

1N4148W-FL

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1N4148W-FL

400mW Surface Mount Switching Diode-100V

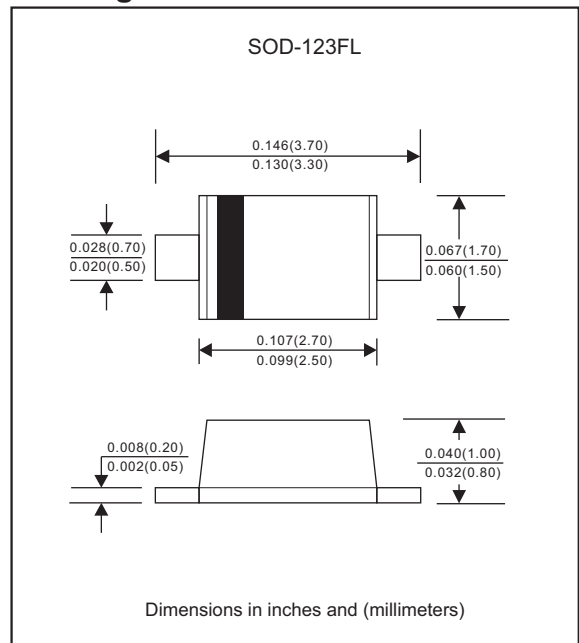
Features

- Fast switching device ($t_{rr} < 4.0$ ns)
- General purpose diodes
- Flat Lead SOD-123FL small outline plastic package
- Surface device type mounting
- RoHS compliant
- Green EMC
- Matte tin(Sn) lead finish
- Band indicates cathode
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free parts, ex. 1N4148W-FL-H

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123FL
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.009 gram

Package Outline



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

Parameter	Symbol	Value	Unit
Power dissipation at $T_A = 25^\circ\text{C}$	P_D	400	mW
Non-repetitive peak reverse voltage	V_{RRM}	100	V
Repetitive peak reverse voltage	V_R	75	V
Repetitive peak forward current	I_{FRM}	300	mA
Continuous forward current	I_O	150	mA
Peak forward surge current (Pulse width=1 μ s)	I_{FSM}	2	A
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
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
Breakdown voltage	$I_R = 100\mu\text{A}$ $I_R = 5\mu\text{A}$	V_B	100 75			V
Reverse leakage current	$V_R = 20\text{V}$ $V_R = 75\text{V}$	I_R			25 5	nA μA
Forward voltage	$I_F = 10\text{mA}$	V_F			1.0	V
Reverse recovery time	$I_F = 10\text{mA}, I_R = 10\text{mA}, R_L = 100\Omega, I_{RR} = 1\text{mA}$	t_{rr}			4.0	ns
Capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$	C_J			4.0	pF

Thermal characteristics

Parameter	Conditions	Symbol	MIN.	TYP.	MAX.	Unit
Thermal resistance	junction to ambient	$R_{\theta JA}$		315		$^\circ\text{C/W}$
	junction to case	$R_{\theta JC}$		235		$^\circ\text{C/W}$

Rating and characteristic curves (1N4148W-FL)

FIG.1-Power Dissipation

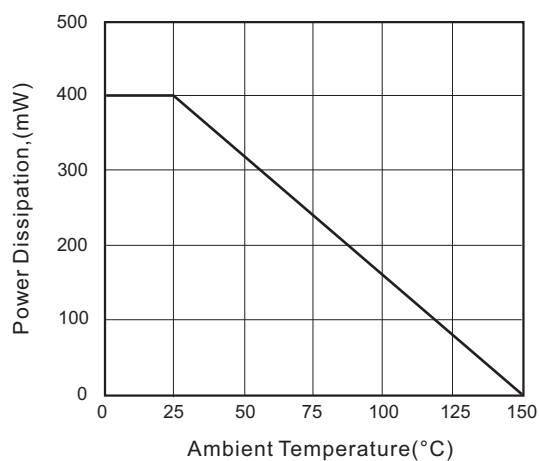


FIG.2 - Typical Reverse Characteristics

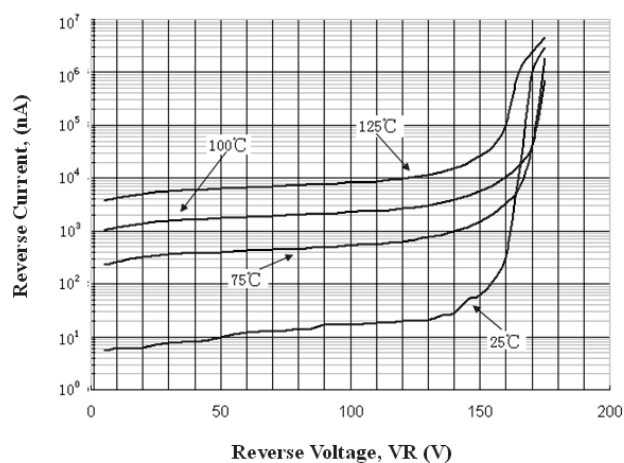


FIG.3 - Typical Capacitance

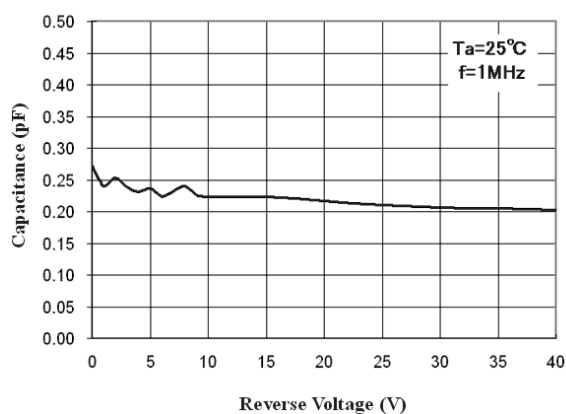
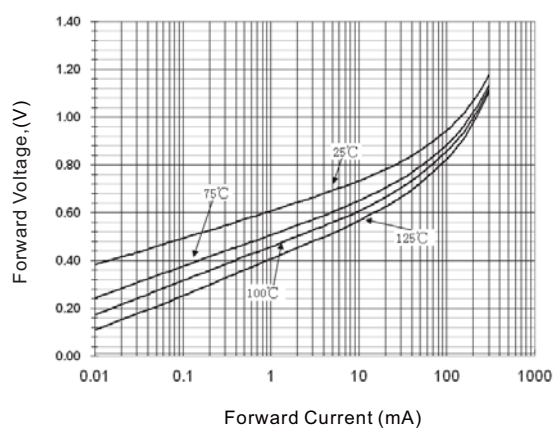


FIG.4 - Typical Forward Voltage vs. Ambient Temperature



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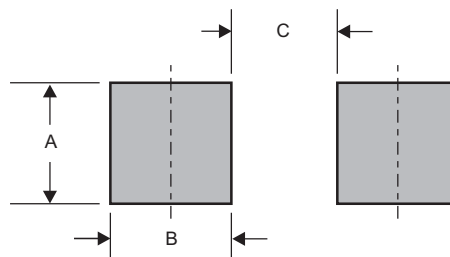
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
1N4148W-FL	D1,T4

Suggested solder pad layout

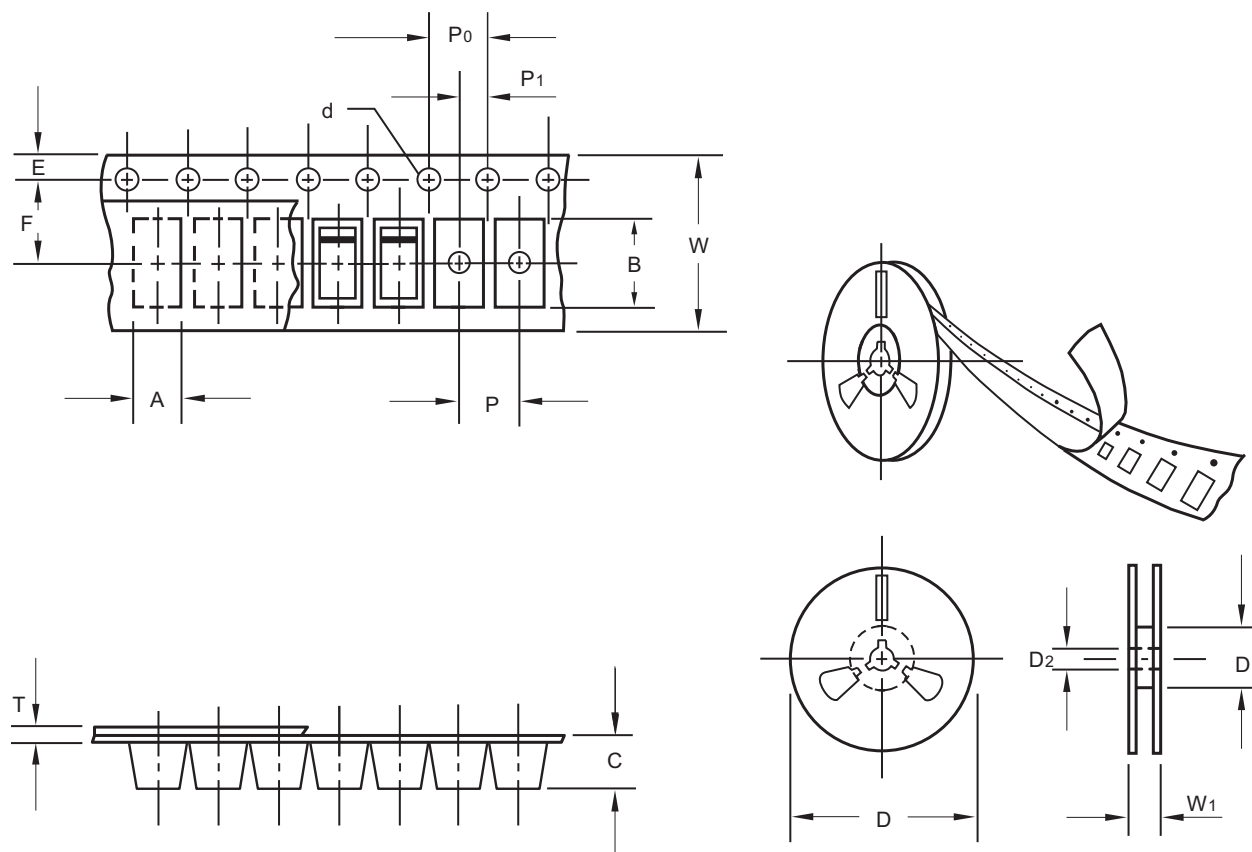


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123FL	0.028 (0.70)	0.028 (0.70)	0.091 (2.30)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-123FL
Carrier width	A	0.1	2.00
Carrier length	B	0.1	3.85
Carrier depth	C	0.1	1.10
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	62.00
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

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

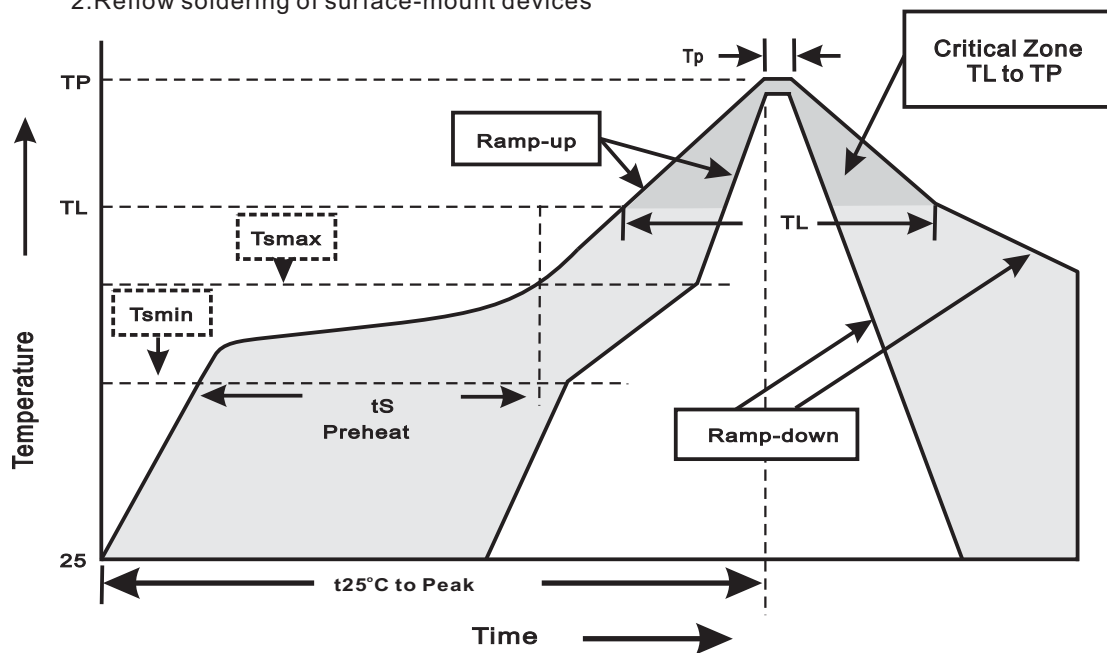
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Reel packing

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)
SOD-123FL	7"	3,000	4.0	30,000	183*123*183	178	382*257*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(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

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^{\circ}\text{C}$ for $10 \pm 2\text{sec.}$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A = 25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	Peak Forward Surge Current	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A = 85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031