UDZ2.4B-FL-Q1 THRU UDZ36B-FL-Q1

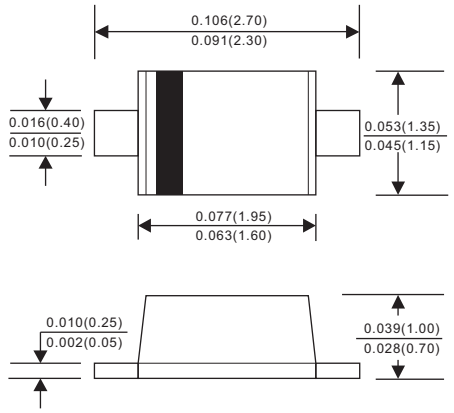
200mW Surface Mount Zener Diodes

Features

- Zener Voltage Range Selection, 2.4V to 36V
- Flat Lead SOD-323FL Small Outline Plastic Package
- Surface Device Type Mounting
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free part, ex.UDZ2.4B-FL-Q1-H.

Package outline

SOD-323FL



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323FL
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.004 gram

Maximum ratings (at T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Power Dissipation		P_D			200	mW
Forward voltage	I_F = 10 mA	V_F			1.0	V
Operating temperature		T_J	-65		+150	°C
Storage temperature		T_{STG}	-65		+150	°C

These ratings are limiting values above which the serviceability of the diode may be impaired.

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Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No.	Marking code	Zener voltage		Test current	Zener impedance			Leakage current	
		V_Z @ I_{ZT}		I_{ZT}	Z_{ZT} @ I_{ZT}	Z_{ZK} @ I_{ZK}	I_{ZK}	I_R	V_R
		Min.(V)	Max.(V)	mA	Max(Ω)	Max(Ω)	mA	Max(uA)	Volts
UDZ2.4B-FL-Q1	D=,DT	2.43	2.63	5	100	1000	0.5	120	1.0
UDZ2.7B-FL-Q1	DΞ,DU	2.69	2.91	5	110	1000	0.5	100	1.0
UDZ3.0B-FL-Q1	D>,DV	3.01	3.22	5	120	1000	0.5	50	1.0
UDZ3.3B-FL-Q1	D<,DW	3.32	3.53	5	120	1000	0.5	20	1.0
UDZ3.6B-FL-Q1	D0	3.60	3.85	5	90	600	1.0	4.5	1.0
UDZ3.9B-FL-Q1	D1	3.89	4.16	5	90	600	1.0	2.7	1.0
UDZ4.3B-FL-Q1	D2	4.17	4.43	5	90	600	1.0	2.7	1.0
UDZ4.7B-FL-Q1	D3	4.55	4.75	5	80	500	1.0	2.7	2.0
UDZ5.1B-FL-Q1	D4	4.98	5.20	5	60	500	1.0	1.8	2.0
UDZ5.6B-FL-Q1	D5	5.49	5.73	5	40	300	1.0	0.9	2.0
UDZ6.2B-FL-Q1	D6	6.06	6.33	5	40	150	1.0	2.7	4.0
UDZ6.8B-FL-Q1	D7	6.65	6.93	5	30	75	1.0	1.8	4.0
UDZ7.5B-FL-Q1	D8	7.28	7.60	5	30	75	1.0	0.9	5.0
UDZ8.2B-FL-Q1	D9	8.02	8.36	5	30	75	1.0	0.63	5.0
UDZ9.1B-FL-Q1	DA	8.85	9.23	5	30	90	1.0	0.45	6.0
UDZ10B-FL-Q1	DB	9.77	10.21	5	20	150	1.0	0.18	7.0
UDZ11B-FL-Q1	DC	10.76	11.22	5	20	150	1.0	0.09	8.0
UDZ12B-FL-Q1	DE	11.74	12.24	5	20	150	1.0	0.09	8.0
UDZ13B-FL-Q1	DF	12.91	13.49	5	40	160	1.0	0.09	8.0
UDZ15B-FL-Q1	DG	14.34	14.98	5	40	190	1.0	0.045	10.5
UDZ16B-FL-Q1	DH	15.85	16.51	5	40	190	1.0	0.045	11.2
UDZ18B-FL-Q1	DJ	17.56	18.35	5	50	220	1.0	0.045	12.6
UDZ20B-FL-Q1	DK	19.52	20.39	5	60	220	1.0	0.045	14.0
UDZ22B-FL-Q1	DL	21.54	22.47	5	80	240	1.0	0.045	15.4
UDZ24B-FL-Q1	DM	23.72	24.78	5	80	240	1.0	0.045	16.8
UDZ27B-FL-Q1	DN	26.19	27.53	5	100	300	0.5	0.045	18.9
UDZ30B-FL-Q1	DP	29.19	30.69	5	100	300	0.5	0.045	21.0
UDZ33B-FL-Q1	DR	32.15	33.79	5	100	310	0.5	0.045	23.0
UDZ36B-FL-Q1	DS	35.07	36.87	5	100	330	0.5	0.045	25.2

Note:

1. The Zener Voltage (V_Z) is tested under pulse condition of 10ms.
2. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current (I_{ZT} or I_{ZK}) is superimposed to I_{ZT} or I_{ZK}.

Rating and characteristic curves (UDZ2.4B-FL-Q1 THRU UDZ36B-FL-Q1)

FIG.1-ZENER VOLTAGE CHARACTERISTICS

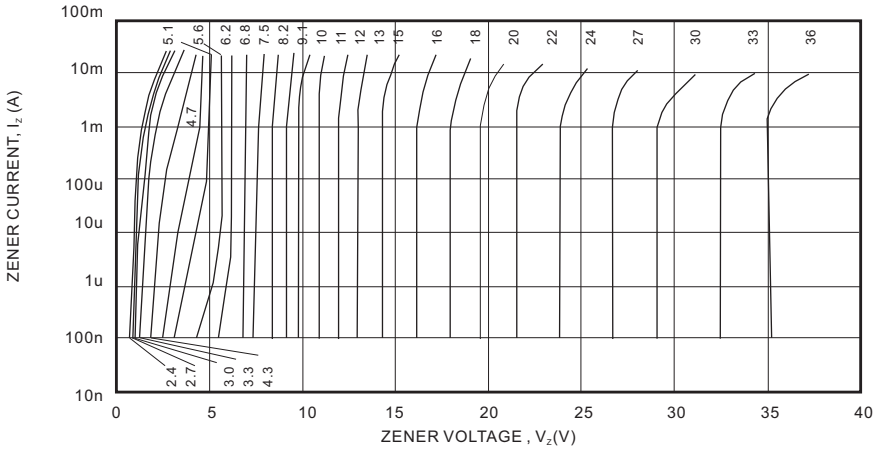
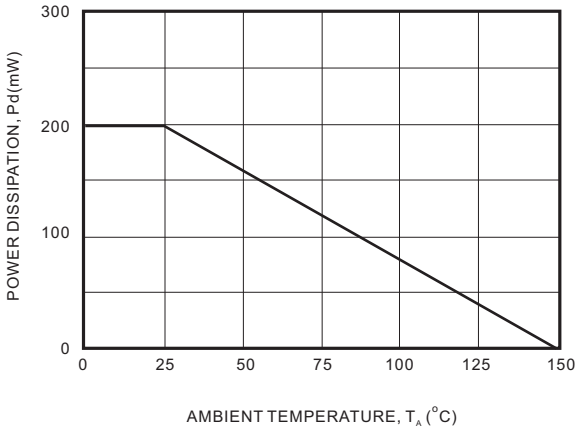


FIG. 2-DRATING CURVE



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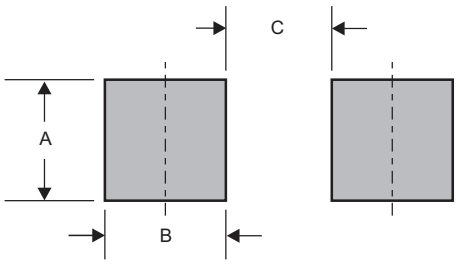
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323FL	0.032 (0.82)	0.022 (0.56)	0.069 (1.75)

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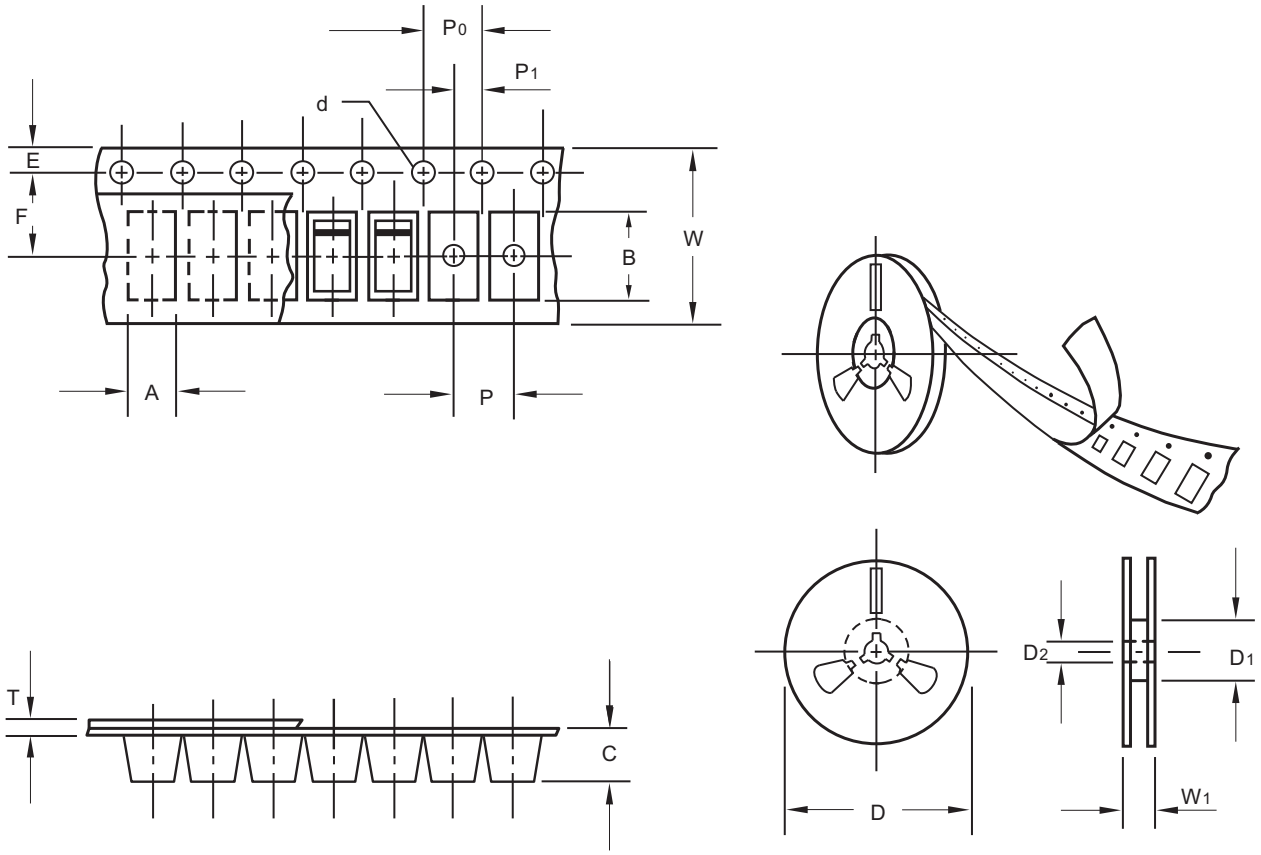
Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323FL
Carrier width	A	0.1	1.46
Carrier length	B	0.1	2.95
Carrier depth	C	0.1	1.25
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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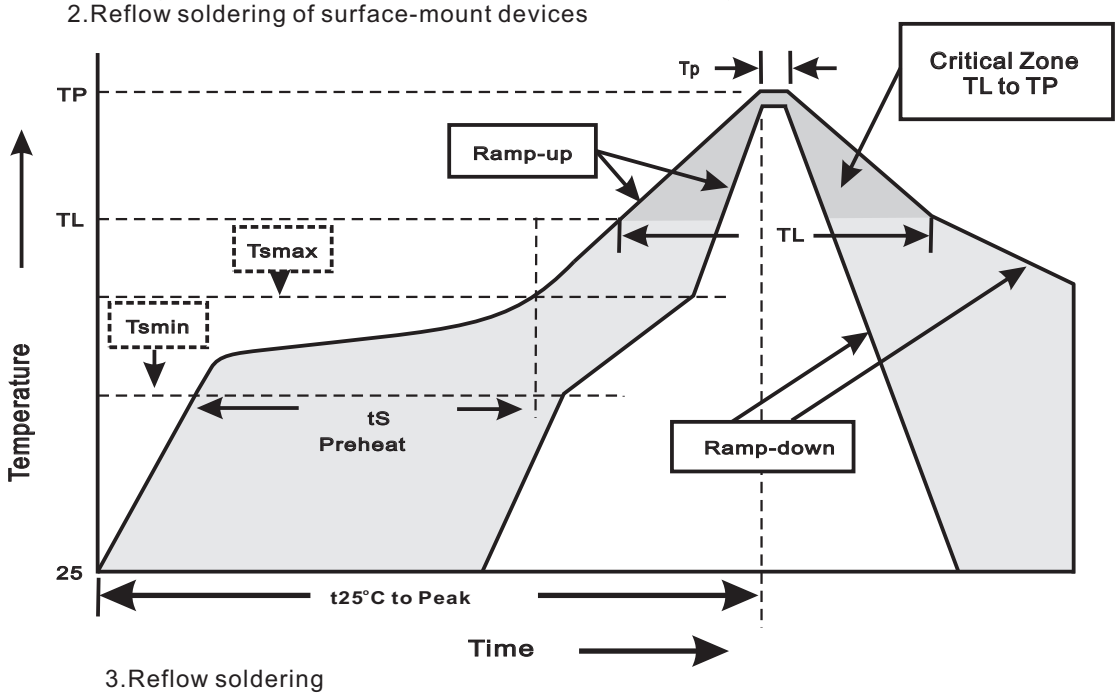
Reel packing

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)
SOD-323FL	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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℃+168hrs@85℃ /85%RH+3xIR@260℃+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25℃, Rated Current（Io=Iomax.）Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tjmax.)Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta=125℃ Test Duration：1000hrs	JESD22 A-103
5. Temperature Cycle	-55℃（15min） to 150℃（15min）Test Cycles：1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121℃ RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25℃,On/Io Max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5℃ for 5sec	J-STD-002
9. Moisture Resistance	Ta=85℃/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5℃ for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85℃, 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