

FM4001-AF THRU FM4007-AF

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FM4001-AF THRU FM4007-AF

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

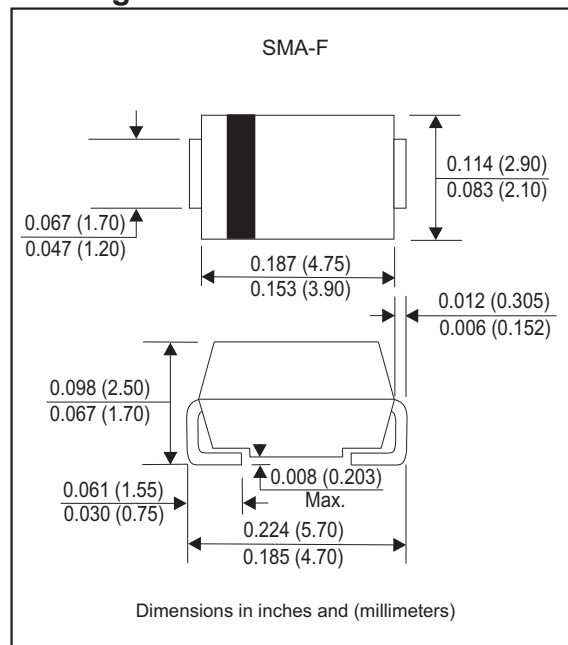
Features

- For surface mounted applications
- Low reverse leakage
- Built-in strain relief, ideal for automated placement
- High forward surge current capability
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free parts, ex. FM4001-AF-H

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AC / SMA-F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.06 gram

Package outline



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

Parameter	Symbols	FM4001-AF	FM4002-AF	FM4003-AF	FM4004-AF	FM4005-AF	FM4006-AF	FM4007-AF	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	I_o	1.0							A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	I_{FSM}	30							A
Typical junction capacitance (Note 1)	C_J	15							pF
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	Symbols	FM4001-AF	FM4002-AF	FM4003-AF	FM4004-AF	FM4005-AF	FM4006-AF	FM4007-AF	Unit
Maximum instantaneous forward voltage at $I_F=1.0\text{A}$	V_F	1.1							V
Maximum DC reverse current $T_J=25^{\circ}\text{C}$ at rated DC blocking voltage $T_J=125^{\circ}\text{C}$	I_R	5.0 50.0							μA μA

Thermal characteristics

Parameter	Symbols	FM4001-AF	FM4002-AF	FM4003-AF	FM4004-AF	FM4005-AF	FM4006-AF	FM4007-AF	Unit
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75							$^{\circ}\text{C/W}$
Typical thermal resistance junction to lead (Note 2)	$R_{\theta JL}$	30							$^{\circ}\text{C/W}$

Notes 1: Measured at 1MHz and applied reverse voltage of 4.0V D.C.
2: P.C.B. mounted with 0.2x0.2"(5.0x5.0mm) copper pad areas

Rating and characteristic curves (FM4001-AF THRU FM4007-AF)

Fig.1 FORWARD CURRENT DERATING CURVE

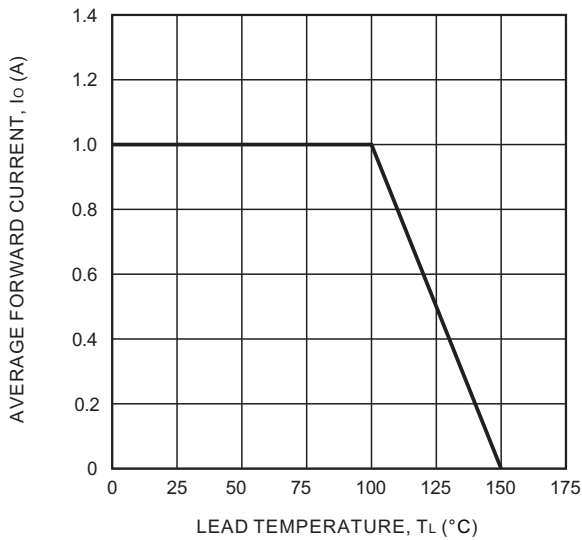


Fig.2 TYPICAL FORWARD CHARACTERISTICS

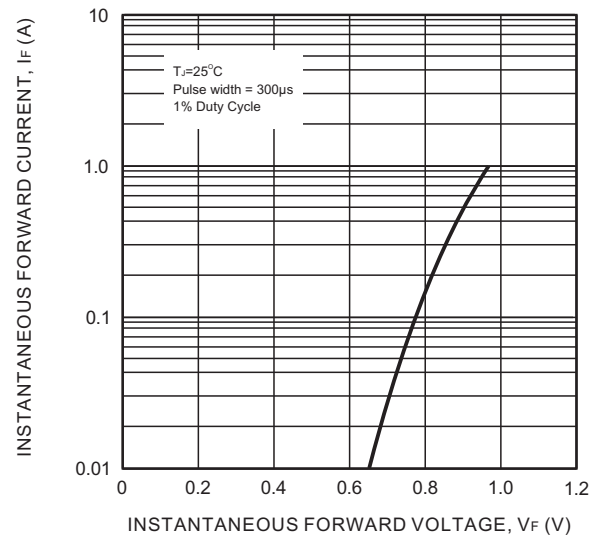


Fig.3 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

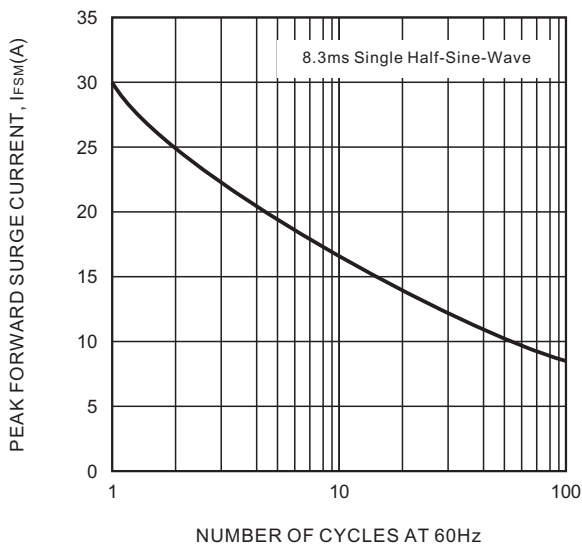
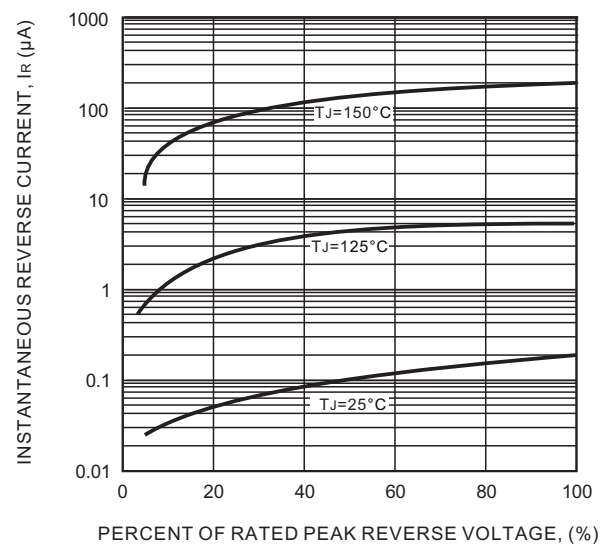


Fig.4 TYPICAL REVERSE CHARACTERISTICS

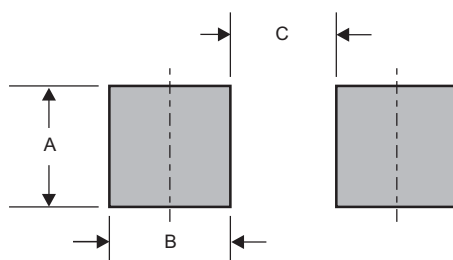


FM4001-AF THRU FM4007-AF**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
FM4001-AF	M1
FM4002-AF	M2
FM4003-AF	M3
FM4004-AF	M4
FM4005-AF	M5
FM4006-AF	M6
FM4007-AF	M7

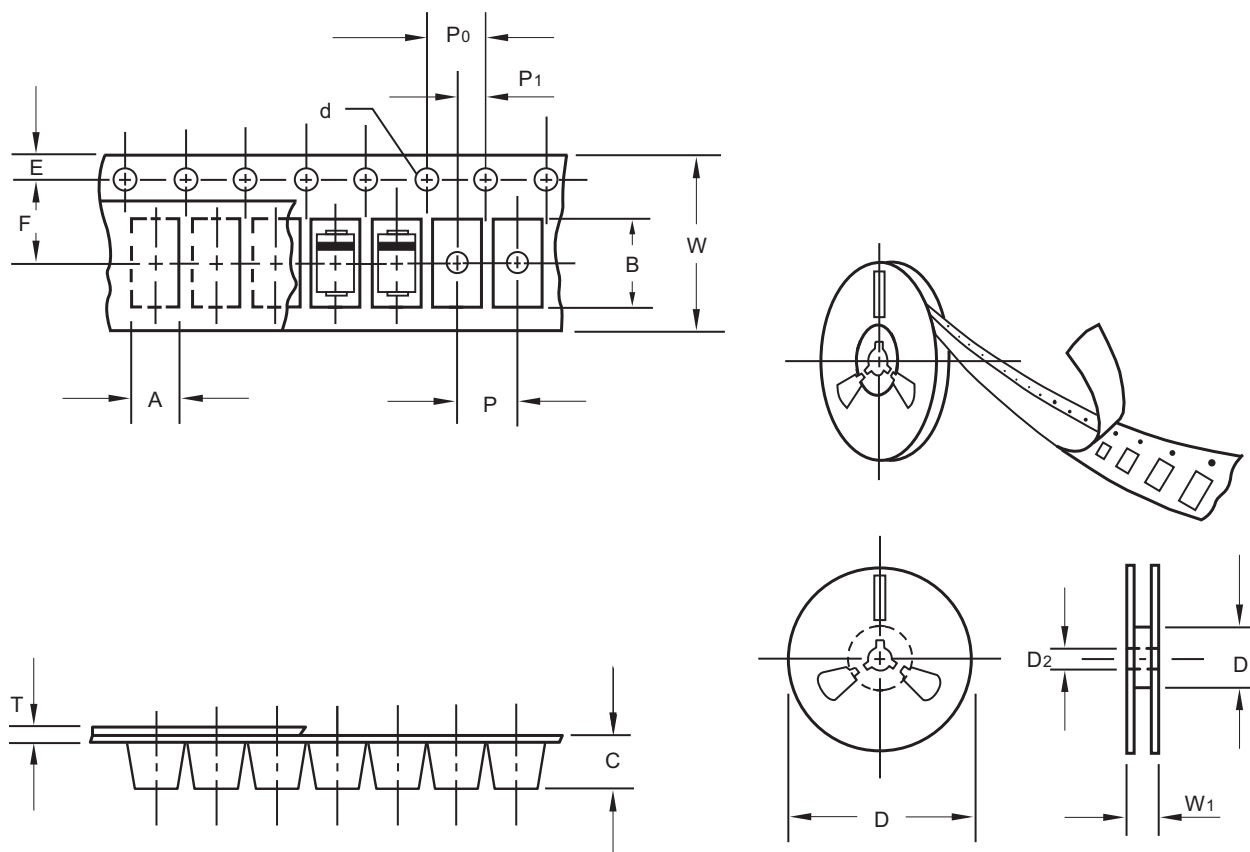
Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA-F	0.075 (1.90)	0.063 (1.60)	0.095(2.40)

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Packing information



unit:mm

Item	Symbol	Tolerance	SMA-F
Carrier width	A	0.1	2.79
Carrier length	B	0.1	5.33
Carrier depth	C	0.1	2.36
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D1	min	72.00
Feed hole diameter	D2	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	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	12.00
Reel width	W1	1.0	18.00

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

Reel packing

FM4001-AF THRU FM4007-AF**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 $T_J = T_{Jmax}$ 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