

Formosa MS

FM201-AFL-Q1 Thru FM207-AFL-Q1

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FM201-AFL-Q1 Thru FM207-AFL-Q1

2.0A Surface Mount General Purpose Rectifiers : 50V ~ 1000V

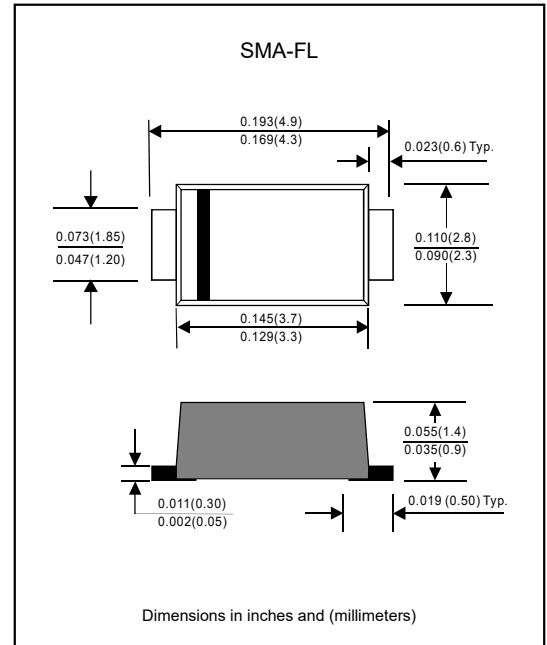
Features

- Glass passivated junction chip.
- Low reverse leakage.
- High forward surge current capability.
- Qualified to AEC-Q101 standards for high reliability..
- High temperature soldering guaranteed 250°C/10 seconds at terminals.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. FM201-AFL-Q1-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 and electrical characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

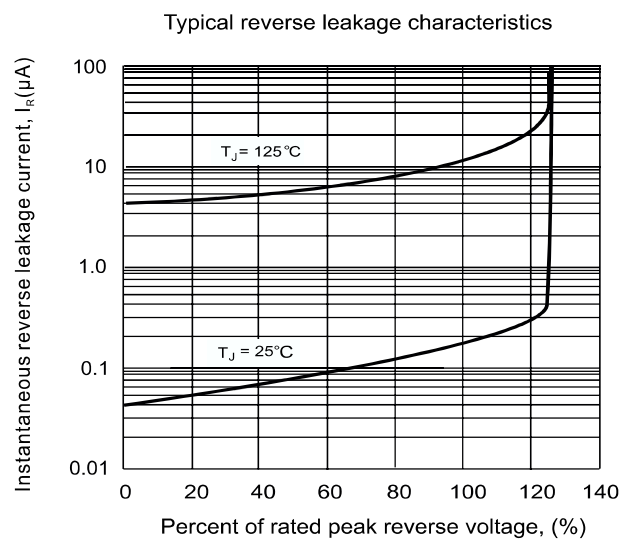
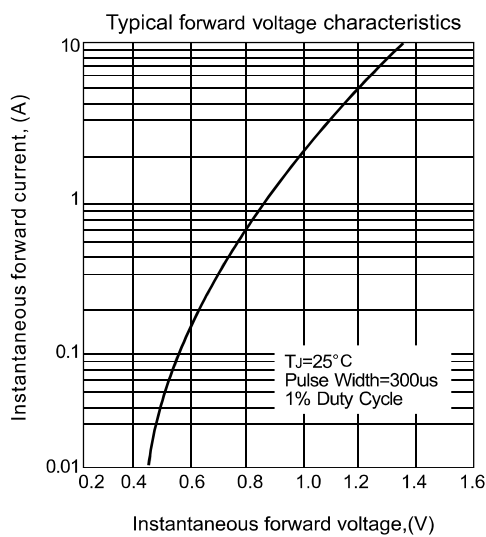
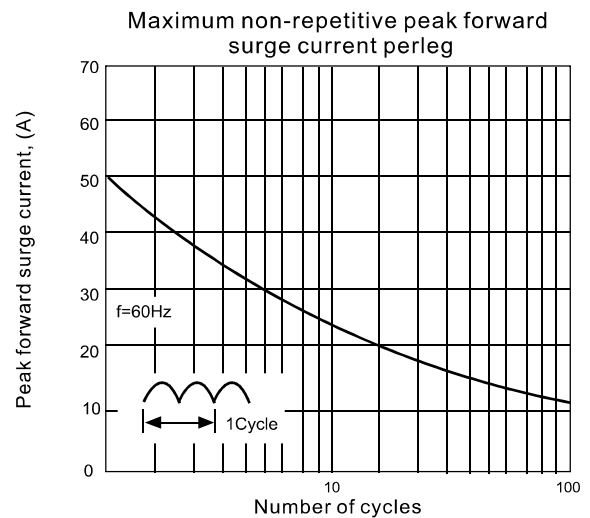
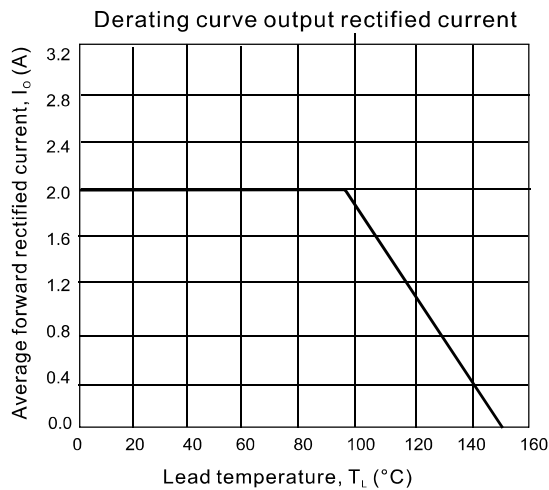
Parameter	Symbol	FM201 -AFL-Q1	FM202 -AFL-Q1	FM203 -AFL-Q1	FM204 -AFL-Q1	FM205 -AFL-Q1	FM206 -AFL-Q1	FM207 -AFL-Q1	Units
Maximum repetitive peak reverse voltage	V _{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V _{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V _{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current at T _L =100°C	I _O	2							A
Peak forward surge current 8.3ms single half sine-wave superimpose on rated load	I _{FSM}	50							A
Maximum instantaneous forward voltage at I _F =2.0A	V _F	1.1							V
Maximum DC reverse current (T _A =25°C)	I _R	5							μA
at rated DC blocking voltage (T _A =125°C)		500							
Typical junction capacitance (Note1)	C _J	30							pF
Operating junction temperature range	T _J	+150							°C
Storage temperature range	T _{STG}	-55 to +150							°C
Typical thermal resistance , junction to ambient	R _{θJA}	70							°C/W

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

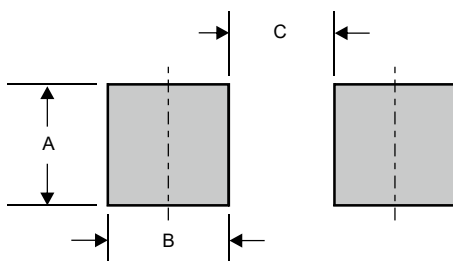


FM201-AFL-Q1 Thru FM207-AFL-Q1**Pinning information**

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
FM201-AFL-Q1	S2AFV
FM202-AFL-Q1	S2BFV
FM203-AFL-Q1	S2DFV
FM204-AFL-Q1	S2GFV
FM205-AFL-Q1	S2JFV
FM206-AFL-Q1	S2KFV
FM207-AFL-Q1	S2MFV

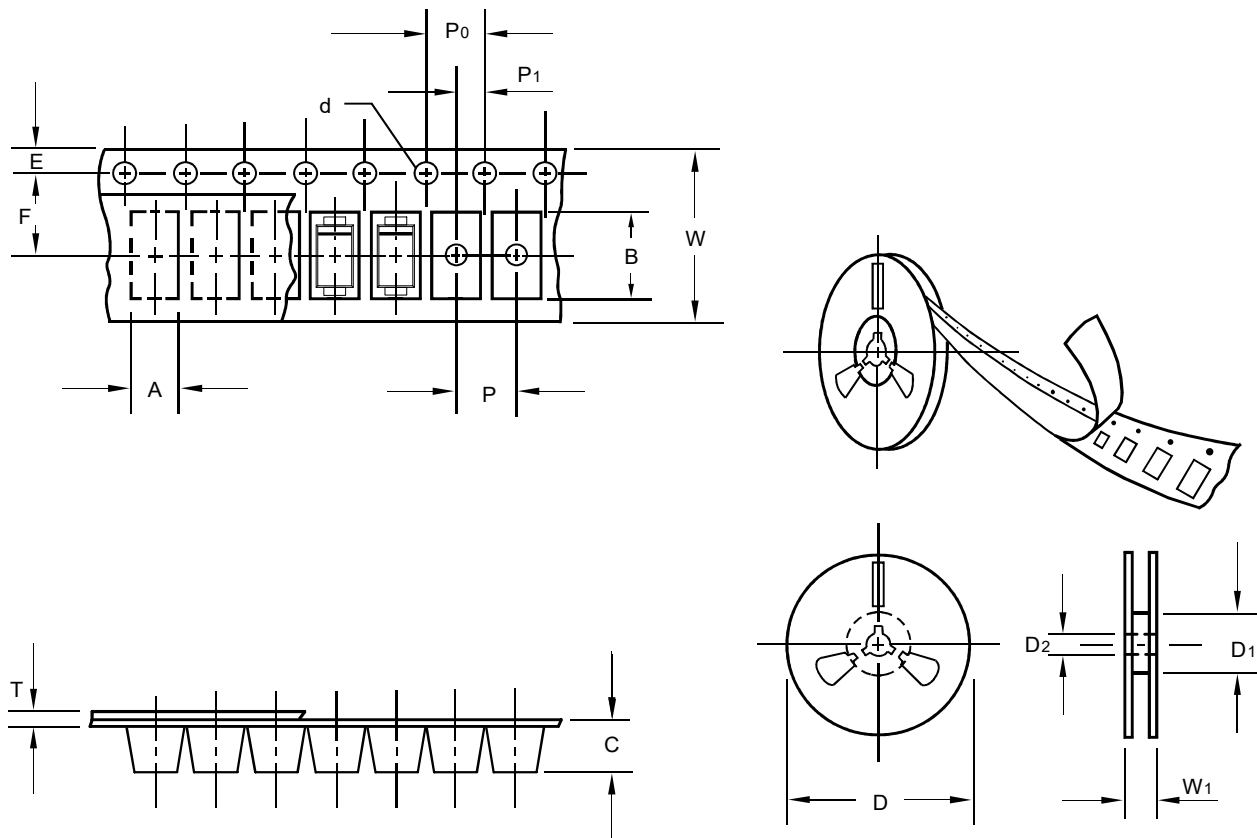
Suggested solder pad layout

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	12.00
Reel width	W ₁	1.0	17.60

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

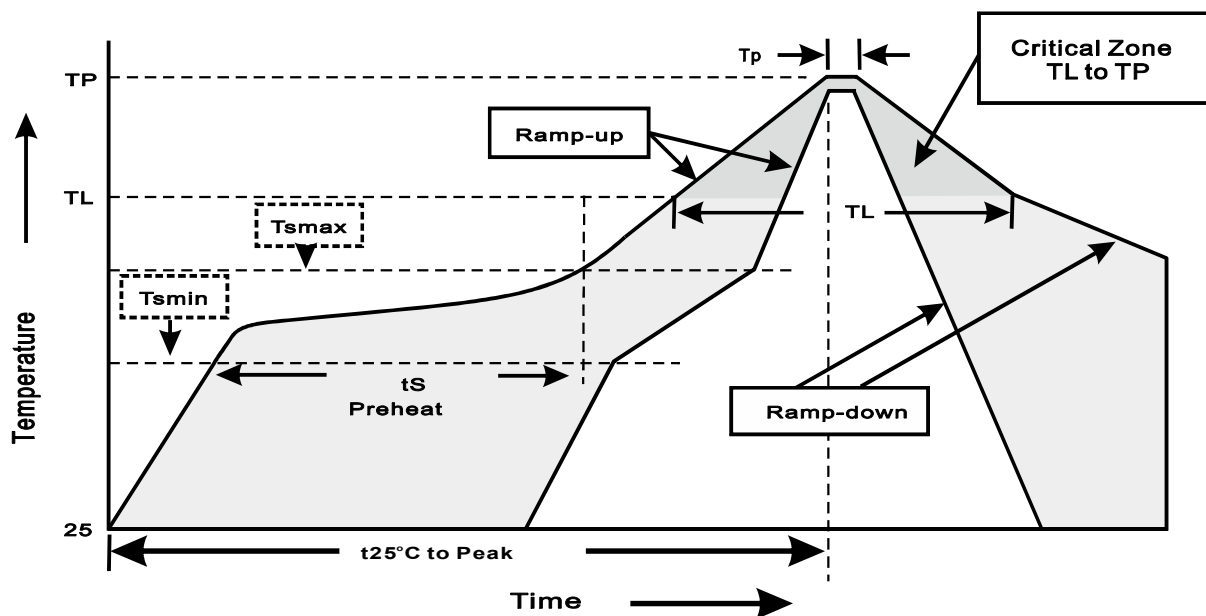
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Reel packing

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-FL	7"	3,000	4.0	30,000	183*155*183	178	382*356*392	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_{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

FM201-AFL-Q1 Thru FM207-AFL-Q1**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$ immerse body into solder $1/16''\pm1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm5^{\circ}\text{C}$ 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 150°C for 1000 hrs.	MIL-STD-750D METHOD-1031