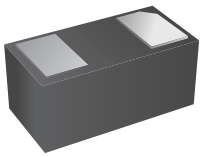
LTE06N03C01LBUS

Ultra Low Capacitance ESD Protection Device

Features



- Transient protection for high-speed data line
  IEC 61000-4-2 (ESD) ±12kV (Contact)
  IEC 61000-4-2 (ESD) ±15kV (Air)
  IEC 61000-4-5 (Surge) 4A
- Package optimized for high-speed line
- Ultra-small package(0.6mm×0.3mm×0.3mm)
- Working voltage: 3.3V
- Snap back featured
- Low capacitance: 0.19pF (Typical)
- Low leakage current
- Low clamping voltage
- Lead free in comply with EU RoHS 2011/65/EU directives

Mechanical Data

- Case:DFN0603
- Flammability Rating: UL 94V-0

Applications

- Thunderbolt 3/4
- USB 3.0/3.1/3.2 and 4.0
- USB Type-C
- Consumer electronics

Ordering Information

Part Number	Marking	Shipping	Reel
LTE06N03C01LBUS-TR10	m	10000PCS Tape&Reel	7 inchs

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{ESD}	ESD per IEC 61000-4-2 (Contact) ESD per IEC 61000-4-2 (Air)	±12 ±15	kV
P_{PP}	Peak Pulse Power (8/20μs)	20	W
I_{PP}	Peak Pulse Current (8/20μs)	4	A
T_{OPT}	Operating Temperature	-50~125	°C
T_{STG}	Storage Temperature	-55~150	°C

Electrical Characteristics (Tamb=25°C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
V_{RWM}	Reverse Working Voltage	Pin to Pin			3.3	V
V_{BR}	Reverse Breakdown Voltage	I_T = 0.1mA	5			V
I_R	Reverse Leakage Current	V_{RWM} = 3.3V			1	uA
V_H	Holding Reverse Voltage	Pin to Pin		1.35		V
I_H	Holding Reverse Current	Pin to Pin		20		mA
V_C	Clamping Voltage	I_{PP} = 1A, t_p = 8/20μs		2.2	3.5	V
		I_{PP} = 4A, t_p = 8/20μs		3.0	5	V
V_{CTLP}	TLP Clamping Voltage	TLP I_{PP} = 8A, t_p = 100ns		3.5		V
		TLP I_{PP} = 16A, t_p = 100ns		5.1		V
R_{DYN}	Dynamic Resistance	I_{TLP} = 4A to I_{TLP} = 16A		0.14		Ω
C_J	Junction Capacitance	V_R = 1V, f = 1MHz		0.19	0.3	pF

Characteristic Curves

Fig.1 Transmission Line Pulsing (TLP) Measurement

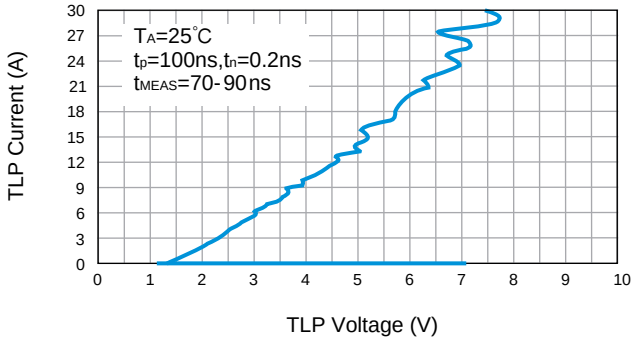


Fig.2 Clamping Voltage vs Peak Pulse Current

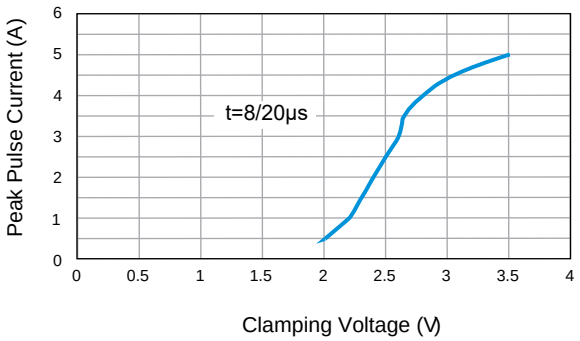


Fig.3 Insertion Loss

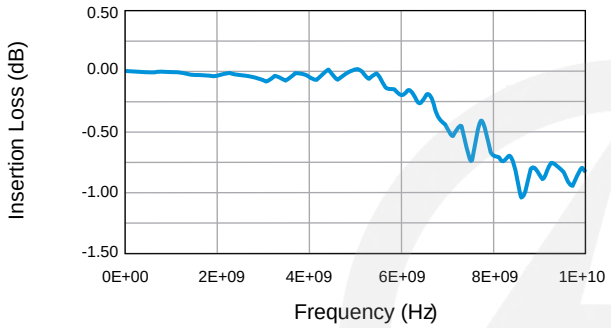


Fig.4 Voltage vs Capacitance

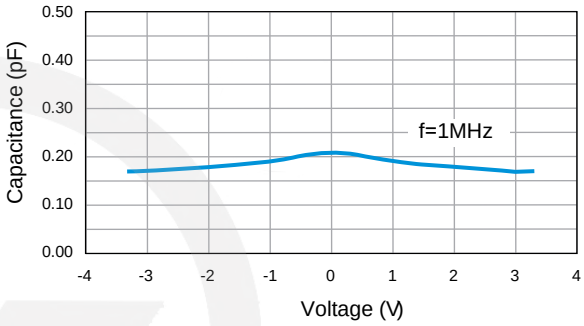
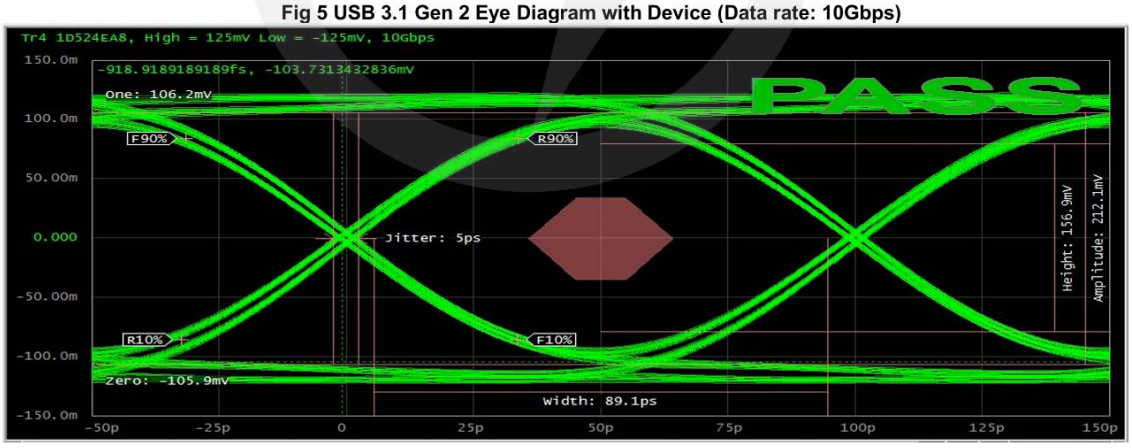
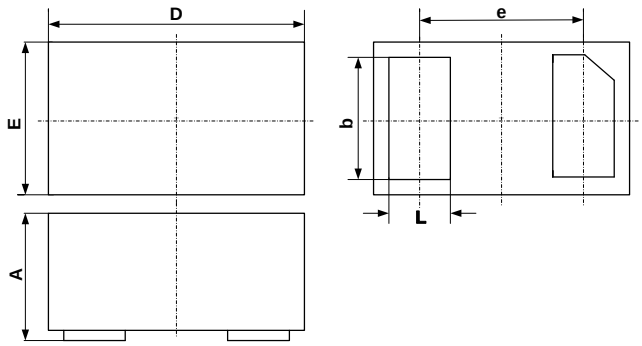


Fig 5 USB 3.1 Gen 2 Eye Diagram with Device (Data rate: 10Gbps)



DFN0603 Package Outline

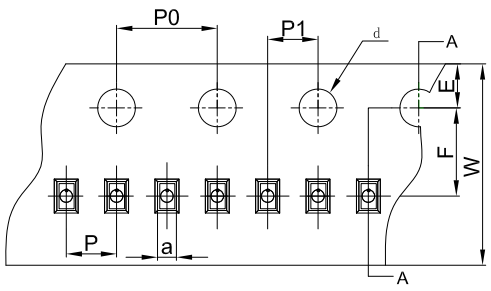


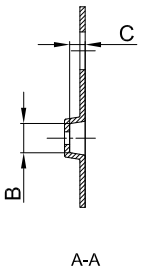
Unit: mm

SYMBOL	DIMENSIONS	
	MILLIMETERS	
	MIN	MAX
A	0.230	0.370
b	0.200	0.275
D	0.550	0.670
e	0.360 BSC	
E	0.250	0.370
L	0.120	0.220

Carrier Tape Dimensions

Unit：mm





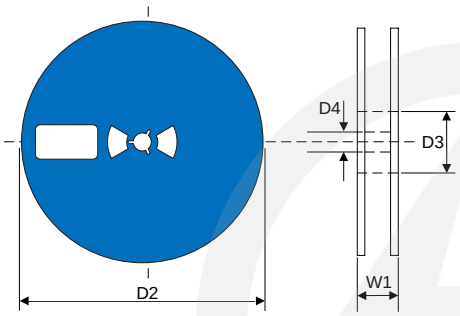
A-A

Symbol	Spec	Symbol	Spec
a	0.41	F	3.50
B	0.70	P0	4.00
C	0.38	P	2.00
d	ø1.50	P1	2.00
E	1.75	W	8.00

Reel Dimensions

Unit：mm

7” Reel

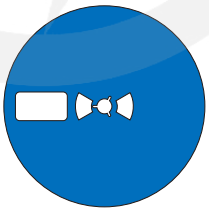


D2	Φ178.0±2.0
D3	Φ50
D4	13.0±0.5
W1	12±0.5
Quantity: 10000PCS	

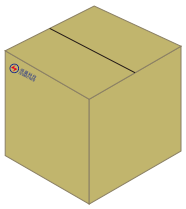
Packaging

DFN0603

10000PCS/Reel

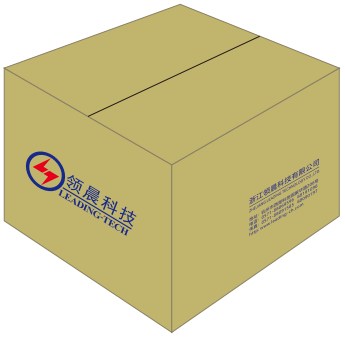


15Reel/Inner Box
150KPCS/Inner Box



Dim(Unit:mm)
210mm*208mm*203mm

4 Boxs per carton
600 KPCS per carton

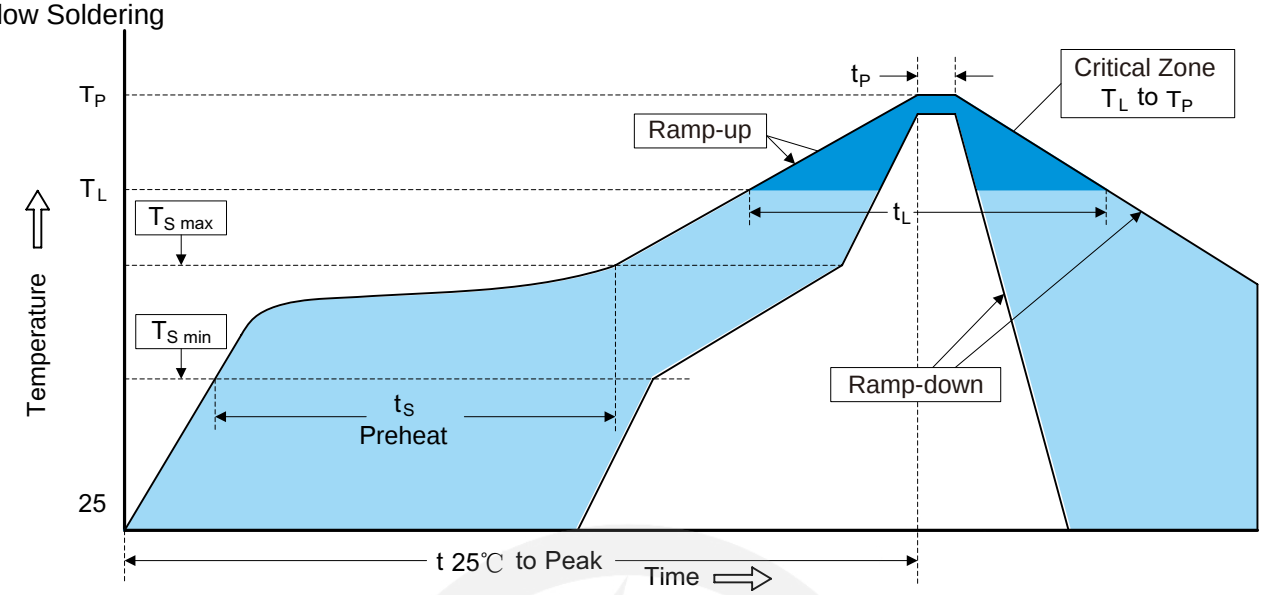


Dim(Unit:mm)
440mm*440mm*230mm

7 inchs Reel

Recommended Soldering Conditions

Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3℃/second max.
Preheat -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_S)	 150℃ 200℃ 60-180 seconds
$T_{S\ max}$ to T_L -Ramp-up Rate	 3℃/second max.
Time maintained above: -Temperature (T_L) -Time (t_L)	 217℃ 60-150 seconds
Peak Temperature (T_P)	260℃
Time within 5℃ of actual Peak Temperature (t_P)	20-40 seconds
Ramp-down Rate	6℃/second max.
Time 25℃ to Peak Temperature	8 minutes max.

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Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision content	Revision Reason	Revision Person	Note
01	2024.03.16	2024.03.16	3.0	New File	/	Ding	