LL15BT1006B-Q1

List

LL15BT1006B-Q1

Ultra Low Capacitance Bi-Directional TVS For ESD Protection : 15V

Features

- Low clamping voltage.
- Low leakage current.
- Complies with following standards:
  IEC 61000-4-2(ESD) ±20 kV(Air), ±15 kV(Contact).
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.LL15BT1006B-Q1-H.

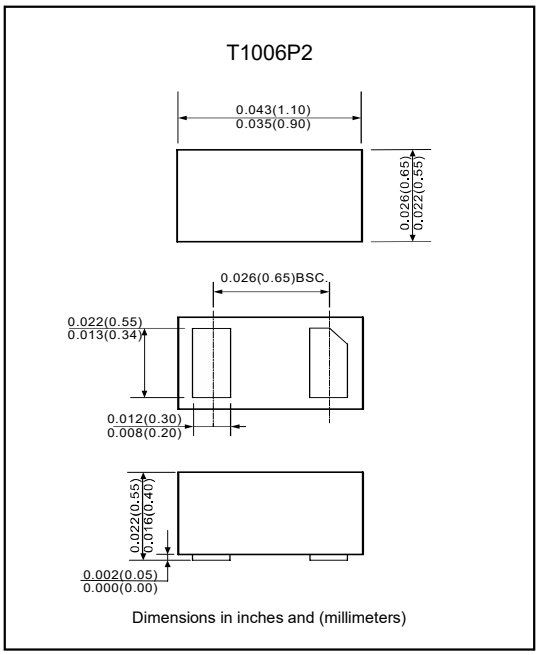
Applications

- Cellular handsets and accessories.
- Personal digital assistants (PDS's) and portable instrumentation.
- Notebooks, handhelds, and audio players.
- Peripherals, keypads, side keys, and LCD displays.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case: T1006P2 package.

Package outline



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

Parameter	Symbol	Ratings	Unit
Peak pulse power (8/20μs)	P_{PP}	90	W
Peak pulse current (8/20μs)	I_{PP}	2.5	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	±20	kV
ESD per IEC61000-4-2 (Contact)		±15	
Junction temperature	T_J	+150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

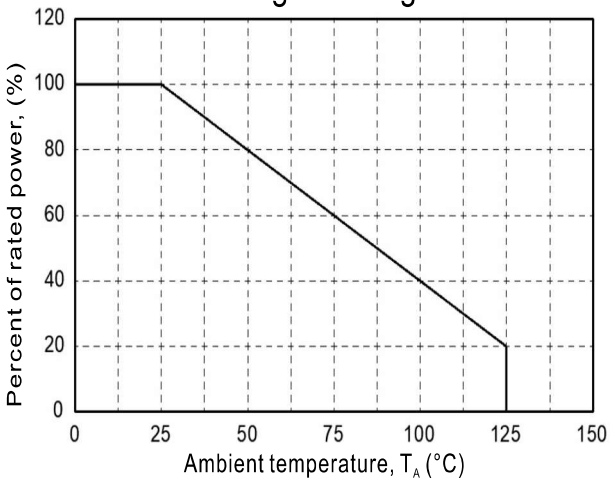
Electrical characteristics (At T_A=25°C, RH=45~75%, unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse stand-off voltage		V_{RWM}			15	V
Reverse breakdown voltage	I_R=1mA	V_{BR}	16.7		21.5	V
Reverse leakage current	V_{RWM}=15V	I_R			0.2	μA
Clamping voltage	I_{PP}=1A, T_P=8/20μs	V_C			26	V
	I_{PP}=2.5A, T_P=8/20μs				35	V
Junction capacitance	V_R=0V, f=1.0MHz	C_J		0.3	0.5	pF

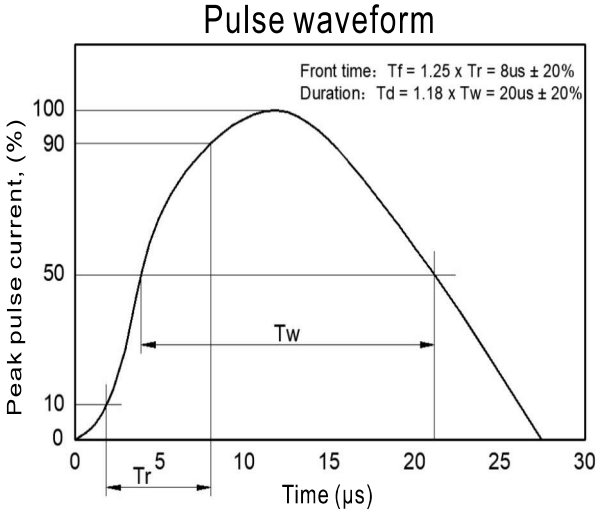
LL15BT1006B-Q1

Rating and characteristic curves

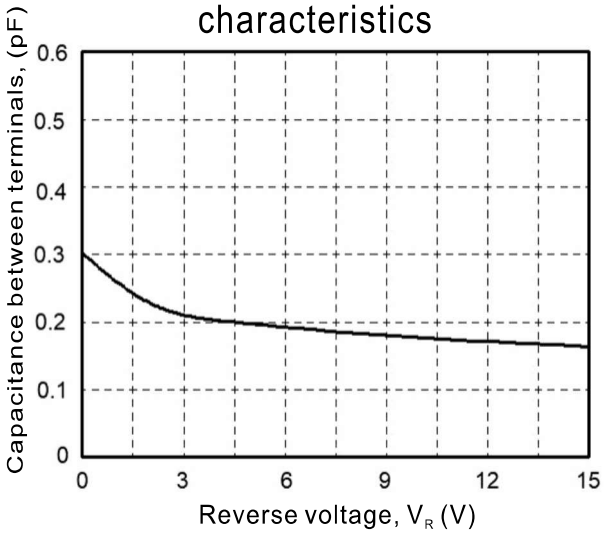
Power rating derating curve



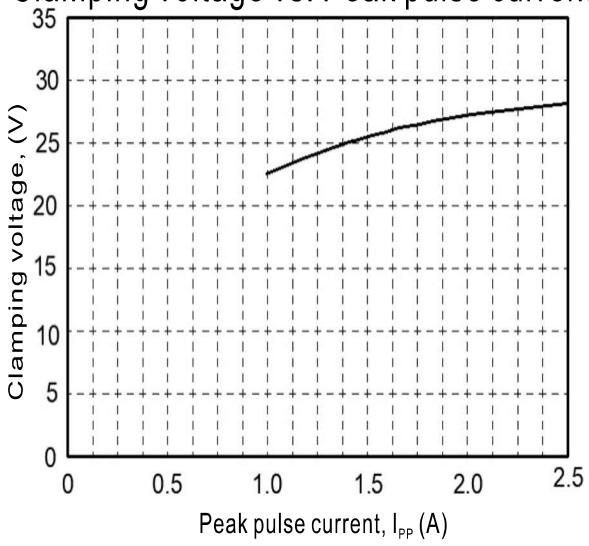
Pulse waveform



Capacitance between terminals characteristics

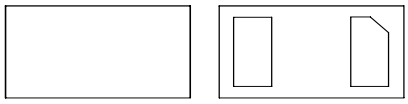
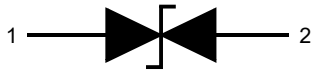


Clamping voltage vs. Peak pulse current



LL15BT1006B-Q1

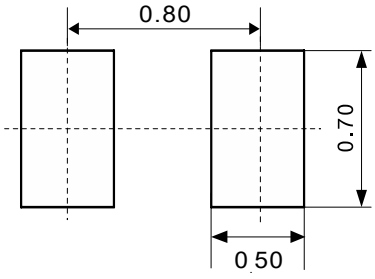
Pinning information

Pin	Simplified outline	Symbol
Bi-directional	 Top view Bottom view	 1 2

Marking

Type number	Marking code
LL15BT1006B-Q1	15F

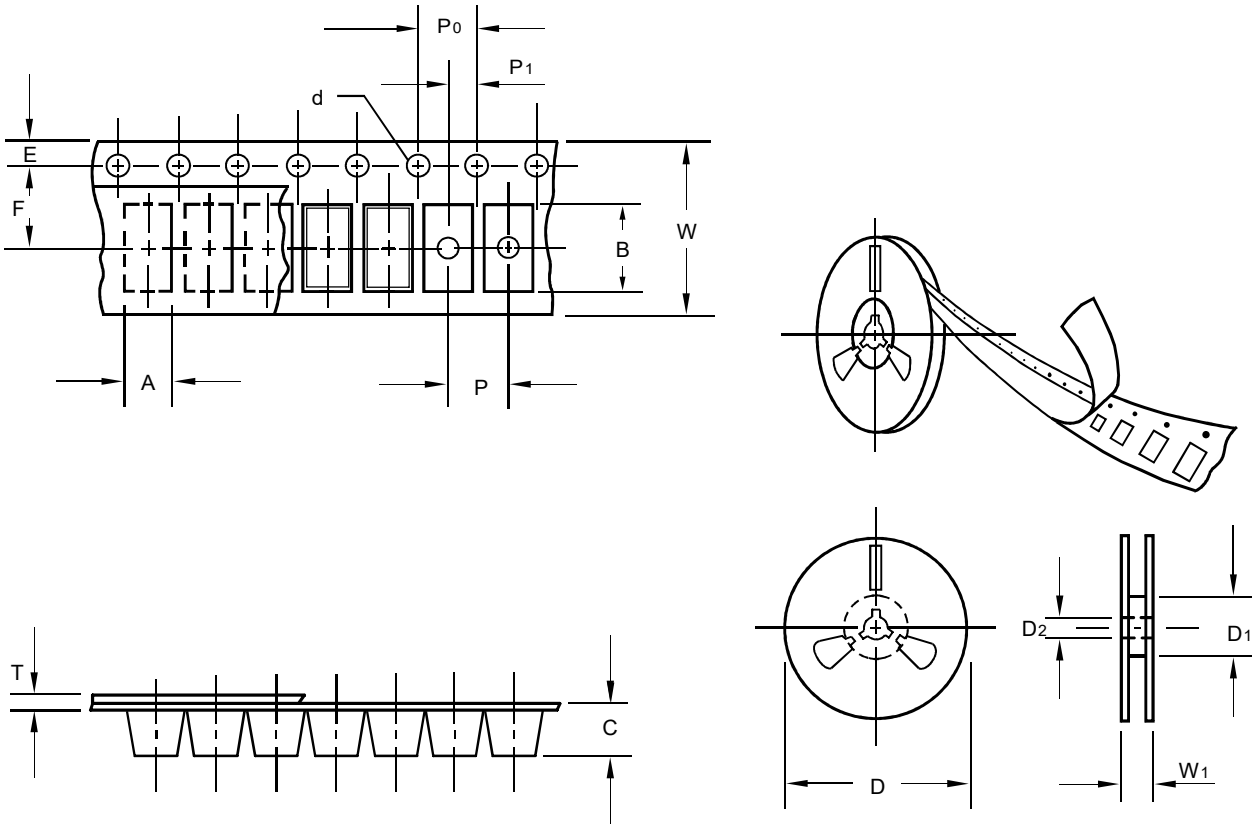
Suggested solder pad layout



Dimensions in millimeters

LL15BT1006B-Q1

Packing information



unit:mm

Item	Symbol	Tolerance	T1006P2
Carrier width	A	0.1	0.66
Carrier length	B	0.1	1.15
Carrier depth	C	0.1	0.66
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	53.40
Feed hole diameter	D_2	1.0	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	2.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	12.30

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

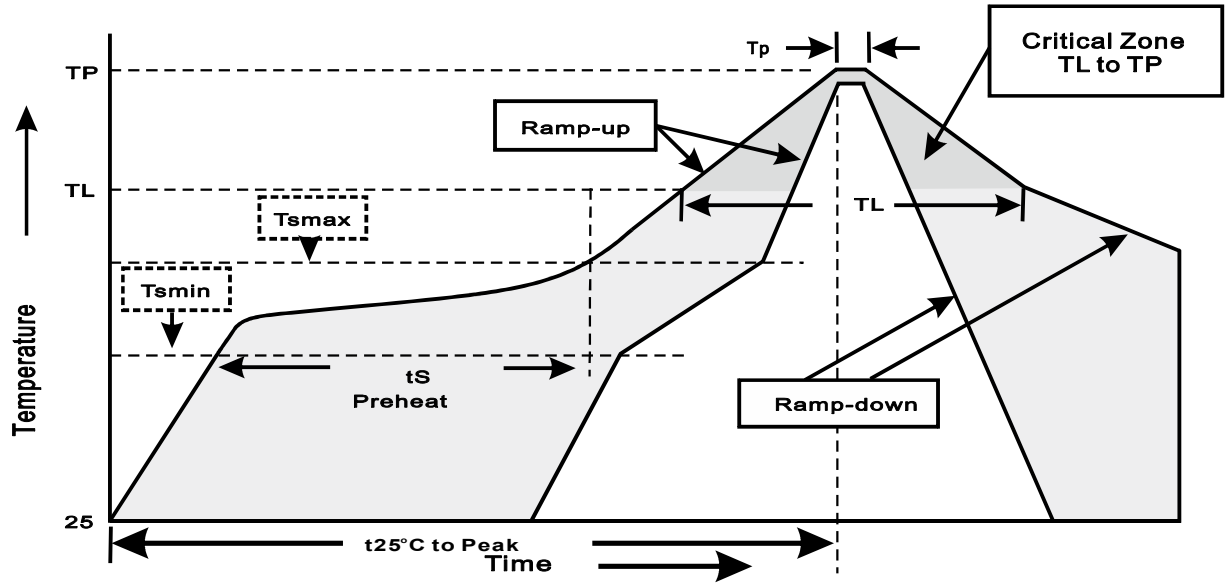
LL15BT1006B-Q1

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)
T1006P2	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

LL15BT1006B-Q1

High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. High Temperature Reverse Bias	V_{BR}=V_{BR} M_{IN}*80% (T_J=T_J max.)Test Duration:1000hrs	JESD22-A108
3. High Temperature Storage Life	Ta=150°C Test Duration:1000hrs	JESD22 A-103
4. Temperature Cycle	-55°C(15min) to 150°C(15min)Test Cycles:1000cycles	JESD22 A-104
5. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
6. Solderability	245±5°C for 5sec	J-STD-002
7. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
8. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
9. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101