

N242BT23A-Q1

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126W 2-Channel Bi-Directional TVS For ESD Protection : 24V

Features

- Transient protection for high-speed data lines.
- Complies with following standards:
IEC 61000-4-2(ESD) ± 30 kV(Air), ± 30 kV(Contact)
IEC 61000-4-5(Lightning) 3A (8/20 μ s)
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. N242BT23A-Q1-H.

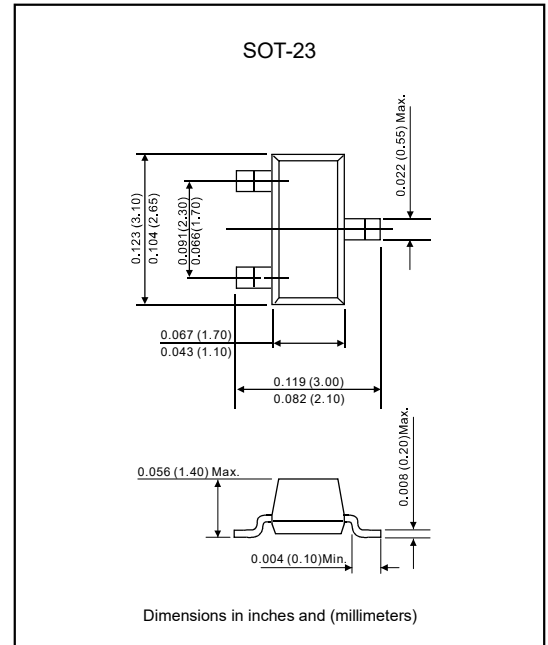
Applications

- CAN bus protection .
- Automotive applications.
- Protects two data, control or CAN bus lines.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOT-23.
- Mounting Position : Any.

Package outline



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

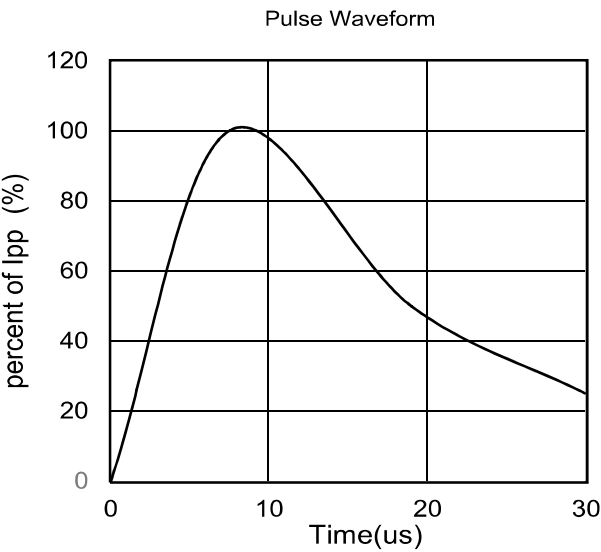
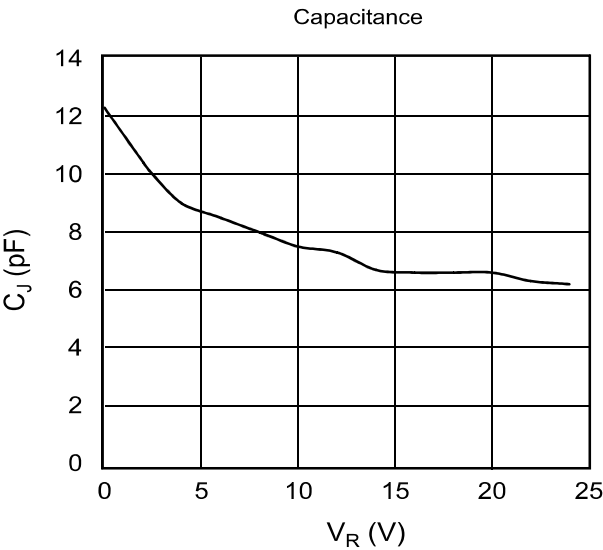
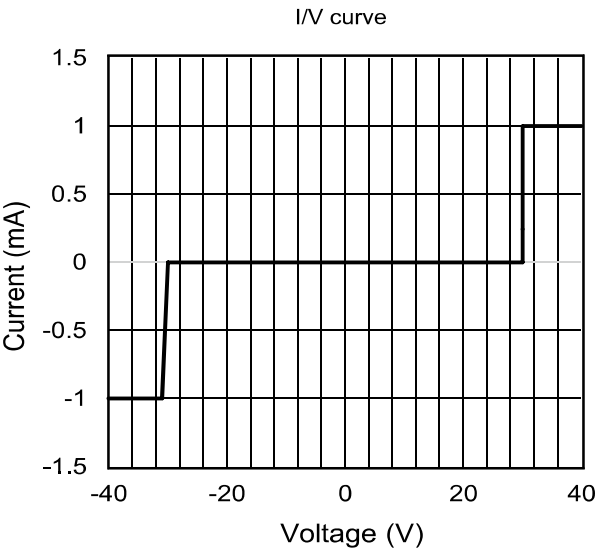
Parameter	Symbol	Ratings	Unit
Peak pulse power (8/20 μ s)	P_{PP}	126	W
Peak pulse current (8/20 μ s)	I_{PP}	3	A
ESD per IEC61000-4-2 (Air)	V_{ESD}	± 30	kV
ESD per IEC61000-4-2 (Contact)			
Junction temperature range	T_J	-40 to +125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Reverse stand-off voltage		V_{RWM}			24	V
Reverse breakdown voltage	$I_T=1\text{mA}$	V_{BR}	26.7		35	V
Reverse leakage current	$V_{RWM}=24\text{V}$	I_R		0.01	0.1	μA
Clamping voltage	$I_{PP}=3\text{A}$, $t_p=8/20\mu\text{s}$	V_C			42	V
Junction capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$	C_J		12	17	pF

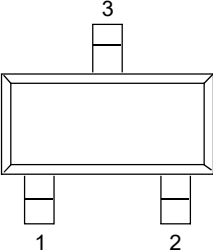
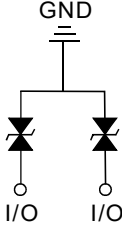
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Rating and characteristic curves

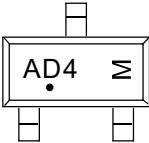


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Pinning information

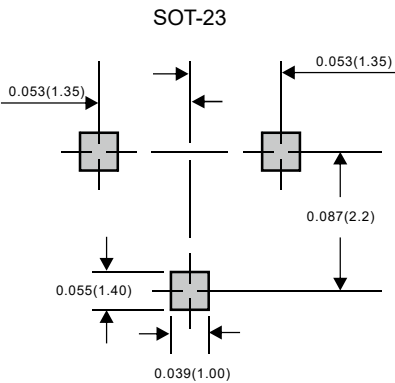
Pin	Simplified outline	Symbol
Pin 1 I/O Pin 2 I/O Pin 3 GND		

Marking

Type number	Marking code
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*M:Month code marking

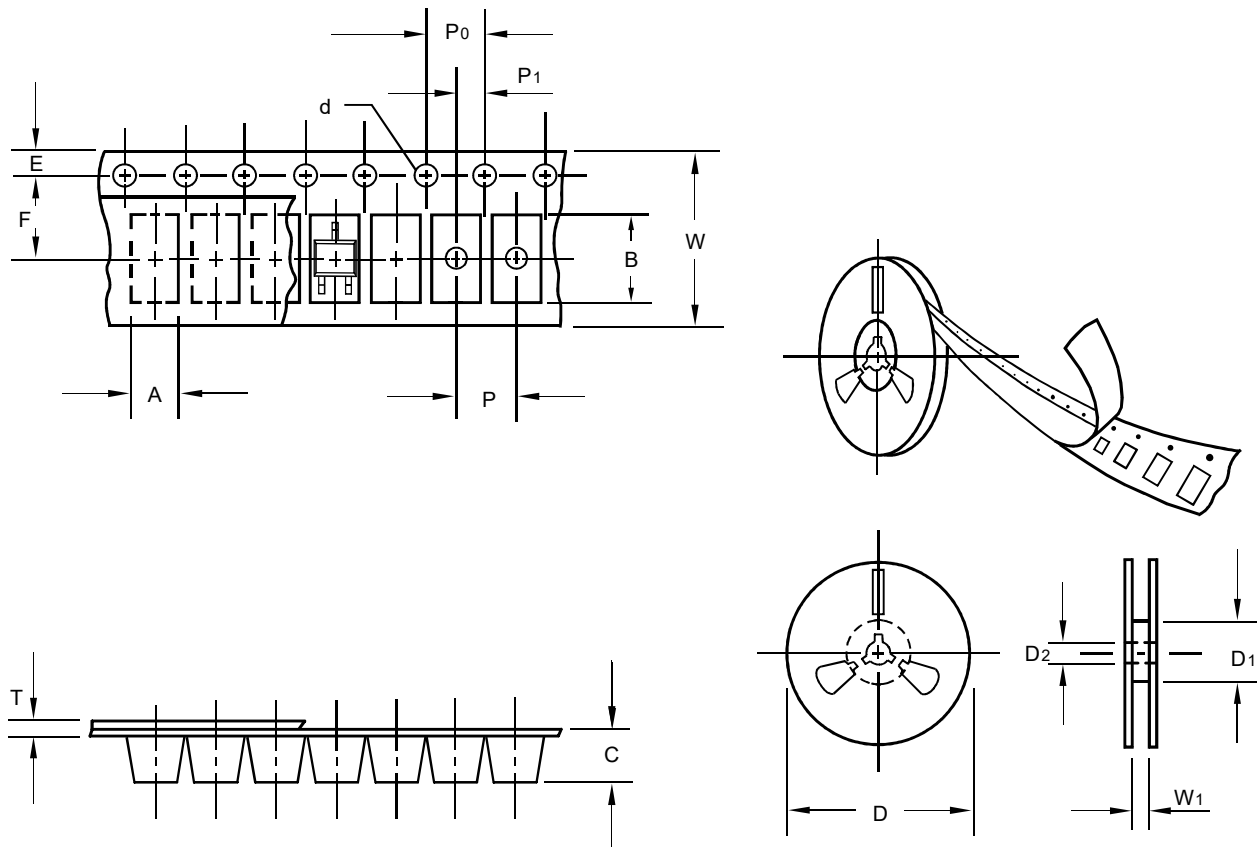
Suggested solder pad layout



Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.5	3.15
Carrier length	B	0.5	2.80
Carrier depth	C	0.5	1.30
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	49.00
Feed hole diameter	D2	2.0	13.20
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
Tape width	W	0.3	8.00
Reel width	W1	2.0	9.60

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

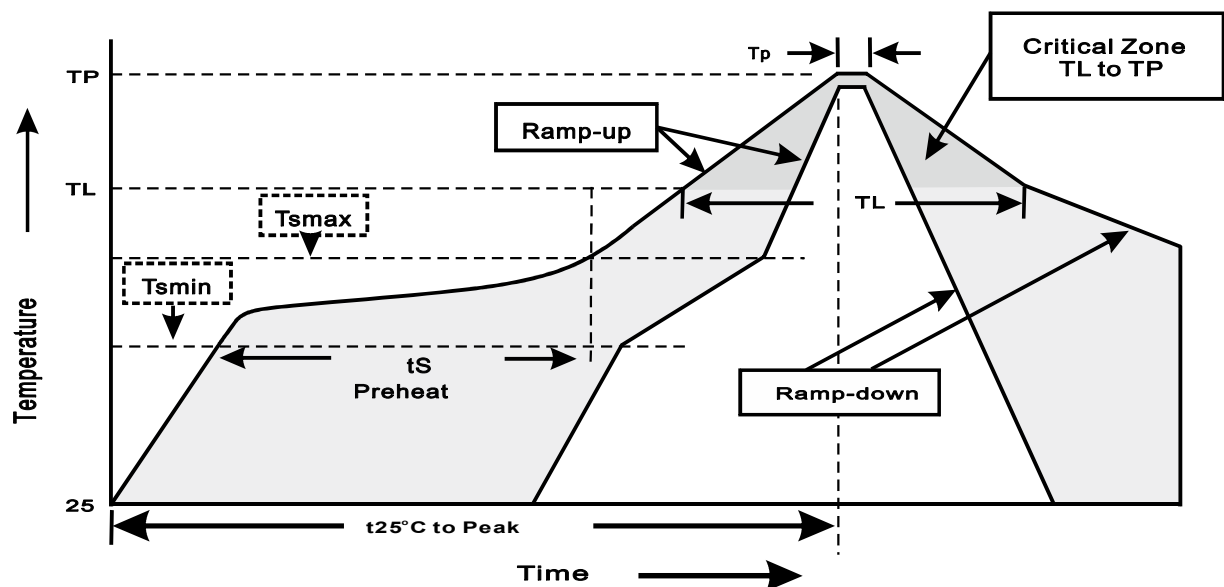
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	REEL DIA, (m/m)	CARTON (pcs)
SOT-23	7"	3,000	4.0	30,000	178	240,000

Suggested thermal profiles for soldering processes

- Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 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 _{min}) -Temperature Max(T _{max}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{max} 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

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High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. High Temperature Reverse Bias	$V_{BR}=V_{BR\ MIN}*80\%$ ($T_J=T_J\ max.$)Test Duration:1000hrs	JESD22-A108
3. High Temperature Storage Life	$T_a=150^{\circ}C$ Test Duration:1000hrs	JESD22 A-103
4. Temperature Cycle	$-55^{\circ}C(15min)$ to $150^{\circ}C(15min)$ Test Cycles:1000cycles	JESD22 A-104
5. Autoclave	$P=2atm$ $T_a=121^{\circ}C$ $RH=100\%$ Test Duration:96hrs	JESD22 A-102
6. Solderability	$245\pm5^{\circ}C$ for 5sec	J-STD-002
7. Moisture Resistance	$T_a=85^{\circ}C/85\%$ Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
8. Resistance To Solder Heat	$260\pm5^{\circ}C$ for 10sec	JESD22 B-106
9. High Temperature High Humidity Reverse Bias	$T_a=85^{\circ}C$, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101