

N223UT2020P6

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3-Channel Uni-Directional TVS For ESD Protection : 22V

Features

- High temperature soldering guaranteed 260°C/10 seconds at terminals.
- Transient protection for high-speed data lines
IEC61000 -4-2 (ESD) $\pm 30\text{kV}$ (Air), $\pm 30\text{kV}$ (Contact).
IEC 61000-4-4 (EFT) 40A (5/50ns) .
IEC 61000-4-5 (Lightning) 55A (8/20 μs) .
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates halogen-free parts, ex.N223UT2020P6-H.

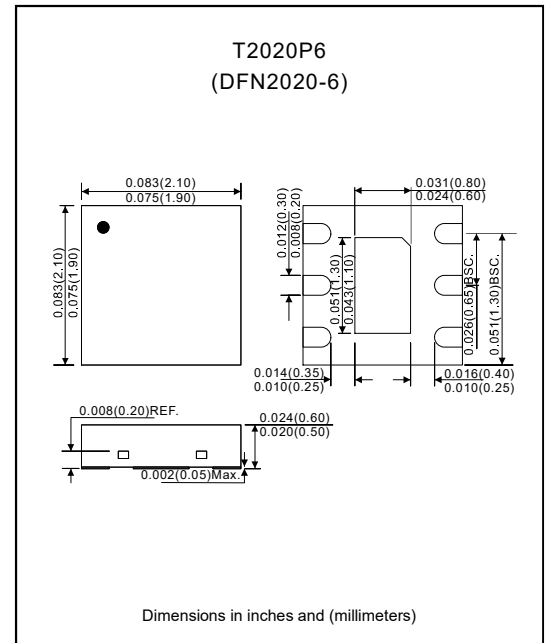
Applications

- Power lines and USB Vbus industrial electronics.
- Industrial electronics and microcontroller input protection.
- Computer and consumer electronics.
- Automotive and telecommunication.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant.
- Case : Molded plastic, T2020P6 (DFN2020-6).
- Mounting Position : Any.

Package outline



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

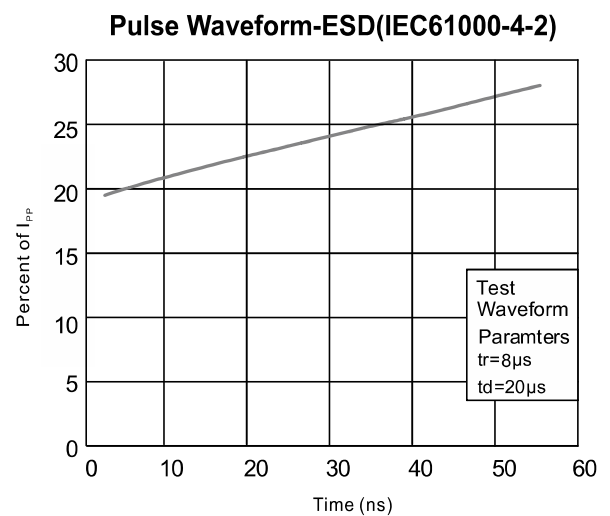
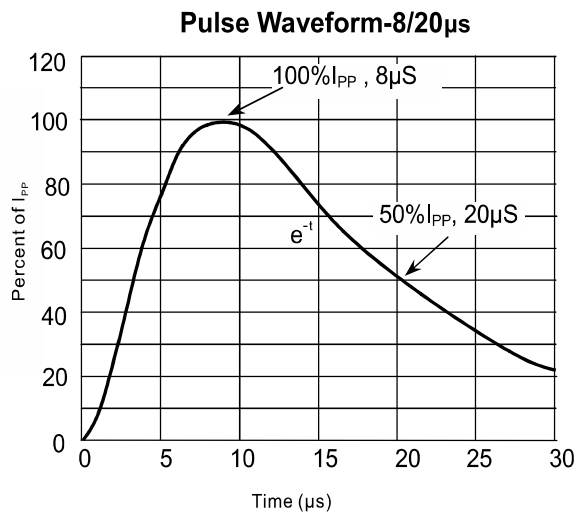
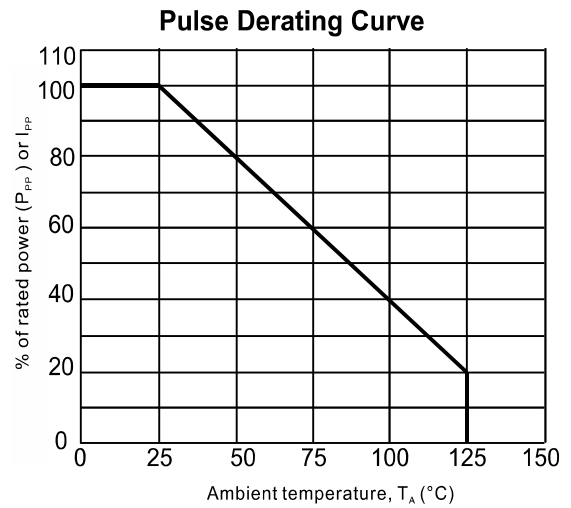
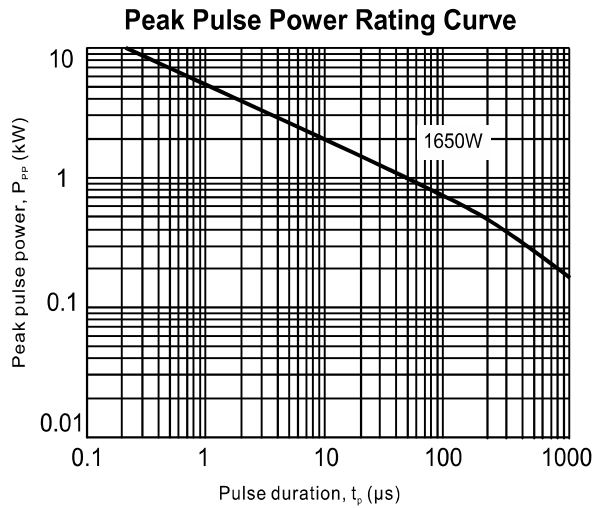
Parameter	Symbol	Value	Units
Peak pulse power (8/20 μs)	P_{PK}	1650	W
Peak pulse current (8/20 μs)	I_{PP}	55	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 30	KV
ESD per IEC61000-4-2 (Contact)			
Operating temperature	T_J	+125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Reverse working voltage		V_{RWM}			22	V
Reverse leakage current	$V_R=22\text{V}$	I_R			1	μA
Reverse breakdown voltage	$I_T=1\text{mA}$	V_{BR}	24.6			V
Forward voltage	$I_T=10\text{mA}$	V_F			1.2	V
Clamping voltage (IEC 61000-4-5)	$I_{PP} = 20\text{A}$	V_C			28	V
	$I_{PP} = 55\text{A}$				30	
Dynamic resistance	$T_P=8/20\mu\text{s}$	R_{dyn}		0.02		Ω
Junction Capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$	C_{ESD}		120		pF

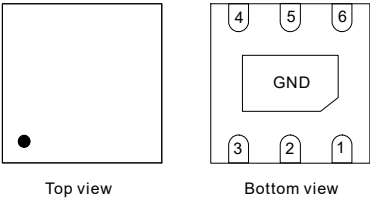
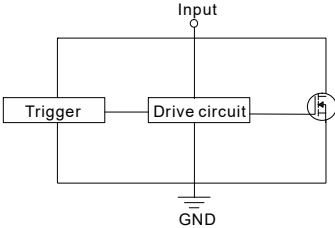
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Rating and characteristic curves



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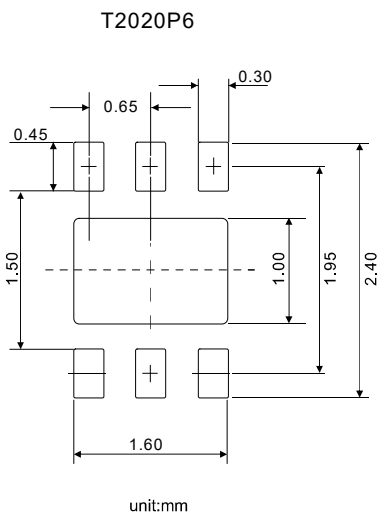
Pinning information

Pin	Simplified outline	Circuit Diagram
Pin 1, 2,3 GND Pin 4, 5, 6 Input	 Top view Bottom view	

Marking

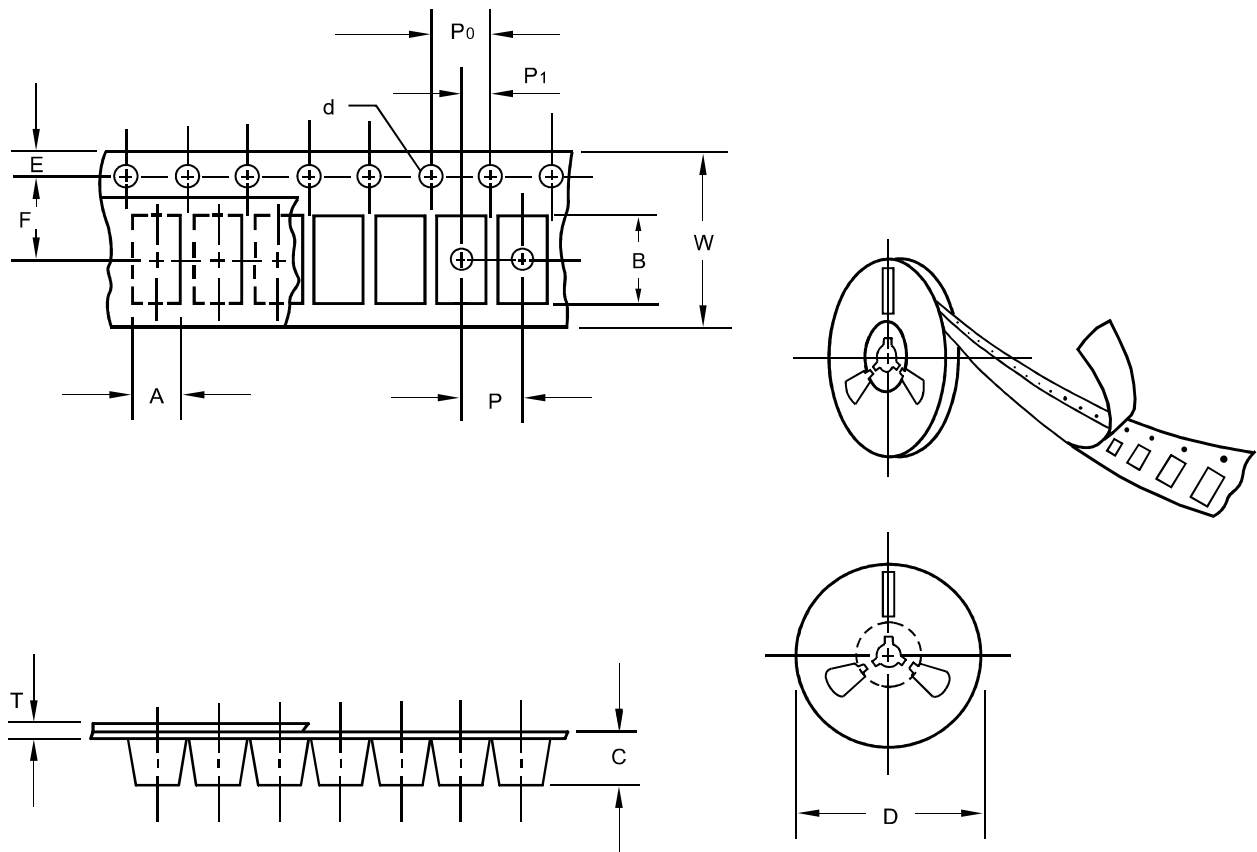
Type number	Marking code
N223UT2020P6	2413 -PLAS

Suggested solder pad layout



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Packing information



unit:mm

Item	Symbol	Tolerance	T2020P6
Carrier width	A	0.1	2.25
Carrier length	B	0.1	2.25
Carrier depth	C	0.1	0.90
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D2	2.0	178.00
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	0.1	2.00
Overall tape thickness	T	0.1	0.20
Tape width	W	0.3	8.00

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

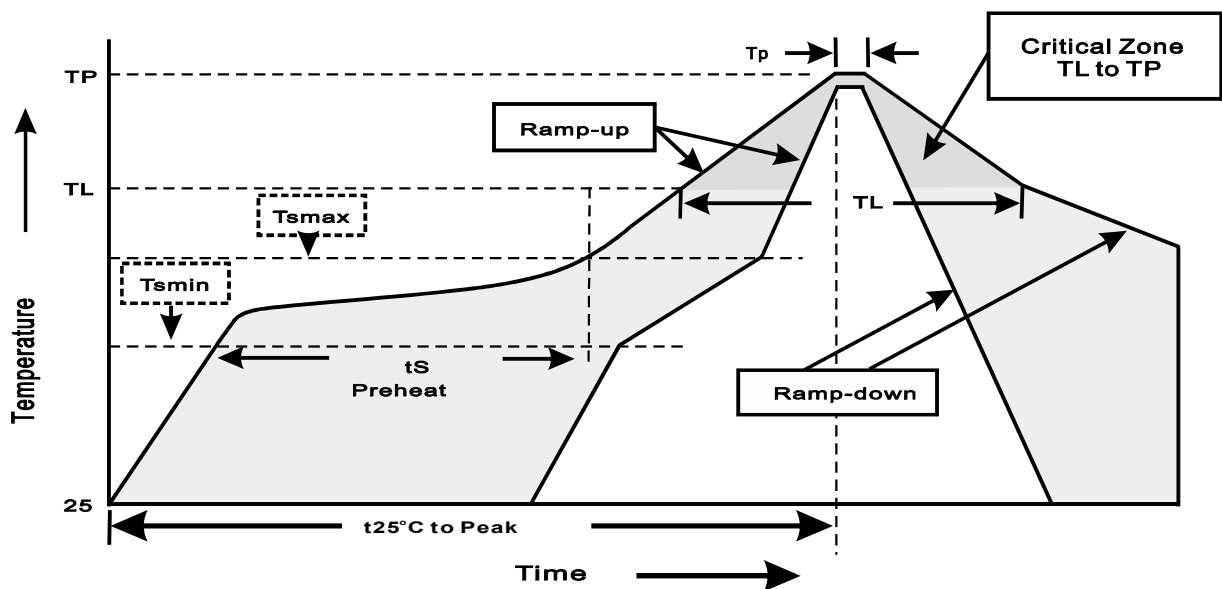
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Reel packing

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)
T2020P6	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

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(T _{5min}) -Temperature Max(T _{5max}) -Time(min to max)(t ₅)	150°C 200°C 60~120sec
T _{5max} 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