

FM4001-AW THRU FM4007-AW

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FM4001-AW THRU FM4007-AW

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

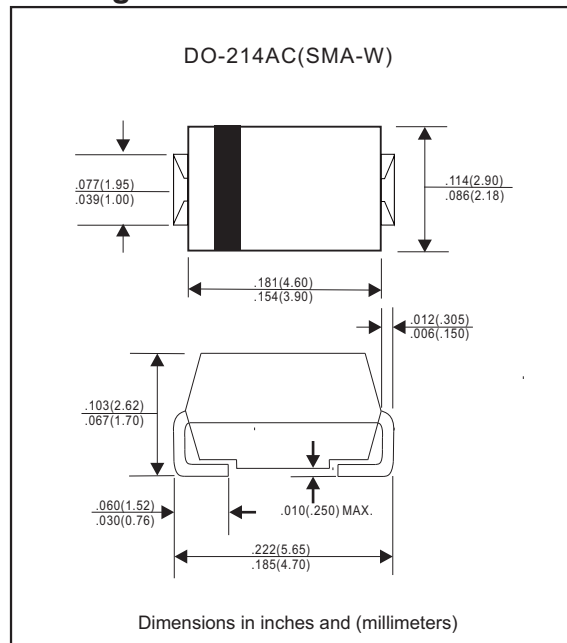
Features

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

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AC(SMA-W)
- Terminals : Solder plated, solderable per MIL-STD-750,Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.08 gram

Package outline



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

PARAMETER	SYMBOLS	FM4001-AW	FM4002-AW	FM4003-AW	FM4004-AW	FM4005-AW	FM4006-AW	FM4007-AW	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
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	30							A
Typical junction capacitance (Note 1)	C_J	15							pF
Operating junction temperature range	T_J	-65 to +150							$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-65 to +150							$^{\circ}\text{C}$

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

PARAMETER	SYMBOLS	FM4001-AW	FM4002-AW	FM4003-AW	FM4004-AW	FM4005-AW	FM4006-AW	FM4007-AW	UNIT
Maximum instantaneous forward voltage at $I_F=1.0\text{A}$	V_F	1.1							V
Maximum DC reverse current $T_A=25^{\circ}\text{C}$ at rated DC blocking voltage $T_A=100^{\circ}\text{C}$	I_R	5.0 50.0							μA

Thermal characteristics

PARAMETER	SYMBOLS	FM4001-AW	FM4002-AW	FM4003-AW	FM4004-AW	FM4005-AW	FM4006-AW	FM4007-AW	UNIT
Typical thermal resistance junction to ambient (Note 2)	$R_{\theta JA}$	75							$^{\circ}\text{C}/\text{W}$

Note1: 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-AW THRU FM4007-AW)

Fig.1 FORWARD CURRENT DERATING CURVE

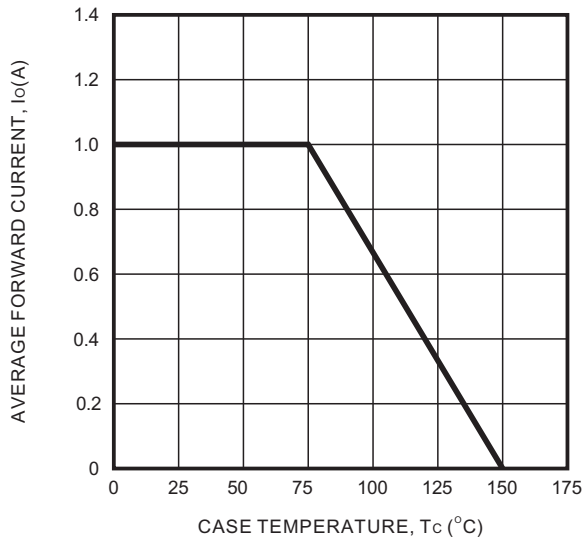


Fig.2 TYPICAL FORWARD CHARACTERISTICS

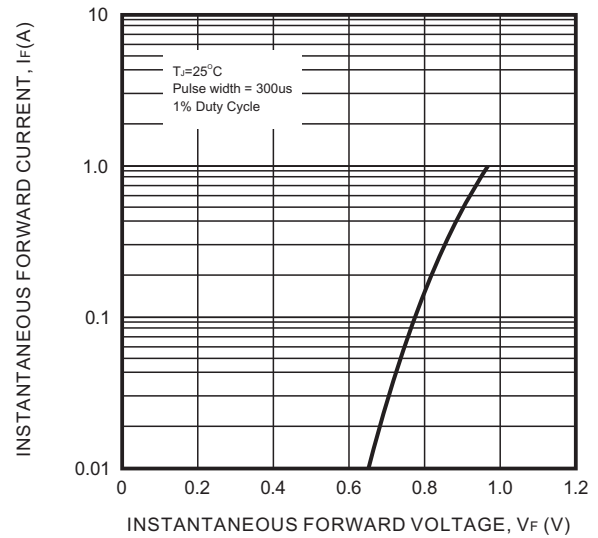


Fig.3 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

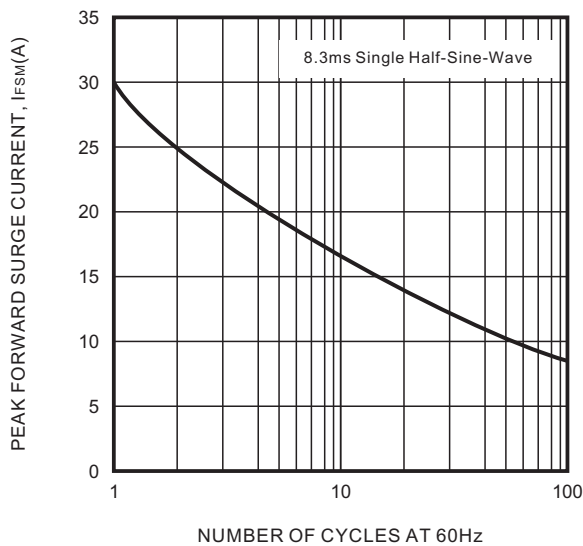
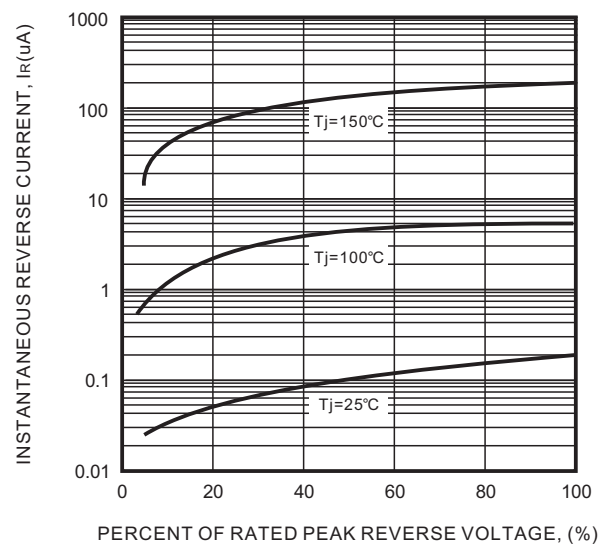


Fig.4 TYPICAL REVERSE CHARACTERISTICS

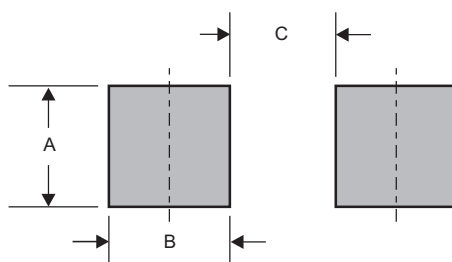


FM4001-AW THRU FM4007-AW**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

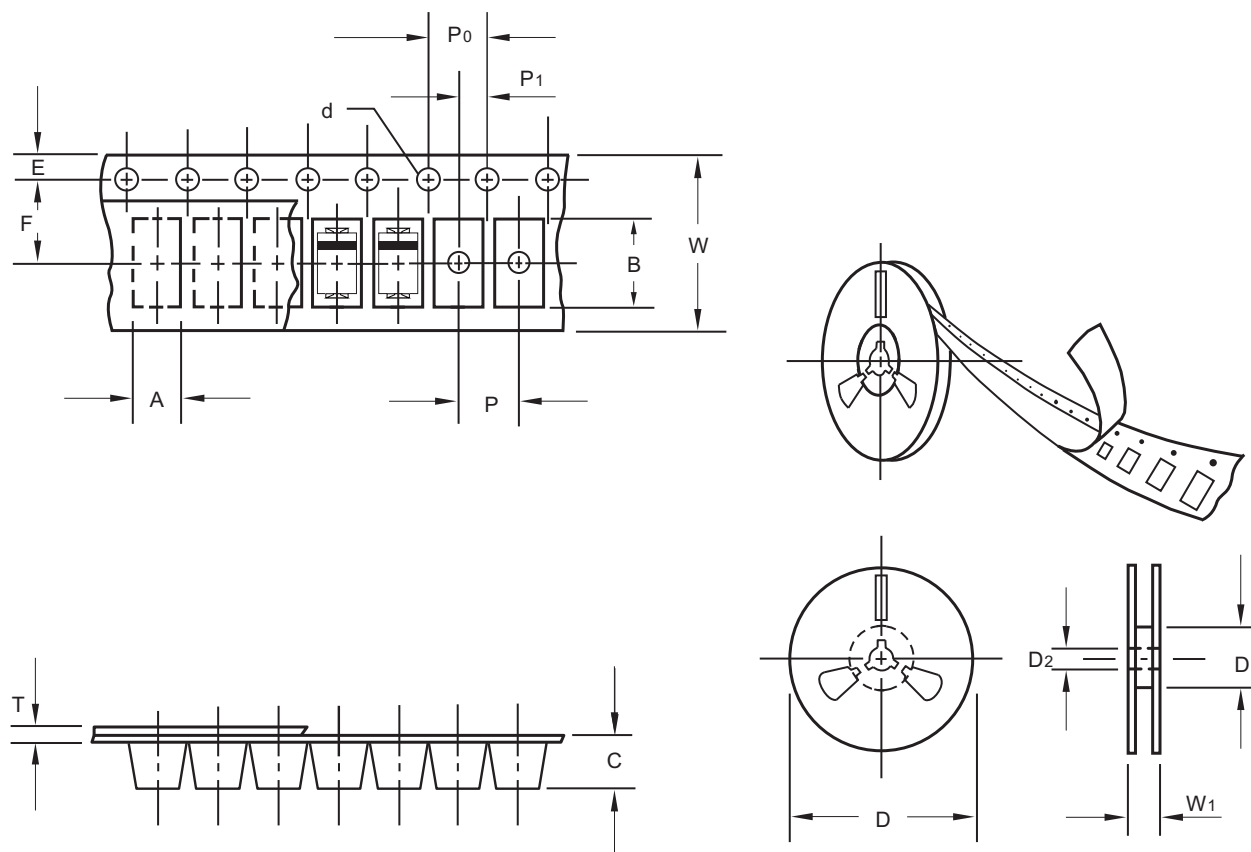
Marking

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

Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
DO-214AC(SMA-W)	0.079 (2.00)	0.068 (1.73)	0.071(1.80)

FM4001-AW THRU FM4007-AW**Packing information**

unit:mm

Item	Symbol	Tolerance	DO-214AC (SMA-W)
Carrier width	A	0.15	2.79
Carrier length	B	0.15	5.33
Carrier depth	C	0.15	2.36
Sprocket hole	d	0.1	1.55
11" Reel outside diameter	D	2.0	310.00
11" Reel inner diameter	D ₁	min	75.00
Feed hole diameter	D ₂	0.5	13.50
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	0.30
Tape width	W	0.15	12.00
Reel width	W ₁	1.5	18.10

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

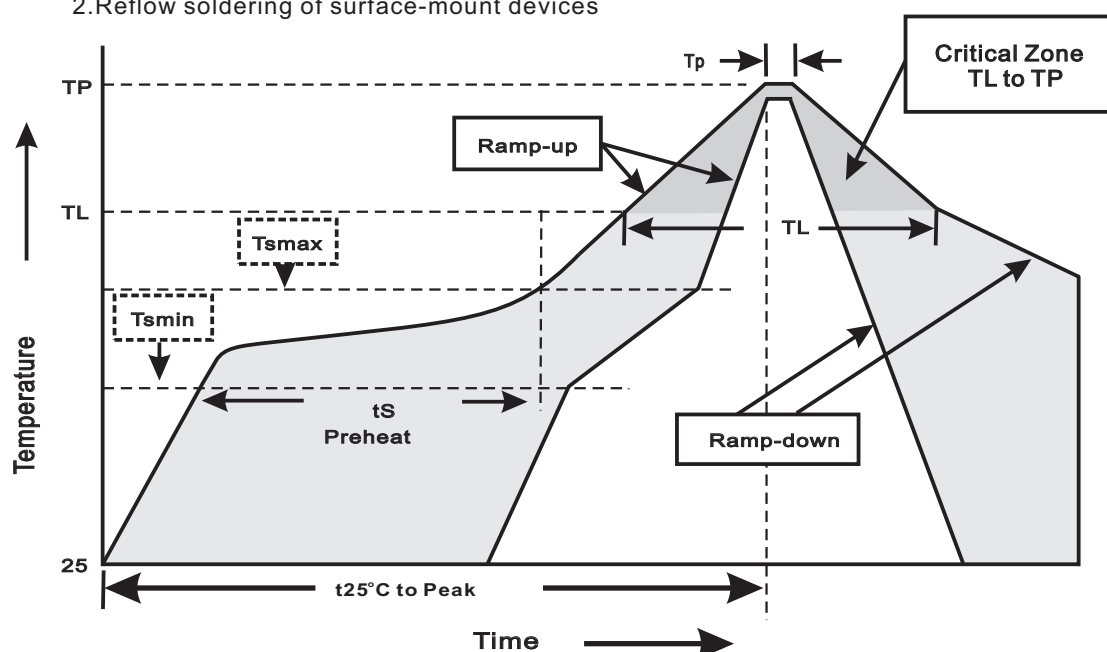
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Reel packing

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)
DO-214AC(SMA-W)	11"	5,000	4.0	10,000	282*282*39	310	350*330*360	80,000

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 _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} 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

FM4001-AW THRU FM4007-AW**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$ immerse body into solder $1/16" \pm 1/32"$	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