

LL052AT1006P3A

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Electrical characteristics.....	2
Rating and characteristic curves.....	3
Electrical Parameters.....	4
Pinning information.....	4
Suggested solder pad layout.....	4
Paking information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6

LL052AT1006P3A

60W Surface Mount TVS Uni-Directional ESD Protection 5.0V

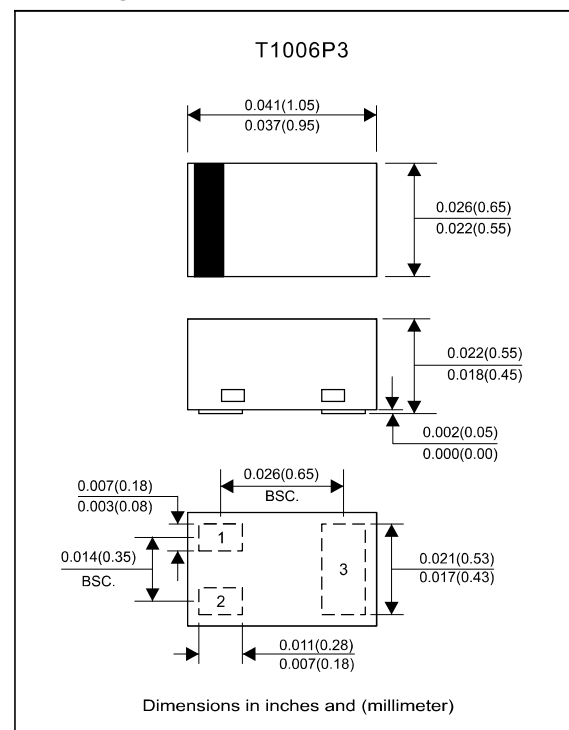
Features

- Uni-directional ESD protection.
- Low leakage current.
- Low clamping voltage.
- Suffix "-H" indicates Halogen-free parts, ex.LL052AT1006P3A

Mechanical data

- Case T1006P3 Standard package, molded plastic.
- Terminalis : Gold plated, solder able per MIL-STD-750, Method 2026.
- Mounting position : Any.
- Weight : 0.001grams (Approx).

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}	60	W
Electrostatic discharge voltage (IEC61000-4-2 Contact & Air)	V_{ESD}	± 22	KV
Peak pulse current ($t_p=8/20\mu\text{s}$, IEC61000-4-5)	I_{PP}	4	A
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}			5.0	V
Forward voltage	$I_F=15\text{mA}$	V_F			1.2	V
Breakdown voltage	$I_T=1\text{mA}$	V_{BR}	6			V
Reverse leakage current	$V_{RWM}=5\text{V}$	I_R			0.1	μA
Clamping voltage	$I_{PP}=1\text{A}$, $t_p=8/20\mu\text{s}$			9	11	V
	$I_{PP}=4\text{A}$, $t_p=8/20\mu\text{s}$	V_C			15	
Junction capacitance	$V_R=0\text{V}$, $f=1\text{MHz}$	C_J		0.45	0.6	pF

Rating and characteristic curves(LL052AT1006P3A)

Fig.1 - 8/20 μ s Peak Pulse Current
Waveform Acc. IEC 61000-4-5

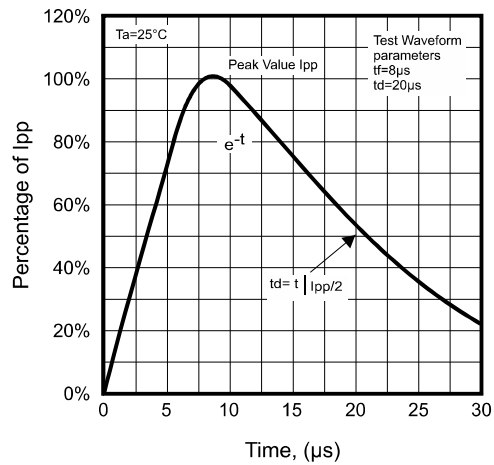


Fig.2 - Power Rating Derating Curve

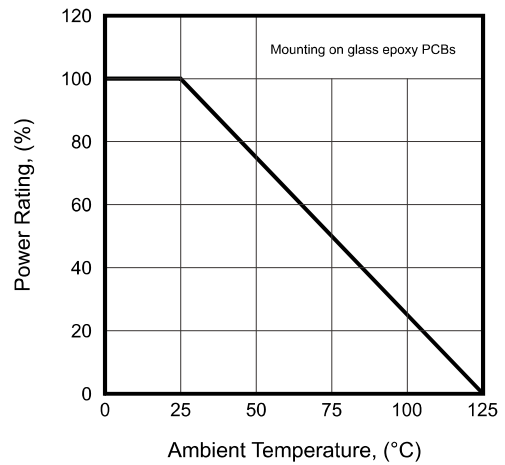


Fig.3 - Typical Clamping Voltage vs.
Peak Pulse Current

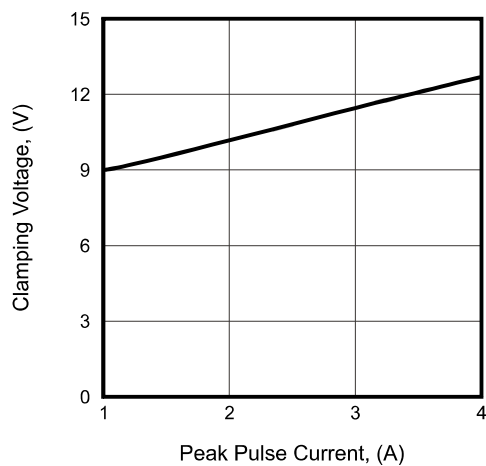


Fig.4 - Typical Capacitance Between
Terminals Characteristics

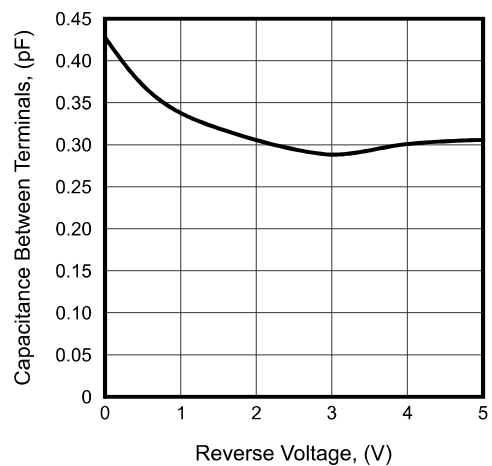
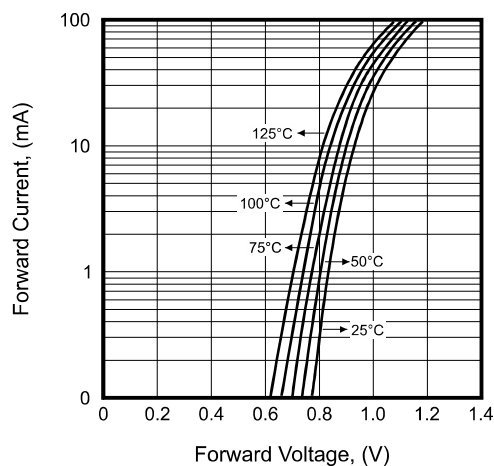


Fig.5 - Forward Characteristic



LL052AT1006P3A

Electrical Parameters ($T_A=25^\circ\text{C}$)

V_C : Clamping Voltage @ I_{PP}

I_{PP} : Maximum Reverse Peak Pulse Current

V_{RWM} : Maximum Reverse Working voltage

I_R : Maximum Reverse Leakage Current @ V_{RWM}

V_{BR} : Breakdown voltage @ I_T

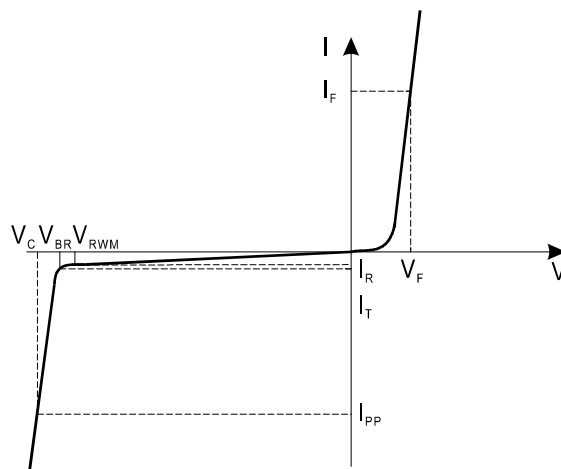
I_T : Test Current

P_{PK} : Peak Pulse Power

I_F : Forward Current

V_F : Forward Voltage @ I_F

C_J : Typ. Capacitance @ $V_R = 0\text{V}$ and $f = 1\text{MHz}$

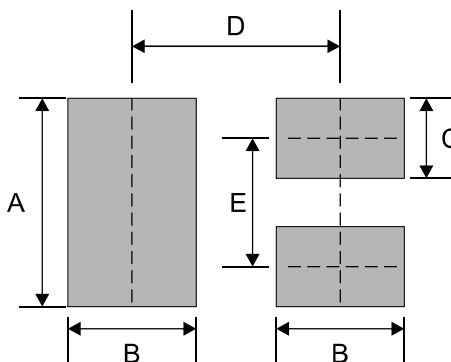


Pinning information

Marking Code	Symbol

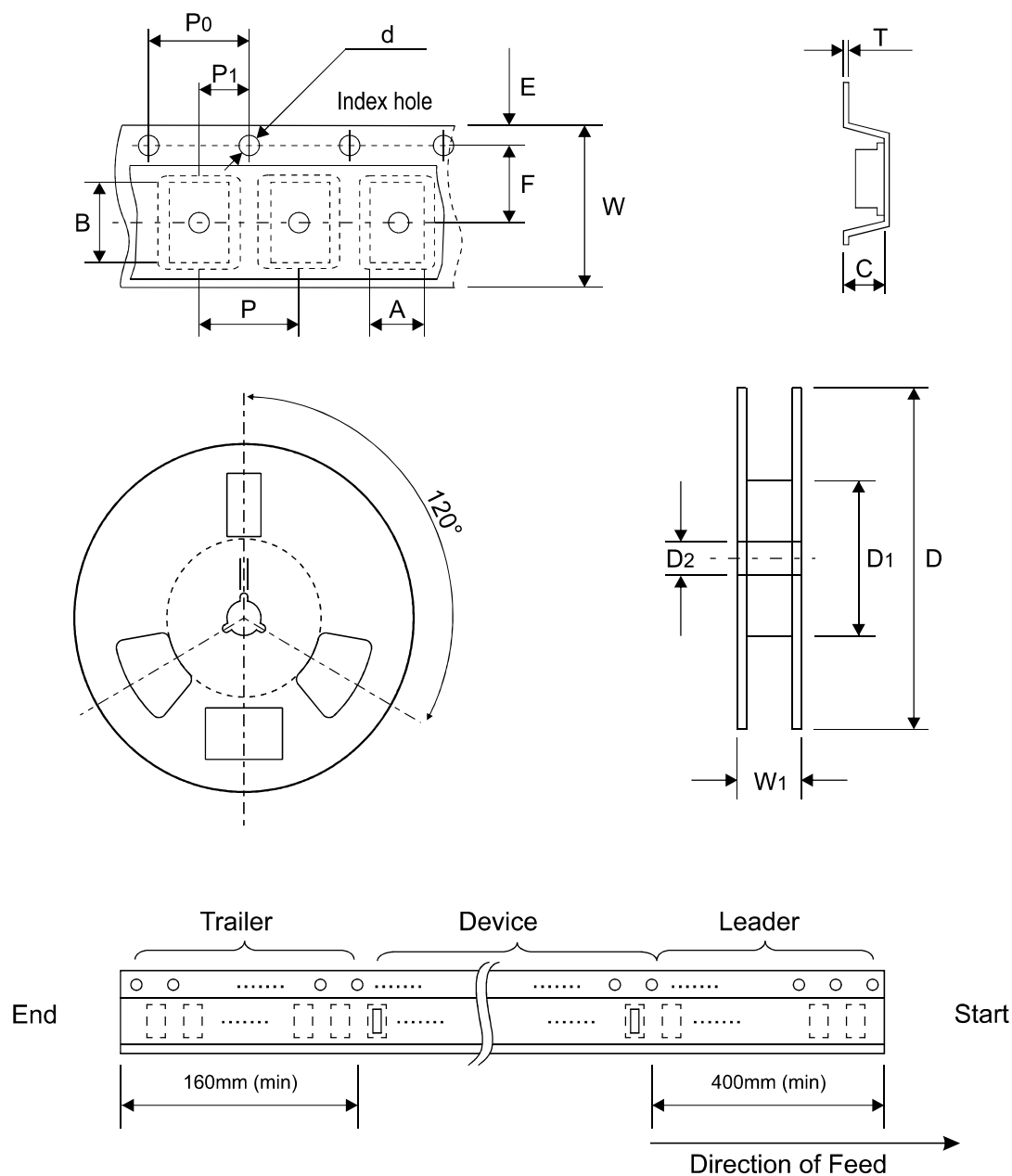
Suggested solder pad layout

SIZE	T1006P3	
	(mm)	(inch)
A	0.65	0.026
B	0.40	0.016
C	0.25	0.010
D	0.65	0.026
E	0.40	0.016



LL052AT1006P3A

Packing information



T1006P3	SYMBOL	A	B	C	d	D	D ₁	D ₂
	(mm)	0.75 ± 0.05	1.17 ± 0.05	0.65 ± 0.05	1.50 + 0.10 - 0.00	178.00 ± 1.00	60.00 ± 0.50	13.50 ± 0.20
	(inch)	0.030 ± 0.002	0.046 ± 0.002	0.026 ± 0.002	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.362 ± 0.020	0.531 ± 0.008

T1006P3	SYMBOL	E	F	P	P ₀	P ₁	T	W	W ₁
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.20 + 0.02 - 0.05	8.00 ± 0.20	12.00 + 0.50 - 0.00
	(inch)	0.069 ± 0.004	0.138 ± 0.004	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.004	0.008 + 0.001 - 0.002	0.315 ± 0.008	0.472 + 0.020 - 0.000

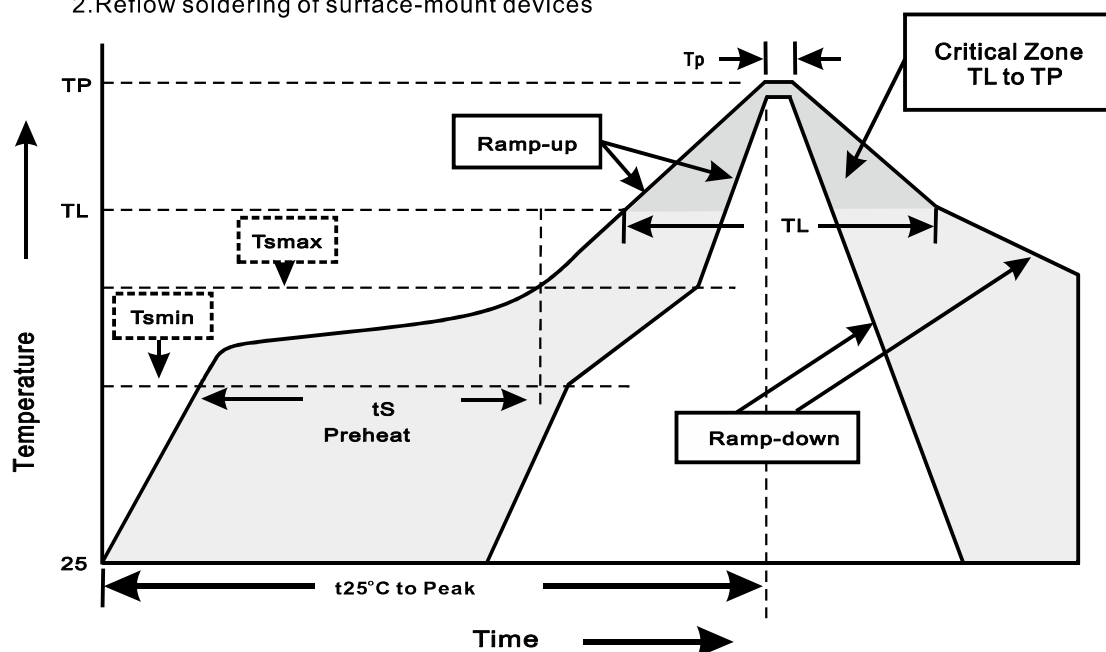
LL052AT1006P3A

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)	APPROX. GROSS WEIGHT (kg)
T1006P3	7"	5,000	4.0	50,000	183*123*183	178	382*257*387	400,000	13.0

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(TL to TP)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts)	150°C 200°C 60~120sec
Tsmax to TL -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(TL) -Time(tL)	217°C 60~260sec
Peak Temperature(TP)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(tp)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes