

LL05BT1006D-Q1

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100W Low Capacitance Bi-Directional TVS For ESD Protection : 5.0V

Features

- Moisture sensitivity: level 3.
- Protection one data/power line to:
 - IEC 61000-4-2 (ESD) $\pm 22\text{kV}$ (Contact), $\pm 25\text{kV}$ (Air).
 - IEC 61000-4-5 (Lightning) 4A (8/20 μs).
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. LL05BT1006D-Q1-H.

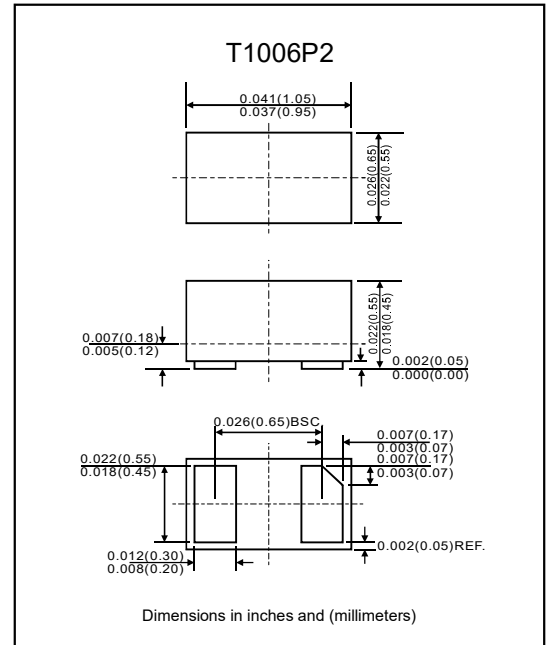
Applications

- Cellular handsets and accessories
- Display ports, MDDI ports and USB ports.
- Digital visual interface (DVI).
- PCI express and serial SATA ports.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DFN1006-2 (T1006P2) package.

Package outline



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

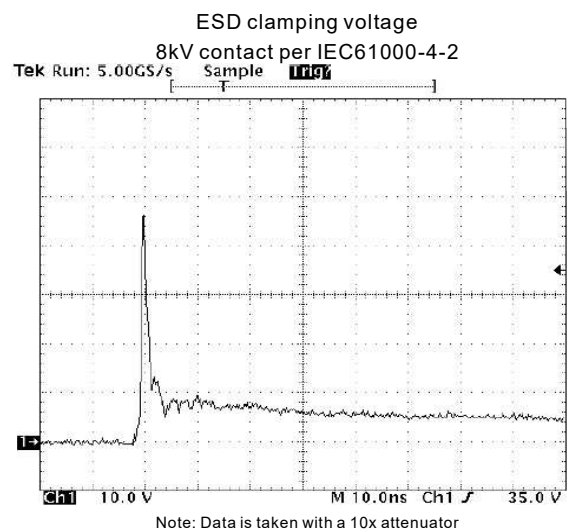
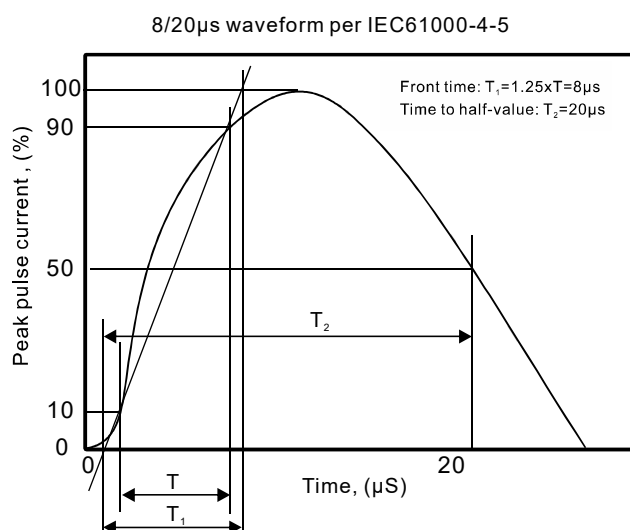
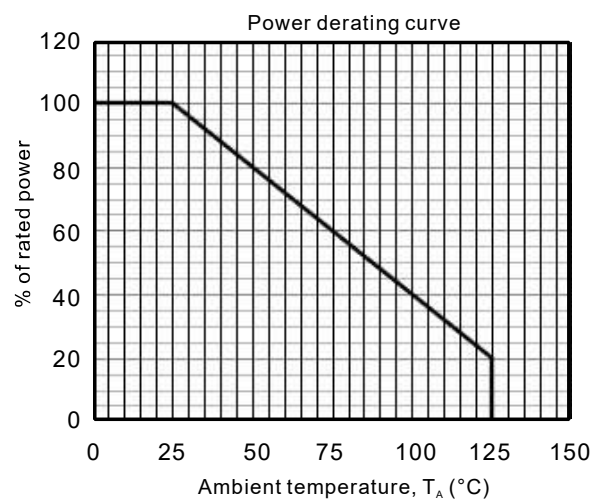
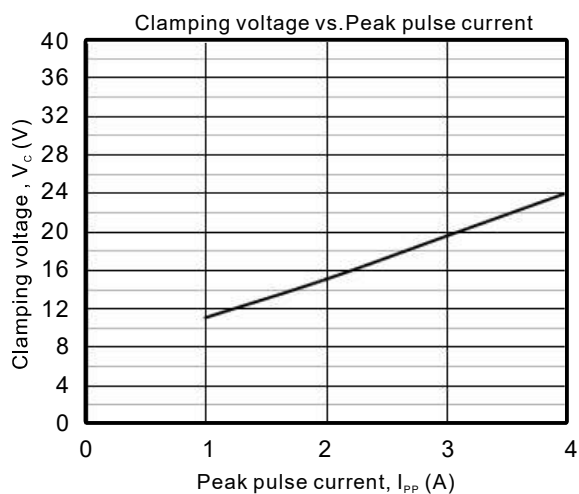
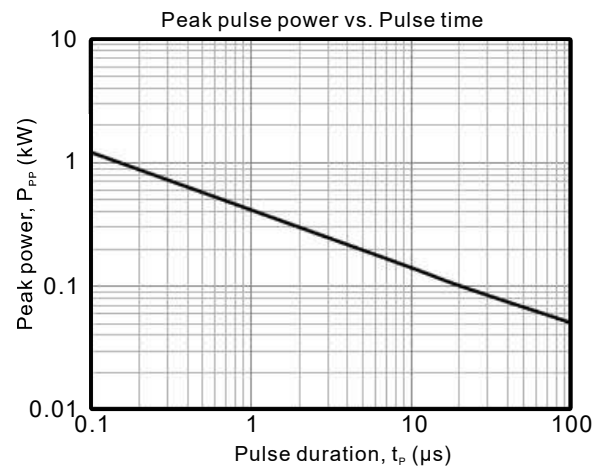
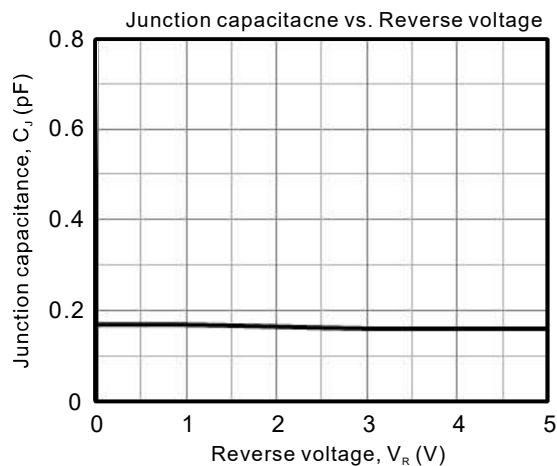
Parameter	Symbol	Value	Unit
Peak pulse power ($t_p = 8/20\mu\text{s}$)	P_{PP}	100	W
Peak pulse current ($t_p = 8/20\mu\text{s}$)	I_{PP}	4	A
ESD Per IEC 61000-4-2 (Air)	V_{ESD}	± 25	KV
ESD Per IEC 61000-4-2 (Contact)		± 22	
Operating temperature	T_J	+125	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse working voltage	V_{RWM}				5	V
Holding voltage	V_{BR}	$I_T = 1\text{mA}$	6.5		9.5	V
Reverse leakage current	I_R	$V_{RWM} = 5\text{V}$			0.2	μA
Clamping voltage	V_C	$I_{PP} = 1\text{A}$ (8 / 20 μs pulse)			12.5	V
Clamping voltage	V_C	$I_{PP2} = 4\text{A}$ (8 / 20 μs pulse)			25	V
Junction capacitance	C_J	$V_R = 0\text{V}$, $f = 1.0\text{MHz}$		0.15	0.3	pF

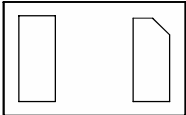
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Rating and characteristic curves



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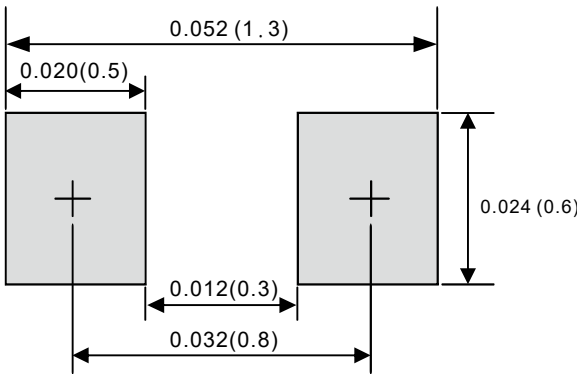
Pinning information

Pin	Simplified outline	Symbol
Bi-Directional		

Marking

Type number	Marking code
LL05BT1006D-Q1	2L

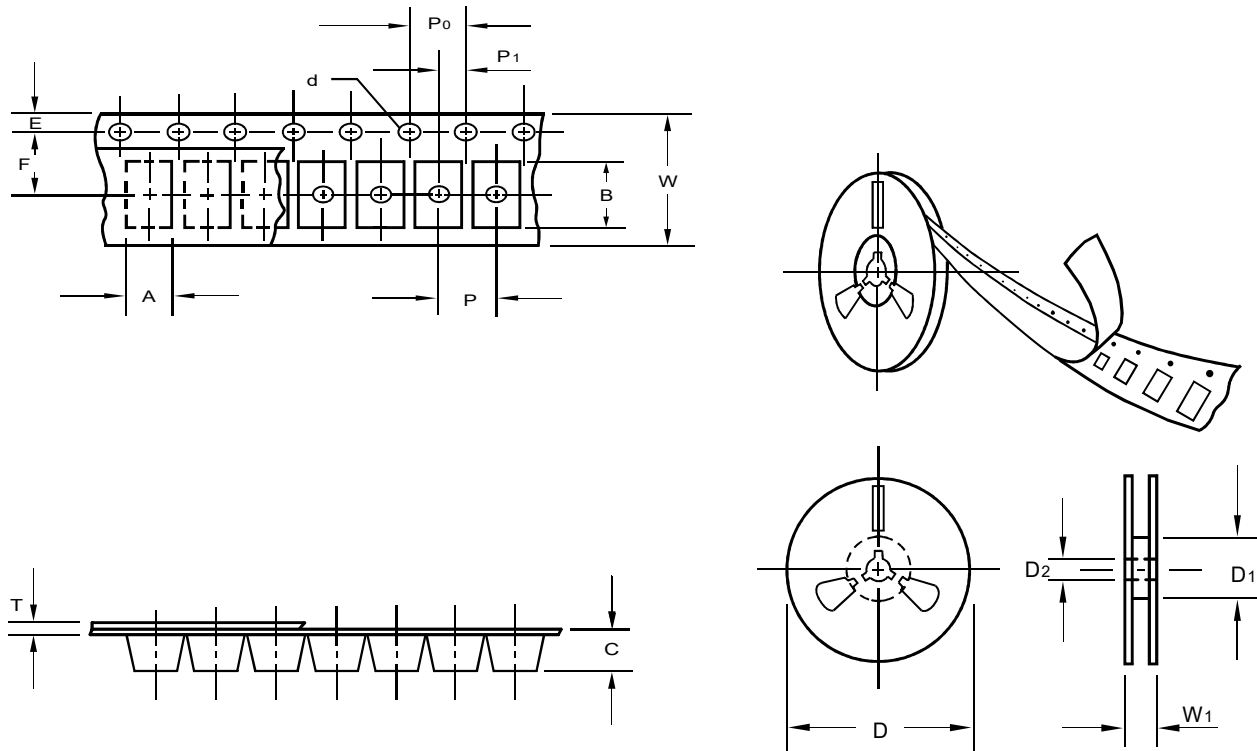
Suggested solder pad layout



Dimensions in inches and (millimeters)

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Suggested solder pad layout



unit:mm

Item	Symbol	Tolerance	T1006P2
Carrier width	A	0.1	0.75
Carrier length	B	0.1	1.15
Carrier depth	C	0.1	0.60
Sprocket hole	d	0.05	1.55
7" Reel outside diameter	D	1.0	178.00
7" Reel inner diameter	D ₁	Min.	60.0
Feed hole diameter	D ₂	0.2	13.0
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.05	2.00
Overall tape thickness	T	0.05	0.23
Tape width	W	0.2	8.00
Reel width	W ₁	Max.	13.5

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

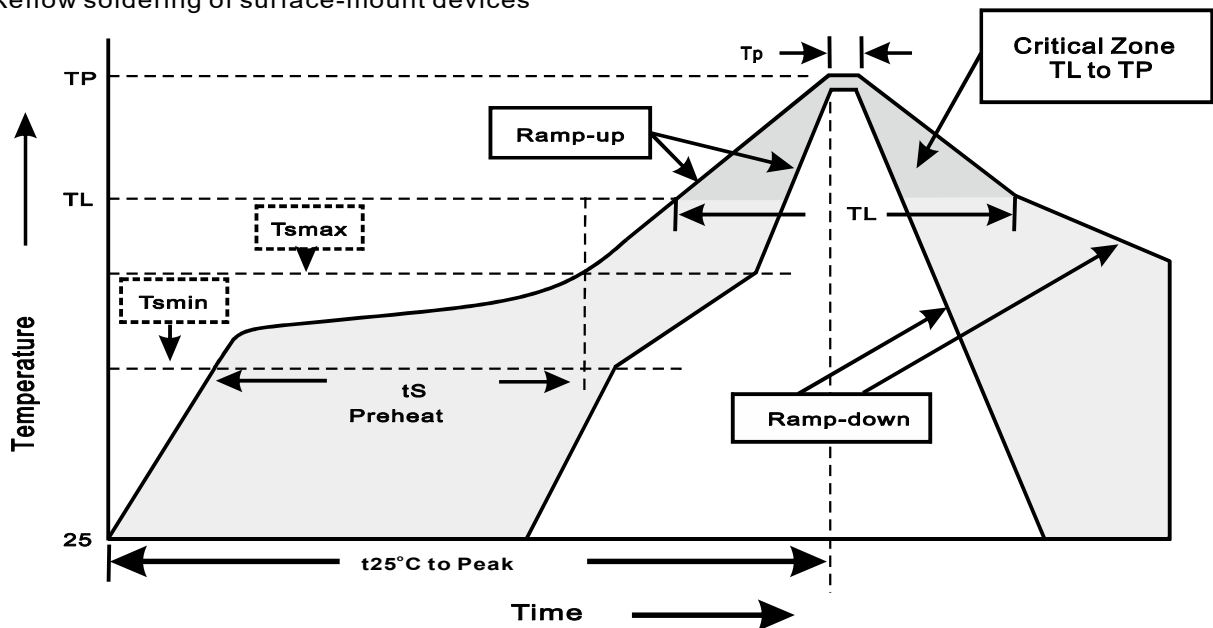
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	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)	$<3^\circ\text{C/sec}$
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	$<3^\circ\text{C/sec}$
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	$<6^\circ\text{C/sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$