

LL24BT0603

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LL24BT0603

32W Surface Mount TVS Bi-Directional For ESD Protection : 24V

Features

- Bi-directional configurations.
- Solid-state silicon-avalanche technology.
- Protection one data/power line to:
 - IEC 61000-4-2 $\pm 8\text{kV}$ (Contact), $\pm 15\text{kV}$ (Air).
 - IEC 61000-4-4 (EFT) 40A (5/50ns).
 - IEC 61000-4-5 (Lightning) 4A (8/20 μs).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.LL24BT0603-H.

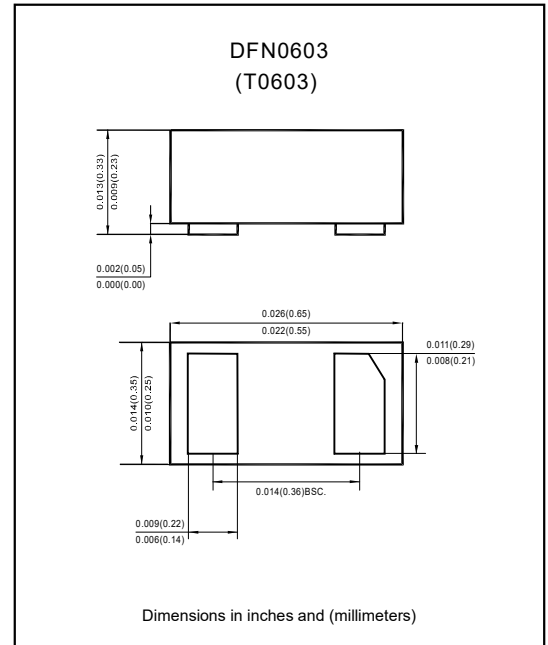
Applications

- Microprocessor based equipment.
- Notebooks, desktops and servers.
- Portable instrumentation.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DFN0603 (T0603) package.
- Terminals: High temperature soldering guaranteed 260°C/10sec. at terminals.

Package outline



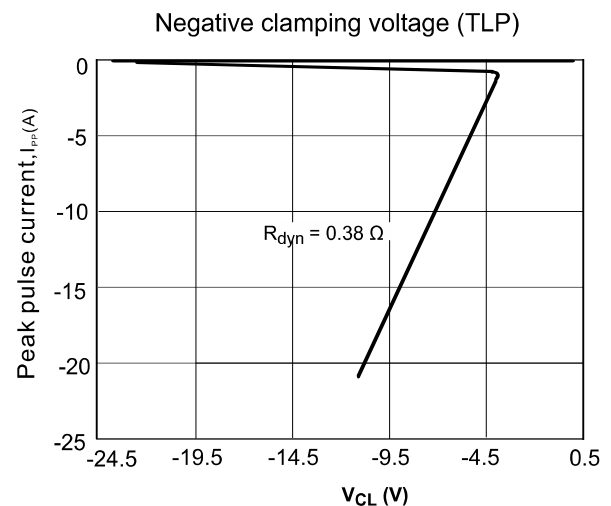
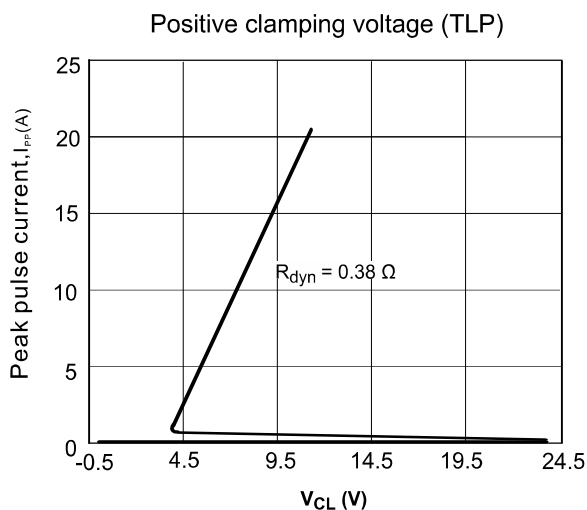
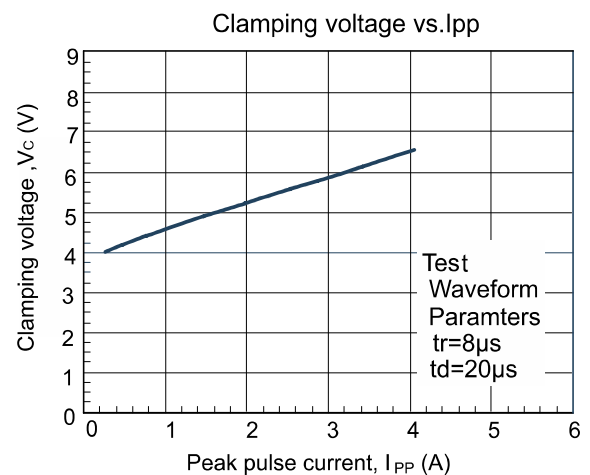
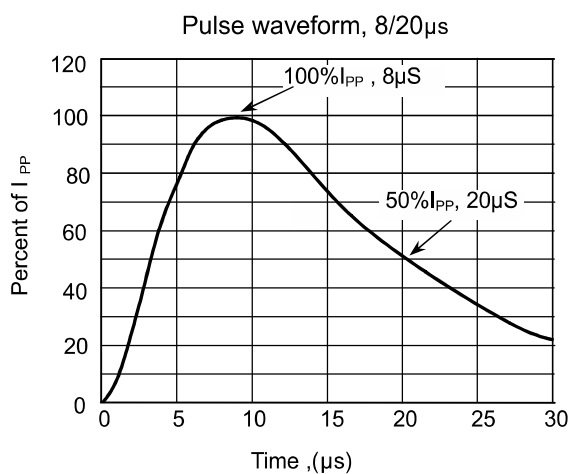
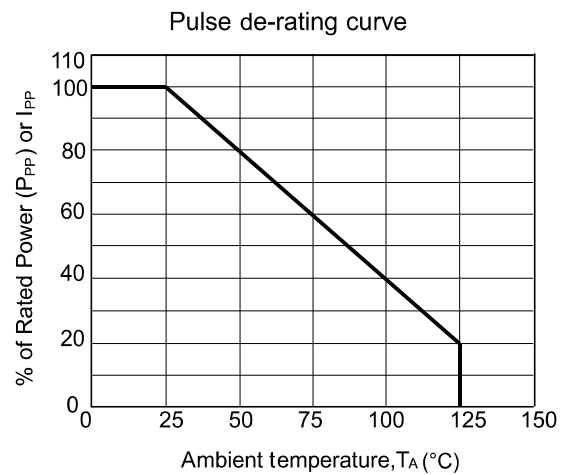
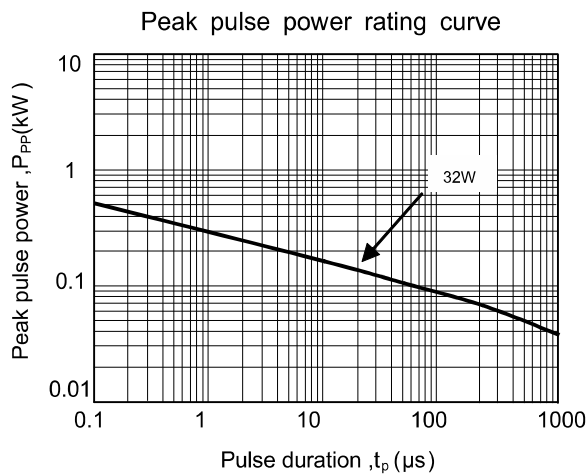
Maximum ratings (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power ($T_p=8/20\mu\text{s}$)	P_{PP}	32	W
ESD Per IEC 61000-4-2 (Air)	V_{ESD}	± 15	KV
ESD Per IEC 61000-4-2 (Contact)		± 8	
Peak pulse current ($T_p=8/20\mu\text{s}$)	I_{PP}	4	A
Operating temperature range	T_J	-55 ~ +125	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

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

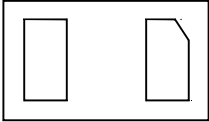
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse working voltage	V_{RWM}				24	V
Holding voltage	V_H	$I_T = I_H$		3		V
Holding current	I_H		35			mA
Reverse leakage current	I_R	$V_{RWM} = 22\text{V}$			0.5	μA
Clamping voltage 1	V_{C1}	$I_{PP1} = 4\text{A}$ ($t_p=8/20\mu\text{s}$)		8		V
Clamping voltage 2 (TLP)	V_{C2}	$I_{PP2} = 16\text{A}$ ($t_p=0.1\mu\text{s}$)		9.6		V
Trigger voltage	V_T			24		V
Dynamic resistance	R_{dyn}	$T_p=100\text{ns}$		0.38		Ω
Junction capacitance	C_J	$V_R=0\text{V}, f=1.0\text{MHz}$		0.45		pF

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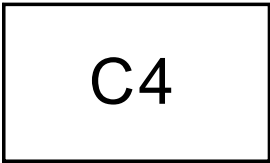
Ratings and V-I characteristics curves ($T_A=25^\circ\text{C}$, Unless otherwise noted)

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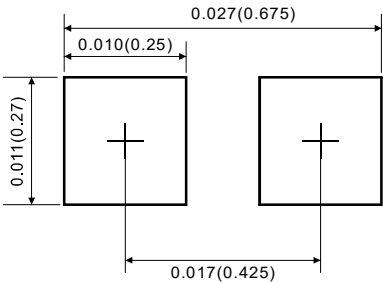
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

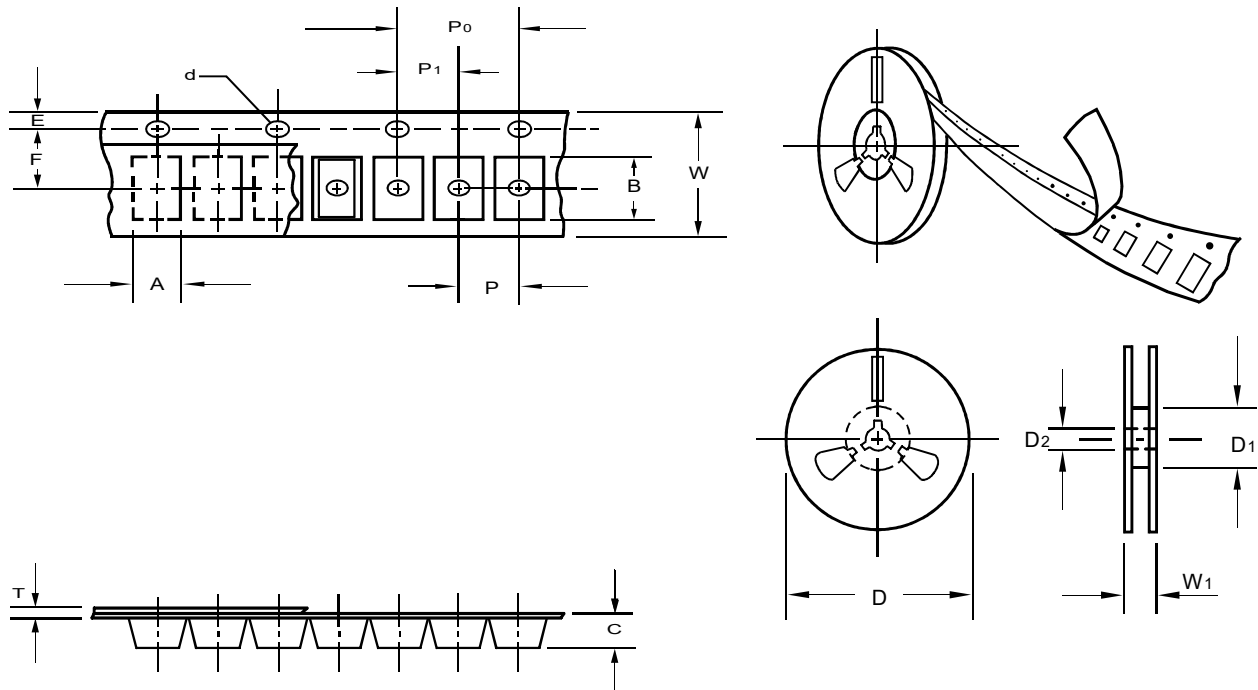
Type number	Marking code
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Suggested solder pad layout



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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.

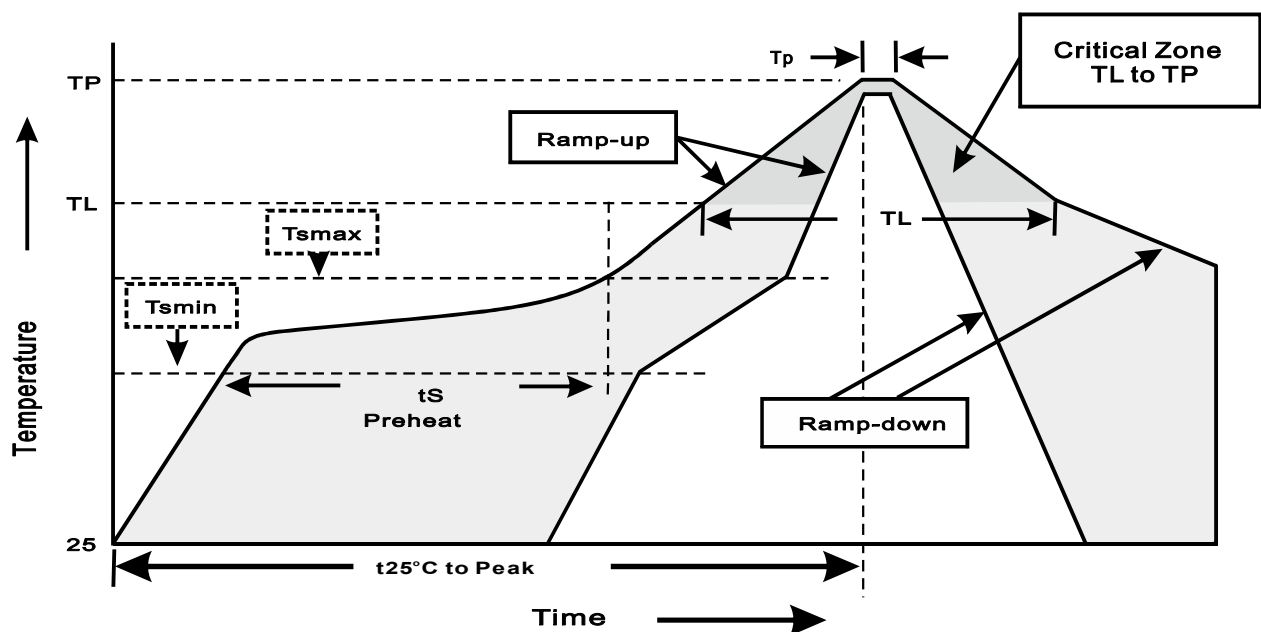
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Reel packing

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