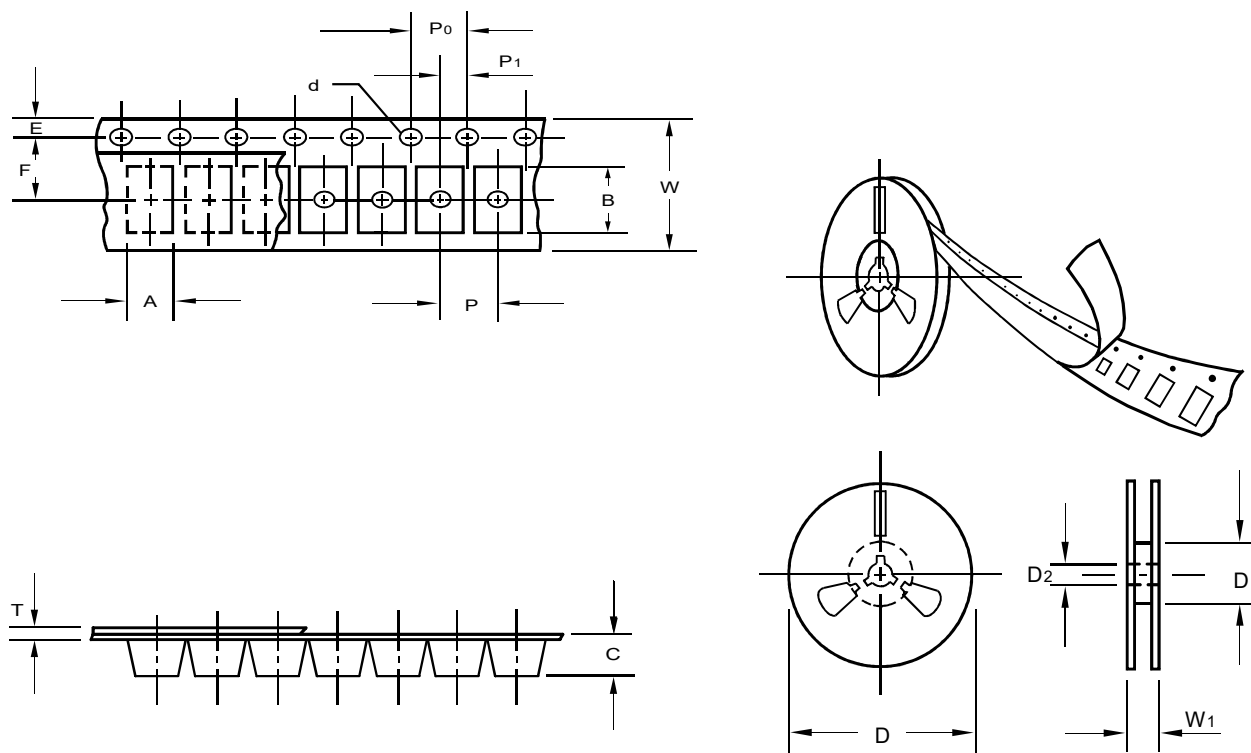
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Marking Information



Suggested solder pad layout



N03BT1006G**Suggested solder pad layout**

unit:mm

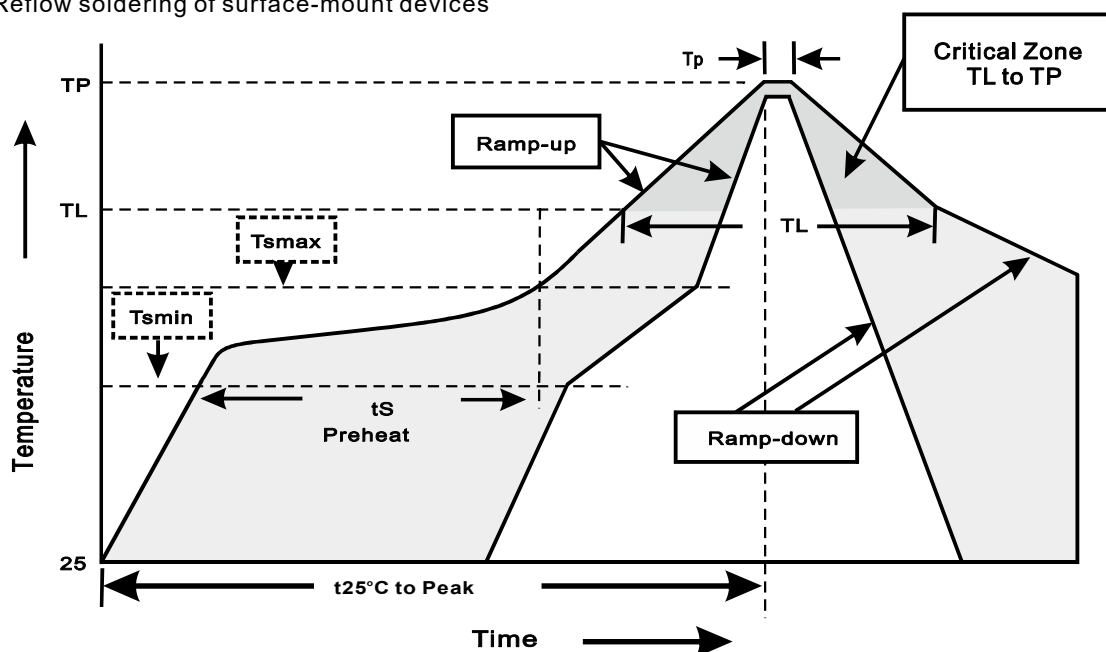
Item	Symbol	Tolerance	T1006P2
Carrier width	A	0.1	0.75
Carrier length	B	0.1	1.15
Carrier depth	C	0.1	0.60
Sprocket hole	d	0.05	1.55
7" Reel outside diameter	D	1.0	178.00
7" Reel inner diameter	D1	Min.	60.0
Feed hole diameter	D2	0.2	13.0
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.05	2.00
Overall tape thickness	T	0.05	0.23
Tape width	W	0.2	8.00
Reel width	W1	Max.	13.5

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

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

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



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