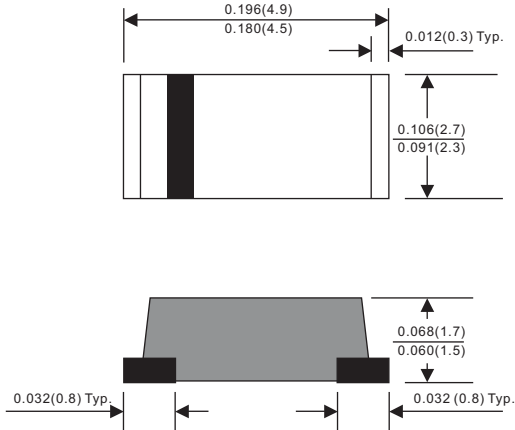




FM120 THRU FM1200

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

SMA-F



Dimensions in inches and (millimeters)

Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance.
- Low profile surface mounted application in order to optimize board space.
- Low power loss, high efficiency.
- High current capability, low forward voltage drop.
- High surge capability.
- Guardring for overvoltage protection.
- Ultra high-speed switching.
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free parts, ex. FM120-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 0.05 gram

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

PARAMETER	CONDITIONS	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward rectified current	See Fig.1	I_o			1.0	A
Forward surge current	8.3ms single half sine-wave superimposed on rate load (JEDEC methode)	I_{FSM}			30	A
Reverse current	$V_R = V_{RRM} T_J = 25^\circ\text{C}$	I_R			0.5	mA
	$V_R = V_{RRM} T_J = 100^\circ\text{C}$				10	
Diode junction capacitance	f=1MHz and applied 4V DC reverse voltage	C_J		120		pF
Storage temperature		T_{STG}	-65		+175	$^\circ\text{C}$

SYMBOLS	V_{RRM}^{*1} (V)	V_{RMS}^{*2} (V)	V_R^{*3} (V)	V_F^{*4} (V)	Operating temperature T_J , ($^\circ\text{C}$)
FM120	20	14	20	0.50	-55 to +125
FM130	30	21	30		
FM140	40	28	40		
FM150	50	35	50	0.70	-55 to +150
FM160	60	42	60		
FM180	80	56	80	0.85	
FM1100	100	70	100		
FM1150	150	105	150	0.90	
FM1200	200	140	200	0.92	

*1 Repetitive peak reverse voltage

*2 RMS voltage

*3 Continuous reverse voltage

*4 Maximum forward voltage@ $I_F=1.0\text{A}$

Rating and characteristic curves (FM120 THRU FM1200)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

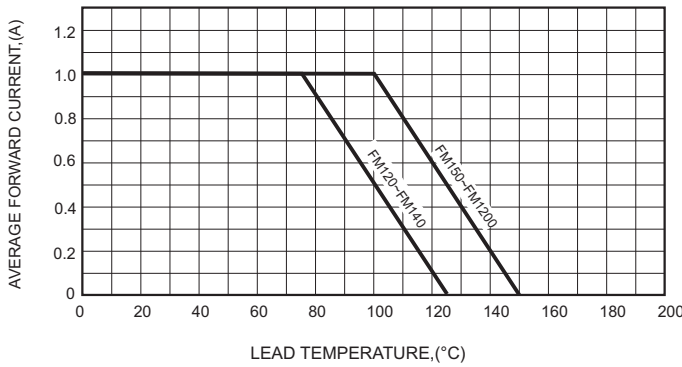


FIG.2-TYPICAL FORWARD CHARACTERISTICS

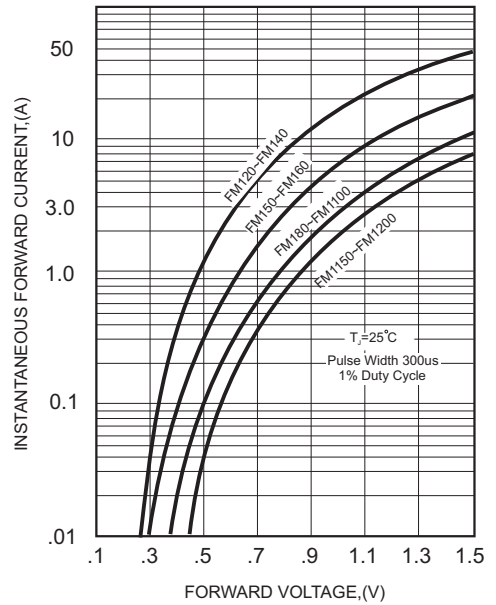


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

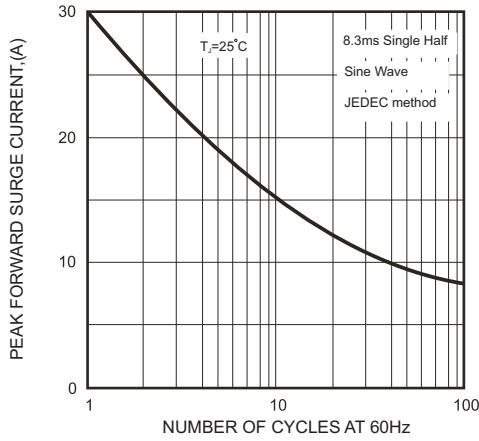


FIG.4-TYPICAL JUNCTION CAPACITANCE

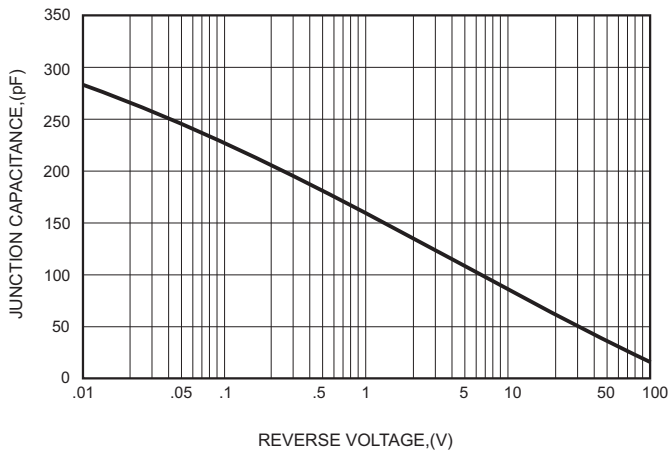
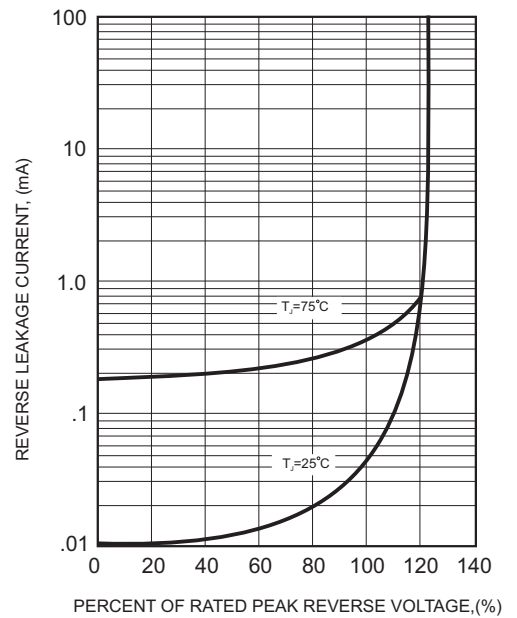
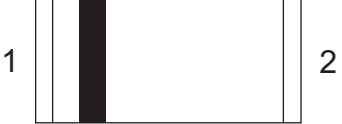



FIG.5 - TYPICAL REVERSE CHARACTERISTICS



FM120 THRU FM1200

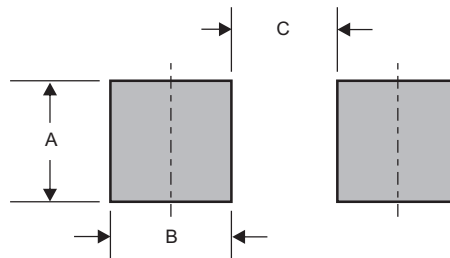
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
FM120	SS12
FM130	SS13
FM140	SS14
FM150	SS15
FM160	SS16
FM180	SS18
FM1100	S110
FM1150	S115
FM1200	S120

Suggested solder pad layout



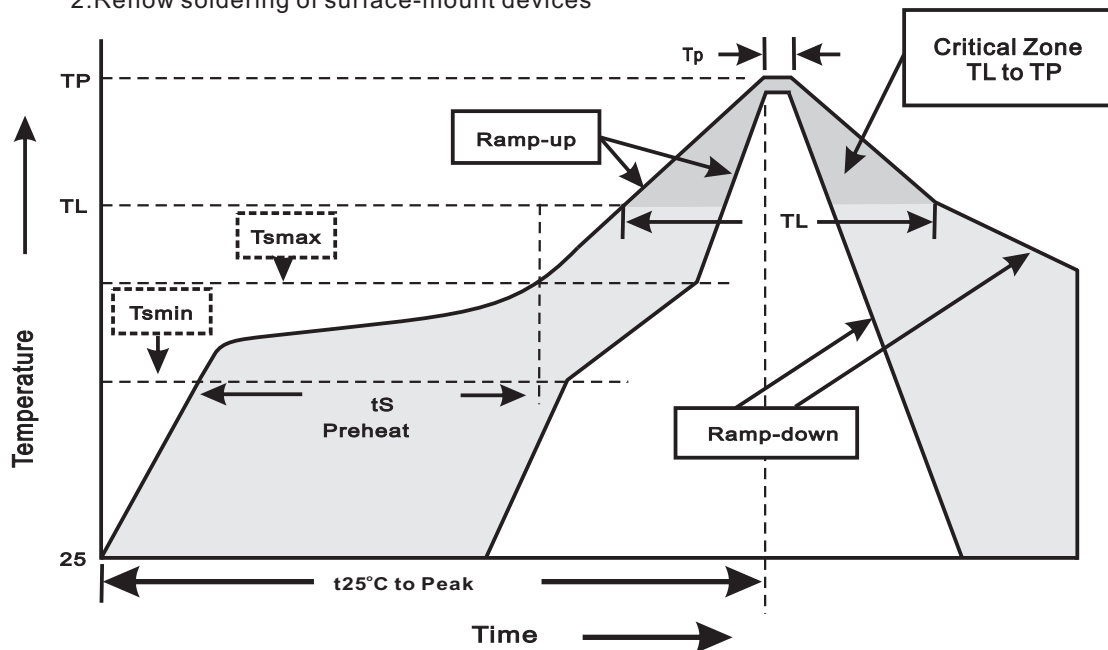
Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA	0.110 (2.80)	0.063 (1.60)	0.087 (2.20)

FM120 THRU FM1200

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

FM120 THRU FM1200

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm 5^{\circ}\text{C}$ for 10 ± 2 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 $T_J=125^{\circ}\text{C}$ 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. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	8.3ms single half sine-wave superimposed on rated load, one surge.	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
11. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031