FM4001-AFL THRU FM4007-AFL

List

FM4001-AFL THRU FM4007-AFL

1.0A General Purpose Rectifiers : 50V ~ 1000V

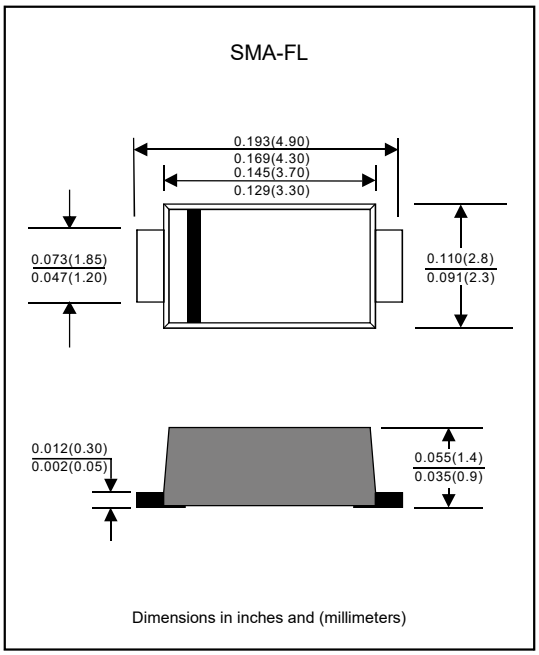
Features

- Glass passivated junction chip.
- Low reverse leakage.
- High forward surge current capability.
- High temperature soldering guaranteed 250°C/10 seconds at terminals.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. FM4001-AFL-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, DO-214AC / SMA-FL.
- Terminals : Solder plated, solderable per MIL-STD-750,Method 2026.
- Polarity : Indicated by cathode band.
- Mounting Position : Any.

Package outline



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

Parameter	Symbol	FM4001 -AFL	FM4002 -AFL	FM4003 -AFL	FM4004 -AFL	FM4005 -AFL	FM4006 -AFL	FM4007 -AFL	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current at T_L=100°C	I_O	1.0							A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	30							A
Typical junction capacitance (Note 1)	C_J	15							pF
Maximum instantaneous forward voltage at I_F=1.0A	V_F	1.1							V
Maximum DC reverse current (T_A=25°C)	I_R	5.0							V
at rated DC blocking voltage (T_A=125°C)		500							
Operating junction temperature	T_J	+150							°C
Storage temperature range	T_{STG}	-55 to +150							°C
Thermal resistance, junction to ambient	$R_{\theta JA}$	70							V

Note: 1.Measured at 1MHz and applied reverse voltage of 4.0V D.C.
2. Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

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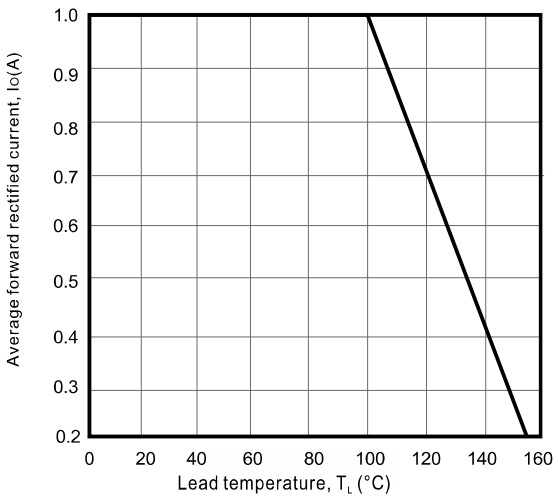
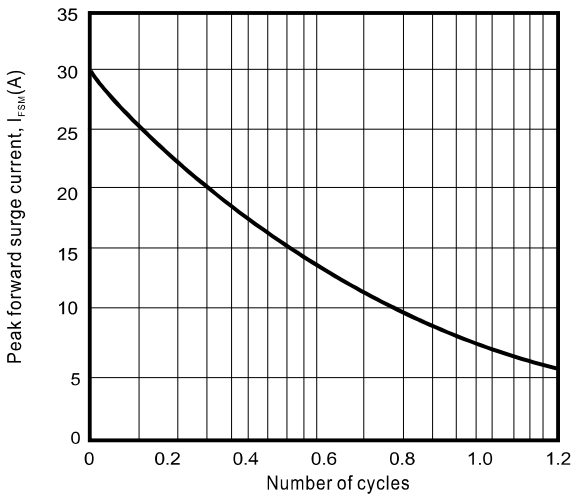
Rating and characteristic curves

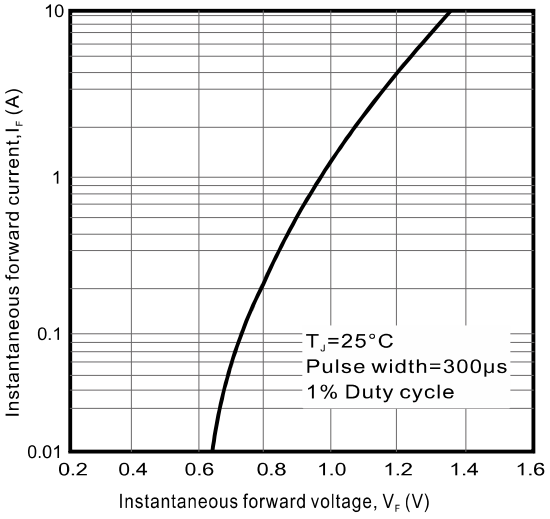
Derating curve output rectified current



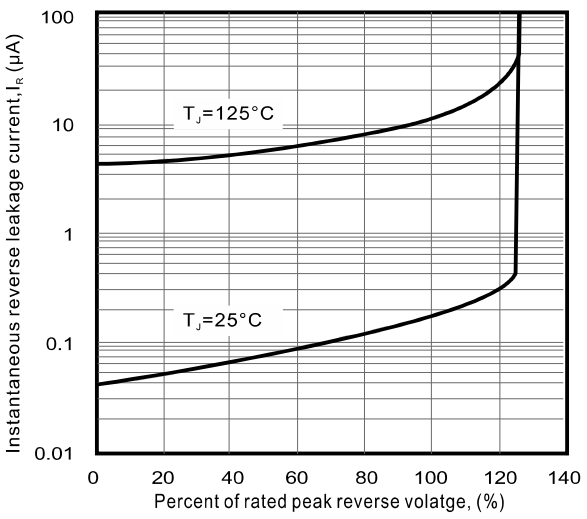
Typical forward characteristics



Typical forward voltage characteristics



Typical reverse leakage characteristics



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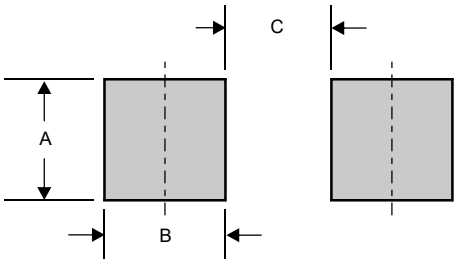
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
FM4001-AFL	S1AF, M1F
FM4002-AFL	S1BF, M2F
FM4003-AFL	S1DF, M3F
FM4004-AFL	S1GF, M4F
FM4005-AFL	S1JF, M5F
FM4006-AFL	S1KF, M6F
FM4007-AFL	S1MF, M7F

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA-FL	0.066 (1.68)	0.060 (1.52)	0.078(2.00)

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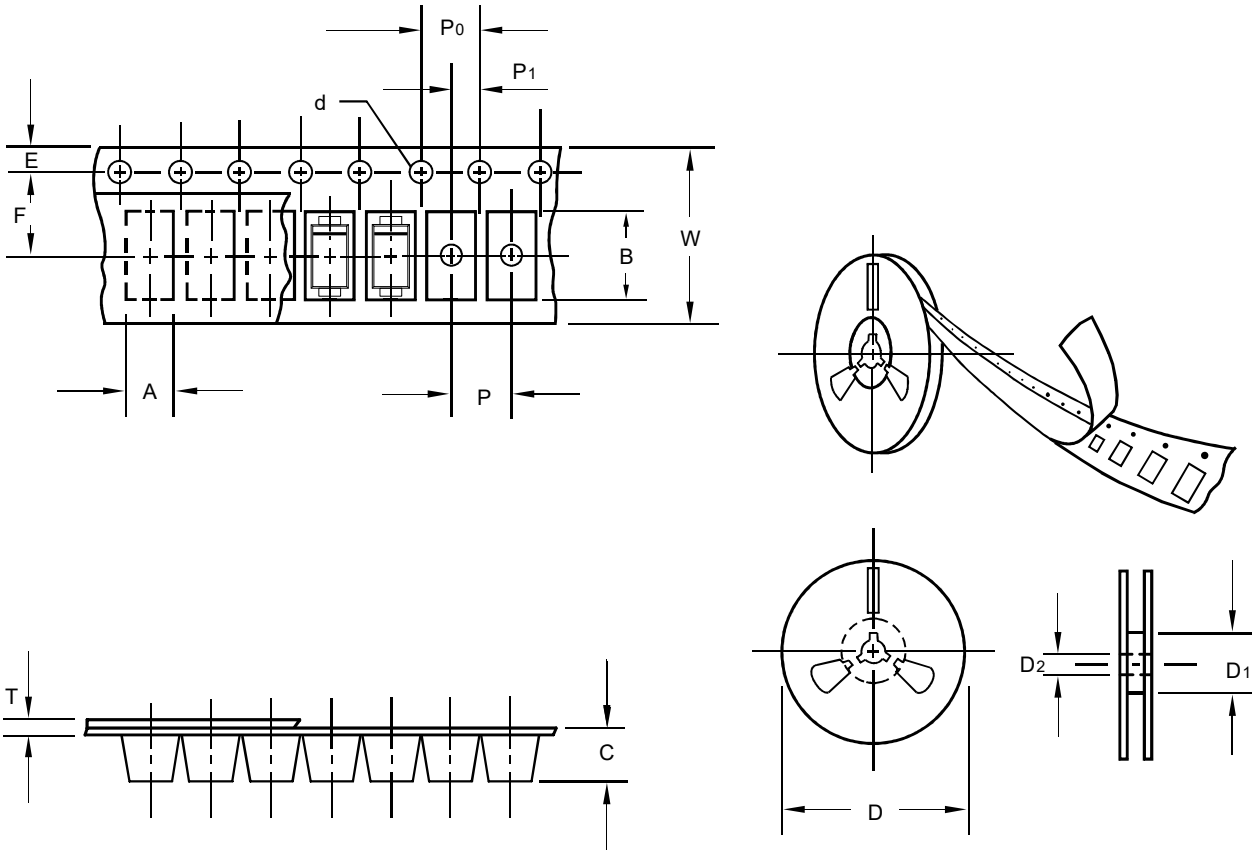
Packing information



unit:mm

Item	Symbol	Tolerance	SMA-FL
Carrier width	A	0.1	2.83
Carrier length	B	0.1	4.75
Carrier depth	C	0.1	1.42
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	54.40
Feed hole diameter	D_2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.50
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	0.25
Tape width	W	0.3	12.0

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

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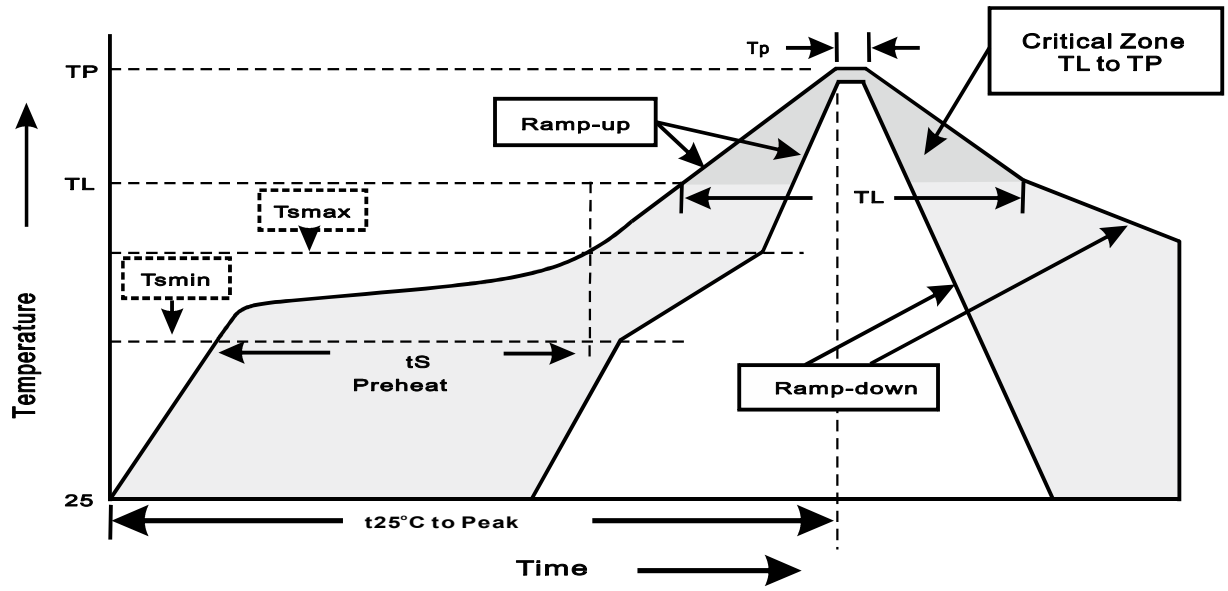
Reel packing

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)
SMA-FL	7"	3,000	4.0	30,000	183*155*183	178	382*356*392	240,000	14.50
	11"	7,500	-	-	-	-	-	-	-

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. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°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°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