

FM101-MFL Thru FM107-MFL

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FM101-MFL Thru FM107-MFL

1.0A Surface Mount General Purpose Rectifiers : 50V ~ 1000V

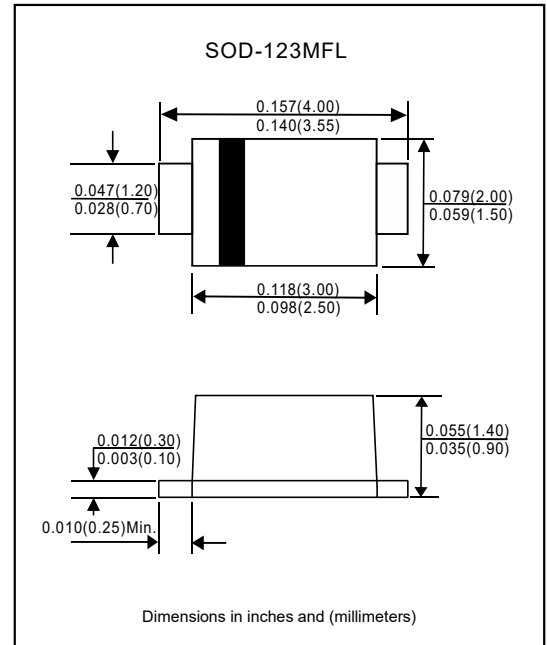
Features

- Idea for automated placement.
- Glass passivated junction chip.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. FM101-MFL-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, SOD-123MFL.
- Terminals : Solder plated, solderable per MIL-STD-750,Method 2026.
- Polarity : Color band denotes cathode end.
- Mounting Position : Any.

Package outline



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

Parameter	Symbol	FM101 -MFL	FM102 -MFL	FM103 -MFL	FM104 -MFL	FM105 -MFL	FM106 -MFL	FM107 -MFL	Units
Repetitive peak reverse voltage	V _{RRM}	50	100	200	400	600	800	1000	V
RMS voltage	V _{RMS}	35	70	140	280	420	560	700	V
DC blocking voltage	V _{DC}	50	100	200	400	600	800	1000	V
Average forward rectified current at T _A =75°C	I _O	1.0							A
Peak forward surge current, 8.3ms single half-sine-wave superimposed on rated load	I _{FSM}	30.0							A
Instantaneous forward voltage at 1.0A	V _F	1.1							V
DC reverse current T _A =25°C	I _R	5.0							μA
at rated DC blocking voltage T _A =125°C		200							
Typical junction capacitance (Note1)	C _J	18							pF
Thermal resistance, junction to ambient (Note2)	R _{θJA}	120							°C/W
Operating junction temperature	T _J	+150							°C
Storage temperature range	T _{STG}	-55 to +150							°C

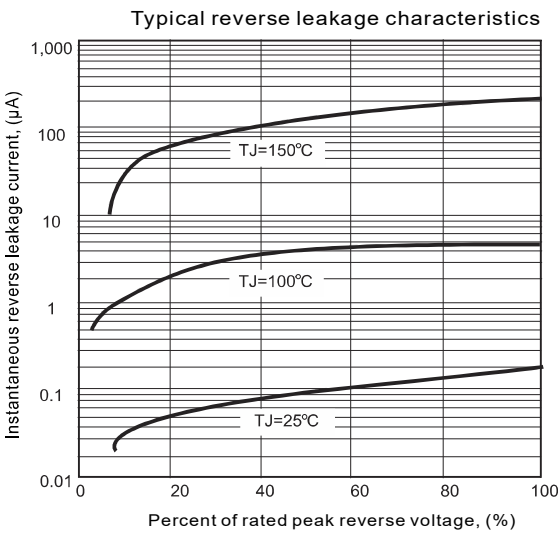
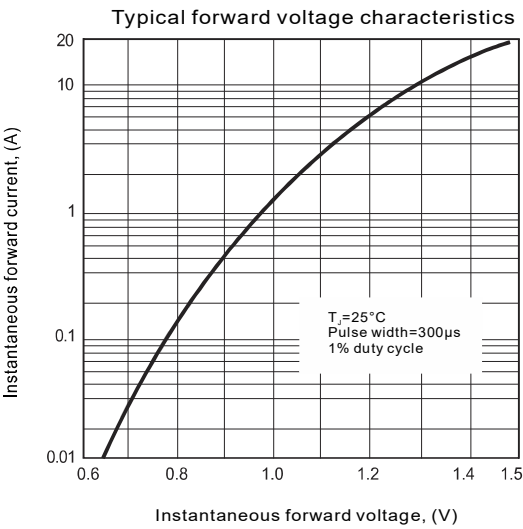
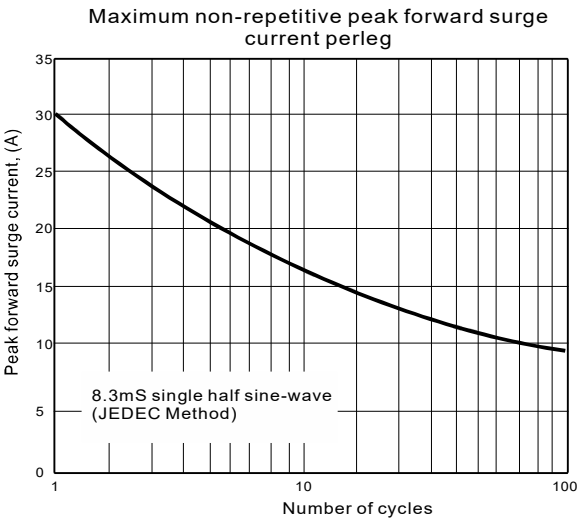
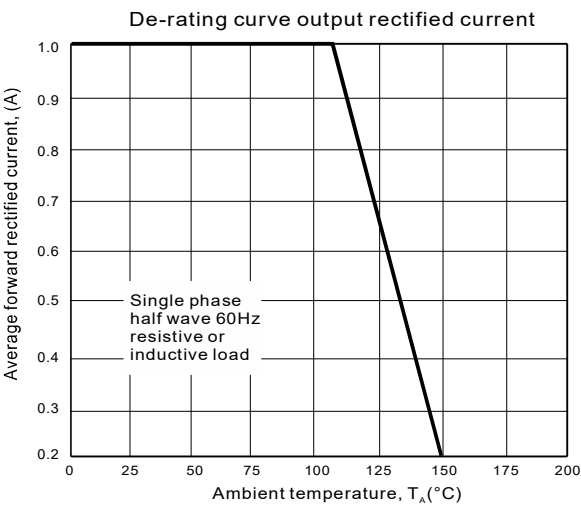
Note:1. Measured at 1MHz and applied reverse voltage of 4.0V D.C.

2. Mounted on 0.2"x0.2" (5.0mm x 5.0mm) copper pad areas.

3. Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

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Rating and characteristic curves

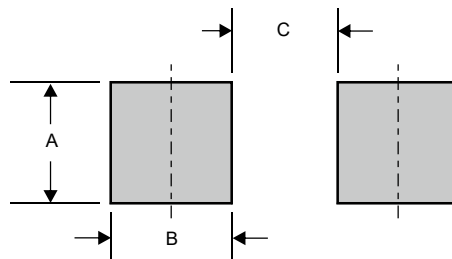


FM101-MFL Thru FM107-MFL**Pinning information**

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
FM101-MFL	A1V
FM102-MFL	A2V
FM103-MFL	A3V
FM104-MFL	A4V
FM105-MFL	A5V
FM106-MFL	A6V
FM107-MFL	A7V

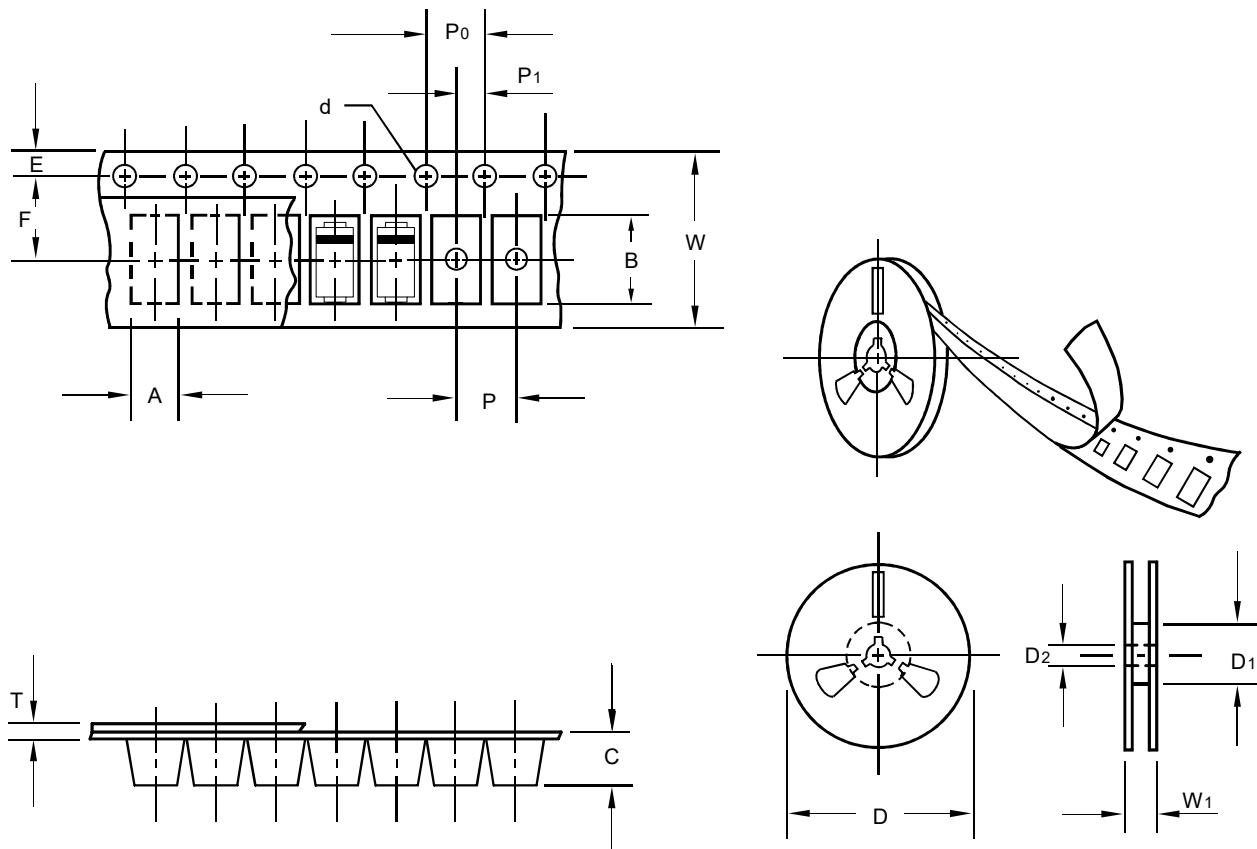
Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-123MFL	0.048 (1.20)	0.045 (1.15)	0.077 (1.95)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOD-123MFL
Carrier width	A	0.1	2.15
Carrier length	B	0.1	3.95
Carrier depth	C	0.1	1.35
Sprocket hole	d	0.1	1.55
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	0.22
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	11.40

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

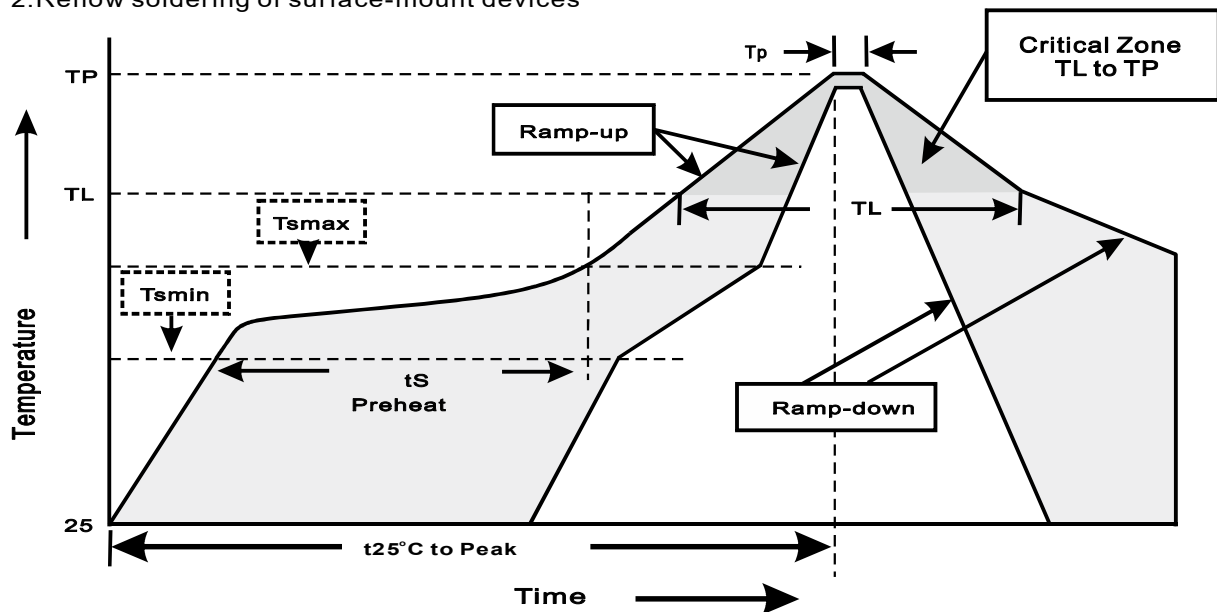
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Reel packing

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)
SOD-123MFL	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°C/sec
Preheat -Temperature Min(T _{smín}) -Temperature Max(T _{smáx}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smáx} 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

FM101-MFL Thru FM107-MFL**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	8.3ms single half sine-wave , one surge.	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