

N06BT0603

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Surface Mount Bi-Directional TVS For ESD Protection Diode 6.0V

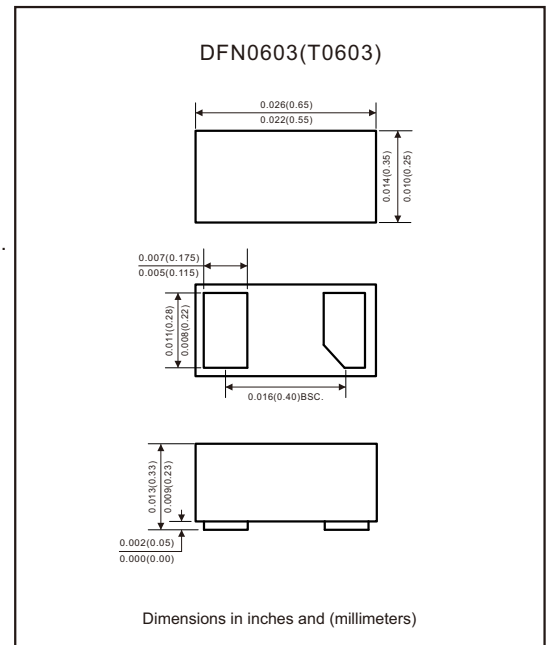
Features

- Protects one data, control or power line.
- Cable discharge event (CDE).
- Package optimized for high-speed lines(Ultra-small package).
- Low capacitance:15pF (typ.).
- Low leakage current: 0.1 μ A @ V_{RWM} (typ.).
- Low clamping voltage.
- Each I/O pin can withstand over 1K ESD strikes for $\pm$ 8kV contact discharge.
- Transient protection for high-speed data lines.
- Complies with following standards:
 - IEC 61000-4-2(ESD) $\pm$ 30kV (Air).
 - IEC 61000-4-2(ESD) $\pm$ 30kV (Contact).
 - IEC 61000-4-5(Lighting) 7A.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.N06BT0603-H.

Mechanical data

- Epoxy: UL94-V0 rated Flame retardant.
- Case: Molded plastic, DFN0603 (T0603).

Package outline



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

Parameter	Symbol	Value	Units
Peak Pulse Power (8/20 μ s)	P_{PK}	60	W
Peak Pulse Current (8/20 μ s)	I_{PP}	7	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	$\pm$ 30	KV
ESD per IEC61000-4-2 (Contact)			
Operating Temperature range	T_J	+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)

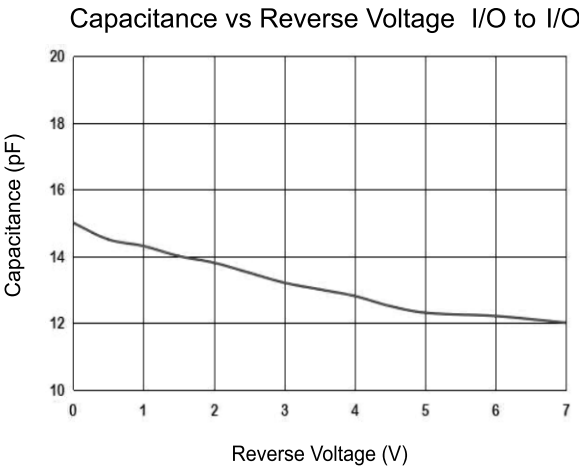
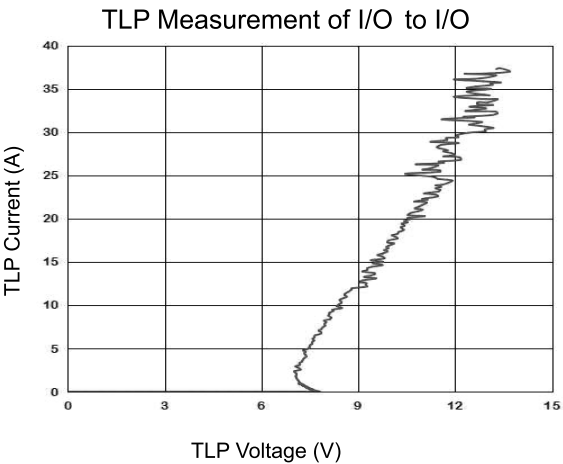
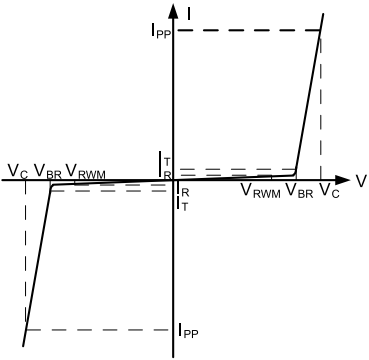
Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse Working Voltage		V_{RWM}			6	V
Reverse Leakage Current	$V_{RWM}=6\text{V}$	I_R		0.1	1	μA
Reverse Breakdown Voltage	$I_T=1\text{mA}$	V_{BR}	7.2			V
Clamping Voltage	$I_{PP}=7\text{A}$, $t_p=8/20\mu\text{s}$	V_C		9.5		V
	$I_{PP}=8\text{A}$, $t_p=100\text{ns}$ (Note 1)			8		
	$I_{PP}=16\text{A}$, $t_p=100\text{ns}$ (Note 1)			9.8		
Dynamic resistance	$I_{PP}=12\text{A}$, $t_p=100\text{ns}$ (Note 1)	R_{dyn}		0.23		Ω
Parasitic capacitance	$V_R=0\text{V}$, $f=1\text{MHz}$	C_{ESD}		15		pF

Notes : 1. Measurements performed using a 100ns transmission Line Pulse (TLP) system.

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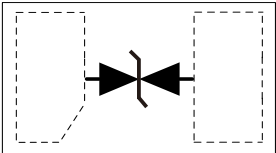
Rating and characteristic curves

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



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Pinning information

Type Number	Simplified outline	Circuit Diagram
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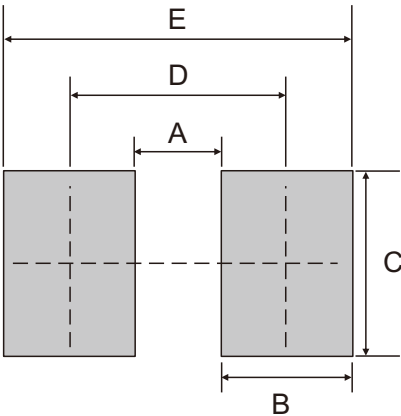
Marking

Type number	Marking code
N06BT0603	NX

Note: 1."N" is part number, fixed.
2."X" is internal code.

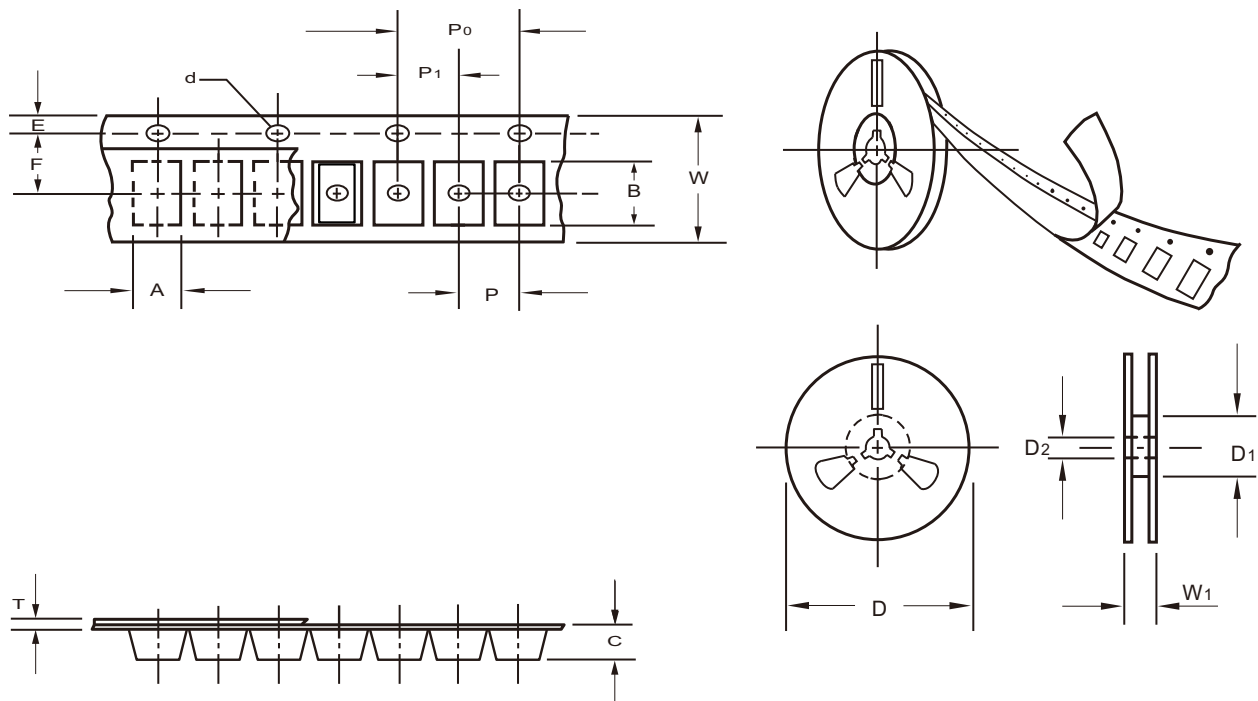
Suggested solder pad layout

Size	T0603	
	(mm)	(inch)
A	0.16	0.006
B	0.24	0.009
C	0.34	0.013
D	0.40	0.016
E	0.64	0.025



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Packing information



unit:mm

Item	Symbol	Tolerance	DFN0603 (T0603)
Carrier width	A	0.1	0.37
Carrier length	B	0.1	0.67
Carrier depth	C	0.1	0.32
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	178.0
7" Reel inner diameter	D ₁	min	60.0
Feed hole diameter	D ₂	0.5	13.5
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.5
Punch hole pitch	P	0.1	2.0
Sprocket hole pitch	P ₀	0.1	4.0
Embossment center	P ₁	0.1	2.0
Overall tape thickness	T	0.1	0.2
Tape width	W	0.3	8.0
Reel width	W ₁	1.0	12.0

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

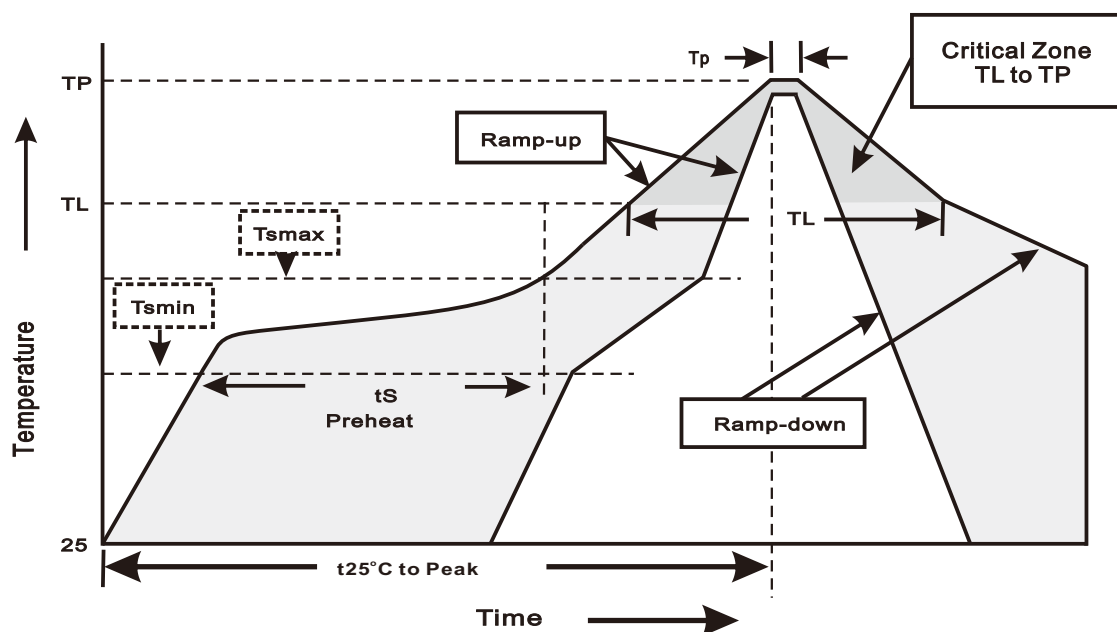
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Reel packing

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)
DFN0603 (T0603)	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 _{min}) -Temperature Max(T _{max}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{max} 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