

N05UT1006F

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Surface Mount TVS Uni-Directional For ESD Protection : 5.0V

Features

- 210Watts peak pulse power per line ($t_p=8/20\mu s$).
- Protects one I/O or power line.
- Low clamping voltage.
- IEC 61000-4-2 (ESD) immunity test : Air discharge: $\pm 30kV$.
Contact discharge: $\pm 30kV$.
- IEC 61000-4-4 (EFT) 40A (5/50ns).
- IEC 61000-4-5 (Lightning) 15A (8/20 μs).
- We declare that the material of product compliance with RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex.N05UT1006F-H.

Applications

- Laptop computers.
- Cellular phones.
- Digital cameras.
- Personal digital assistants (PDAs)

Mechanical data

- T1006P2 package
- Molding compound flammability rating : UL94V-0
- Making part number, data code.
- Packaging : Tape and reel.
- Weight : Approximated 0.73 mg.

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

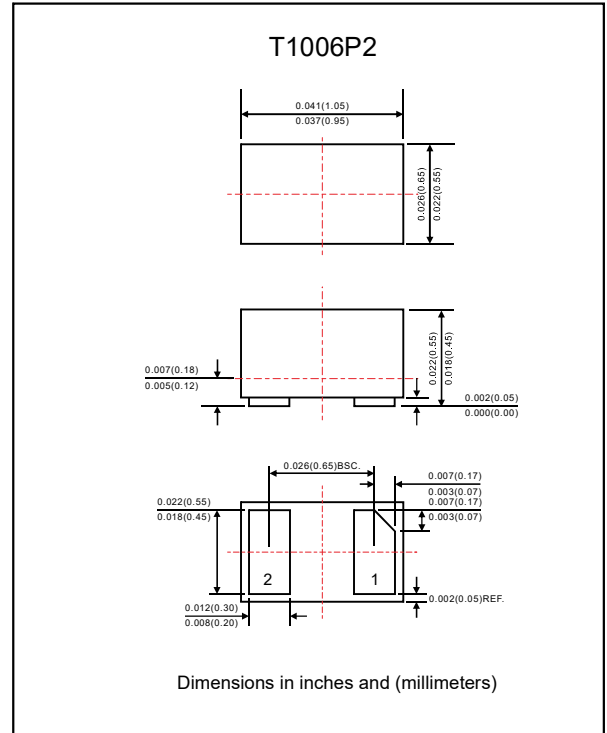
Parameter	Symbol	Value	Unit
Peak pulse power (8/20 μs)	P_{PK}	210	W
Peak pulse current (8/20 μs)	I_{PP}	15	A
Operating temperature range	T_J	-55 ~ +125	$^\circ C$
Storage temperature	T_{STG}	-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5.0	V
Reverse Breakdown voltage	V_{BR}	$I_T = 1mA$	6.0		9.0	V
Reverse leakage current	I_R	$V_{RWM} = 5V$			500	nA
Forward voltage	V_F	$I_F = 10mA$	0.5		1.0	V
Clamping voltage	V_{C1}	$I_{PP1} = 15A$ ($t_p=8 / 20\mu s$)		11.5	14	V
ESD Clamping voltage (Note 1)	V_{C2}	$I_{PP2} = 4A$ ($t_p=0.2 / 100ns$)		8.2		V
ESD Clamping voltage (Note 1)	V_{C3}	$I_{PP3} = 16A$ ($t_p=0.2 / 100ns$)		11.0		V
Dynamic resistance (Note 1, 2)	R_{DYN}	$T_{LF}=0.2 / 100ns$		0.23		Ω
Junction capacitance	C_J	$V_R=0V, f=1MHz$		105	120	pF

Note : 1. T_{LF} Setting: $t_p=100ns$, $t_i=0.2ns$, I_{TLF} and V_{TLF} sample window : $t_i=70ns$ to $t_2=90ns$.
2. Dynamic resistance calculated from $I_{PP}=4A$ to $I_{PP}=16A$ using "Best Fit"

Package outline



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Typical performance characteristics ($T_A=25^\circ\text{C}$ Unless otherwise specified)

Figure 1: Peak Pulse Power Vs Pulse Time

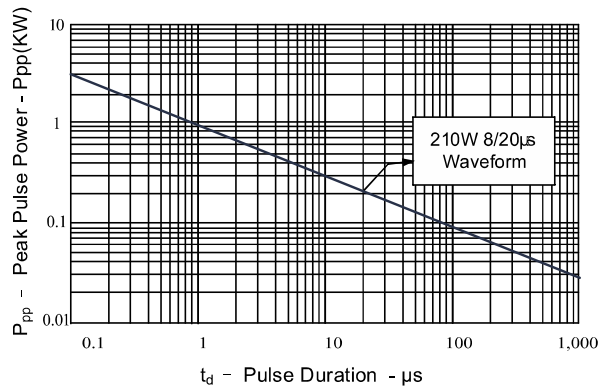


Figure 2: Power Derating Curve

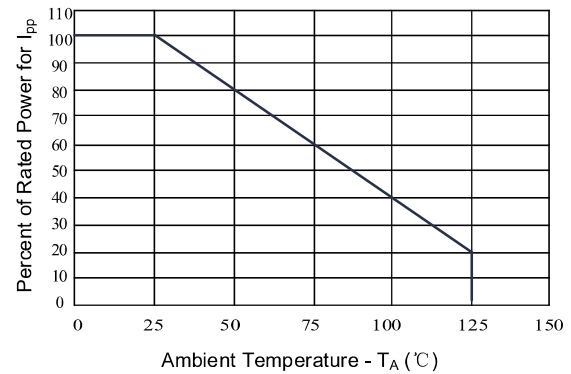


Figure 3: Clamping Voltage vs. Peak Pulse Current

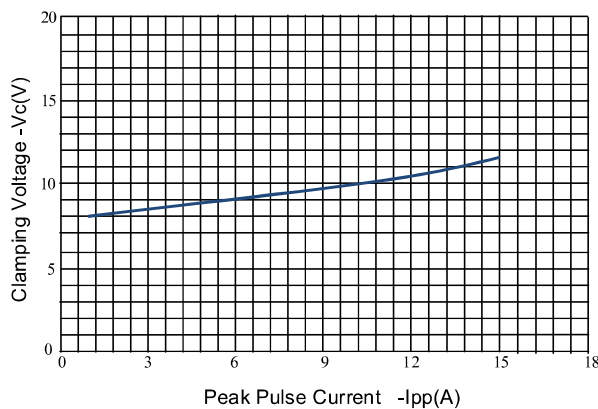


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

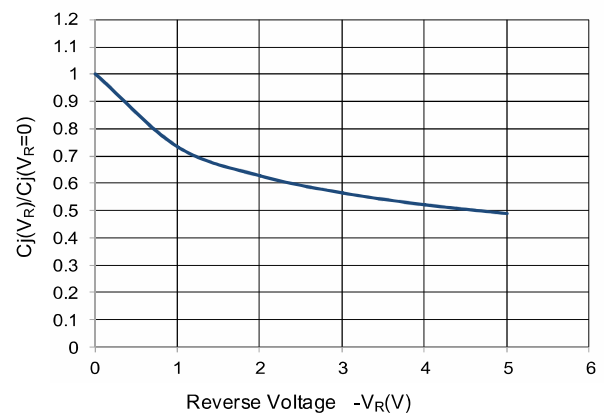


Figure 5: Pulse Waveform

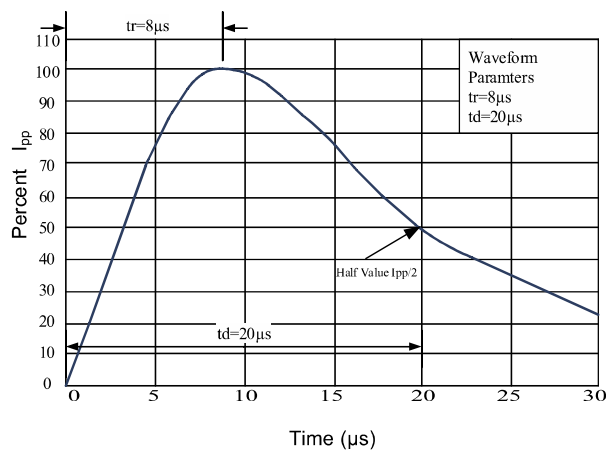
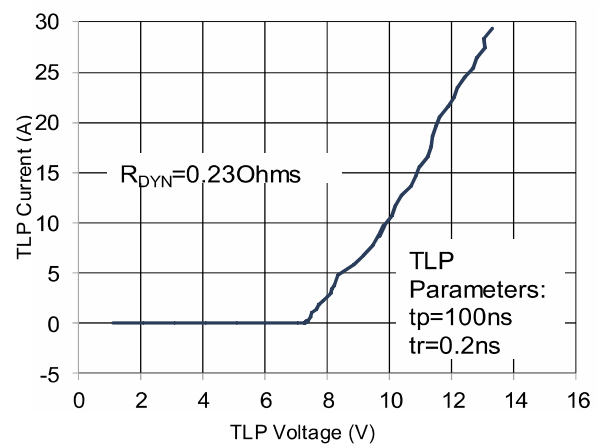


Figure 6: TLP I-V Curve

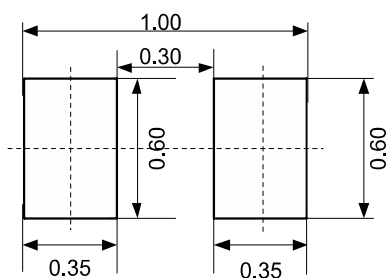


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Marking Information

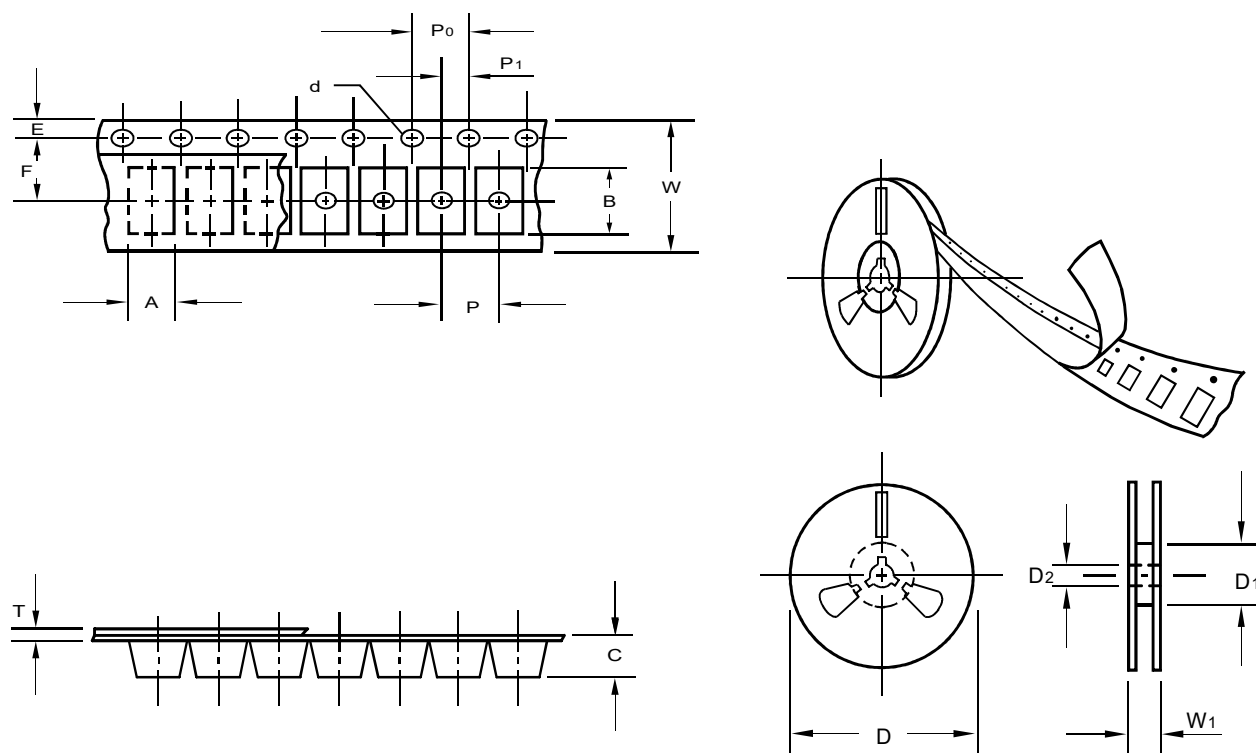


Suggested solder pad layout



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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	D1	Min.	60.0
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.05	2.00
Overall tape thickness	T	0.05	0.23
Tape width	W	0.2	8.00
Reel width	W1	Max.	13.5

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

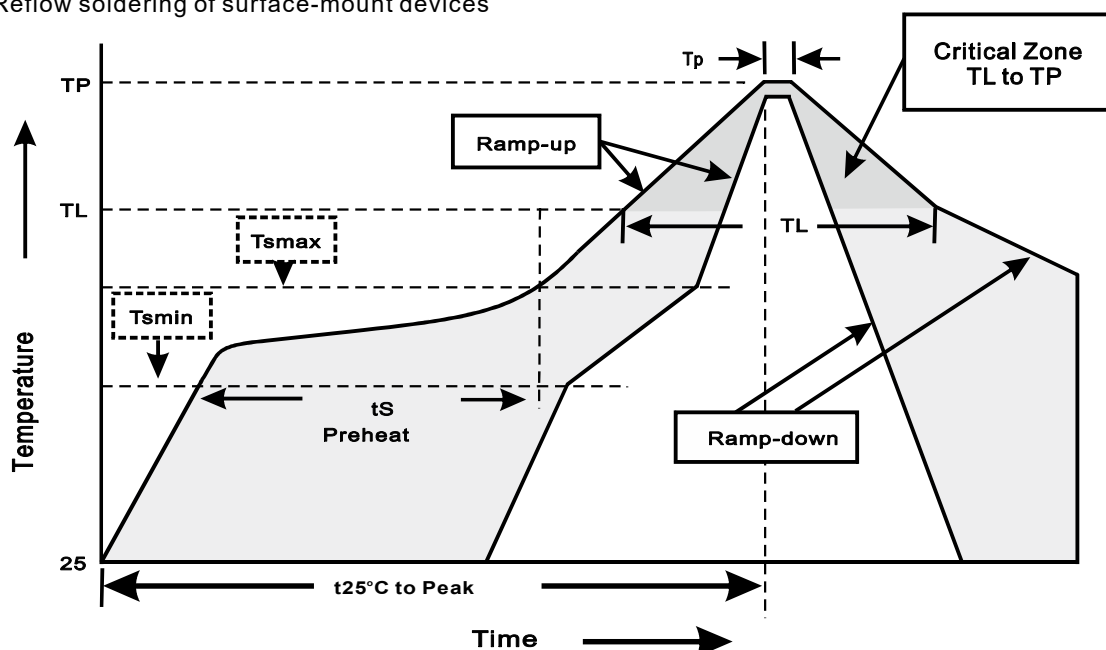
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Reel packing

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)	APPROX. GROSS WEIGHT (kg)
T1006P2	7"	10,000	4.0	100,000	183*123*183	178	382*257*387	800,000	15.0

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