

Formosa MS

FM520-BF-Q1 Thru FM5200-BF-Q1

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FM520-BF-Q1 Thru FM5200-BF-Q1

5.0A Schottky Barrier Rectifiers : 20V ~ 200V

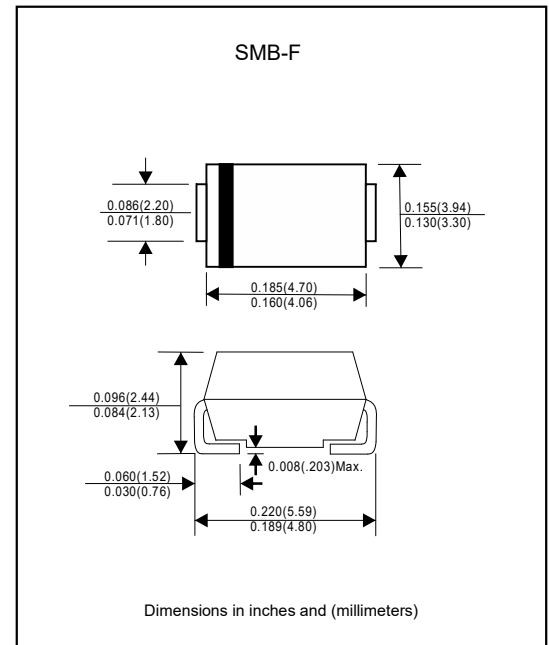
Features

- Built-in strain relief, ideal for automated placement.
- Low reverse leakage.
- High forward surge current capability.
- High temperature soldering guaranteed 250°C/10 seconds at terminals.
- Qualified to AEC-Q101 standards for high reliability.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. FM520-BF-Q1-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.

Package outline



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

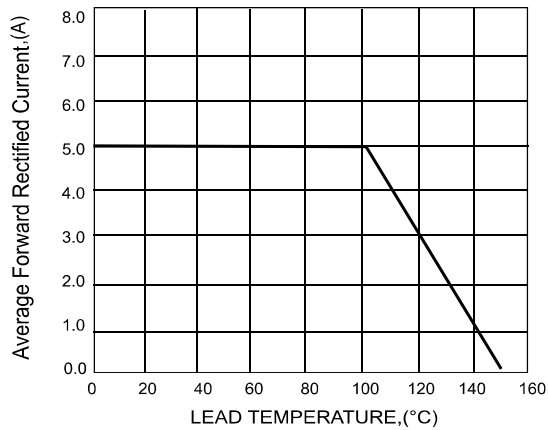
Parameter	Symbols	FM520- BF-Q1	FM540- BF-Q1	FM560- BF-Q1	FM580- BF-Q1	FM5100 -BF-Q1	FM5150 -BF-Q1	FM5200 -BF-Q1	Unit
Maximum repetitive peak reverse voltage	V _{RRM}	20	40	60	80	100	150	200	V
Maximum RMS voltage	V _{RMS}	14	28	42	56	70	105	140	V
Maximum DC blocking voltage	V _{DC}	20	40	60	80	100	150	200	V
Maximum average forward rectified current	I _O	5							A
Maximum forward voltage at I _F =5.0A	V _F	0.55		0.7	0.85		0.95		V
Maximum DC reverse current (T _A =25°C)	I _R	0.1			0.05				mA
at rated DC blocking voltage (T _A =125°C)		50			10				
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I _{FSM}	120							A
Typical thermal resistance, junction to ambient	R _{θJA}	85							°C/W
Operating junction temperature	T _J	+150							°C
Storage temperature range	T _{STG}	-55 to +150							°C

Note: 1.Single phase half-wave 60Hz,resistive or inductive load, for capacitive load current derate by 20%.

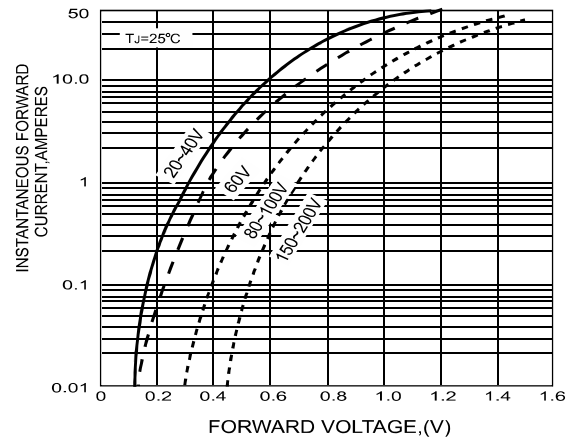
FM520-BF-Q1 Thru FM5200-BF-Q1

Rating and characteristic curves

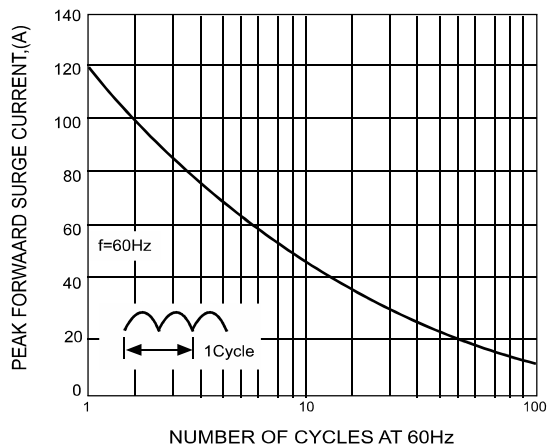
DERATING CURVE OUTPUT RECTIFIED CURRENT



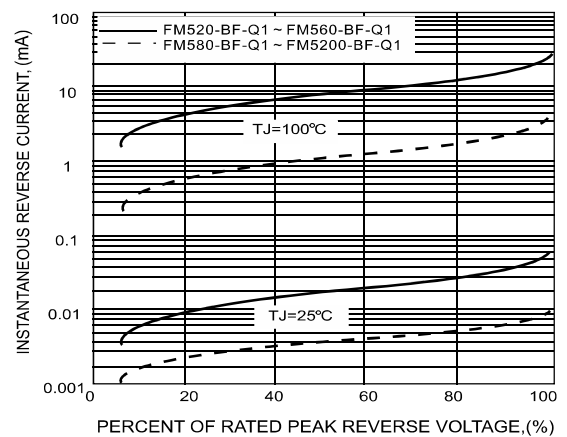
TYPICAL FORWARD VOLTAGE CHARACTERISTICS



MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT PER LEG

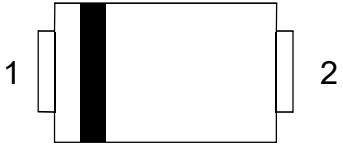


TYPICAL REVERSE LEAKAGE CHARACTERISTICS



FM520-BF-Q1 Thru FM5200-BF-Q1

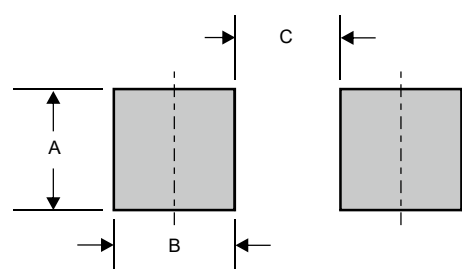
Pinning information

Pin	Simplified outline	Symbol
Pin1 Cathode Pin2 Anode		

Marking

Type number	Marking code
FM520-BF-Q1	SS52V
FM540-BF-Q1	SS54V
FM560-BF-Q1	SS56V
FM580-BF-Q1	SS58V
FM5100-BF-Q1	SS510V
FM5150-BF-Q1	SS515V
FM5200-BF-Q1	SS520V

Suggested solder pad layout

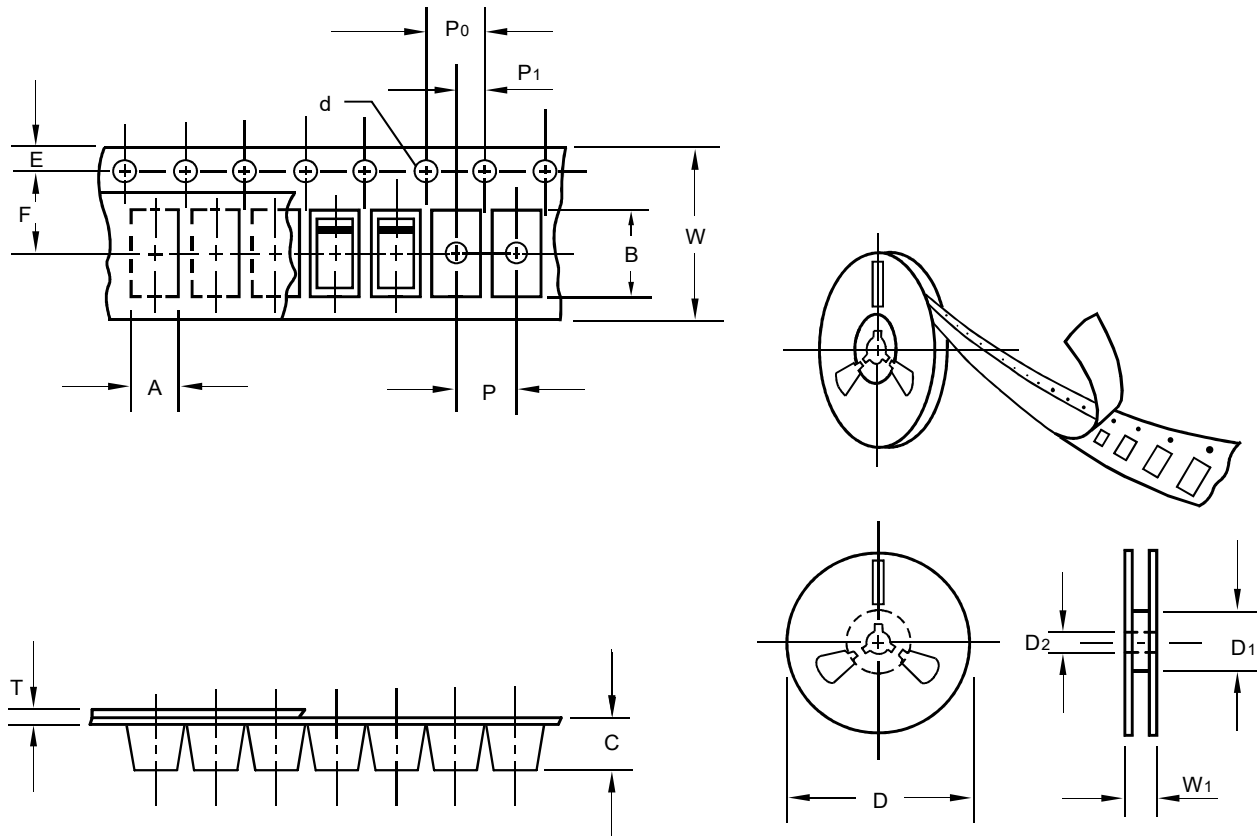


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMB-F	0.091 (2.30)	0.078 (2.00)	0.083(2.10)

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Packing information



unit:mm

Item	Symbol	Tolerance	SMB-F
Carrier width	A	0.1	3.80
Carrier length	B	0.1	5.40
Carrier depth	C	0.1	2.45
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	2.0	-
7" Reel inner diameter	D ₁	min	-
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	0.1	0.25
Tape width	W	0.3	12.00
Reel width	W ₁	1.0	18.00

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

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)
SMB-F	13"	3,000	8.0	6,000	337*337*37	330	350*330*360	48,000

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{min}) -Temperature Max(T_{max}) -Time(min to max)(t_s)	150°C 200°C $60\sim 120\text{sec}$
T_{max} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C $60\sim 260\text{sec}$
Peak Temperature(T_P)	$255^{\circ}\text{C}-0/+5^{\circ}\text{C}$
Time within 5°C of actual Peak Temperature(t_P)	$10\sim 30\text{sec}$
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