

N05UT1006E-Q1

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

N05UT1006E-Q1

180W Surface Mount TVS Bi-Directional ESD Protection - 5.0V

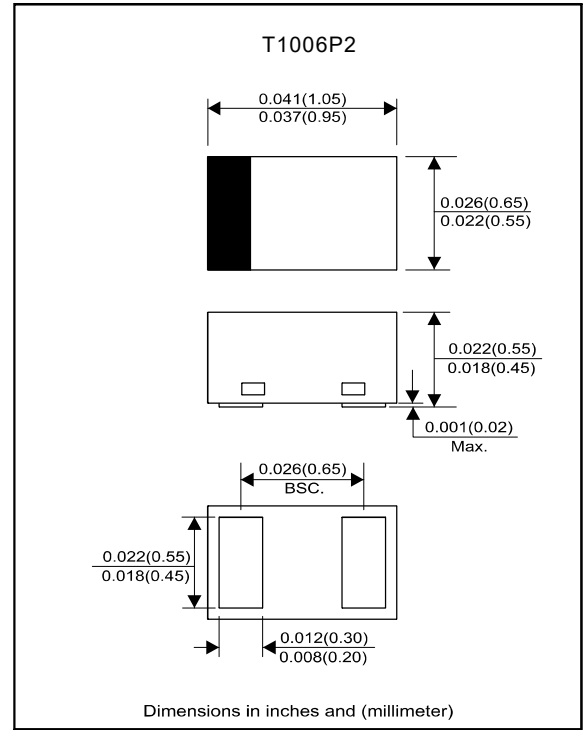
Features

- Uni-directional ESD protection.
- IEC61000-4-2 (ESD) : $\pm 30\text{KV}$ (Contact).
- Surface mount package.
- Ultra small SMD Package : T1006P2.
- High component density.
- AEC-Q101 Qualified.
- Suffix "-H" indicates Halogen-free parts, ex.N05UT1006E-Q1-Q1-H

Mechanical data

- Case T1006P2 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}	180	W
Electrostatic discharge voltage (IEC61000-4-2 Contact & Air)	V_{ESD}	± 30	KV
Peak pulse current ($t_p=8/20\mu\text{s}$, IEC61000-4-5)	I_{PP}	15	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	$I_F=10\text{mA}$	V_F		0.8	1.2	V
Breakdown voltage	$I_T=1\text{mA}$	V_{BR}	6			V
Reverse leakage current	$V_{RWM}=5\text{V}$	I_R		0.2	2.0	μA
Clamping voltage	$I_{PP}=1\text{A}$, $t_p=8/20\mu\text{s}$	V_C			7.6	V
	$I_{PP}=5\text{A}$, $t_p=8/20\mu\text{s}$			8	9.4	
	$I_{PP}=15\text{A}$, $t_p=8/20\mu\text{s}$			10	12	
Junction capacitance	$V_R=0\text{V}$, $f=1\text{MHz}$	C_j		130		pF

Rating and characteristic curves(N05UT1006E-Q1)

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

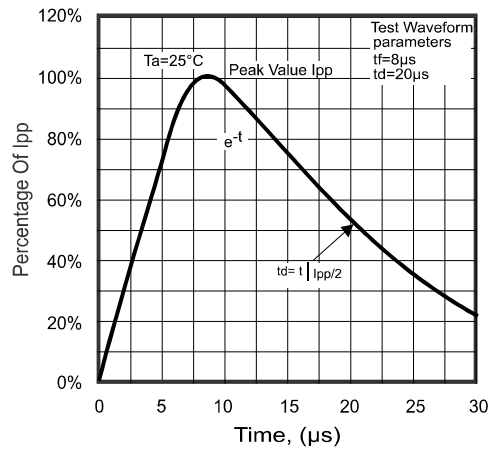


Fig.2 - Power Rating Derating Curve

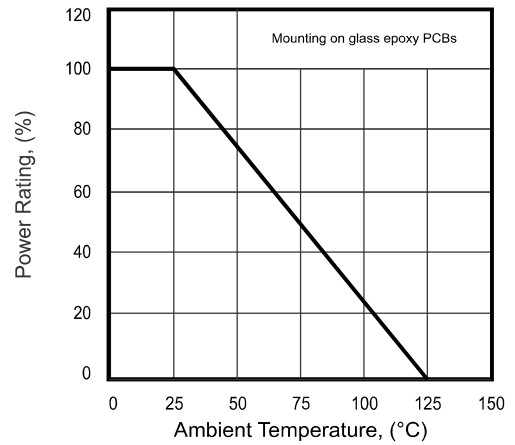


Fig.3 - Clamping Voltage Vs. Peak Pulse Current

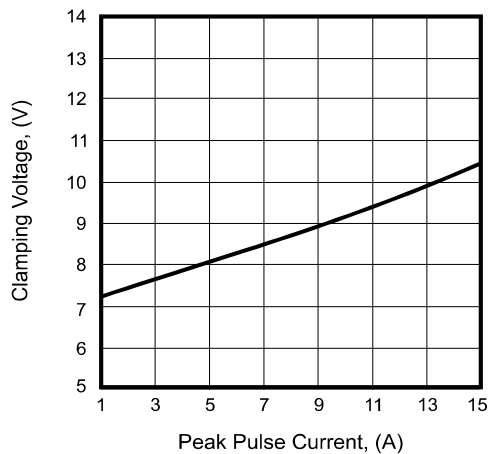


Fig.4 - Forward Characteristic

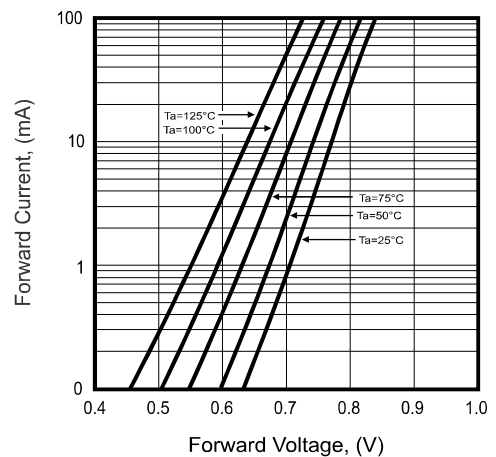
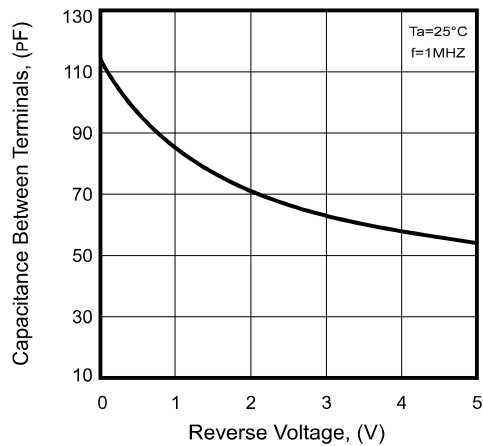


Fig.5 - Capacitance Between Terminals Characteristics



N05UT1006E-Q1

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

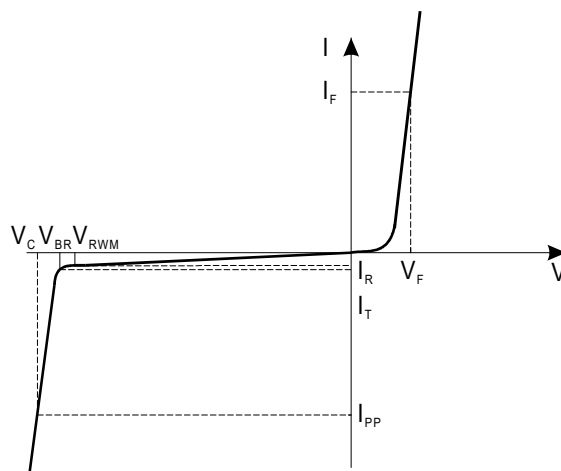
I_T : Test Current

P_{PK} : Peak Pulse Power

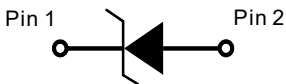
I_F : Forward Current

V_F : Forward Voltage @ I_F

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

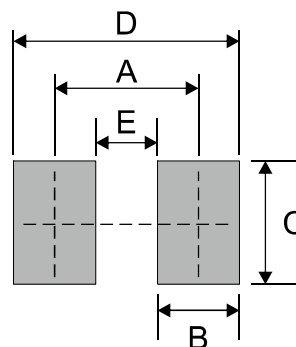


Pinning information

Marking Code	Symbol
	

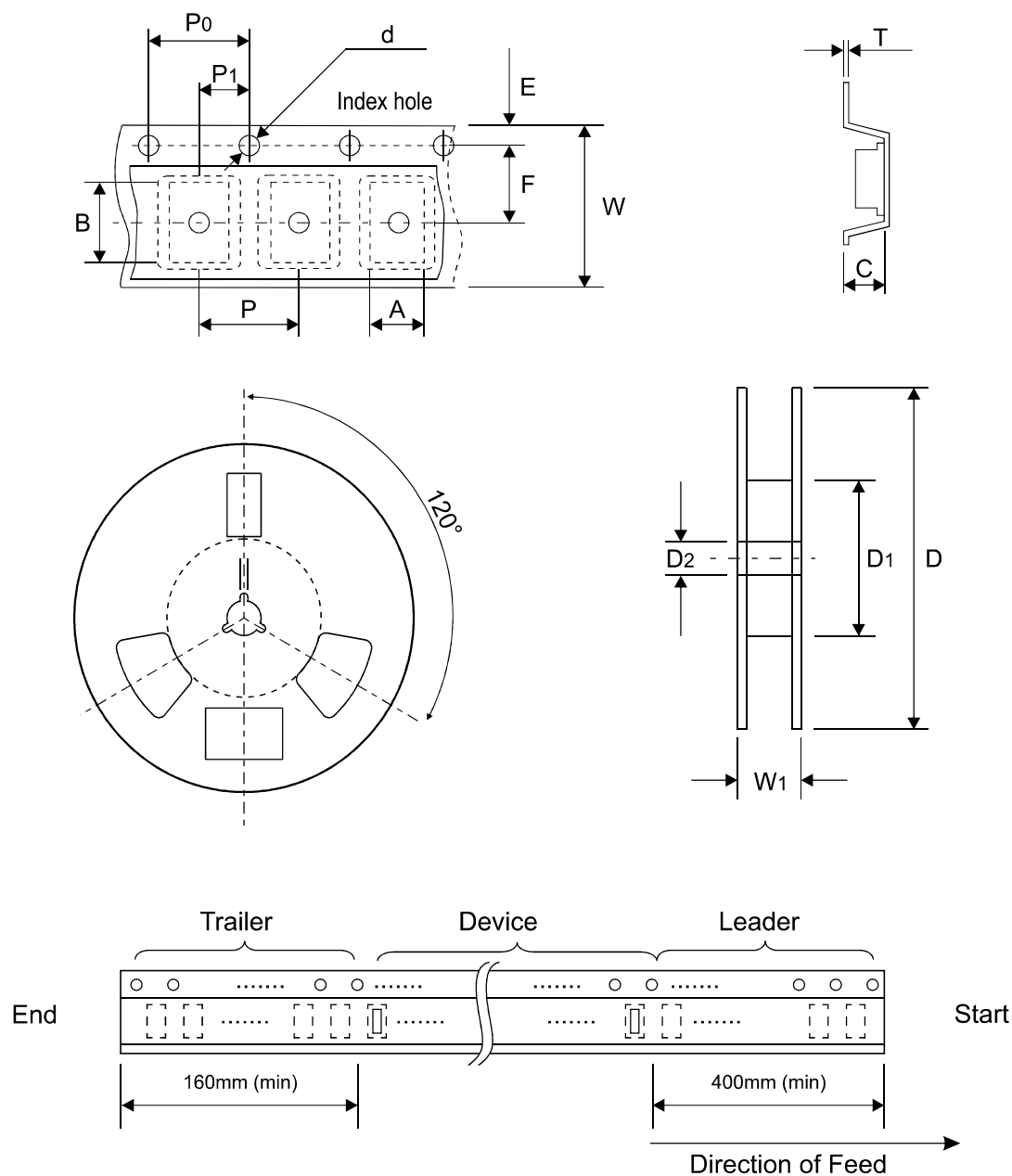
Suggested solder pad layout

SIZE	T1006P2	
	(mm)	(inch)
A	0.70	0.028
B	0.40	0.016
C	0.60	0.024
D	1.10	0.043
E	0.30	0.012



N05UT1006E-Q1

Packing information



T1006P2	SYMBOL	A	B	C	d	D	D1	D2
	(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

T1006P2	SYMBOL	E	F	P	P0	P1	T	W	W1
	(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	$0.472 + 0.020$ $- 0.000$

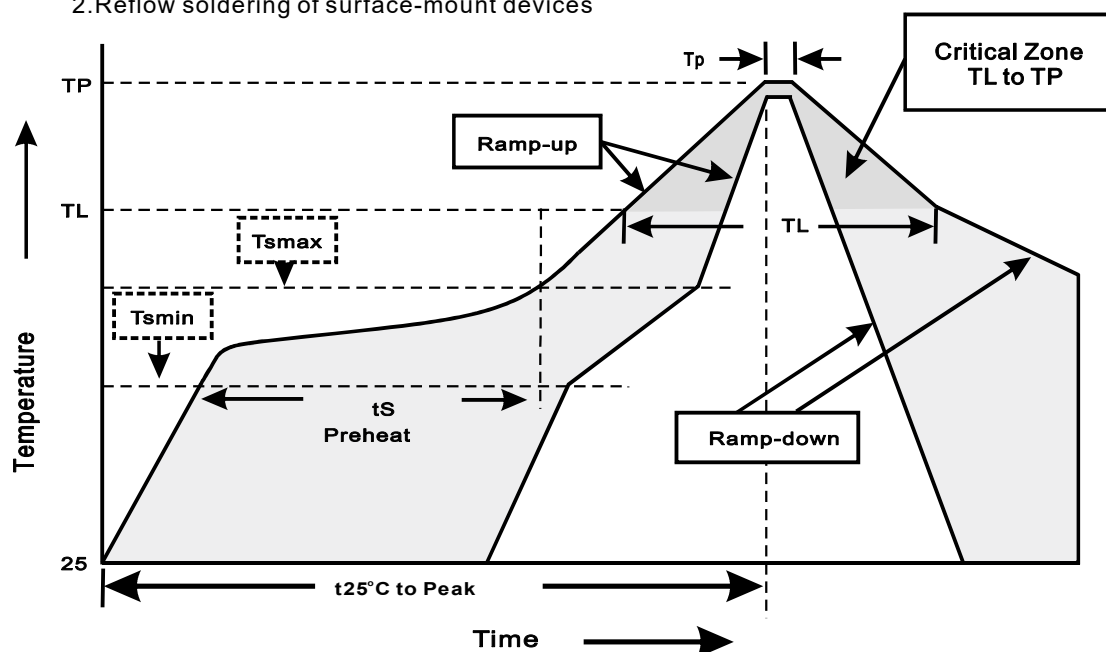
N05UT1006E-Q1

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)	APPROX. GROSS WEIGHT (kg)
T1006P2	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(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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