

# SF15A20FC Thru SF15A80FC

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# SF15A20FC Thru SF15A80FC

**15.0A Super Fast Recovery Rectifiers**  
**Surface Mount : 200V ~ 800V**

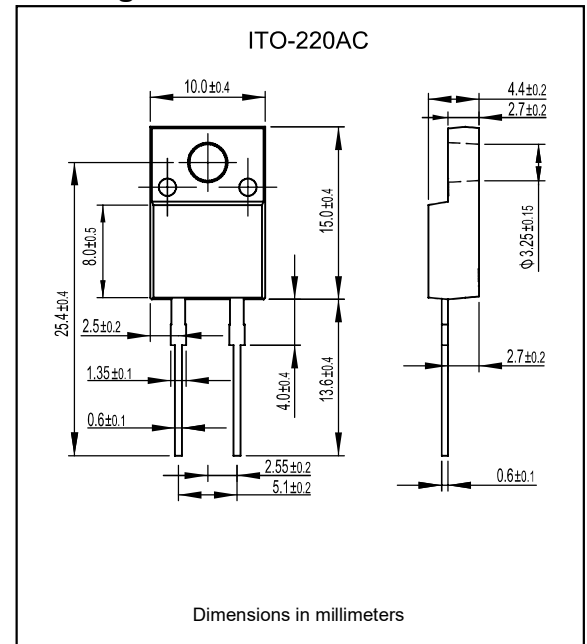
## Features

- Glass passivated chip junctions.
- Super fast recovery time for switching mode application.
- High forward surge capability.
- Low leakage current.
- Lead free in compliance with EU RoHS 2011/65/EU directive.
- Suffix "-H" indicates Halogen free parts, ex.SF15A20FC-H.

## Mechanical data

- Circuit figure : Single positive.
- Lead : Solder able per MIL-STD-202, Method 208.
- Mounting torque : 5 in-lbs maximum.
- Polarity: As marked.
- Terminals : Puretin plated.
- Weight : Approximated 1.65 gram.

## Package outline



## Maximum ratings and electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                                                        | Symbol           | SF15<br>A20FC | SF15<br>A30FC | SF15<br>A40FC | SF15<br>A50FC | SF15<br>A60FC | SF15<br>A70FC | SF15<br>A80FC | Unit |
|--------------------------------------------------------------------------------------------------|------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------|
| Maximum repetitive peak reverse voltage                                                          | V <sub>RRM</sub> | 200           | 300           | 400           | 500           | 600           | 700           | 800           | V    |
| Maximum RMS voltage                                                                              | V <sub>RMS</sub> | 140           | 210           | 280           | 350           | 420           | 490           | 560           | V    |
| Maximum DC blocking voltage                                                                      | V <sub>DC</sub>  | 200           | 300           | 400           | 500           | 600           | 700           | 800           | V    |
| Maximum average forward current                                                                  | I <sub>AV</sub>  | 15            |               |               |               |               |               |               | A    |
| Peak forward surge current 8.3ms single half sine wave superimposed on rated load (JEDEC Method) | I <sub>FSM</sub> | 250.0         |               |               |               |               |               |               | A    |
| Maximum instantaneous forward voltage at 15.0A                                                   | V <sub>F</sub>   | 1.05          | 1.35          |               | 1.85          |               | 2.80          |               | V    |
| Maximum DC reverse current T <sub>J</sub> =25°C                                                  | I <sub>R</sub>   | 5             |               |               |               |               |               |               | μA   |
| At rated DC blocking voltage T <sub>J</sub> =125°C                                               |                  | 250           |               |               |               |               |               |               |      |
| Typical reverse recovery time (Note 2)                                                           | t <sub>rr</sub>  | 35            |               |               |               |               |               |               | ns   |
| Typical thermal resistance                                                                       | R <sub>θJC</sub> | 4.0           |               |               |               |               |               |               | °C/W |
| Operating junction temperature                                                                   | T <sub>J</sub>   | +150          |               |               |               |               |               |               | °C   |
| Storage temperature range                                                                        | T <sub>STG</sub> | -55 to +150   |               |               |               |               |               |               | °C   |

Note : 1. Thermal resistance from junction to case.  
 2. Test conditions :  $I_F=0.5\text{A}$ ,  $I_R=1.0\text{A}$ ,  $I_{RR}=0.25\text{A}$ .

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## Rating and characteristic curves

FIG. 1 - TYPICAL FORWARD CURRENT DERATING CURVE

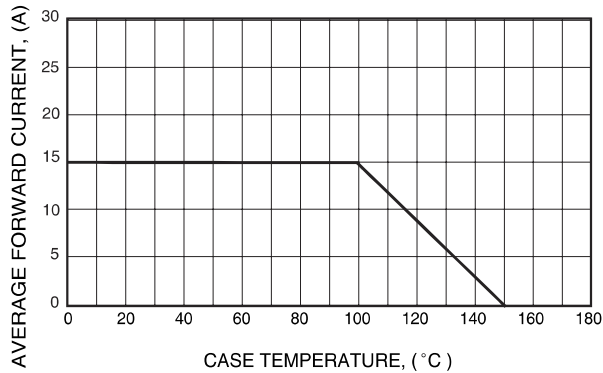


FIG. 3 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

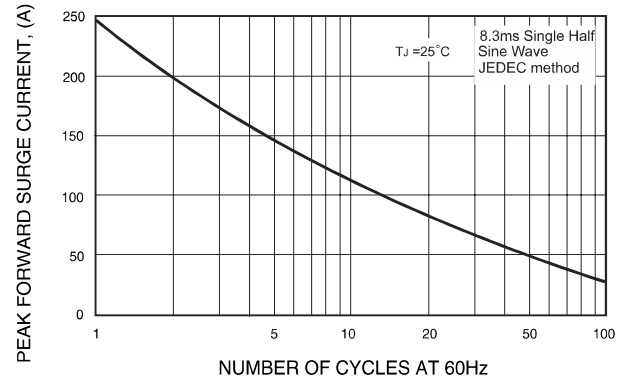


FIG. 4 - TYPICAL REVERSE CHARACTERISTICS

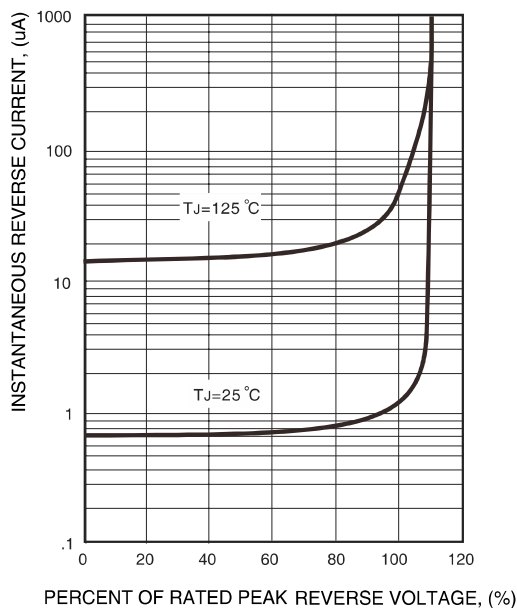


FIG. 2 - TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

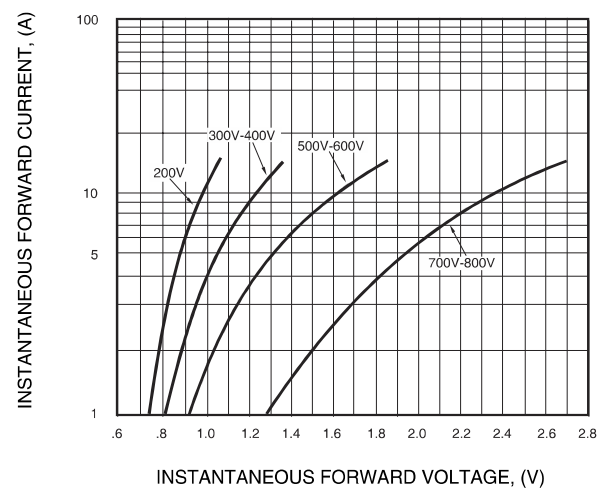
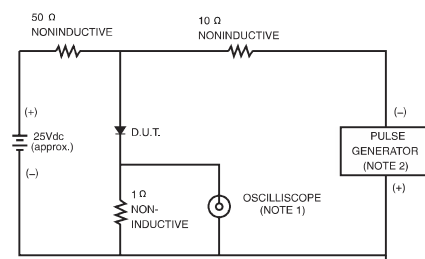
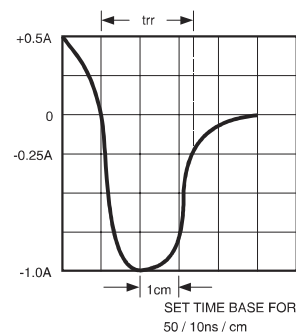


FIG. 6- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTICS

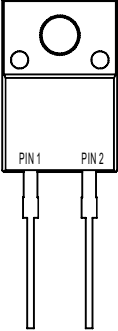


NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm.22pF.  
2. Rise Time= 10ns max., Source Impedance= 50 ohms.



## SF15A20FC Thru SF15A80FC

## Pinning information

| Pin                        | Simplified outline                                                                | Symbol                                                                              |
|----------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Pin1 Anode<br>Pin2 Cathode |  |  |

## Marking

| Type Number | Marking Code |
|-------------|--------------|
| SF15A20FC   | DSE1502F     |
| SF15A30FC   | DSE1503F     |
| SF15A40FC   | DSE1504F     |
| SF15A50FC   | DSE1505F     |
| SF15A60FC   | DSE1506F     |
| SF15A70FC   | DSE1507F     |
| SF15A80FC   | DSE1508F     |

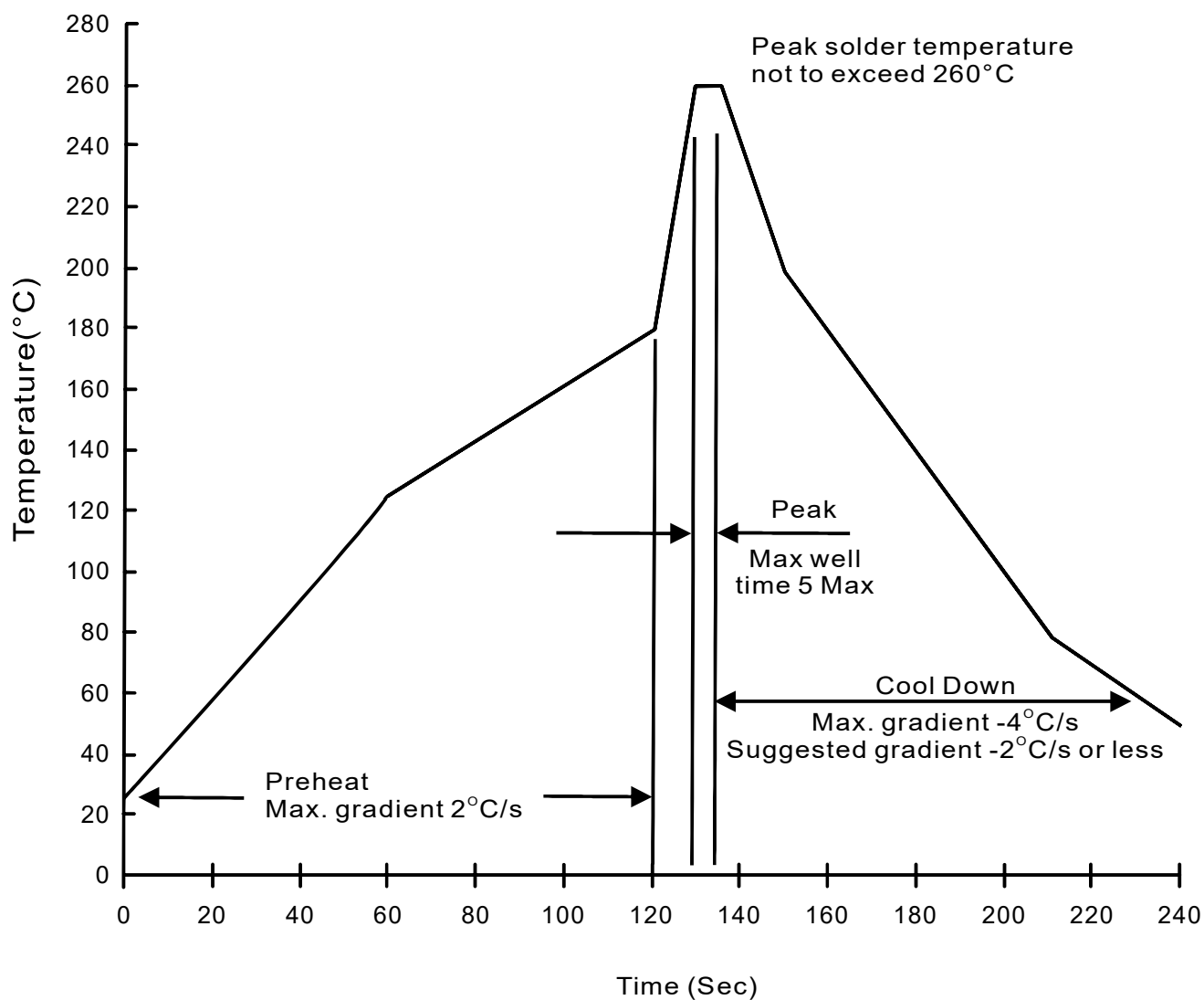
## Tube packing

| PACKAGE   | TUBE (pcs) | TUBE SIZE (m/m) | BOX (pcs) | INNER BOX (m/m) | CARTON SIZE (m/m) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|-----------|------------|-----------------|-----------|-----------------|-------------------|--------------|---------------------------|
| ITO-220AC | 50         | 525*31.9*6.4    | 1000      | 545*150*45      | 575*245*170       | 5,000        | 15.0                      |

# SF15A20FC Thru SF15A80FC

Suggested thermal profiles for soldering processes

## 1. Lead free temperature profile wave-soldering



**SF15A20FC Thru SF15A80FC****High reliability test capabilities**

| Item Test                         | Conditions                                                                                                                               | Reference                     |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. Solder Resistance              | at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$<br>immerse body into solder $1/16" \pm 1/32"$                                     | MIL-STD-750D<br>METHOD-2031   |
| 2. Solderability                  | at $245 \pm 5^\circ\text{C}$ for 5 sec.                                                                                                  | MIL-STD-202F<br>METHOD-208    |
| 3. High Temperature Reverse Bias  | $V_R = 80\%$ rate at $T_J = 125^\circ\text{C}$ for 168 hrs.                                                                              | MIL-STD-750D<br>METHOD-1038   |
| 4. Forward Operation Life         | Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs.                                                                  | MIL-STD-750D<br>METHOD-1027   |
| 5. Intermittent Operation Life    | $T_A = 25^\circ\text{C}$ , $I_F = I_O$<br>On state: power on for 5 min.<br>off state: power off for 5 min.<br>on and off for 500 cycles. | MIL-STD-750D<br>METHOD-1036   |
| 6. Pressure Cooker                | $15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.                                                                                      | JESD22-A102                   |
| 7. Temperature Cycling            | $-55^\circ\text{C}$ to $+125^\circ\text{C}$ dwelled for 30 min.<br>and transferred for 5min. total 10 cycles.                            | MIL-STD-750D<br>METHOD-1051   |
| 8. Forward Surge                  | 8.3ms single half sine-wave , one surge.                                                                                                 | MIL-STD-750D<br>METHOD-4066-2 |
| 9. Humidity                       | at $T_A = 85^\circ\text{C}$ , RH=85% for 1000hrs.                                                                                        | MIL-STD-750D<br>METHOD-1021   |
| 10. High Temperature Storage Life | at $150^\circ\text{C}$ for 1000 hrs.                                                                                                     | MIL-STD-750D<br>METHOD-1031   |