

ESDH3Z24CB-Q1

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Bi-Directional TVS For ESD Protection : 24V

Features

- Low leakage current.
- Protection one data/power line to:
IEC61000 -4-2 (ESD) $\pm 30\text{kV}$ (Air), $\pm 30\text{kV}$ (Contact).
IEC 61000-4-5 (Lightning) 3A (8/20 μs) .
- Qualified to AEC-Q101 standard for high reliability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates halogen-free parts, ex.ESDH3Z24CB-Q1-H.

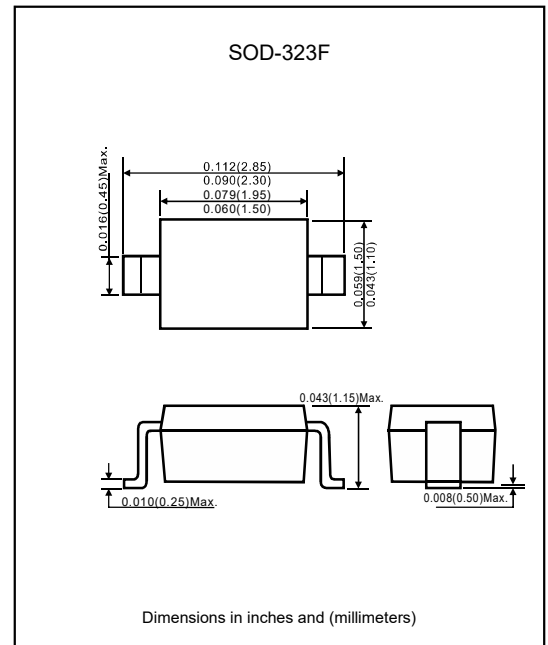
Applications

- Industrial control networks: smart distribution systems devicenet.
- Automotive networks: low and high-speed CAN and fault tolerant CAN.
- LIN bus protection.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOD-323F.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



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

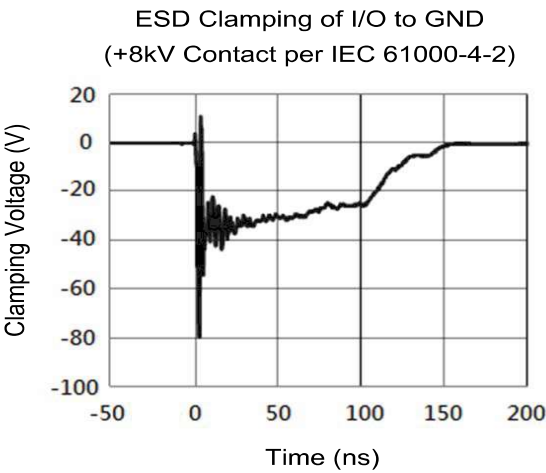
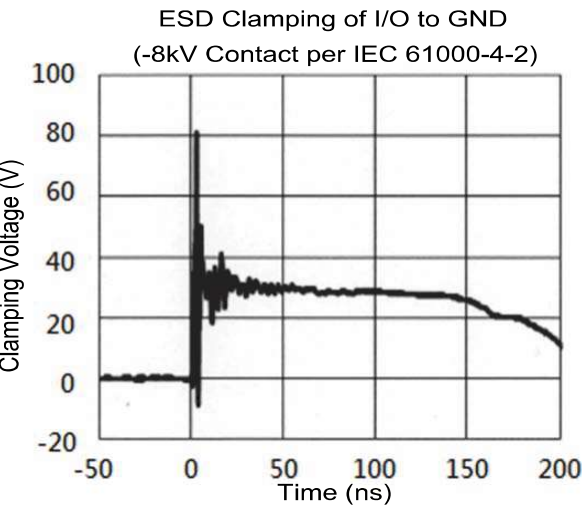
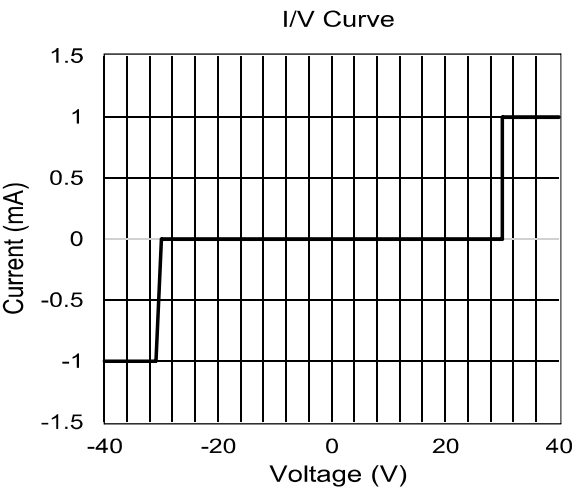
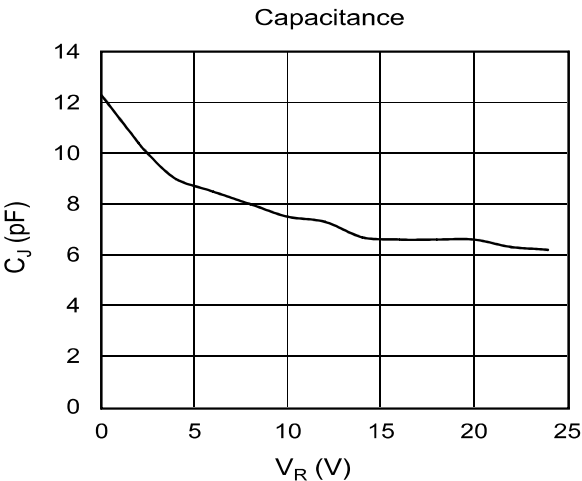
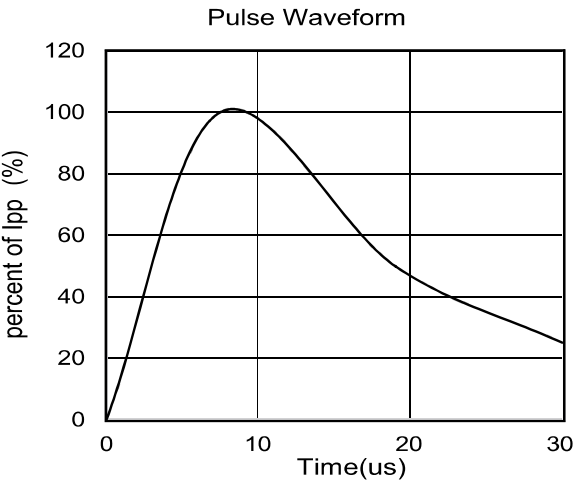
Parameter	Symbols	Ratings	Unit
Peak Pulse Current (8/20 μs)	I_{PP}	3	A
ESD per IEC 61000-4-2 (Air)	V_{ESD}	± 30	KV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating temperature	T_J	+125	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

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

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

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Rating and characteristic curves

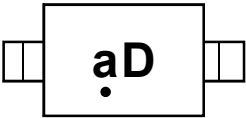


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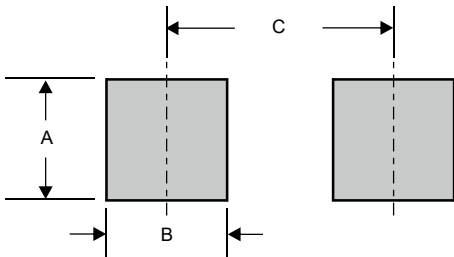
Pinning information

Pin	Simplified outline	Symbol
Bi-directional		

Marking

Type number	Marking code
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Suggested solder pad layout

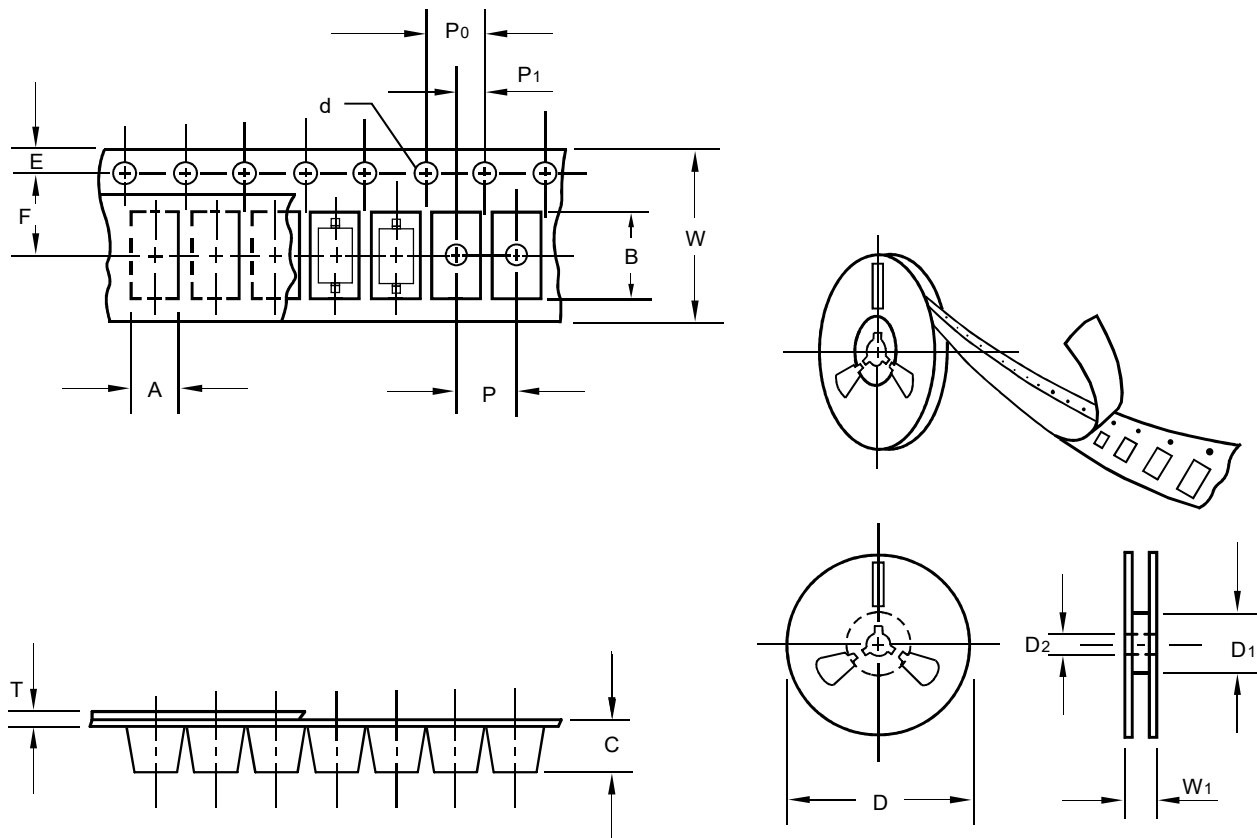


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.031 (0.80)	0.091 (2.30)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	1.0	1.44
Carrier length	B	1.0	2.90
Carrier depth	C	1.0	1.17
Sprocket hole	d	0.1	1.55
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	13.00
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	0.50
Tape width	W	0.3	8.00
Reel width	W1	0.3	9.50

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

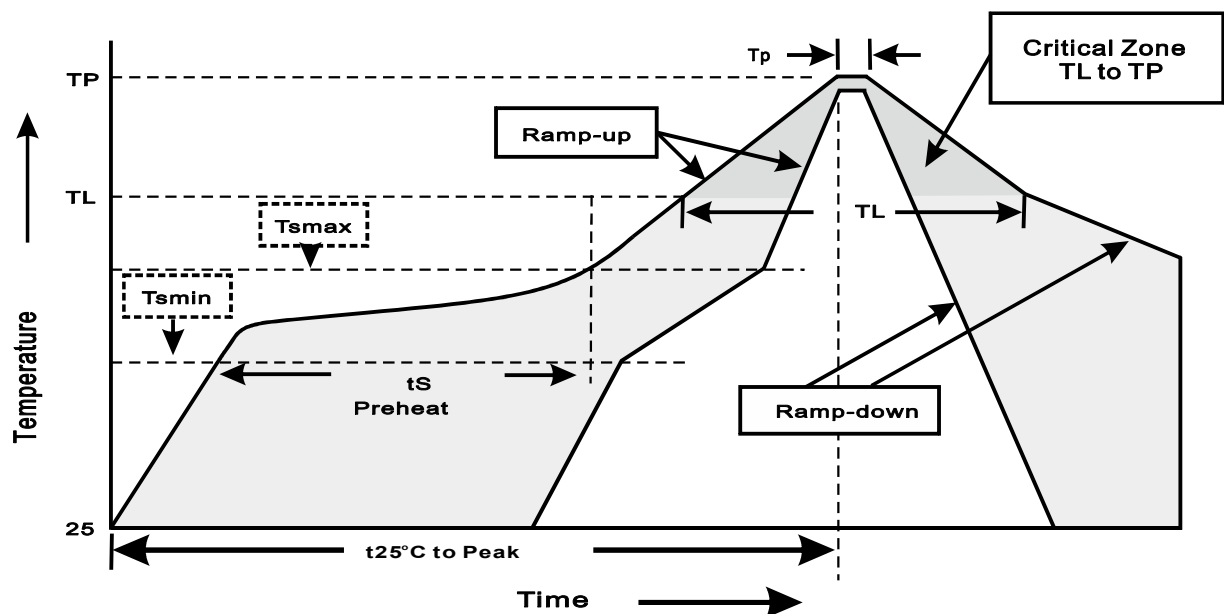
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Reel packing

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)
SOD-323F	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)	$< 3^\circ\text{C/sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	$< 3^\circ\text{C/sec}$
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	$< 6^\circ\text{C/sec}$
Time 25°C to Peak Temperature	< 6 minutes

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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