

LL05BTCT0603B-H

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LL05BTCT0603B-H

50W Ultra Low Capacitance Bi-Directional Snap Back TVS For ESD Protection : 5.0V

Features

- Peak pulse current (8/20μs):8.5A. (Max)
- Junction capacitance :0.19pF. (Max.)
- Low clamping voltage and low leakage current.
- Complies with following standards:
IEC 61000-4-2(ESD) ±20 kV(Air), ±20 kV(Contact).
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

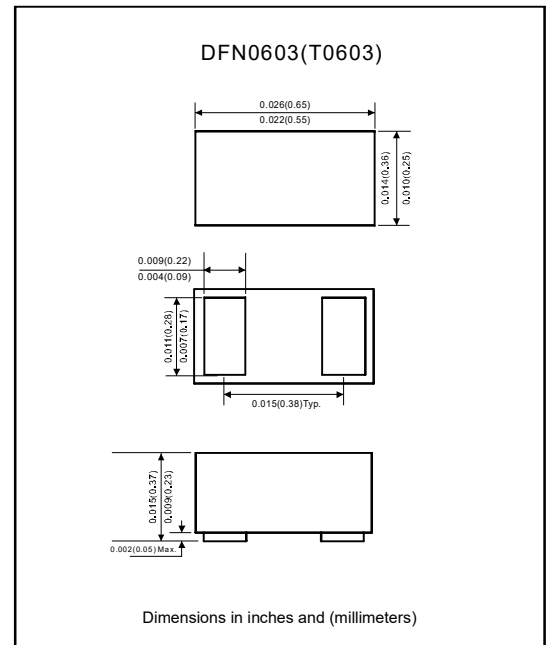
Applications

- Cellular handsets and accessories.
- Personal digital assistants, notebooks, and handhelds.
- Portable instrumentation, digital cameras.
- Peripherals, audio players, and industrial equipment.

Mechanical data

- Epoxy: UL94-V0 rated Flame retardant.
- Case: Molded plastic, DFN0603 (T0603).
- Weight : Approximated 0.2mg.

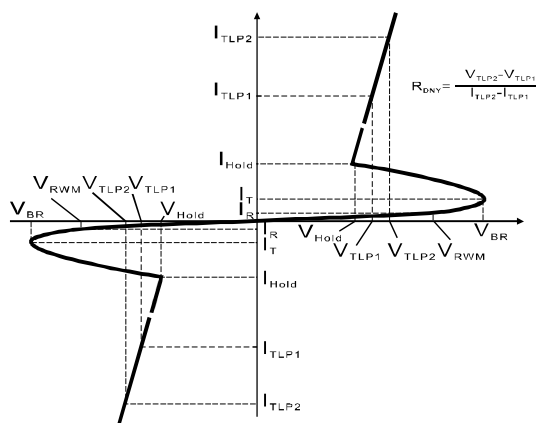
Package outline



Maximum ratings (At T=25°C, RH=45~75%, unless otherwise noted)

Parameter	Symbol	Ratings	Units
Peak pulse power (8/20μs)	P_{PK}	50	W
Peak pulse current (8/20μs)	I_{PP}	8.5	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	±20	KV
ESD per IEC61000-4-2 (Contact)		±20	
Operating temperature	T_J	+125	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Electrical curve characteristic parameters



- Note :
1. $V_{BR}=7.5V@I_T=100\mu A$.
 2. V_{BR}, T_O, V_{Hold} represents sweep back depth.
 3. $V_{TLP1}=2.5V@I_{TLP1}=1A$.
 4. $V_{TLP2}=5.5V@I_{TLP2}=16A$.

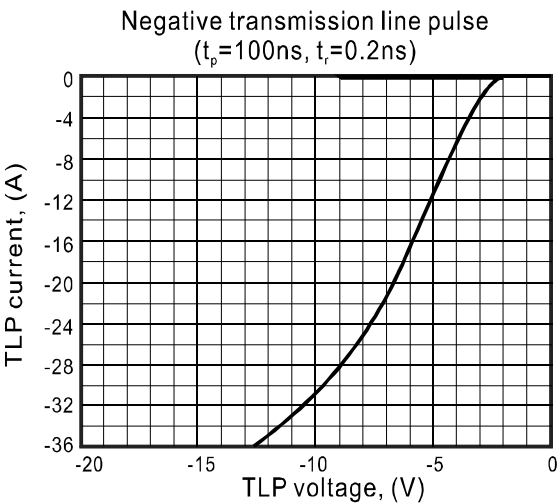
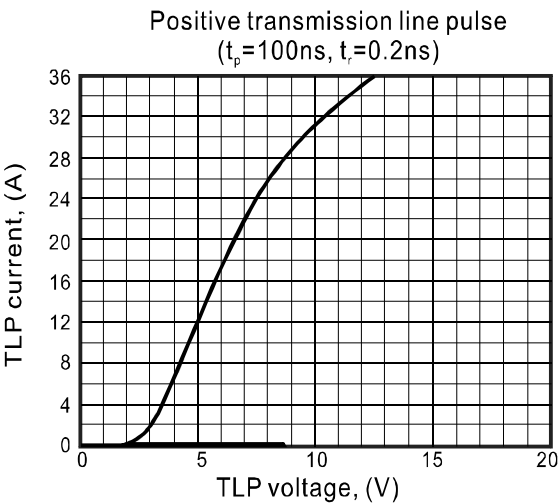
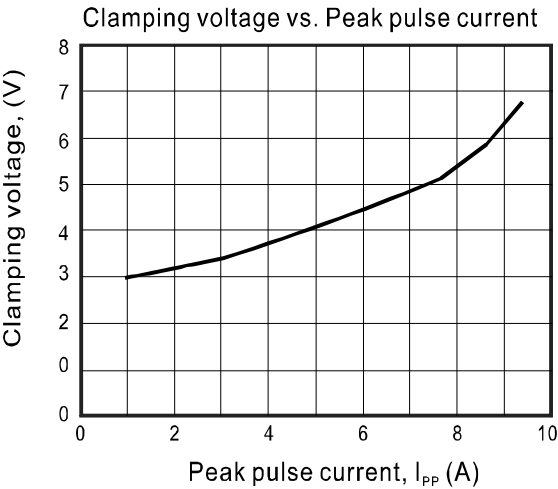
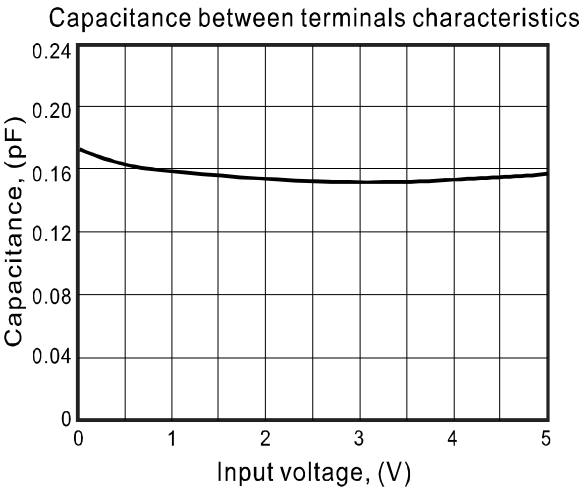
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Electrical Characteristics (At T=25°C, RH=45~75%, unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse working voltage		V_{RWM}			5	V
Reverse breakdown voltage	$I_r=100\mu A$	V_{BR}	6.0	7.5	9.0	V
Reverse leakage current	$V_R=5V$	I_R		1	50	nA
Clamping voltage (Note1,2)	$I_{TLP}=1A$, 100ns transmission line pulse	V_{CL}		2.5		V
	$I_{TLP}=16A$, 100ns transmission line pulse			5.5		
Clamping voltage (Note1)	$I_{PP}=1.0A$, IEC61000-4-5, $T_p=8/20\mu s$	V_{CL}		3.0		V
	$I_{PP}=8.5A$, IEC61000-4-5, $T_p=8/20\mu s$			5.8		
Dynamic resistance (Note1,2)	$I_{TLP}=1A$ to 16A	R_{DNY}		0.2		Ω
Junction capacitance	$V_R=0V$, $f=1.0MHz$	C_J		0.15	0.19	pF

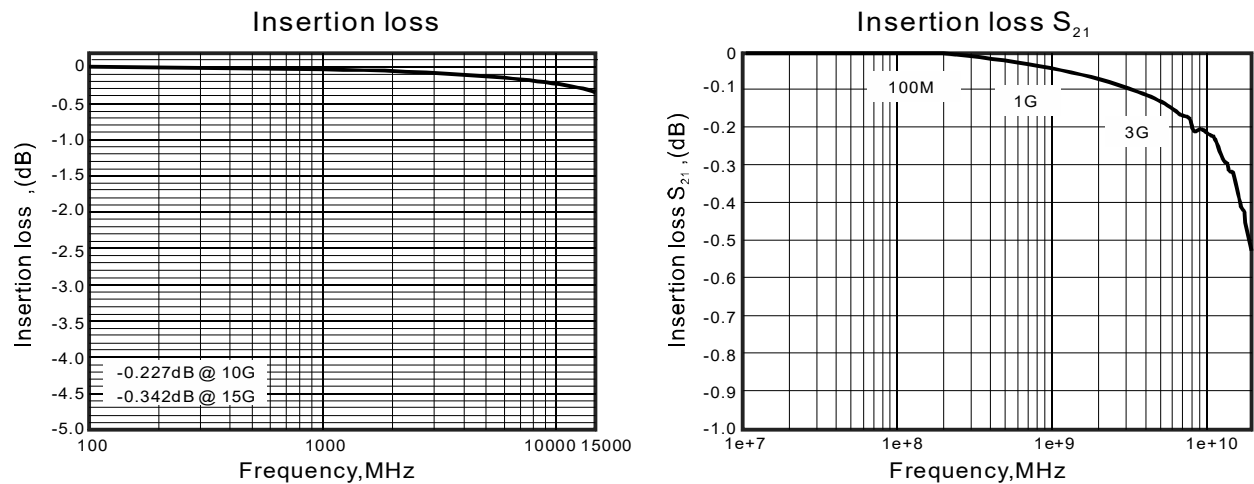
Notes:1. These specifications are guaranteed by design and characterization.
2. Measurements performed using a 100ns transmission line pulse (TLP) system.

Rating and characteristic curves



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Rating and characteristic curves



Pinning information

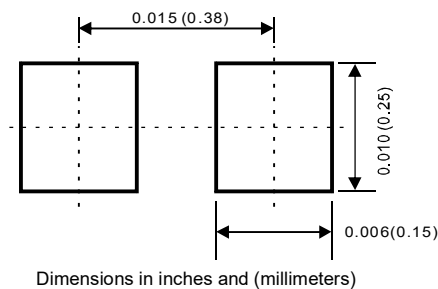
Pin	Simplified outline	Symbols
Bi-directional	Top view Bottom view	

Marking

Type number	Marking code
LL05BTCT0603B-H	<u>B</u> M

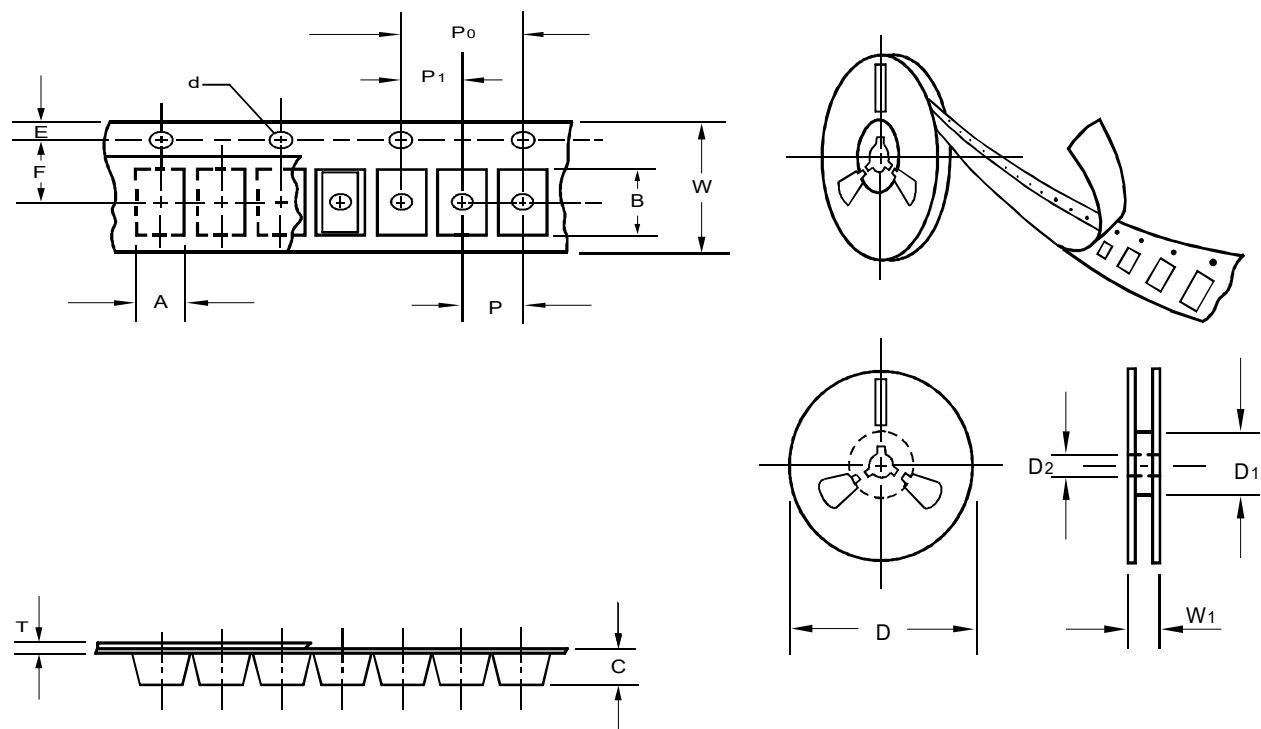
* "M" is the month code.

Suggested solder pad layout



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Packing information



unit:mm

Item	Symbol	Tolerance	DFN0603 (T0603)
Carrier width	A	0.5	0.41
Carrier length	B	0.5	0.71
Carrier depth	C	0.5	0.38
Sprocket hole	d	0.5	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.0
7" Reel inner diameter	D1	min	53.40
Feed hole diameter	D2	5.0	13.00
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	P0	0.1	4.0
Embossment center	P1	0.1	2.0
Overall tape thickness	T	0.5	0.2
Tape width	W	0.5	8.0
Reel width	W1	5.0	12.3

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

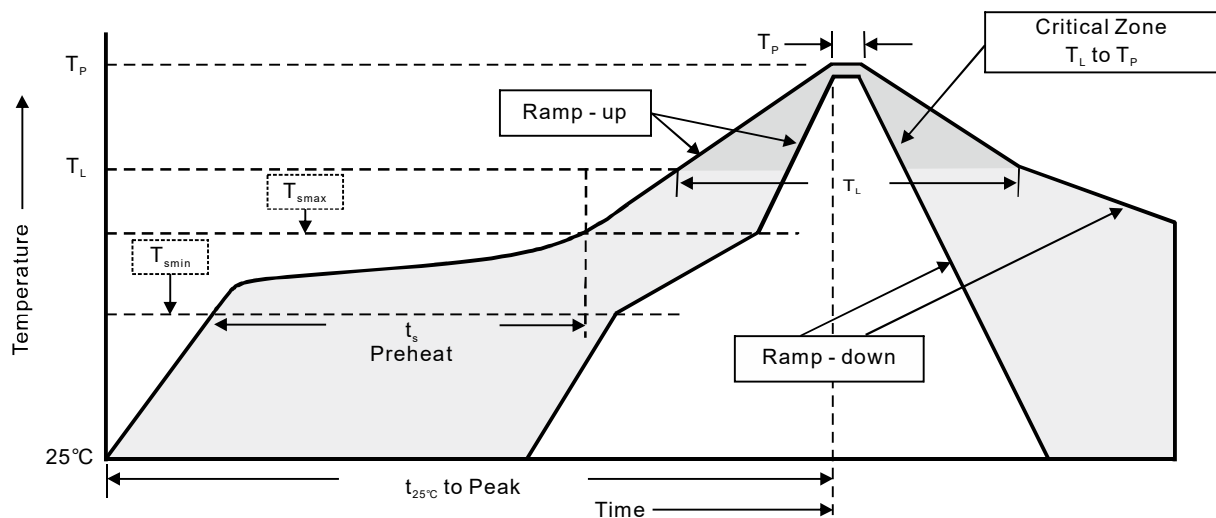
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)
DFN0603 (T0603)	7"	15,000	4.0	150,000	183*123*183	178	382*257*387

Suggested thermal profiles for soldering processes

- Storage environment : Temperature = 5°C ~ 40°C, Humidity = 55%, ±25%.
- 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_{smin}) - Temperature Max (T_{smax}) - Time (Min to Max) (t_s)	150°C 200°C 60 ~ 120 sec
T_{smax} to T_L - Ramp-up rate	< 3 °C / sec
Time maintained above : - Temperature (T_L) - Time (T_L)	217°C 60 ~ 260 sec
Peak temperature (T_P)	255 °C -0 / +5°C
Time with 5°C of actual peak temperature (T_P)	10 ~ 30 sec
Ramp-down rate	< 6°C / sec
Time 25°C to peak temperature	< 6 minutes