

LL052BT1610

List

List.....	1
Package outline.....	2
Features.....	2
Applications.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Reel packing.....	5
Suggested thermal profiles for soldering processes.....	5

LL052BT1610

2-Channel Ultra Low Capacitance TVS For ESD Protection Array : 5.0V

Features

- Protect two lines.
- Complies with following standards:
IEC 61000-4-2 (ESD) $\pm 25\text{kV}$ (Air).
IEC 61000-4-2 (ESD) $\pm 20\text{kV}$ (Contact).
IEC 61000-4-5 (Lightning) 5A(8/20 μs).
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.LL052BT1610-H.

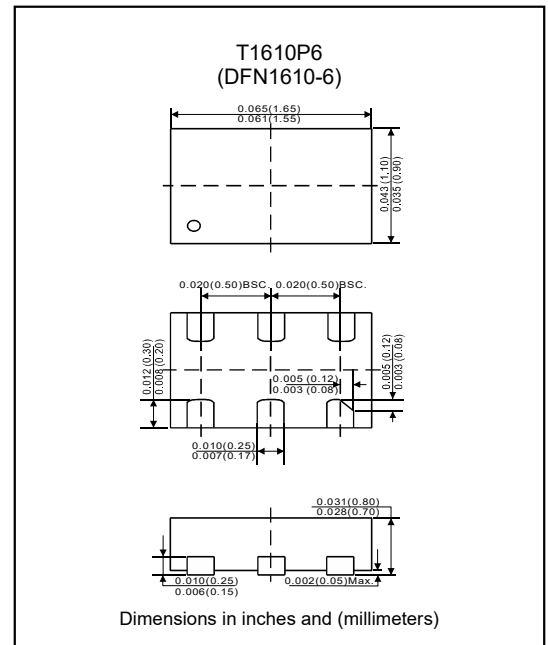
Applications

- Cellular handsets and accessories.
- USB ports.
- Video interface.
- MDDI ports.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, T1610P6(DFN1610-6).
- Mounting Position: Any.

Package outline



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

Parameter	Symbol	Value	Unit
Peak pulse power (8/20 μs)	P_{PK}	75	W
Peak pulse current (8/20 μs)	I_{PP}	5	A
ESD per IEC 61000-4-2 (Contact)	V_{ESD}	± 25	kV
ESD per IEC 61000-4-2 (Air)		± 20	
Operating temperature	T_J	+125	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

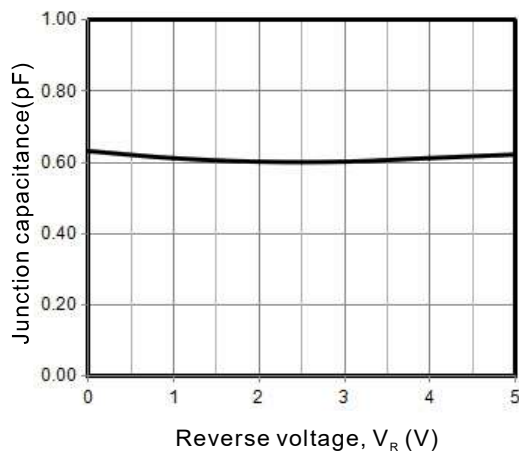
Electrical characteristics (at $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			5	V
Reverse breakdown voltage	$I_T=1\text{mA}$	V_{BR}	6			V
Reverse leakage current	$V_{RWM}=5.0\text{V}$	I_R			0.5	μA
Clamping voltage @ I_{PP}	$I_{PP}=1\text{A}$ (8/20 μs) (Any I/O pin to ground)	V_C			10	V
	$I_{PP}=5\text{A}$ (8/20 μs) (Any I/O pin to ground)				15	
Junction capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$ (Between I/O pins)	C_J		0.3	0.4	pF
	$V_R=0\text{V}$, $f=1.0\text{MHz}$ (Any I/O pin to ground)				0.8	

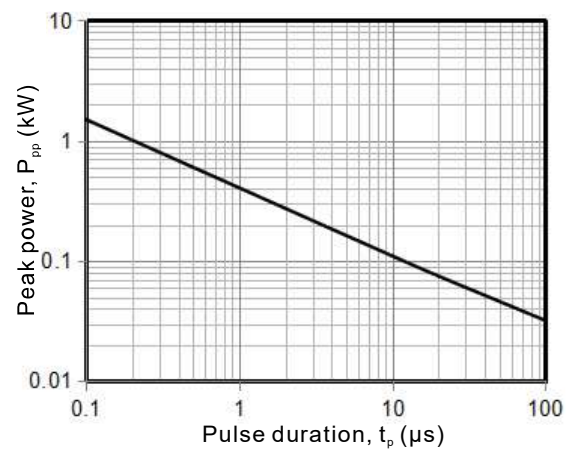
LL052BT1610

Rating and characteristic curves

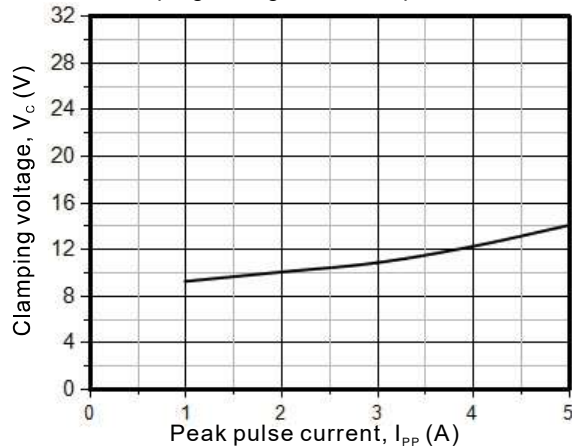
Junction capacitance vs. Reverse voltage



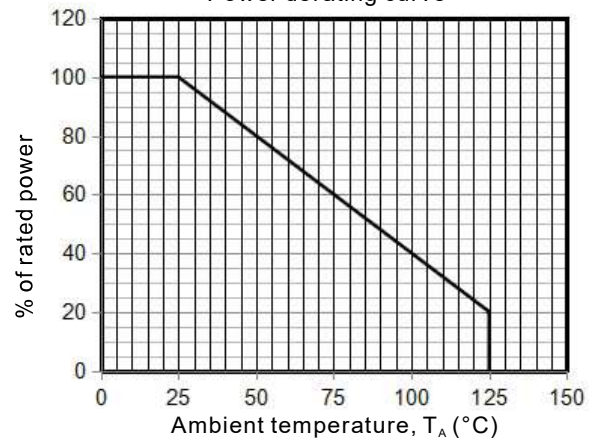
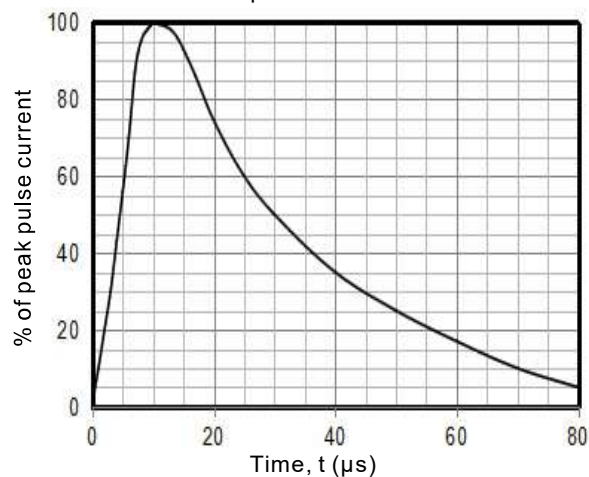
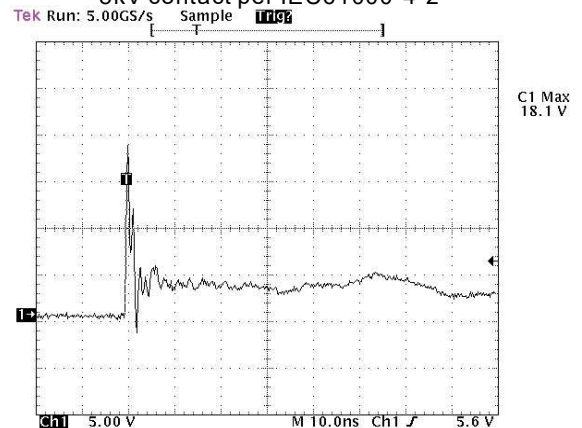
Peak pulse power vs. Pulse time



Clamping voltage vs. Peak pulse current



Power derating curve

8 x 20 μ s Pulse waveformESD Clamping voltage
8kV contact per IEC61000-4-2

Note: Data is taken with a 10x attenuator

LL052BT1610

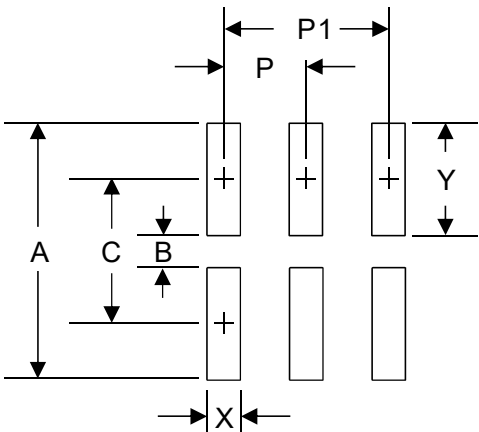
Pinning information

Pin	Simplified outline	Circuit Diagram
Pin 1 I/O Pin 2 I/O Pin 3,4 GND Pin 5,6 NC	Top view Bottom view	

Marking

Type number	Marking code
LL052BT1610	0522P or 2R2P

Suggested solder pad layout



Size	T1610P6 (DFN1610-6)	
	(mm)	(inch)
A	0.061	1.55
B	0.007	0.19
C	0.034	0.87
P	0.020	0.50
P1	0.039	1.00
X	0.008	0.20
Y	0.027	0.68

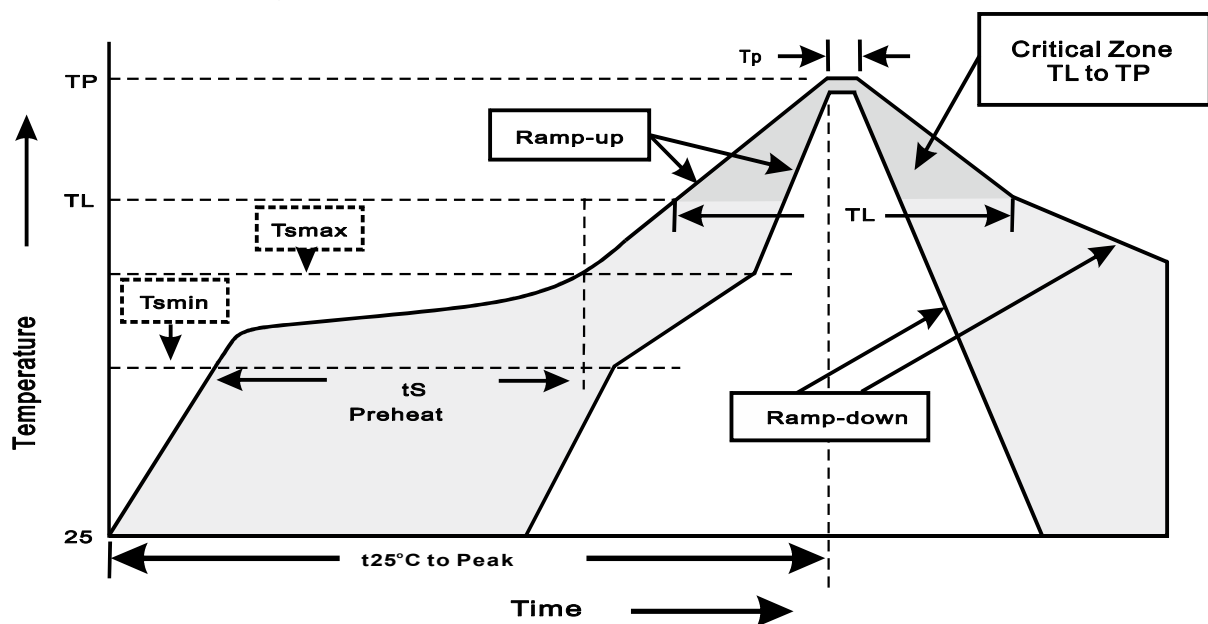
LL052BT1610

Reel packing

TYPE NUMBER	PACKAGE	REEL DIA, (m/m)	REEL SIZE	REEL (pcs)
LL052BT1610	T1610P6 (DFN1610-6)	178	7"	3,000

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