

FM120-AF THRU FM1200-AF**List**

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FM120-AF THRU FM1200-AF

1.0A Surface Mount Schottky Barrier Rectifiers 20V~200V

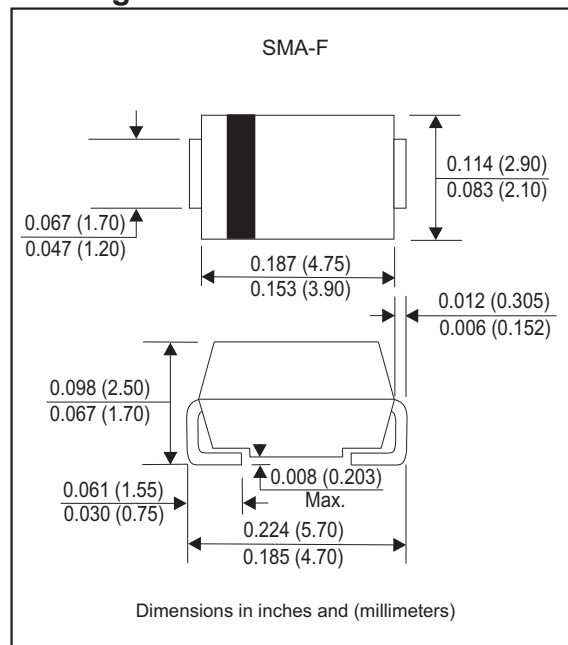
Features

- Low power loss, high efficiency
- High current capability, low forward voltage drop
- Ultra high-speed switching
- Silicon epitaxial planar chip, metal silicon junction
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen free parts, ex. FM120-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	FM120-AF	FM140-AF	FM160-AF	FM1100-AF	FM1150-AF	FM1200-AF	Units
Maximum repetitive peak reverse voltage	VRRM	20	40	60	100	150	200	V
Maximum RMS voltage	VRMS	14	28	42	70	105	140	V
Maximum DC blocking voltage	VDC	20	40	60	100	150	200	V
Maximum average forward rectified current	Io	1.0						A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	IFSM	30						A
Operating junction temperature range	TJ	-55 to +125		-55 to +150				°C
Storage temperature range	TSTG	-55 to +150						°C

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

Parameter	Symbols	FM120-AF	FM140-AF	FM160-AF	FM1100-AF	FM1150-AF	FM1200-AF	Units
Maximum instantaneous forward voltage at $I_F=1.0\text{A}$	V_F	0.50		0.70	0.85	0.90	0.92	V
Maximum DC reverse current $T_J=25^{\circ}\text{C}$ at rated DC blocking voltage $T_J=100^{\circ}\text{C}$	I_R	0.5 20						mA

Thermal characteristics

Parameter	Symbols	FM120-AF	FM140-AF	FM160-AF	FM1100-AF	FM1150-AF	FM1200-AF	Units
Typical thermal resistance junction to ambient	$R_{\theta JA}$	88						$^{\circ}\text{C/W}$
Typical thermal resistance junction to lead (Note 1)	$R_{\theta JL}$	28						$^{\circ}\text{C/W}$

Note1: P.C.B. mounted with 0.2x0.2" (5.0x5.0mm) copper pad areas

Rating and characteristic curves (FM120-AF THRU FM1200-AF)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

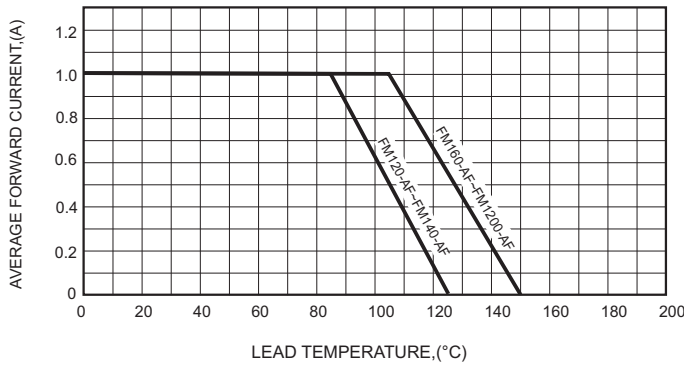


FIG.2-TYPICAL FORWARD CHARACTERISTICS

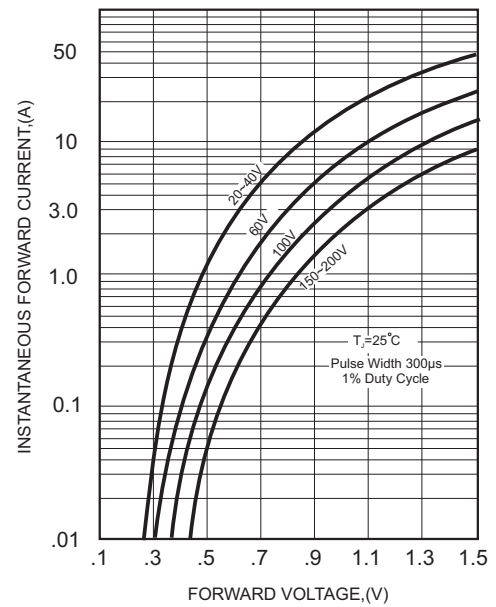


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

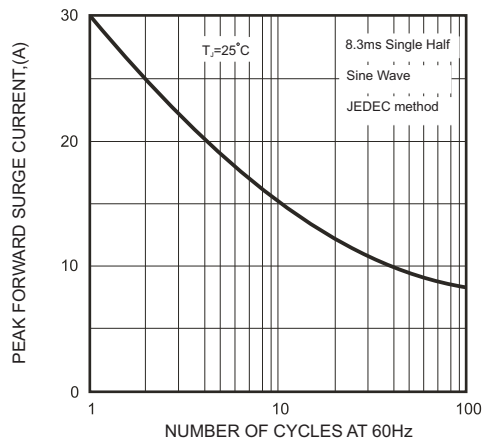


FIG.4-TYPICAL JUNCTION CAPACITANCE

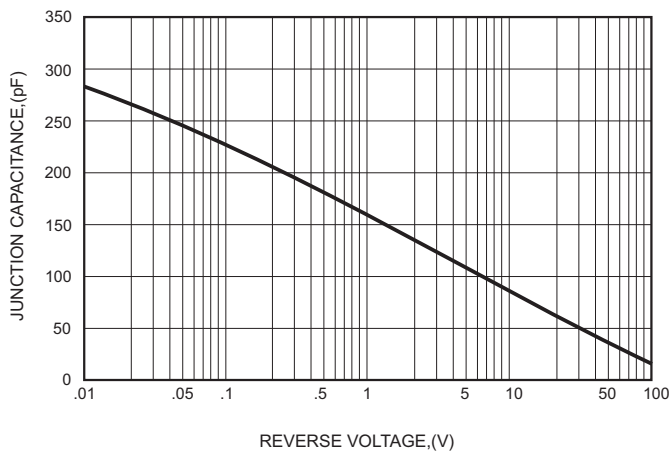
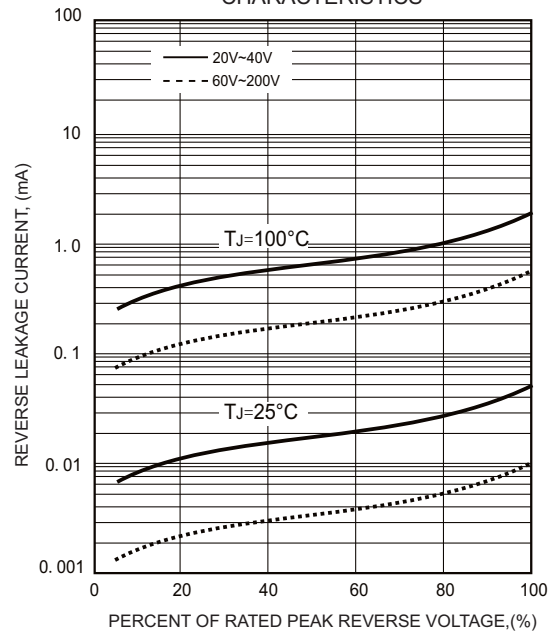


FIG.5 - TYPICAL REVERSE CHARACTERISTICS



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Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
FM120-AF	SK12,SS12
FM140-AF	SK14,SS14
FM160-AF	SK16,SS16
FM1100-AF	SK110,SS110
FM1150-AF	SK115,SS115
FM1200-AF	SK120,SS120

Suggested solder pad layout

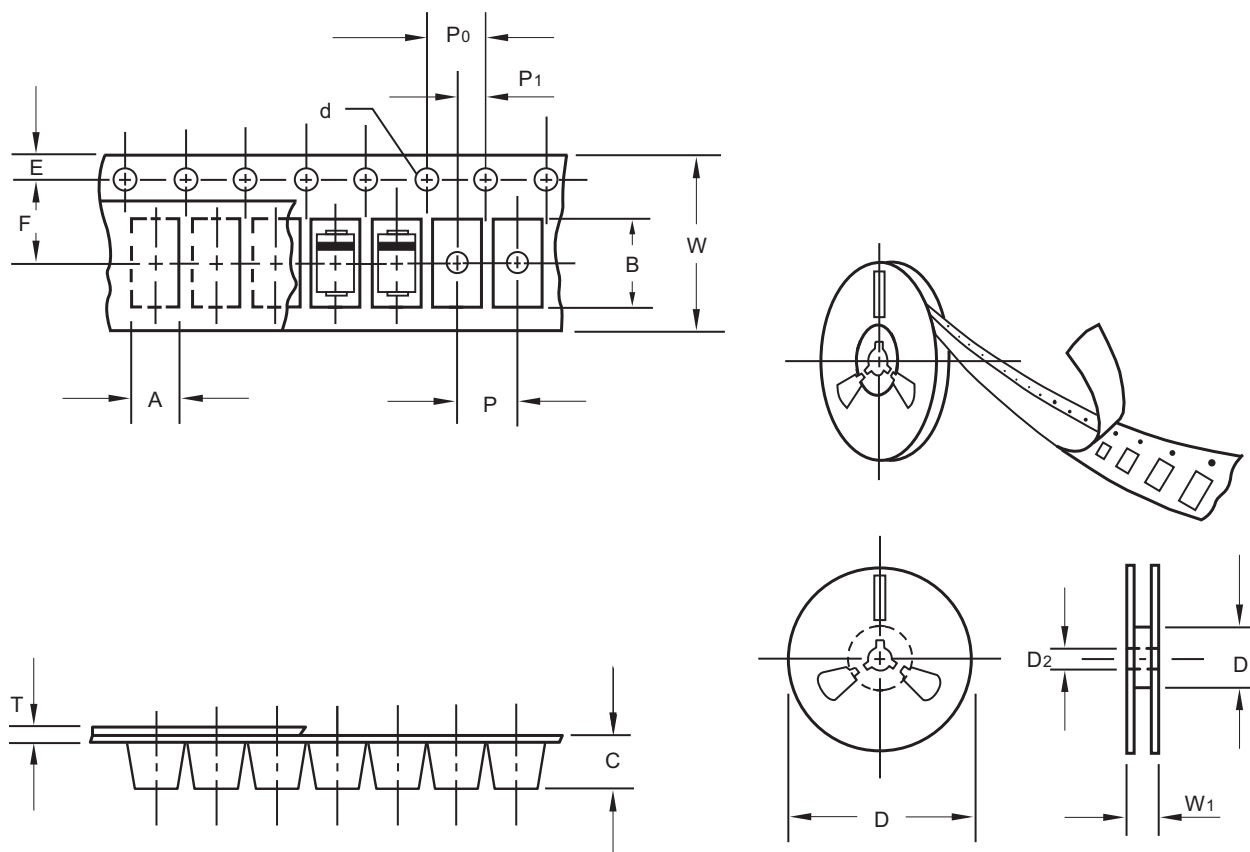


Dimensions in inches and (millimeters)

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.

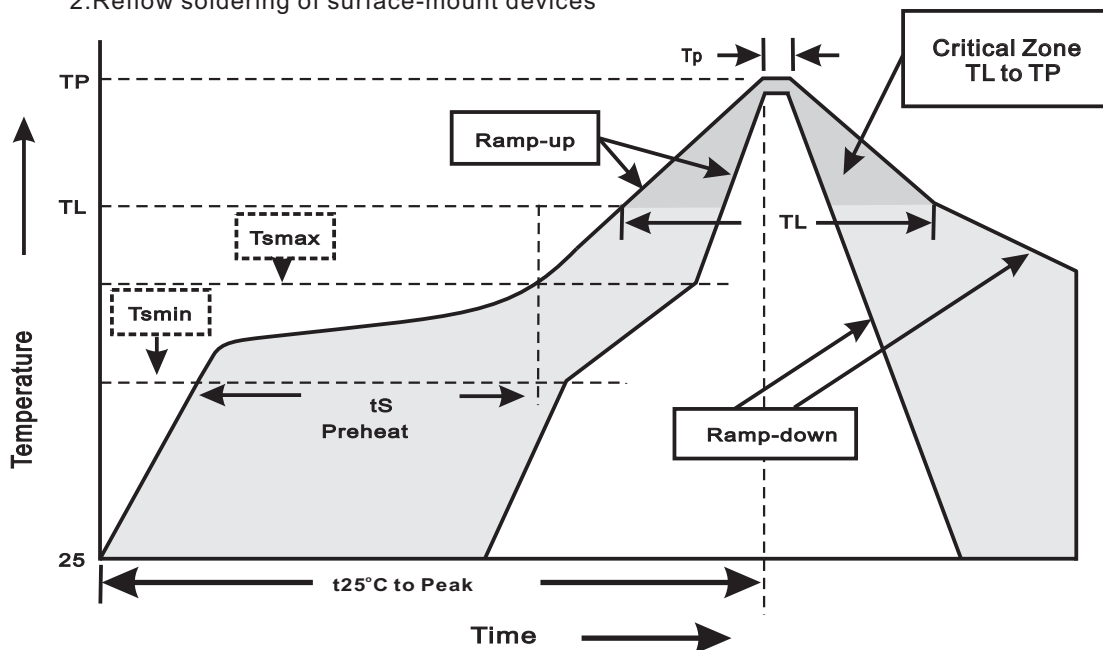
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Reel packing

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)
SMA-F	13"	5,000	4.0	10,000	335*335*38	330	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 _{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

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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