

Formosa MS

FM5H01-CF-Q1 Thru FM5H07-CF-Q1

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FM5H01-CF-Q1 Thru FM5H07-CF-Q1

5.0A General Purpose Rectifiers : 50V~1000V

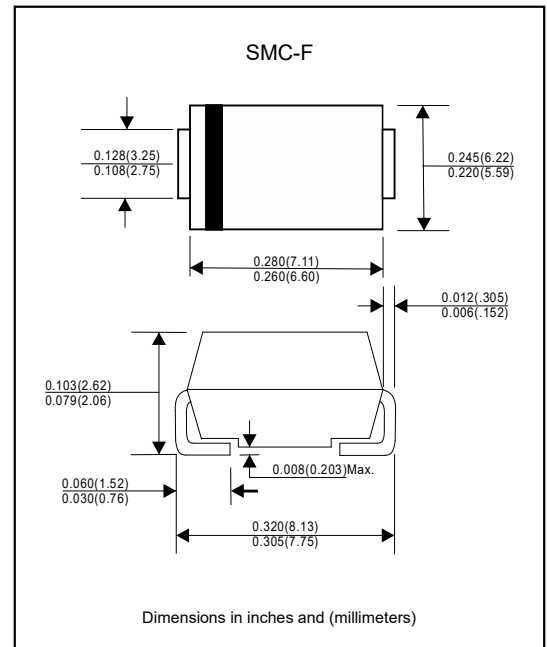
Features

- Glass passivated junction chip.
- Ideal for printed circuit board.
- Low reverse leakage.
- High forward surge current capability.
- Qualified to AEC-Q101 standards for high reliability.
- Lead free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. FM5H01-CF-Q1-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, DO-214AB / SMC-F.
- 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	Symbols	FM5H01 -CF-Q1	FM5H02 -CF-Q1	FM5H03 -CF-Q1	FM5H04 -CF-Q1	FM5H05 -CF-Q1	FM5H06 -CF-Q1	FM5H07 -CF-Q1	Unit
Repetitive peak reverse voltage	V _{RRM}	50	100	200	400	600	800	1000	V
RMS voltage	V _{RMS}	35	70	140	280	420	560	700	V
DC blocking voltage	V _{DC}	50	100	200	400	600	800	1000	V
Average forward rectified current at T _L =100°C	I _(AV)	5							A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I _{FSM}	150							A
Instantaneous forward voltage at 5.0A	V _F	1							V
DC reverse current (T _A =25°C)	I _R	2							μA
at rated DC blocking voltage (T _A =125°C)		200							
Typical junction capacitance (Note1)	C _J	50							pF
Typical thermal resistance, junction to ambient	R _{θJA}	47							°C/W
Operating junction temperature	T _J	+175							°C
Storage temperature range	T _{STG}	-55 to +175							°C

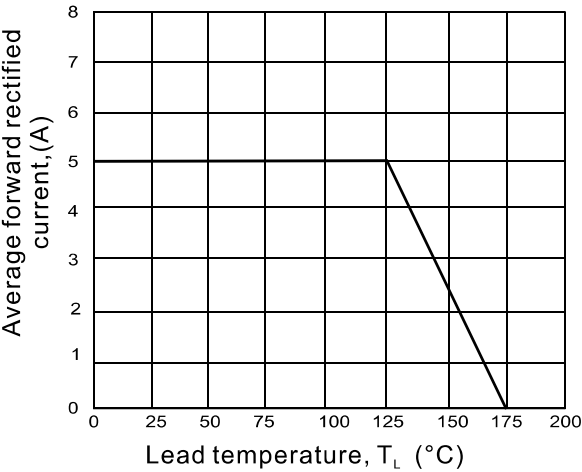
Note: 1. Measured at 1MHz and applied reverse voltage of 4.0V D.C.

2. Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

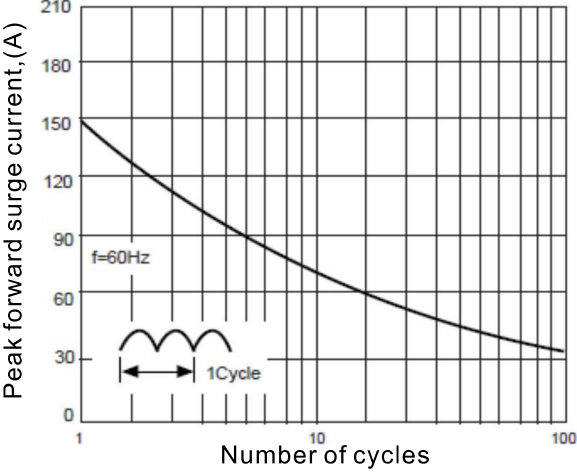
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Rating and characteristic curves

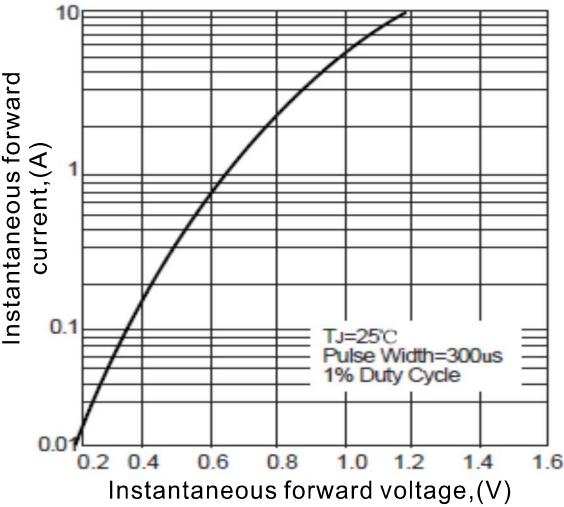
Derating curve output rectified current



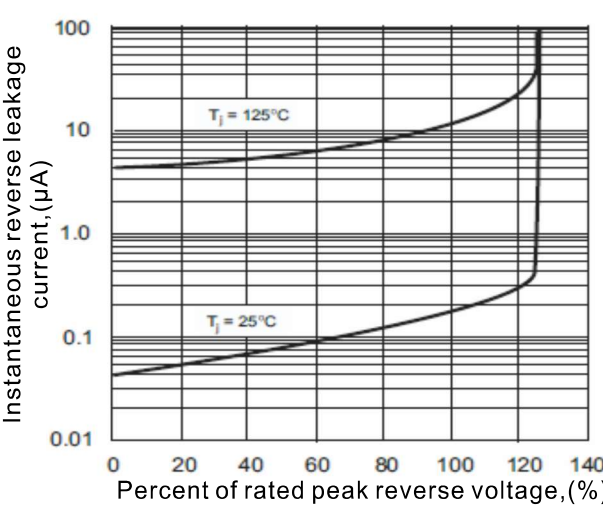
Maximum non-repetitive peak forward surge current per leg



Typical forward voltage characteristics



Typical reverse leakage characteristics



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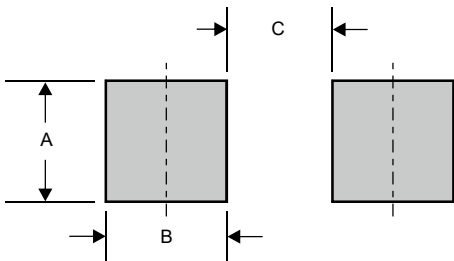
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
FM5H01-CF-Q1	GS5ACV
FM5H02-CF-Q1	GS5BCV
FM5H03-CF-Q1	GS5DCV
FM5H04-CF-Q1	GS5GCV
FM5H05-CF-Q1	GS5JCV
FM5H06-CF-Q1	GS5KCV
FM5H07-CF-Q1	GS5MCV

Suggested solder pad layout

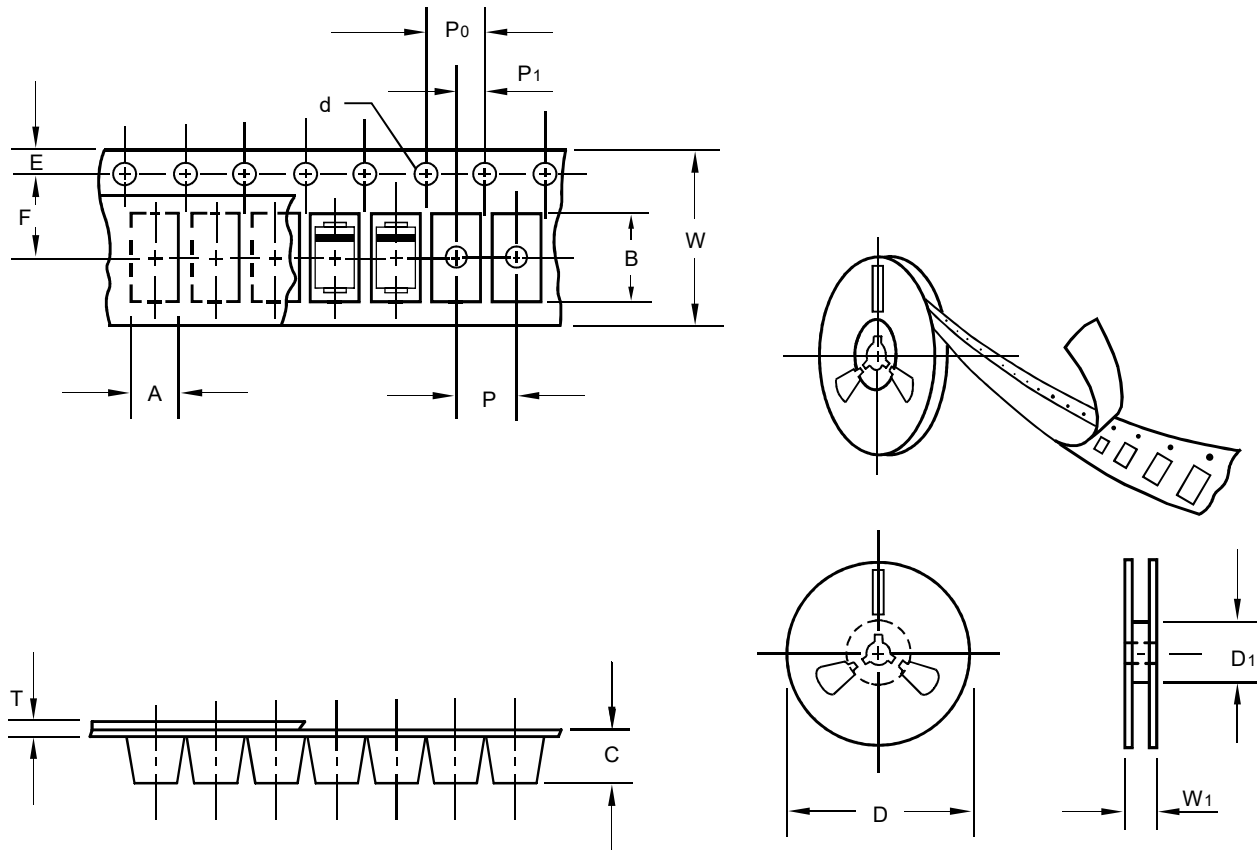


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMC-F	0.132 (3.30)	0.100 (2.50)	0.176(4.40)

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Packing information



unit:mm

Item	Symbol	Tolerance	SMC-F
Carrier width	A	0.2	6.05
Carrier length	B	0.2	8.31
Carrier depth	C	0.1	2.54
Sprocket hole	d	0.1	1.55
13" Reel outside diameter	D	2.0	330.00
13" Reel inner diameter	D ₁	min	50.00
7" Reel outside diameter	D	-	-
7" Reel inner diameter	D ₁	-	-
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	7.50
Punch hole pitch	P	0.1	8.00
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	16.00
Reel width	W ₁	1.0	18.00

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

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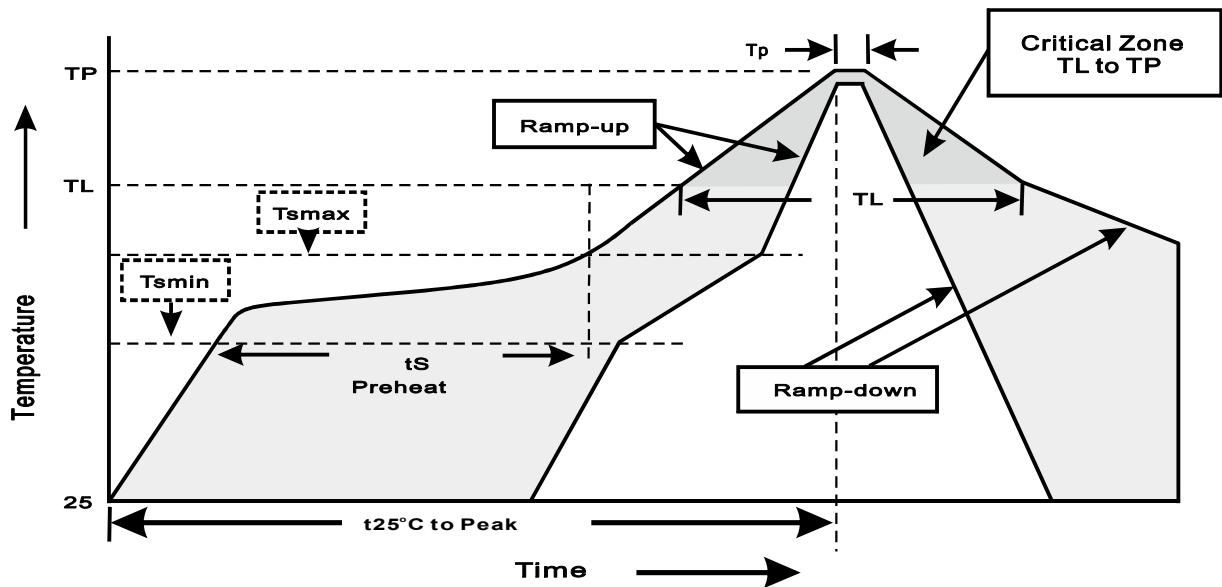
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Reel packing

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)
SMC-F	13"	3,000	8.0	6,000	338*338*38	330	365*365*360	48,000

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)	$<3^{\circ}\text{C}/\text{sec}$
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	$<3^{\circ}\text{C}/\text{sec}$
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	$<6^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$

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High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25°C, Rated Current (Io=Io max.) Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (TJ=TJ max.) Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta=150°C Test Duration:1000hrs	JESD22 A-103
5. Temperature Cycle	-55°C(15min) to 150°C(15min) Test Cycles:1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25°C, On/Io=Io max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5°C for 5sec	J-STD-002
9. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101