LL05BT0603F

List

LL05BT0603F

Surface Mount TVS Bi-directional
For ESD : 5.0V

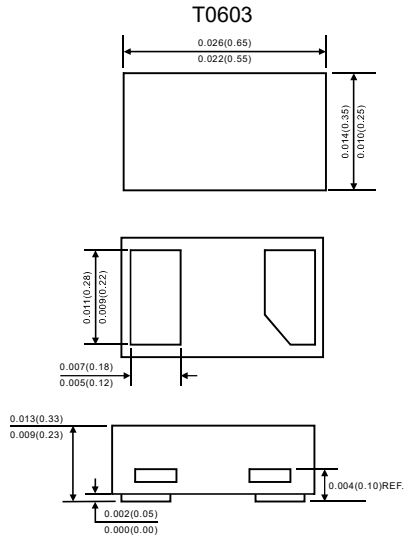
Features

- Protects one high-speed data line.
- Transient protection for high-speed data lines.
- IEC 61000-4-2 (ESD) ±17kV (Air), ±8kV (Contact).
- Each I/O Pin can withstand over 1000 ESD strikes for ±8KV contact discharge.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. LL05BT0603F-H.

Mechanical data

- Molding compound flamm ability rating : UL 94V-0.
- Pb-Free, Halogen Free, RoHS/WEEE compliant.
- Case : Molded plastic, T0603
- Terminals : Solder plated, solder able per J-STD-002.
- Polarity : Indicated by cathode band.
- Mounting Position : Any.
- Weight : Approximated 0.109 gram.

Package outline



Dimensions in inches and (millimeters)

Absolute maximum ratings (At T_A=25°C, RH=45% ~ 75%, unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Peak pulse current (t_P=8/20μs)	I_{PP}	4.0	A
ESD per IEC 61000-4-2 (Air discharge)	ESD	±17	KV
ESD per IEC 61000-4-2 (Contact discharge)		±8	KV
Operating junction temperature range	T_{OPT}	-55 ~ 125	℃
Storage temperature range	T_{STG}	-55 ~ 150	℃

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

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Nominal reverse working voltage	V_{RWM}			3.3	5.0	V
Reverse leakage current	I_R	V_{RWM}=5V			0.1	μA
Breakdown voltage	V_{t1}	I_{t1}=100μA	6.5		8.5	V
Holding voltage	V_h	I_h=30mA		2.2	2.4	V
Clamping voltage-1	V_{c1}	I_{PP}=1A, t_P=8/20μs			4.0	V
Clamping voltage-2	V_{c2}	I_{PP}=3A, t_P=8/20μs			5.0	V
Clamping voltage-3	V_{c3}	I_{PP}=4A, t_P=100ns			4.8	V
Inverse dynamic resistance	R_{dyn}	IEC61000-4-2, 0~8KV		0.3		Ω
Parasitic cpacitance	C_{ESD}	V_R=0V, f=1MHz		0.13	0.176	pF

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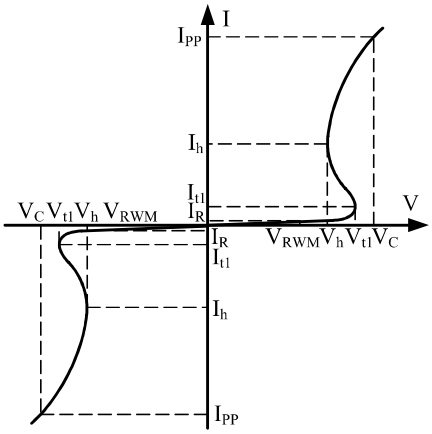
Electrical characteristics (T_A=25℃, Unless otherwise noted)

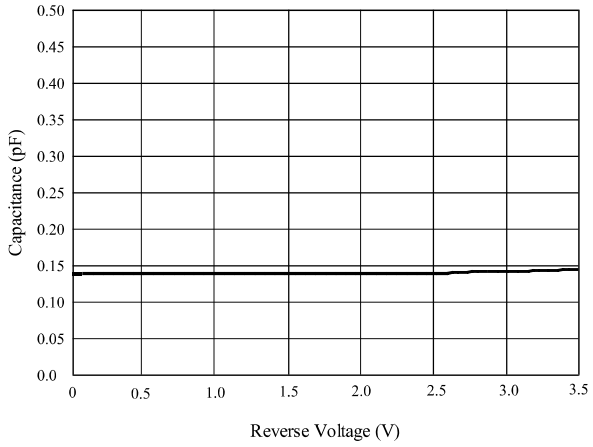
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{t1}	Trigger Voltage
I_{t1}	Trigger Current @ V_{t1}
V_h	Holding Voltage
I_h	Holding Current @ V_h
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
C_Δ	Variation in C_{ESD} with Reverse Bias



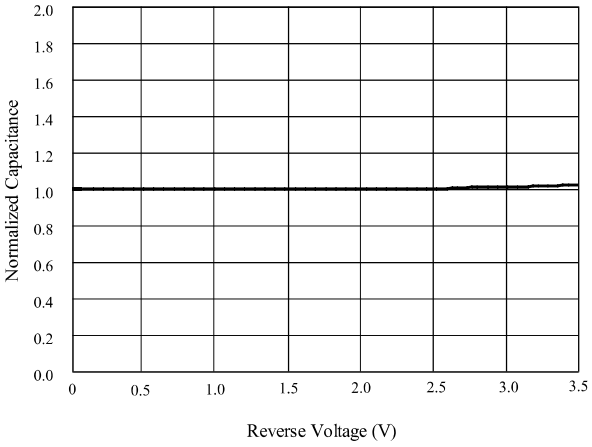
Bi-Directional TVS

Ratings and V-I characteristics curves (T_A=25℃, Unless otherwise noted)

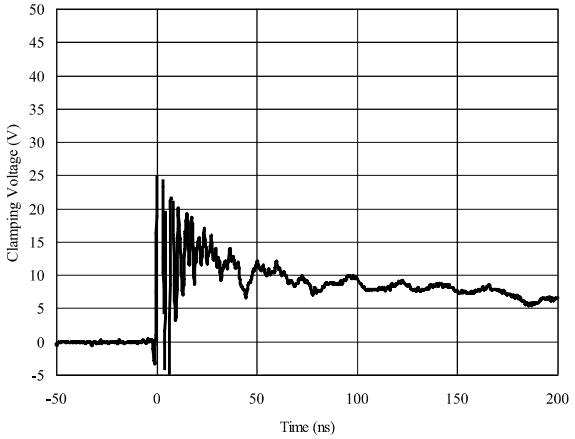
Capacitance *vs.* Reverse Voltage



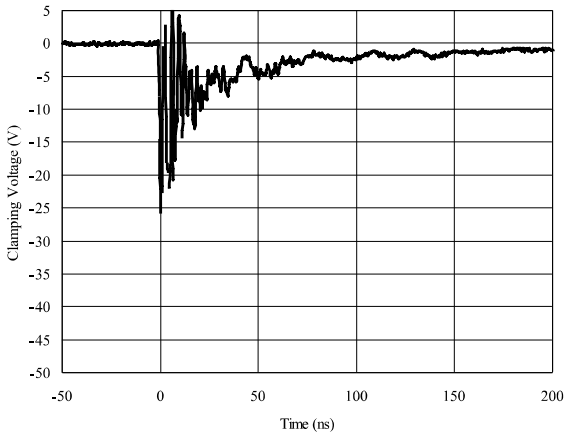
Normalized Capacitance *vs.* Reverse Voltage



ESD Clamping of I/O to GND (+8kV Contact per IEC 61000-4-2)



ESD Clamping of I/O to GND (-8kV Contact per IEC 61000-4-2)



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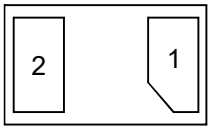
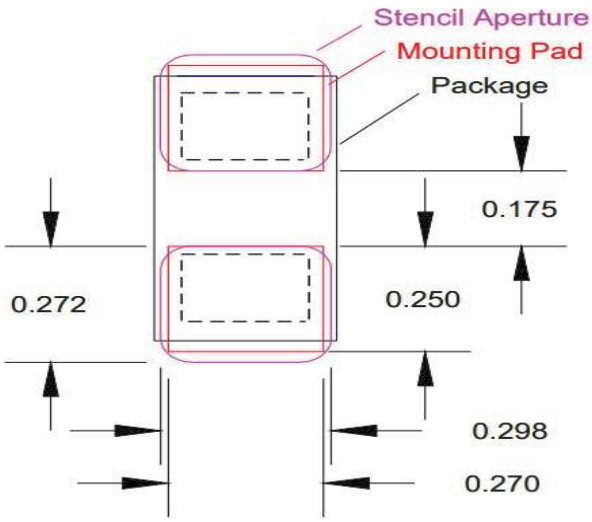
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

4X

Suggested solder pad layout



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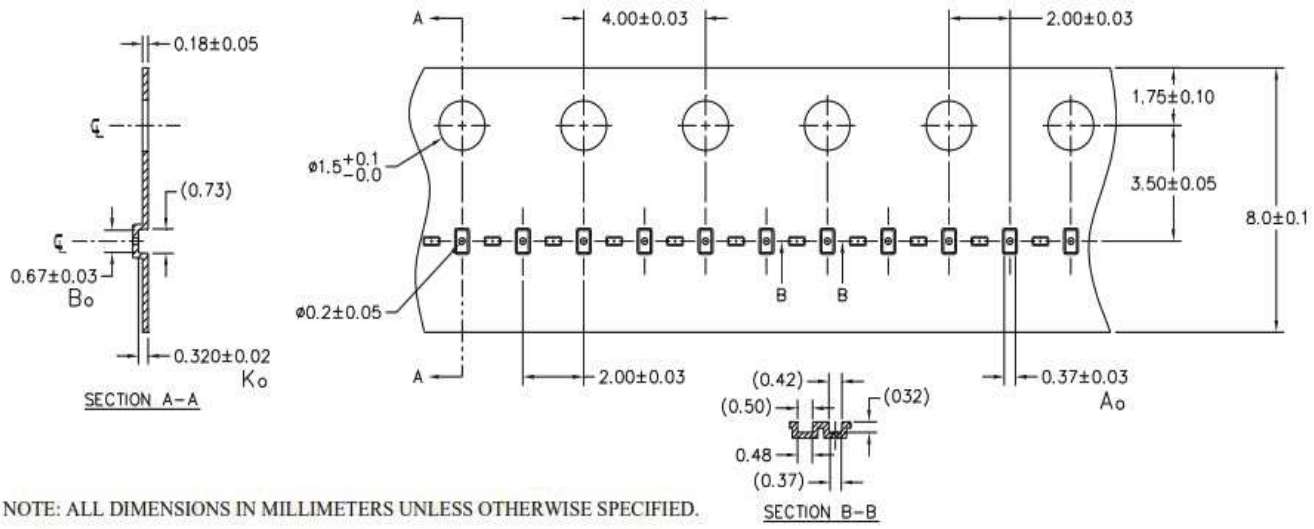
Packing information

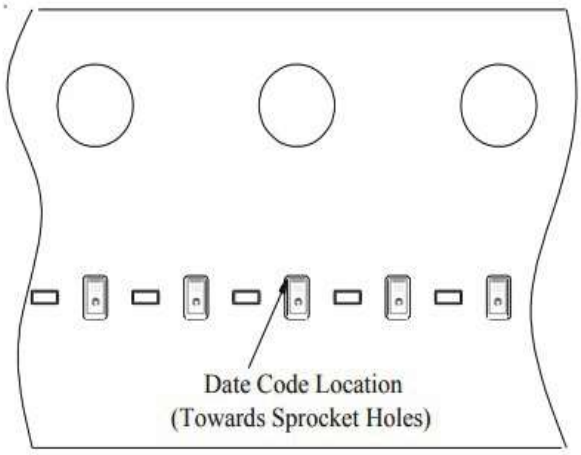


NOTE: ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

A0	B0	K0
0.37 +/-0.03	0.67 +/-0.03	0.32 +/-0.02 mm

Note: All dimensions in mm unless otherwise specified

Device Orientation in Tape



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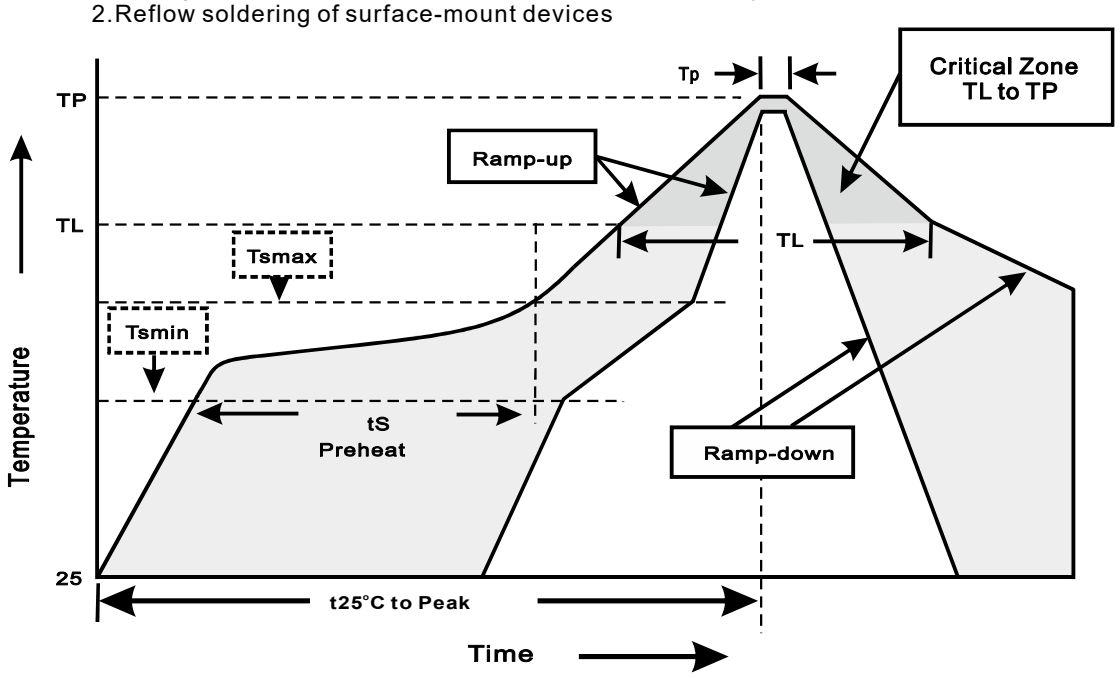
Suggested thermal profiles for soldering processes

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