



# FR1AF SERIES

## SURFACE MOUNT FAST RECOVERY RECTIFIER

**VOLTAGE** 50 to 600 Volt    **CURRENT** 1 Ampere

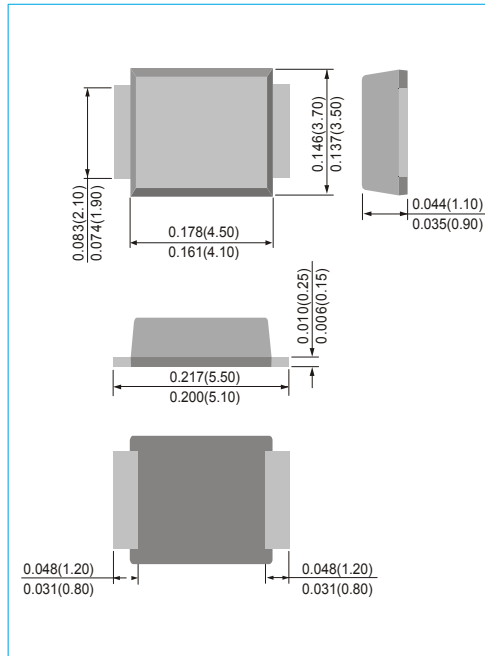
**SMBF**    Unit : inch(mm)

### FEATURES

- For surface mounted applications
- Low profile package
- Built-in strain relief
- Easy pick and place
- Fast Recovery times for high efficiency
- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated junction
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Green molding compound as per IEC61249 Std

### MECHANICAL DATA

- Case: SMBF molded plastic
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0018 ounce, 0.05 grams
- Polarity: Color band denotes cathode end



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.

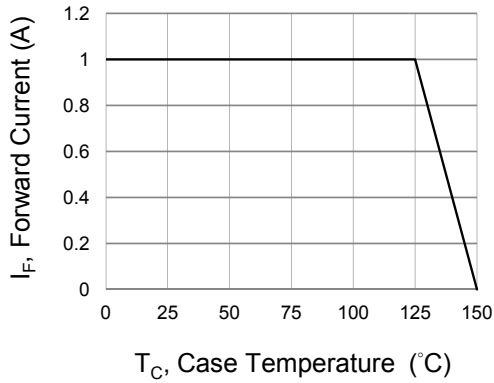
| PARAMETER   | SYMBOL                             | FR1AF       | FR1BF | FR1DF | FR1GF | FR1JF | UNITS           |
|---|------------------------------------|-------------|-------|-------|-------|-------|-----------------|
| Maximum Recurrent Peak Reverse Voltage  | $V_{RRM}$                          | 50          | 100   | 200   | 400   | 600   | V               |
| Maximum RMS Voltage   | $V_{RMS}$                          | 35          | 70    | 140   | 280   | 420   | V               |
| Maximum DC Blocking Voltage   | $V_{DC}$                           | 50          | 100   | 200   | 400   | 600   | V               |
| Maximum Average Forward Rectified Current   | $I_{F(AV)}$                        | 1.0         |       |       |       |       | A               |
| Peak Forward Surge Current :8.3ms single half sine-wave superimposed on rated load(JEDEC method)per diode | $I_{FSM}$                          | 30          |       |       |       |       | A               |
| Maximum Forward Voltage at 1A   | $V_F$                              | 1.3         |       |       |       |       | V               |
| Maximum DC Reverse Current $T_j=25^{\circ}C$  | $I_R$                              | 1.0         |       |       |       |       | $\mu A$         |
| Typical Junction Capacitance (VR=4V f=1MHZ)   | $C_J$                              | 16          |       |       |       | 9     | pF              |
| Typical Thermal Resistance (Note 1)<br>(Note 2)   | $R_{\theta JL}$<br>$R_{\theta JA}$ | 21<br>135   |       |       |       |       | $^{\circ}C / W$ |
| Maximum Reverse Recovery Time   | $T_{rr}$                           | 150         |       |       |       | 250   | nS              |
| Operating Junction and Storage Temperature Range  | $T_J, T_{STG}$                     | -55 to +150 |       |       |       |       | $^{\circ}C$     |

NOTES : 1. Mounted on an FR4 PCB, single-sided copper, with 48cm<sup>2</sup> copper pad area.  
2. Mounted on an FR4 PCB, single-sided copper, mini pad.

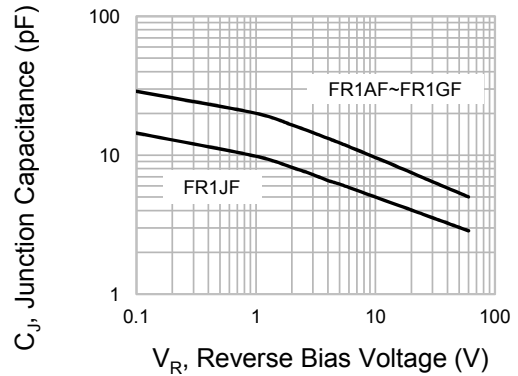


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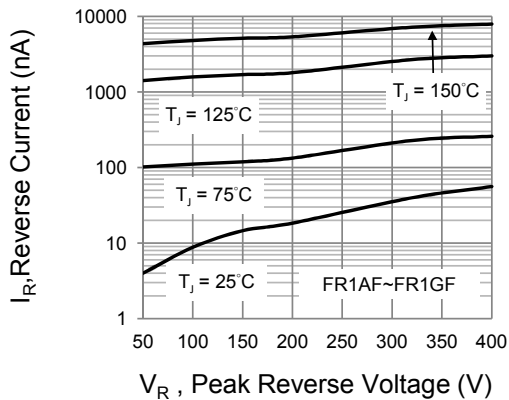
## RATING AND CHARACTERISTIC CURVES



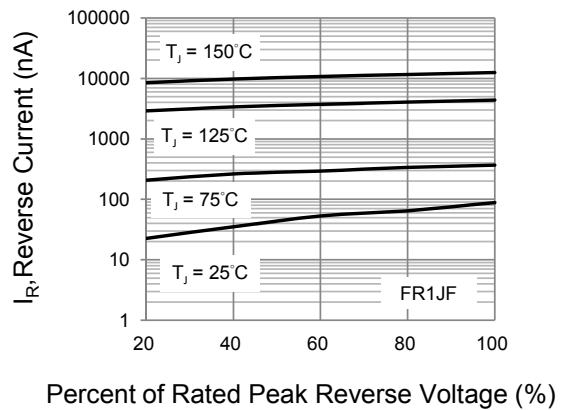
**Fig.1 Forward Current Derating Curve**



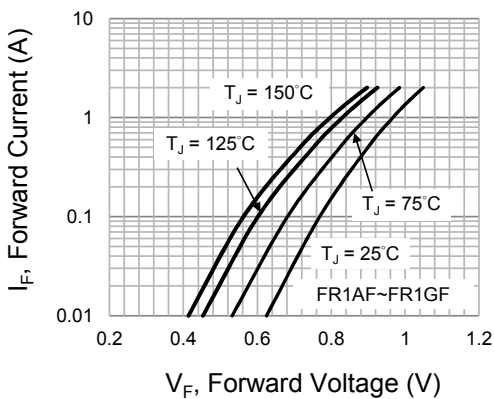
**Fig.2 Typical Junction Capacitance**



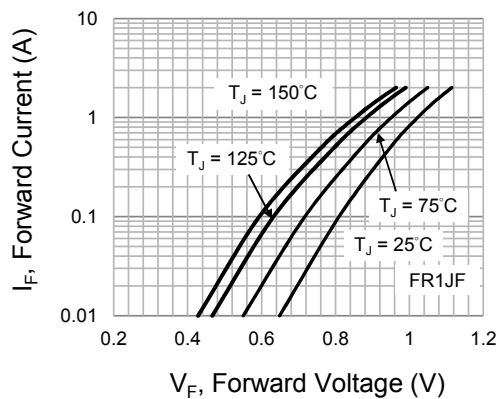
**Fig.3 Typical Reverse Characteristics**



**Fig.4 Typical Reverse Characteristics**



**Fig.5 Typical Forward Characteristics**

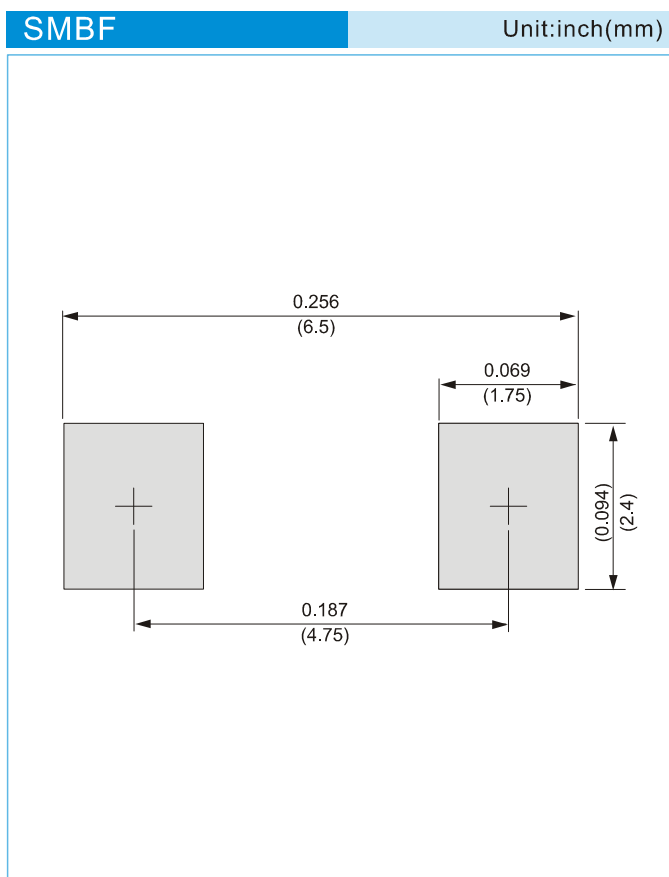


**Fig.6 Typical Forward Characteristics**



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## MOUNTING PAD LAYOUT



## ORDER INFORMATION

- Packing information  
T/R - 5K per 13" plastic Reel



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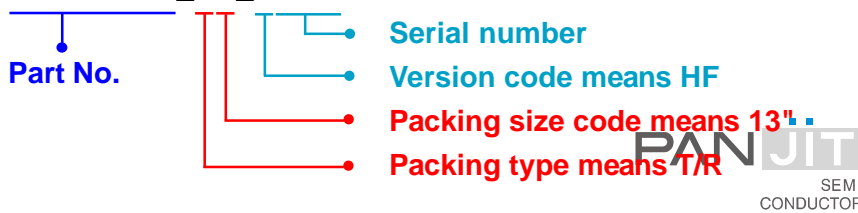
### Part No\_packing code\_Version

FR1AF\_R1\_00001

FR1AF\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



| Packing Code XX                      |                      |                                  |                      | Version Code XXXXX |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|--------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS         | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | A                    | N/A                              | 0                    | HF                 | 0                    | serial number                         |
| Tape and Reel (T/R)                  | R                    | 7"                               | 1                    | RoHS               | 1                    | serial number                         |
| Bulk Packing (B/P)                   | B                    | 13"                              | 2                    |                    |                      |                                       |
| Tube Packing (T/P)                   | T                    | 26mm                             | X                    |                    |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | S                    | 52mm                             | Y                    |                    |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | L                    | PANASERT T/B CATHODE UP (PBCU)   | U                    |                    |                      |                                       |
| FORMING                              | F                    | PANASERT T/B CATHODE DOWN (PBCD) | D                    |                    |                      |                                       |



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