LL01V5BTCT0603-H

List

LL01V5BTCT0603-H

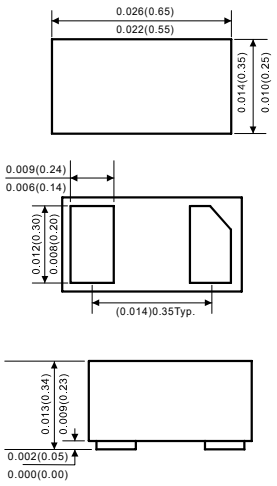
13W Ultra Low Capacitance Bi-Directional TVS For ESD Protection : 1.5V

Features

- 13Watts peak pulse power (t_p=8/20μs).
- Solid-state silicon-avalanche technology.
- Capacitance: 0.2pF(typ.)
- Low clamping voltage.
- Low leakage current.
- Complies with following standards:
  - IEC 61000-4-2(ESD) ±15kV (Air), ±12kV (Contact).
  - IEC 61000-4-4(EFT) 40A (5/50ns)
  - IEC 61000-4-5(Lightning) 4A (8/20μs).
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21) .

Package outline

DFN0603(T0603)



Dimensions in inches and (millimeters)

Applications

- USB 3.1/3.2/4.0 interface, Thunderbolt interface and USB type-C interface.
- Handheld portable application.
- Consumer electronics.

Mechanical data

- Epoxy: UL94-V0 rated Flame retardant.
- Case: Molded plastic, DFN0603 (T0603).
- Terminals: Solder plated, solder able per J-STD-020.

Maximum ratings (At T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power (8/20μs)	P_{PK}	13	W
Peak Pulse Current (8/20μs)	I_{PP}	4	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	±15	kV
ESD per IEC61000-4-2 (Contact)		±12	
Lead soldering temperature (10 seconds duration)	T_L	260	°C
Operating temperature	T_J	+125	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Electrical Characteristics (At T_A=25°C unless otherwise noted)

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Units
Reverse Working Voltage		V_{RWM}			1.5	V
Reverse Leakage Current	V_{RWM}=1.5V	I_R			0.1	μA
Reverse Breakdown Voltage	I_T=0.1mA	V_{BR}	4.5	6.0		V
Clamping Voltage	I_{PP} = 1A, t_p=8/20μs	V_C		1.75		V
	I_{PP} = 4A, t_p=8/20μs			2.9		
Dynamic resistance	IEC 61000-4-2, 0 to + 8kV, contact mode, T=25ºC	R_{dyn}		0.2		Ω
Junction Capacitance	V_{DC}=1V, f=1.0MHz	C_J		0.2		pF

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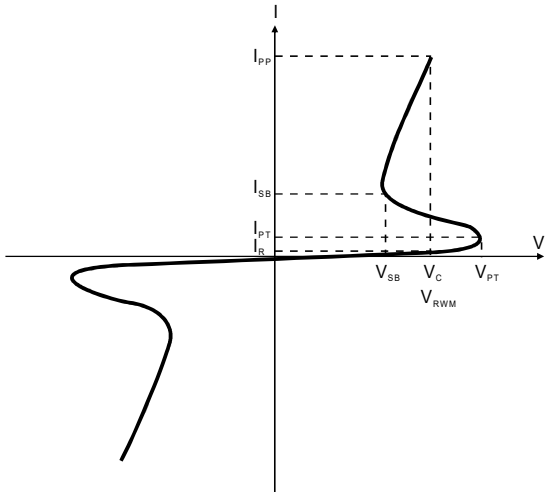
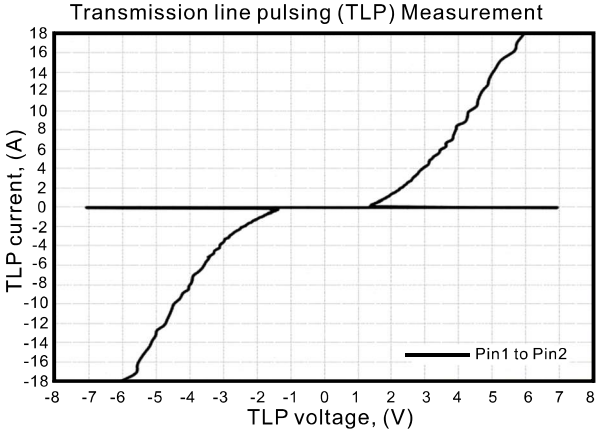
Rating and characteristic curves

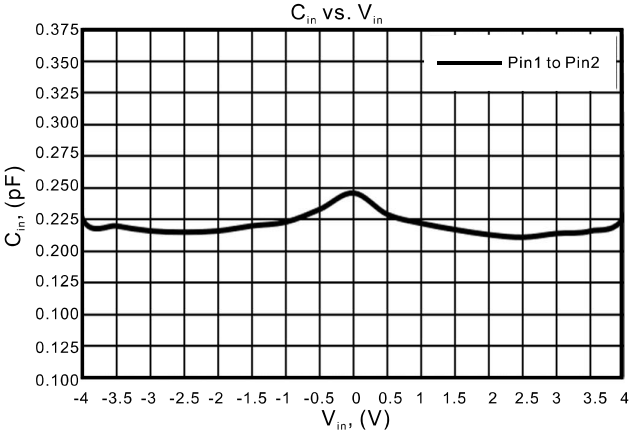
Symbol	Parameter
I_{PP}	Peak pulse current
V_C	Clamping voltage
V_{RWM}	Reverse working voltage
I_R	Reverse leakage current
V_{BR}	Breakdown voltage
I_T	Test current
V_{PT}	Punch- through voltage
I_{PT}	Punch- through current



Dynamic resistance with positive clamping voltage
Transmission line pulsing (TLP) Measurement



Typical variation of C_{IN} vs V_{IN}
C_{in} vs. V_{in}



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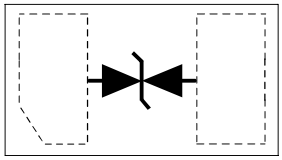
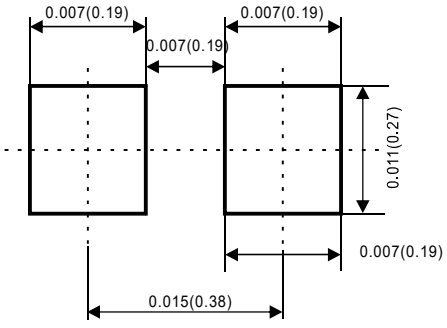
Pinning information

Pin	Simplified outline	Circuit Diagram
Bi-directional		

Marking

Type number	Marking code
LL01V5BTCT0603-H	1S or A

Suggested solder pad layout



Dimensions in inches and (millimeters)

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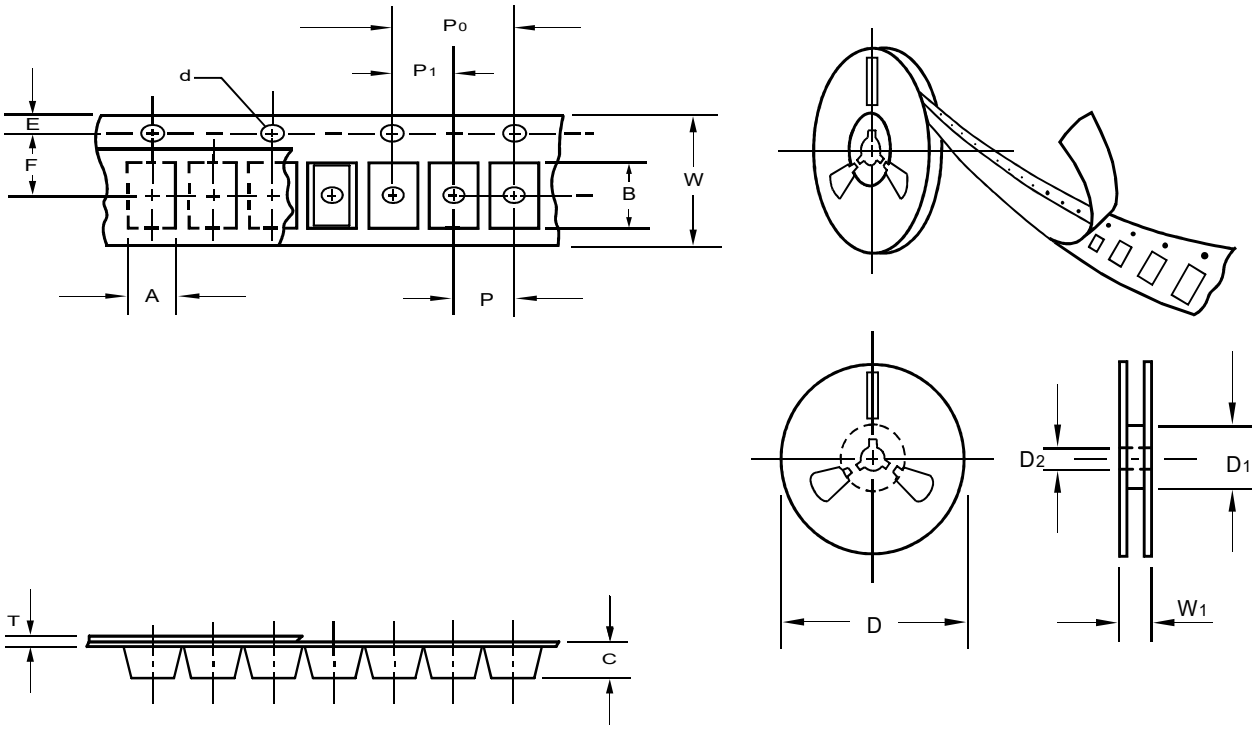
Packing information



unit:mm

Item	Symbol	Tolerance	DFN0603 (T0603)
Carrier width	A	0.1	0.41
Carrier length	B	0.1	0.71
Carrier depth	C	0.1	0.38
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 accor dance with EIA standar RS-481-A and specifications listed above.

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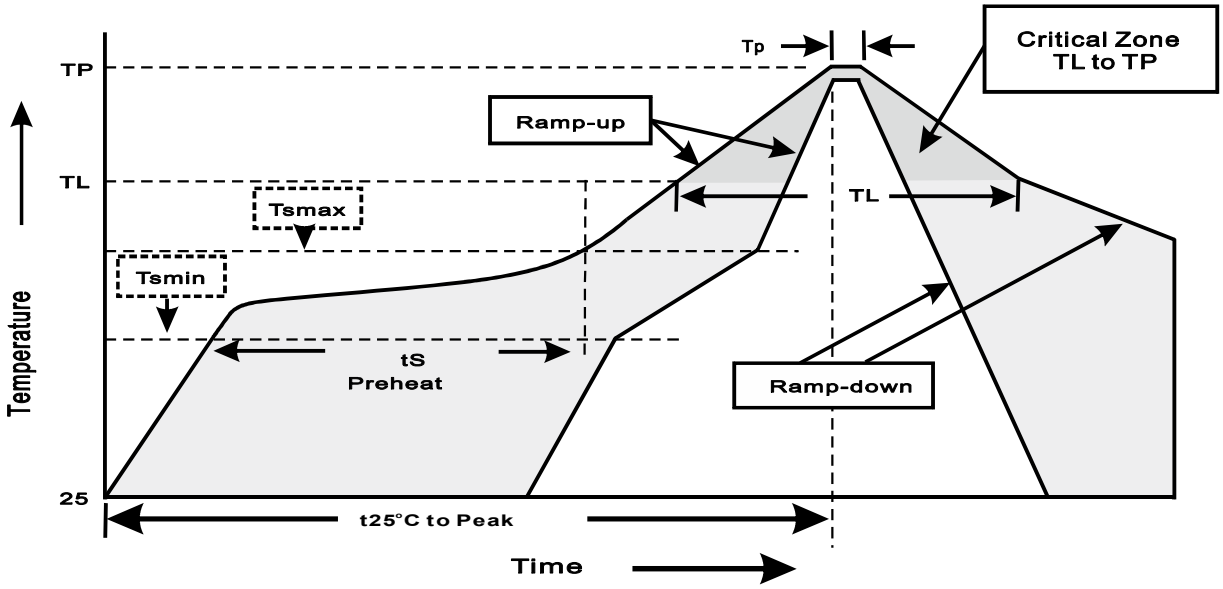
Reel packing

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)
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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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