

N03BT1006I

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N03BT1006I

80W Bi-Directional TVS For ESD Protection Diode : 3.3V

Features

- Protects one data line.
- Complies with following standards:
 - IEC 61000-4-2(ESD) $\pm 30\text{kV}$ (Air).
 - IEC 61000-4-2(ESD) $\pm 30\text{kV}$ (Contact).
 - IEC 61000-4-5(Lighting) 8A (8/20 μs).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. N03BT1006I-H.

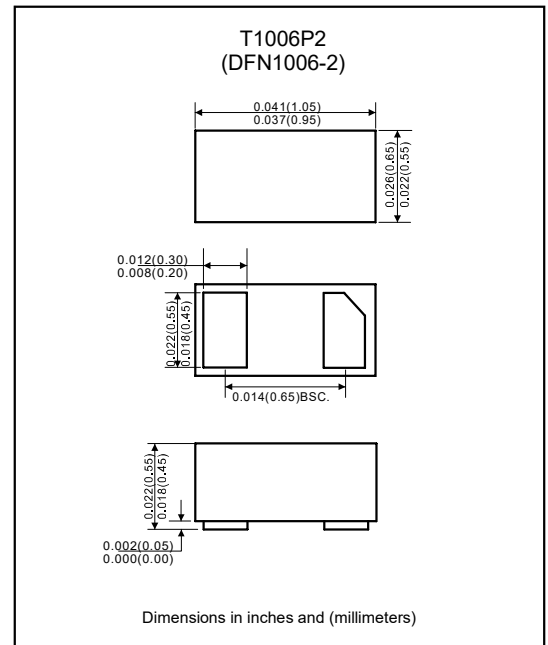
Applications

- Cellular handsets and accessories.
- Personal digital assistants.
- Notebooks and handholds.
- Portable instrumentation.
- Digital cameras.
- Peripherals.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case : Molded plastic, T1006P2 (DFN1006-2) .
- Mounting Position : Any.

Package outline



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

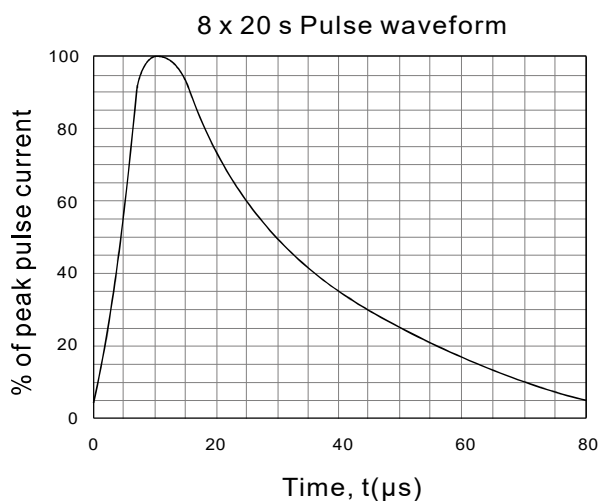
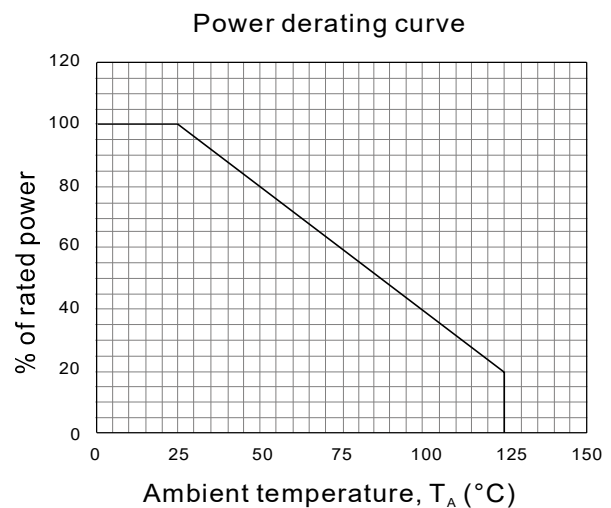
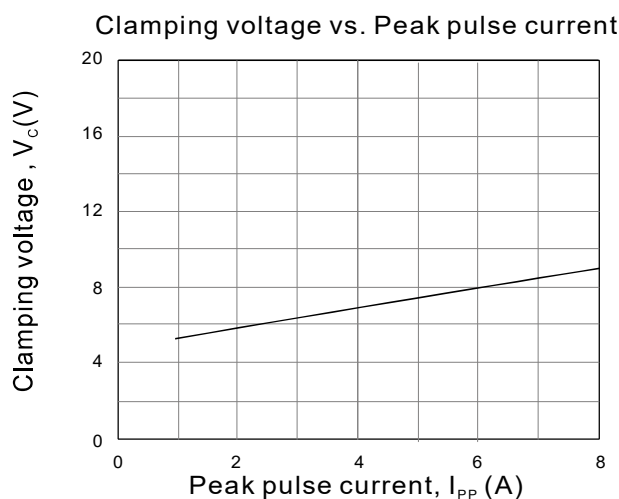
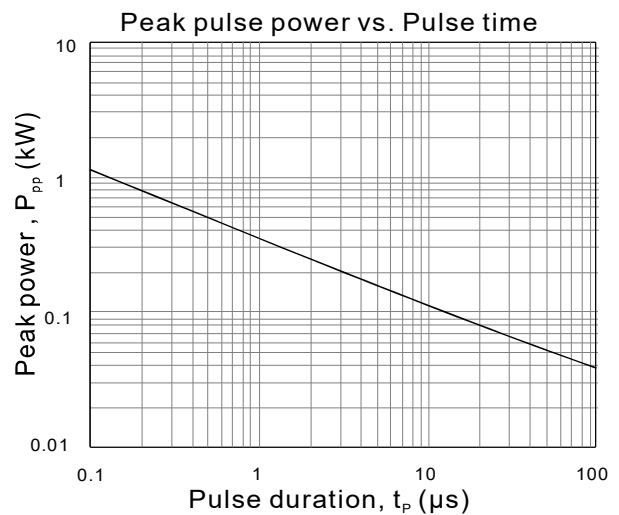
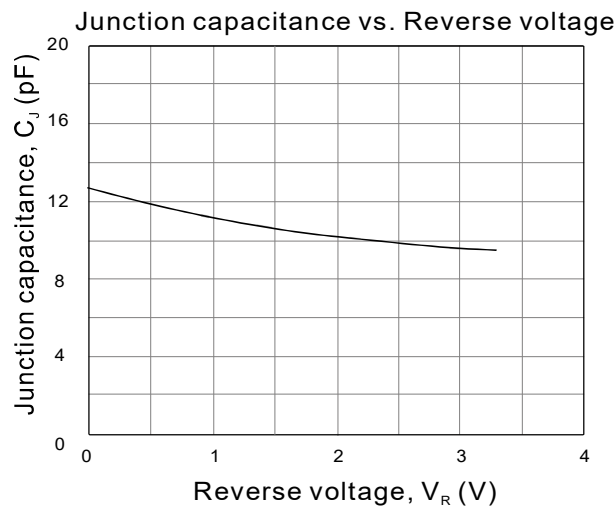
Parameter	Symbol	Value	Units
Peak pulse power (8/20 μs)	P_{PK}	80	W
Peak pulse current (8/20 μs)	I_{PP}	8	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC61000-4-2 (Contact)			
Operating temperature range	T_J	-55 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

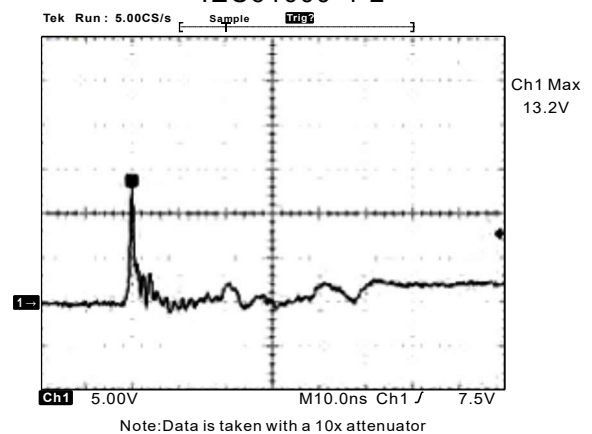
Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse working voltage		V_{RWM}			3.3	V
Punch- through voltage	$I_T = 2\mu\text{A}$	V_{PT}	3.8			V
Snap- back voltage	$I_T = 50\text{mA}$	V_{SB}	3.5			V
Reverse leakage current	$V_{RWM} = 3.3\text{V}$	I_R		5	50	nA
Clamping voltage	$I_{PP} = 1\text{A}$ (8/20 μs pulse)	V_C			6	V
	$I_{PP} = 5\text{A}$ (8/20 μs pulse)				8	
	$I_{PP} = 8\text{A}$ (8/20 μs pulse)				10	
Junction capacitance	$V_R = 0\text{V}$, $f = 1.0\text{MHz}$	C_J		12.5	25	pF

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Rating and characteristic curves

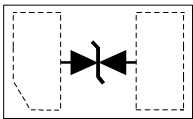


ESD clamping voltage 8kV contact per IEC61000-4-2



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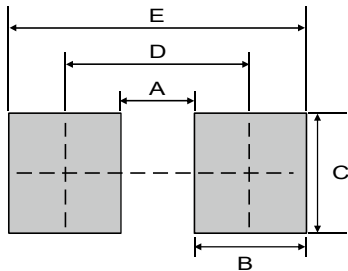
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

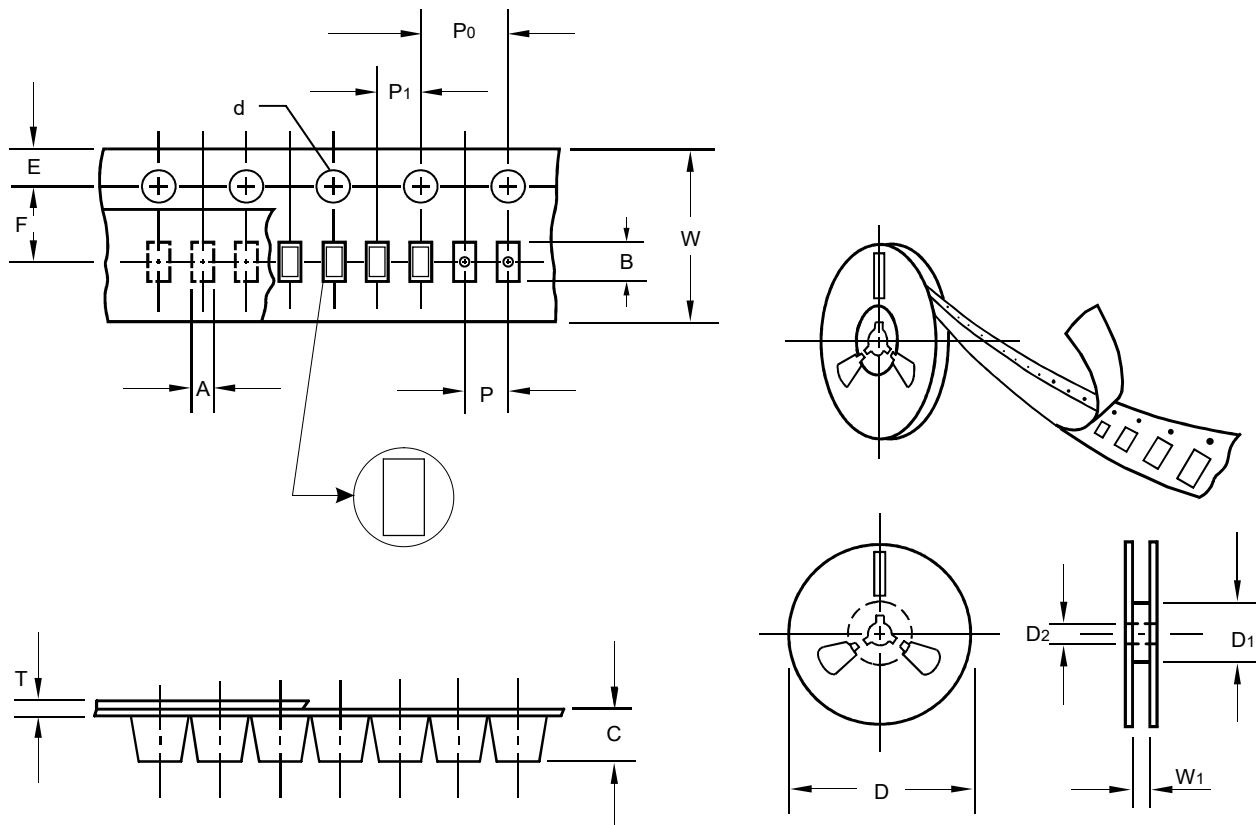
Marking

Type number	Marking code
N03BT1006I	3X

Suggested solder pad layout



Size	T1006P2	
	(mm)	(inch)
A	0.30	0.012
B	0.50	0.020
C	0.60	0.024
D	0.80	0.032
E	1.30	0.052

N03BT1006I**Packing information**

unit:mm

Item	Symbol	Tolerance	T1006P2 (DFN1006-2)
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	D ₁	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	55.00
Feed hole diameter	D ₂	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	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	9.50

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

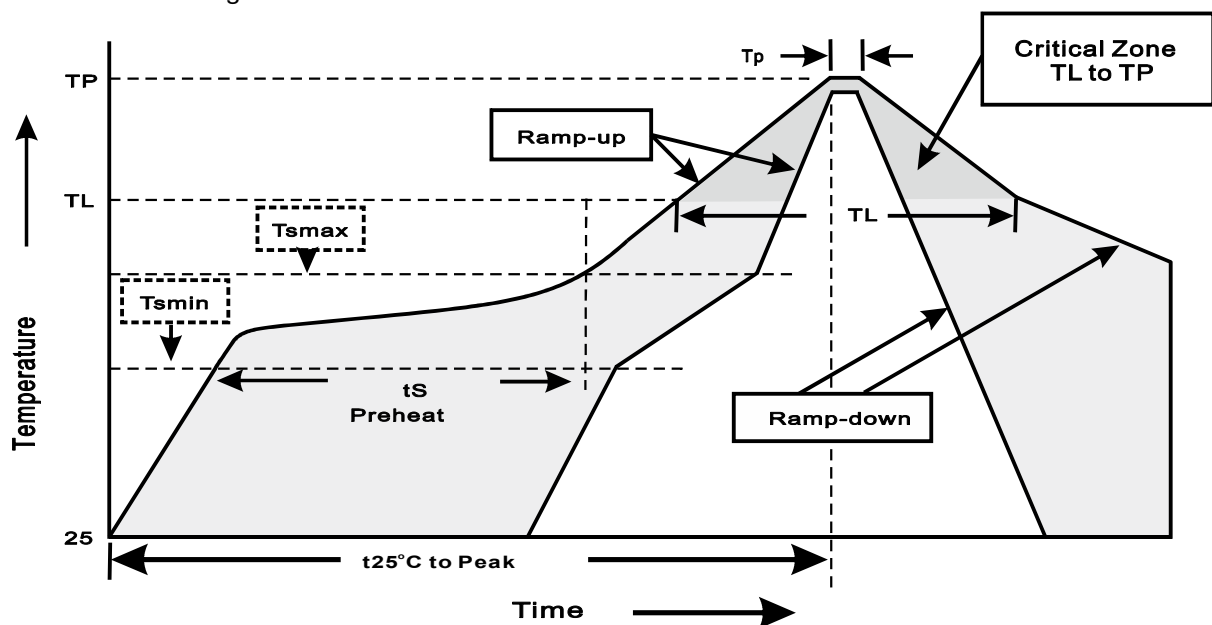
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Reel packing

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)
T1006P2 (DFN1006-2)	7"	10,000	2.0	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)	$<3^{\circ}\text{C}/\text{sec}$
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	$<3^{\circ}\text{C}/\text{sec}$
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	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_{\text{BR}}=V_{\text{BR MIN}}*80\%$ at $T_{\text{J}}=85^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Pressure Cooker	$15P_{\text{SIG}}$ at $T_{\text{A}}=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
5. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
6. Humidity	at $T_{\text{A}}=85^{\circ}\text{C}$, 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