

MMBD914WS-FL-Q1

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MMBD914WS-FL-Q1

200mA Surface Mount Switching Diode- 100V

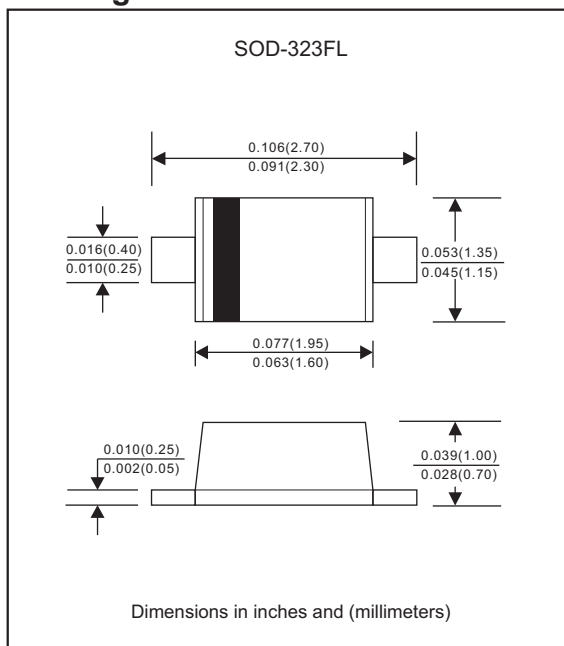
Features

- Low reverse leakage current
- High speed 4ns max
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen-free part, ex.MMBD914WS-FL-Q1-H

Mechanical data

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

Package outline



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

PARAMETER	SYMBOL	Limits	UNIT
Reverse voltage	V_R	100	V
Forward current	I_F	200	mA
Peak forward surge current	I_{FM}	500	mA
Non-repetitive peak forward current (square wave; $T_J = 25^\circ\text{C}$ prior to surge $t = 1\mu\text{s}$) ($t = 1\text{ms}$) ($t = 1\text{s}$)	I_{FSM}	4 1 0.5	A

Thermal characteristics

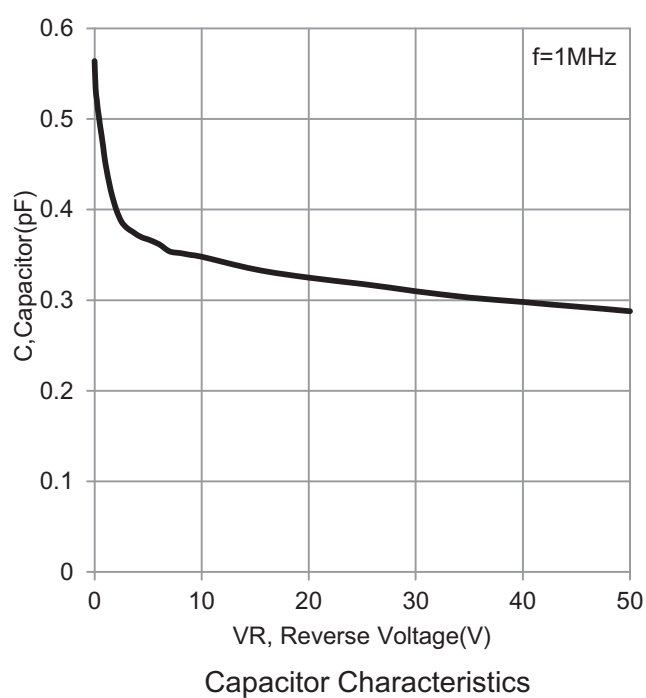
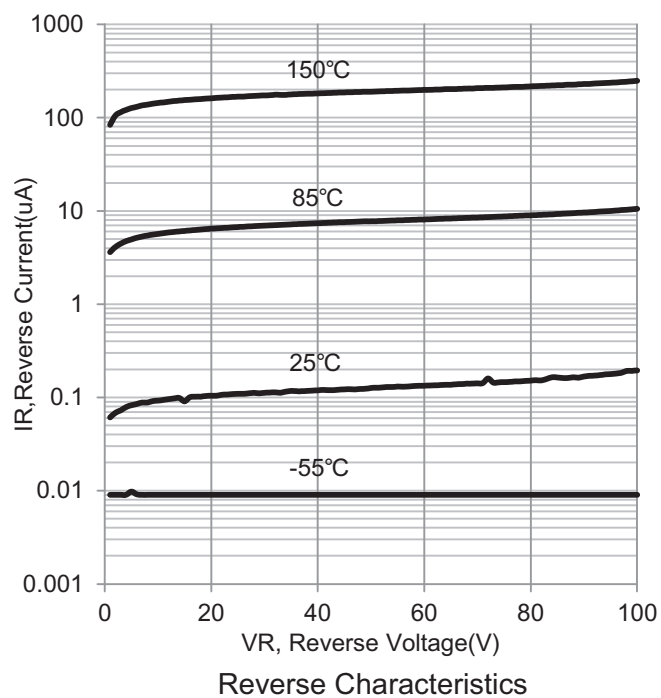
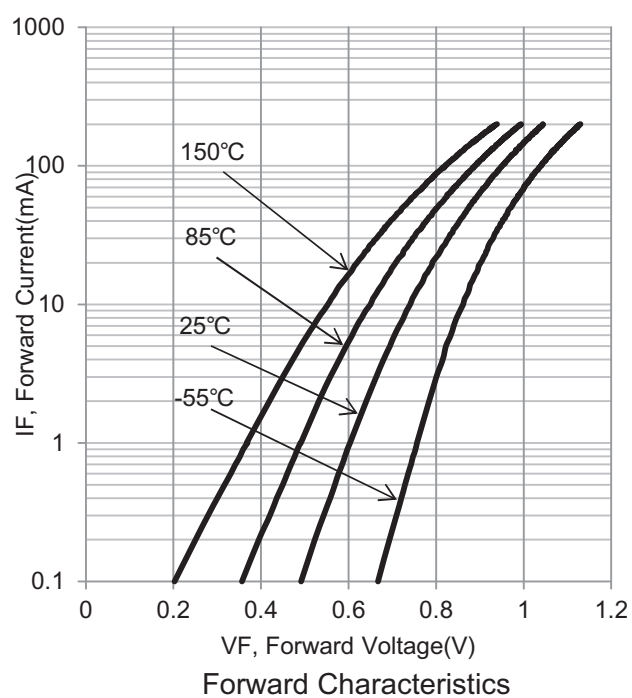
PARAMETER	SYMBOL	MAX.	UNIT
Total device dissipation FR-4 Board*, $T_A = 25^\circ\text{C}$ Derate Above 25°C	P_D	200 1.57	mW mW/ $^\circ\text{C}$
Thermal resistance junction to ambient	$R_{\theta JA}$	635	$^\circ\text{C}/\text{W}$
Operating junction temperature range	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150	$^\circ\text{C}$

1. FR-4 = 1.0 x 0.75 x 0.062 in.

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

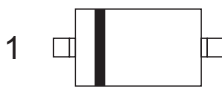
PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Reverse breakdown voltage($I_R=100\mu\text{Adc}$)	V_{BR}	100		V
Reverse voltage leakage current ($V_R = 20\text{V}$, $T_J = 25^\circ\text{C}$) ($V_R = 75\text{V}$, $T_J = 25^\circ\text{C}$)	I_R		25 5.0	nA μA
Diode capacitance($V_R = 0\text{V}$, $f = 1.0\text{MHz}$)	C_T		4.0	pF
Reverse recovery time($I_F = I_R = 10\text{mA}$)	t_{rr}		4.0	ns
Forward voltage ($I_F = 10\text{mAdc}$)	V_F		1000	mV

Rating and characteristic curves(MMBD914WS-FL-Q1)



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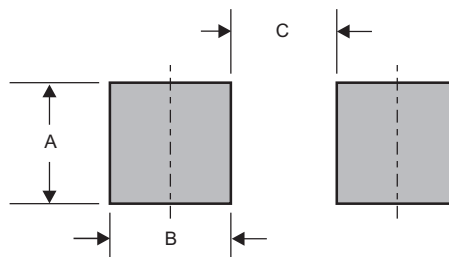
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
MMBD914WS-FL-Q1	5D

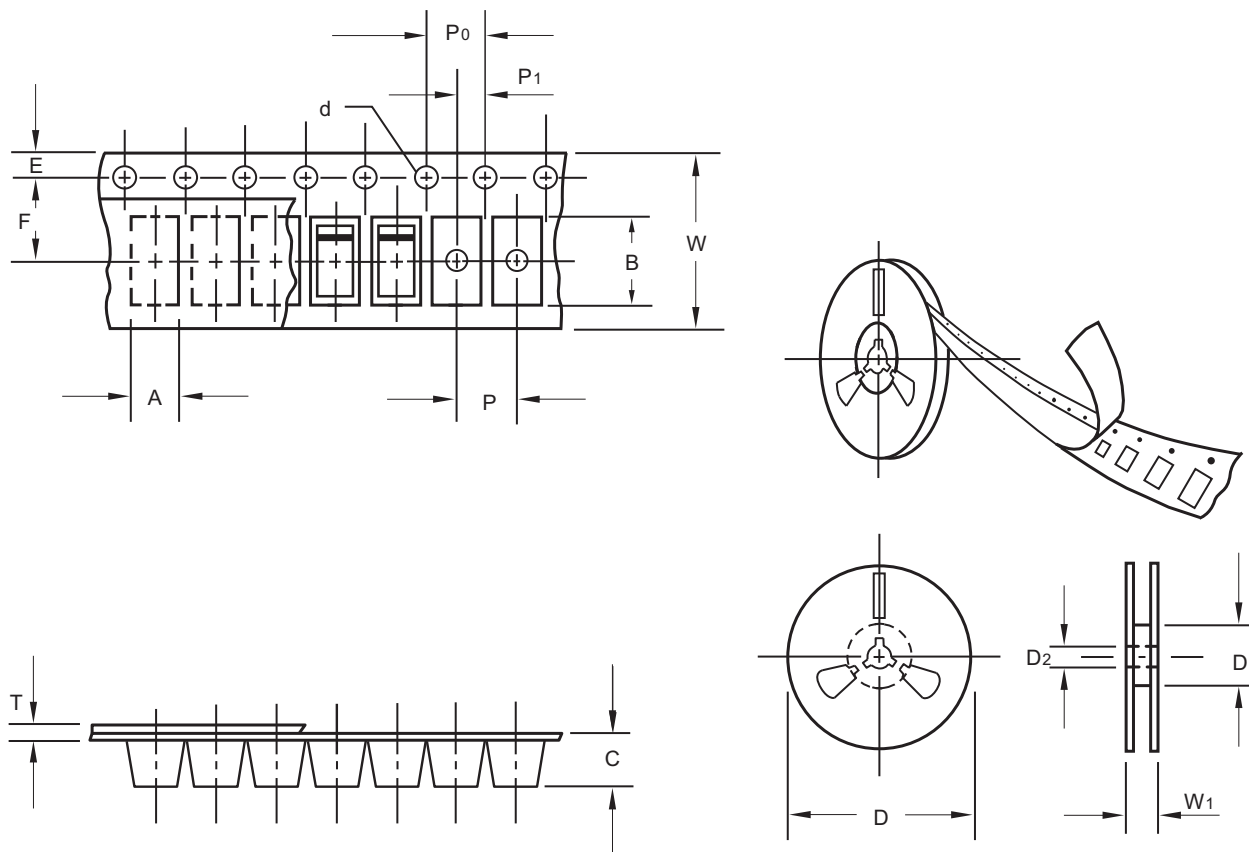
Suggested solder pad layout



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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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	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.

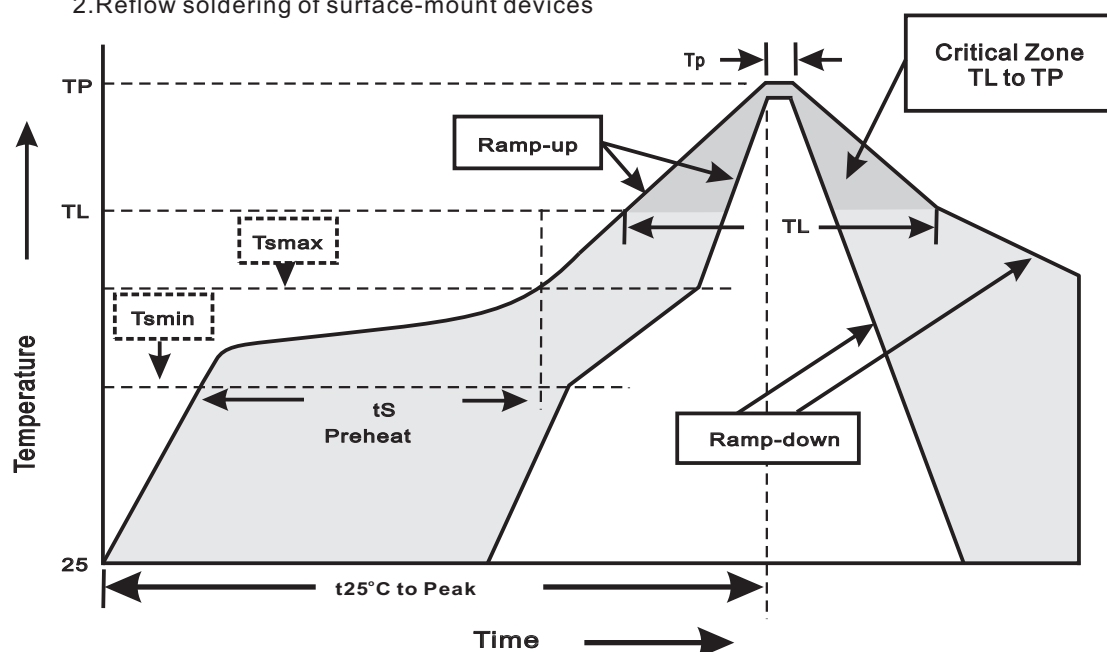
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Reel packing

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-323FL	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

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

MMBD914WS-FL-Q1**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. Operation Life	Ta=25°C, Rated Current (Io=Io max.)Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tj max.)Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta= 125°C Test Duration: 1000hrs	JESD22 A-103
5. Temperature Cycle	-55°C (15min) to 150°C (15min)Test Cycles: 1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25°C,On/Io Max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5°C for 5sec	J-STD-002
9. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85°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