FFM201-BF Thru FFM207-BF

List

FFM201-BF Thru FFM207-BF

2.0A Surface Mount Fast Recovery Rectifiers : 50V-1000V

Features

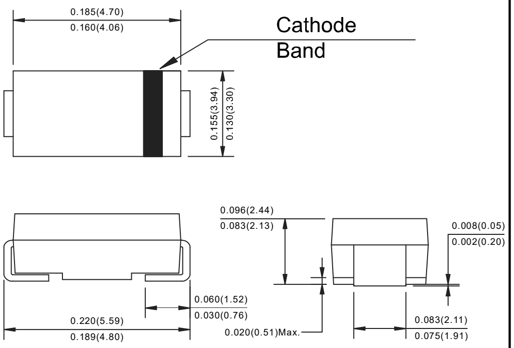
- Fast switching for high efficiency.
- Low leakage current.
- High forward surge capability.
- Solder dip 260℃/40sec.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. FFM201-BF-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, DO-214AA / SMB-F.
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026.
- Polarity : Indicated by cathode band.
- Mounting Position : Any.
- Weight : Approximated 0.098gram.

Package outline

SMB-F



Dimensions in inches and (millimeters)

Maximum ratings and electrical characteristics (At T_A=25°C unless otherwise noted)

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 201-BF	FFM 202-BF	FFM 203-BF	FFM 204-BF	FFM 205-BF	FFM 206-BF	FFM 207-BF	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 at T_A=90℃	$I_{(AV)}$	2.0							A
Peak forward surge current 8.3ms single half sine wave superimposed on rated load (JEDEC Method)	I_{FSM}	50.0							A
Maximum instantaneous forward voltage at 2.0A	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	50.0							pF
Typical thermal resistance (Note 3)	$R_{\theta JA}$	55.0							℃/W
Operating junction temperature	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 D.C.
3.Thermal resistance from junction to ambient at 0.375"(9.5mm)lead length, P.C.B. mounted.

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Rating and characteristic curves

FIG. 1- FORWARD CURRENT DERATING CURVE

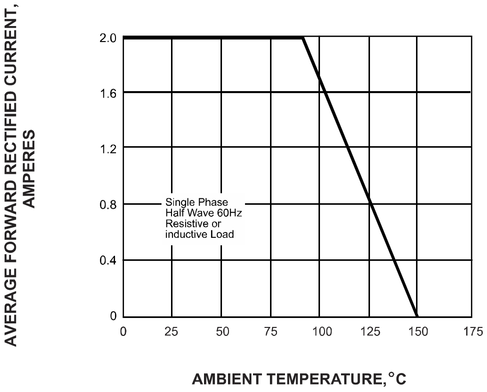


FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

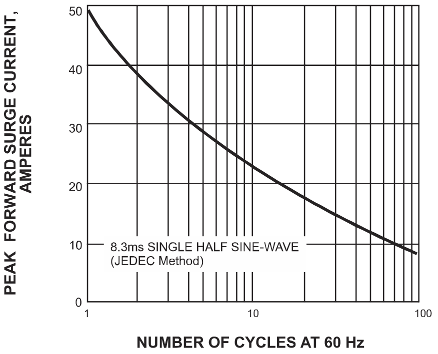


FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

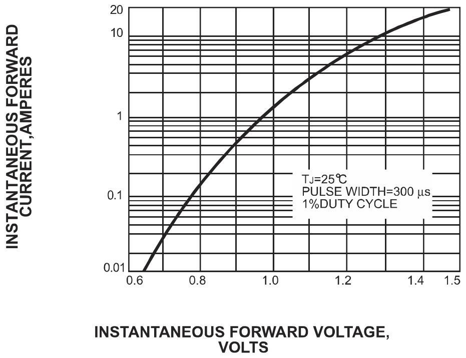
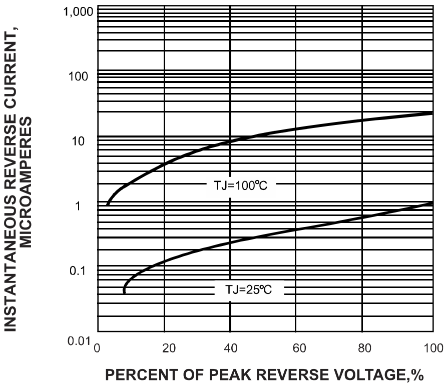


FIG. 4-TYPICAL REVERSE CHARACTERISTICS



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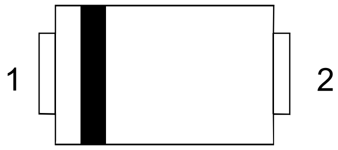
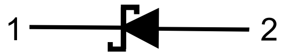
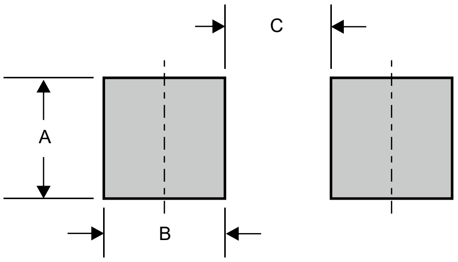
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
FFM201-BF	RS2A
FFM202-BF	RS2B
FFM203-BF	RS2D
FFM204-BF	RS2G
FFM205-BF	RS2J
FFM206-BF	RS2K
FFM207-BF	RS2M

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMB-F	0.091 (2.30)	0.098 (2.50)	0.071(1.80)

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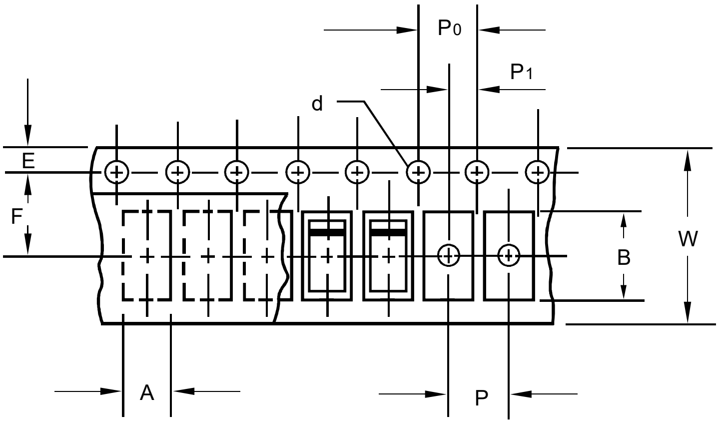
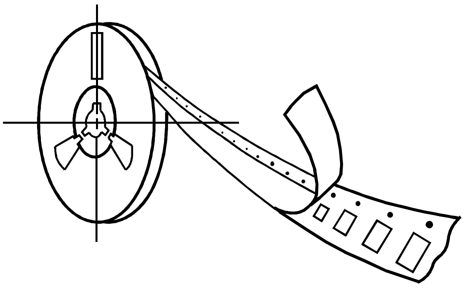
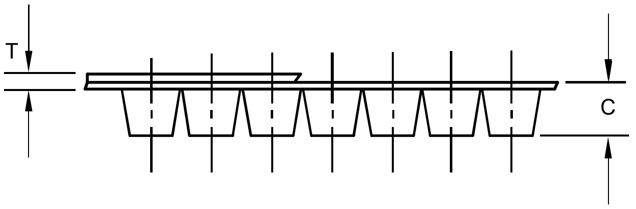
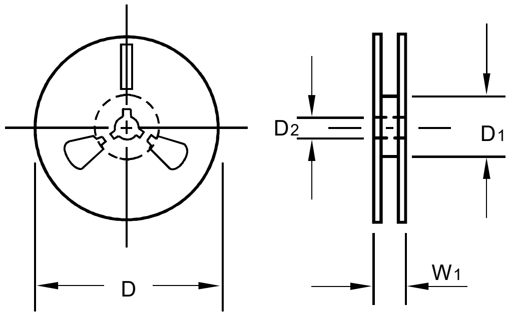
Packing information









unit:mm

Item	Symbol	Tolerance	SMB-F
Carrier width	A	0.1	5.25
Carrier length	B	0.1	5.72
Carrier depth	C	0.1	2.50
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
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	8.00
Sprocket hole pitch	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.015	0.40
Tape width	W	0.3	12.00
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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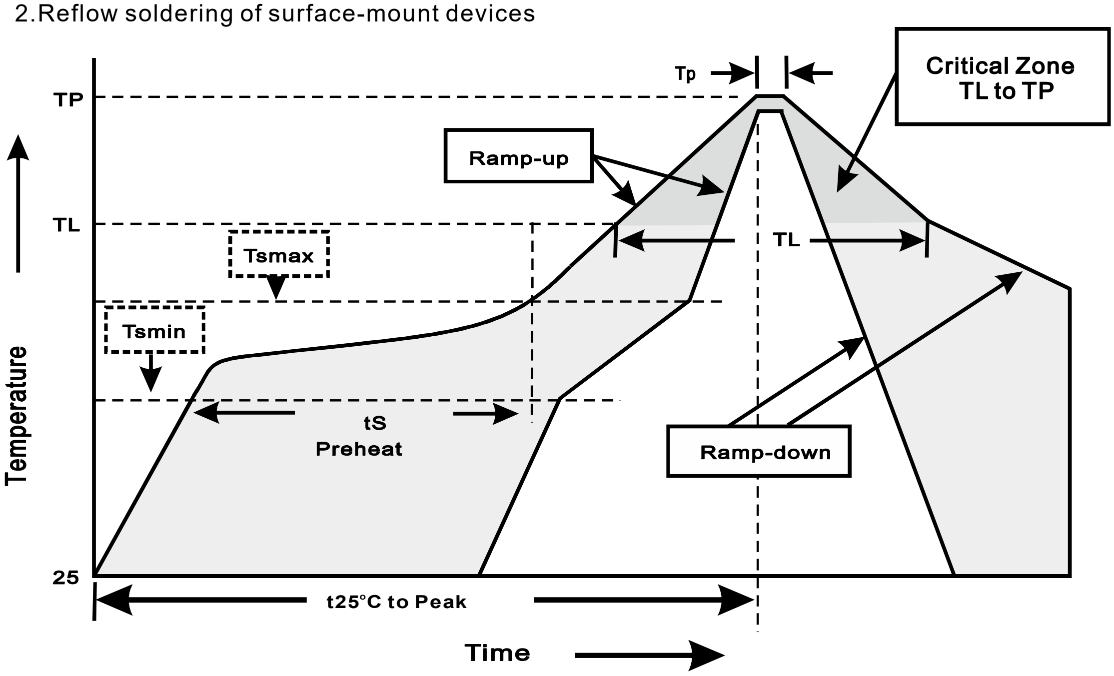
Reel packing

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)
SMB-F	13"	3,000	8.0	6,000	335*335*38	330	350*330*360	48,000	12.40

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.	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=150°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