FFM501-CF Thru FFM507-CF

List

FFM501-CF Thru FFM507-CF

5.0A Fast Recovery Rectifiers
Surface Mount : 50-1000V

Features

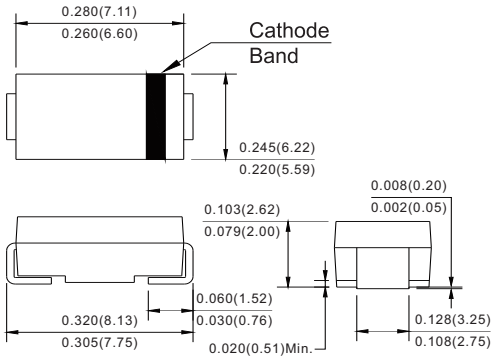
- Fast switching for high efficiency.
- Low leakage current.
- High forward surge capability.
- Glass passivated chip junction
- Solder dip 260℃, 40s.
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC.
- Suffix "-H" indicates Halogen free parts, ex. FFM501-CF-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AB / SMC-F
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Polarity : Color band denotes cathode end.
- Mounting Position : Any
- Weight : Approximated 0.23 gram

Package outline

SMC-F



Dimensions in inches and (millimeters)

Maximum ratings and electrical characteristics

Rating at 25℃ ambnet temperature unless otherwise specified.
single phase half-wave 60Hz, resistive of inductive load, for capacitive load current derate by 20%.

Parameter	Symbol	FFM 501-CF	FFM 502-CF	FFM 503-CF	FFM 504-CF	FFM 505-CF	FFM 506-CF	FFM 507-CF	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	$I_{(AV)}$	5.0							A
Peak forward surge current 8.3ms single half sine wave superimposed on rated load (JEDEC Method)	I_{FSM}	100							A
Maximum instantaneous forward voltage at 5.0A	V_F	1.3							V
Maximum DC reverse current T_A=25℃	I_R	5.0							μA
At rated DC blocking voltage T_A=100℃		50							
Maximum reverse recovery time (Note 1)	t_{rr}	150				250	500		ns
Typical junction capacitance (Note 2)	C_J	60							pF
Typical thermal resistance (Note 3)	$R_{\theta JA}$	50							℃/W
Operating junction temperature range	T_J	+150							℃
Storage temperature range	T_{STG}	-65 to +150							℃

Note :

1. Reverse recovery condition I_F=0.5A, I_R=1.0A, I_{rr}=0.25A.
2. Measured at 1MHz and applied reverse voltage of 4.0V DC.
3. Thermal resistance from junction to ambient at 0.375" (9.5mm) lead length, P.C.B mounted.

Rating and characteristic curves (FFM501-CF Thru FFM507-CF)

FIG.1-FORWARD CURRENT DERATING CURVE

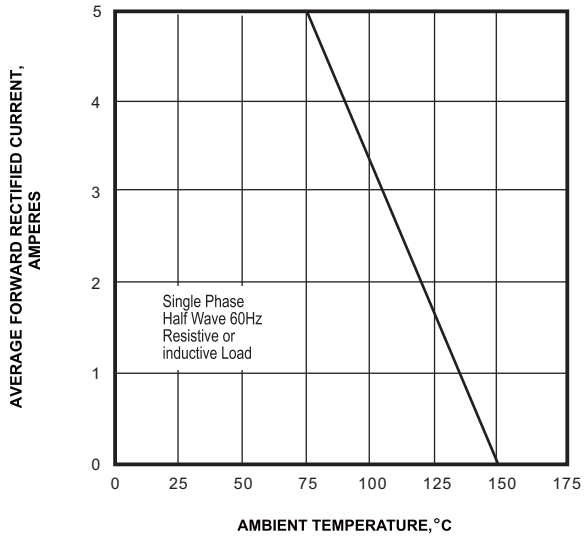


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

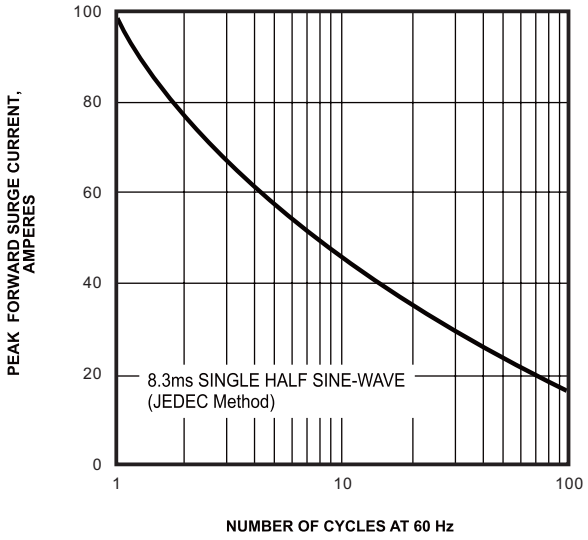


FIG.3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

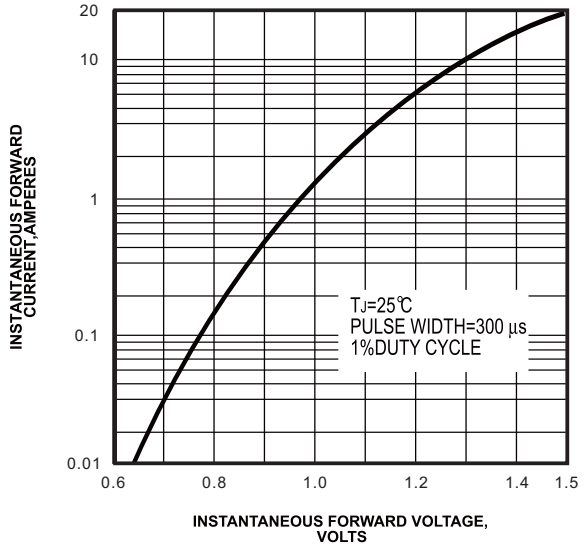
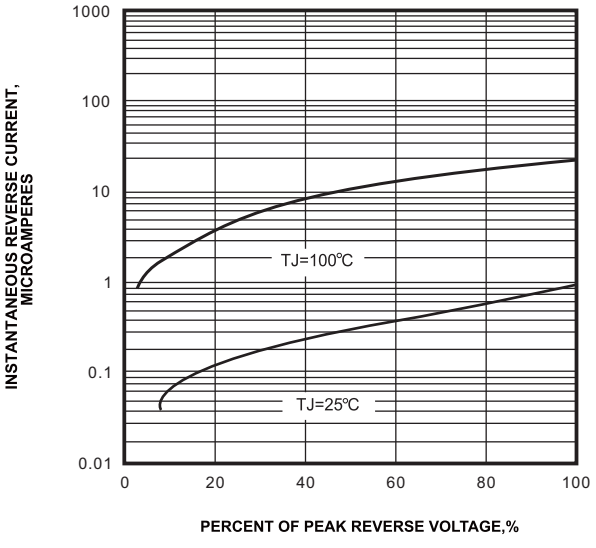


FIG.4-TYPICAL REVERSE CHARACTERISTICS



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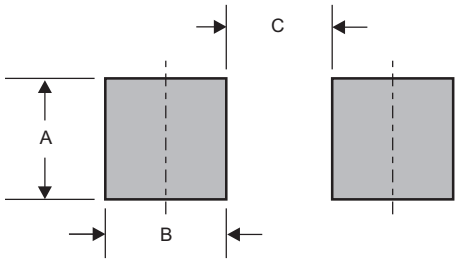
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type Number	Marking Code
FFM501-CF	RS5A
FFM502-CF	RS5B
FFM503-CF	RS5D
FFM504-CF	RS5G
FFM505-CF	RS5J
FFM506-CF	RS5K
FFM507-CF	RS5M

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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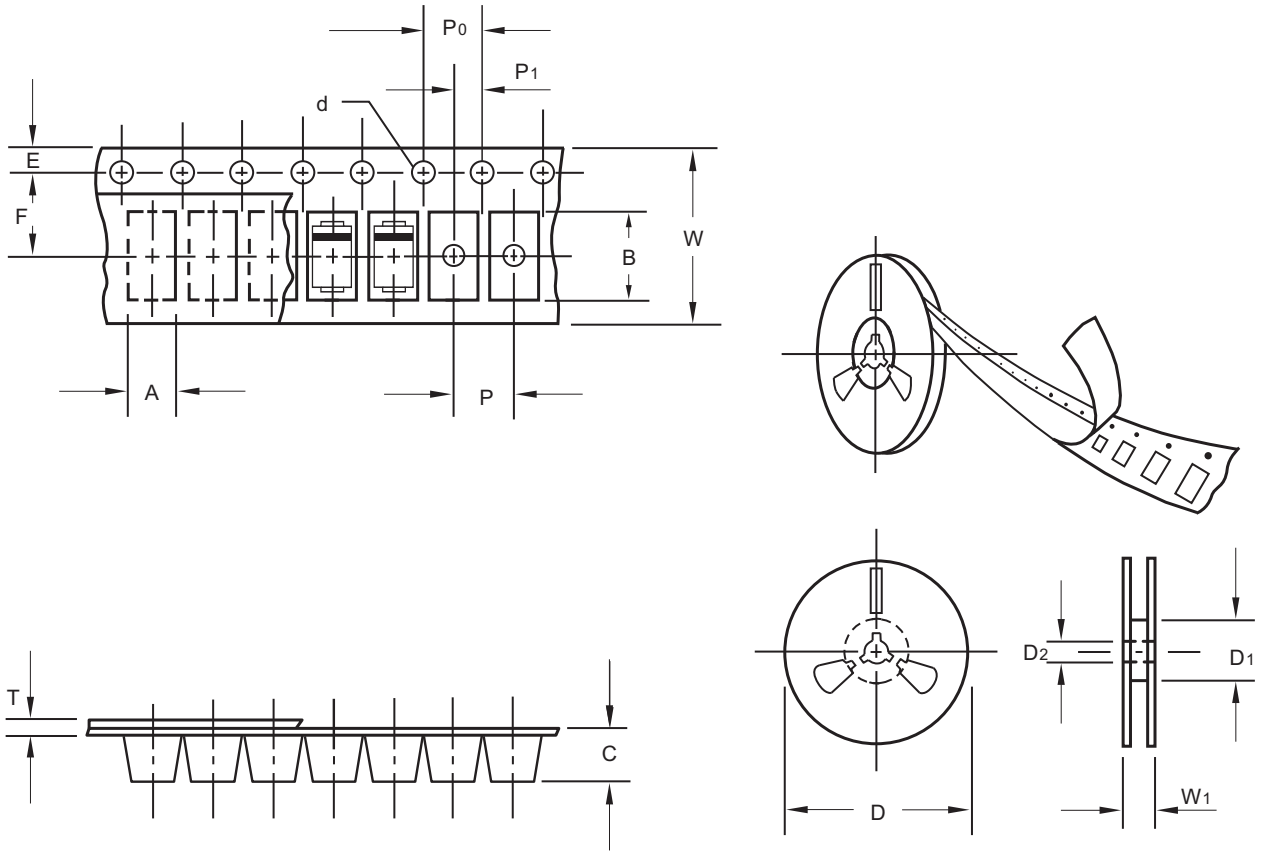
Packing information



unit:mm

Item	Symbol	Tolerance	SMC-F
Carrier width	A	0.15	6.00
Carrier length	B	0.2	8.25
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	D_1	min	50.00
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	0.5	13.00
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	0.23
Tape width	W	0.3	16.00
Reel width	W_1	1.0	18.00

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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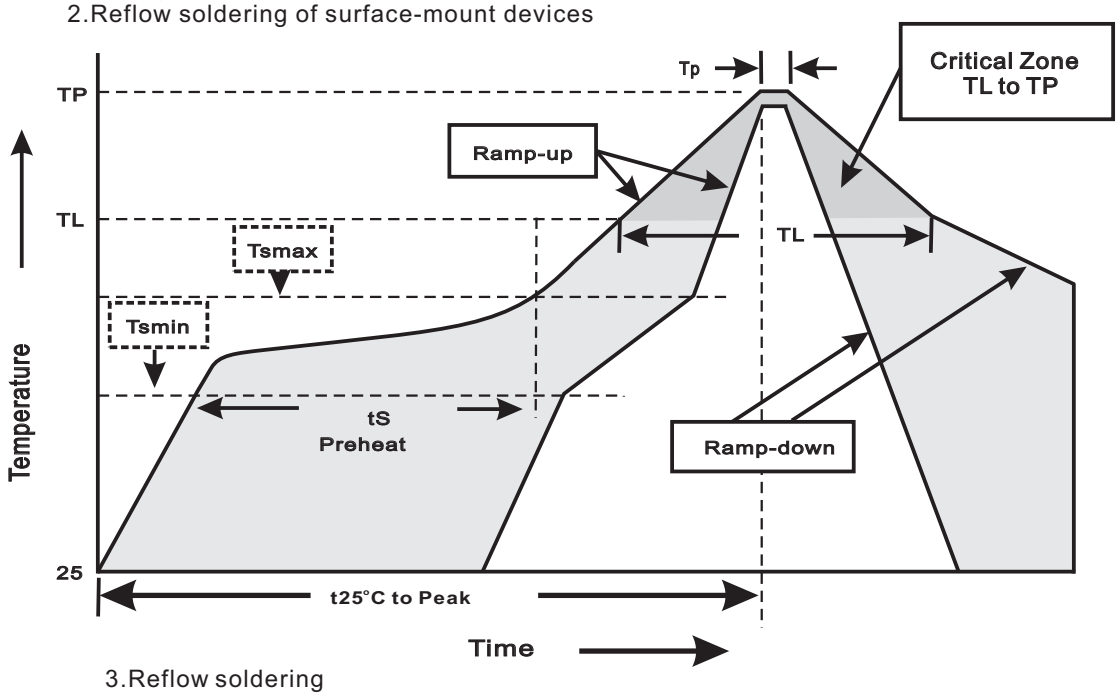
Reel packing

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)	APPROX. GROSS WEIGHT (kg)
SMC-F	13"	3,000	8.0	6,000	338*338*38	330	365*365*360	48,000	18.8

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=125°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°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°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