

# SF11 THRU SF18

## List

深圳FMS Kinter 131 6803 0058

|   |   |
|---|---|
| List.....   | 1 |
| Package outline.....                                    | 2 |
| Features.....   | 2 |
| Mechanical data.....                                    | 2 |
| Maximum ratings .....                                   | 2 |
| Rating and characteristic curves.....                   | 3 |
| Pinning information.....                                | 4 |
| Marking.....  | 4 |
| Taping & bulk specifications for AXIAL devices.....     | 4 |
| Suggested thermal profiles for soldering processes..... | 5 |
| High reliability test capabilities.....                 | 6 |

# SF11 THRU SF18

## 1.0A Axial Leaded Super Fast Rectifiers-50-600V

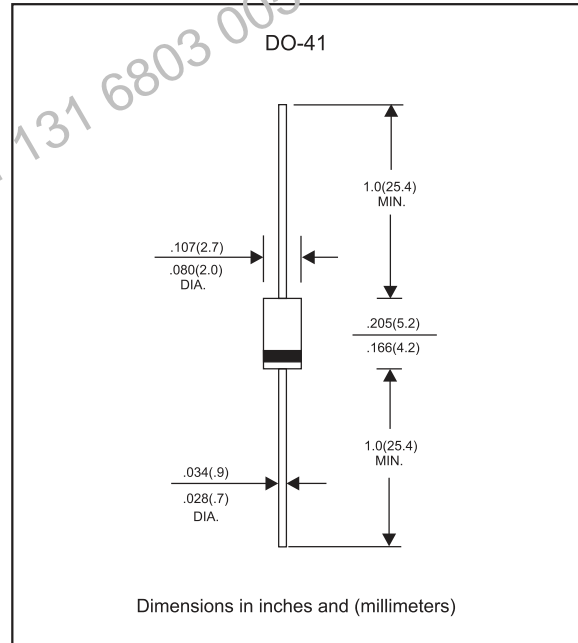
### Features

- Axial lead type devices for through hole design
- High current capability.
- Superfast recovery time for switching mode application.
- High surge current capability.
- Silicon rubber coating chip junction.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex SF11-H.

### Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, DO-41
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity: Color band denotes cathode end
- Mounting Position : Any
- Weight : Approximated 0.33 gram

Package outline



### Maximum ratings and Electrical Characteristics (AT T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                  | CONDITIONS  | Symbol           | MIN. | TYP. | MAX. | UNIT |
|----------------------------|---|------------------|------|------|------|------|
| Forward rectified current  | Ambient temperature = 55°C  | I <sub>O</sub>   |      |      | 1.0  | A    |
| Forward surge current      | 8.3ms single half sine-wave superimposed on rate load (JEDEC methode) | I <sub>FSM</sub> |      |      | 30   | A    |
| Reverse current            | V <sub>R</sub> = V <sub>RRM</sub> T <sub>J</sub> = 25°C               | I <sub>R</sub>   |      |      | 5.0  | μA   |
|                            | V <sub>R</sub> = V <sub>RRM</sub> T <sub>J</sub> = 100°C              |                  |      |      | 100  |      |
| Diode junction capacitance | f=1MHz and applied 4V DC reverse voltage                              | C <sub>J</sub>   |      | 50   |      | pF   |
| Storage temperature        |   | T <sub>STG</sub> | -65  |      | +175 | °C   |

| SYMBOLS | V <sub>RRM</sub> <sup>*1</sup><br>(V) | V <sub>RMS</sub> <sup>*2</sup><br>(V) | V <sub>R</sub> <sup>*3</sup><br>(V) | V <sub>F</sub> <sup>*4</sup><br>(V) | t <sub>rr</sub> <sup>*5</sup><br>(ns) | Operating temperature<br>T <sub>J</sub> , (°C) |
|---------|---------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|---------------------------------------|--|
| SF11    | 50                                    | 35                                    | 50                                  | 0.95                                | 35                                    | -55 to +125                                    |
| SF12    | 100                                   | 70                                    | 100                                 |                                     |                                       |  |
| SF13    | 150                                   | 105                                   | 150                                 |                                     |                                       |  |
| SF14    | 200                                   | 140                                   | 200                                 |                                     |                                       |  |
| SF15    | 300                                   | 210                                   | 300                                 | 1.25                                | 35                                    | -55 to +125                                    |
| SF16    | 400                                   | 280                                   | 400                                 |                                     |                                       |  |
| SF17    | 500                                   | 350                                   | 500                                 |                                     |                                       |  |
| SF18    | 600                                   | 420                                   | 600                                 | 1.70                                | 35                                    | -55 to +125                                    |

- \*1 Repetitive peak reverse voltage
- \*2 RMS voltage
- \*3 Continuous reverse voltage
- \*4 Maximum forward voltage@I<sub>F</sub>=1.0A
- \*5 Maximum Reverse recovery time, note 1

Note 1. Reverse recovery time test condition, I<sub>F</sub>=0.5A, I<sub>R</sub>=1.0A, I<sub>RR</sub>=0.25A

# Rating and characteristic curves (SF11 THRU SF18)

FIG.1- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTIC

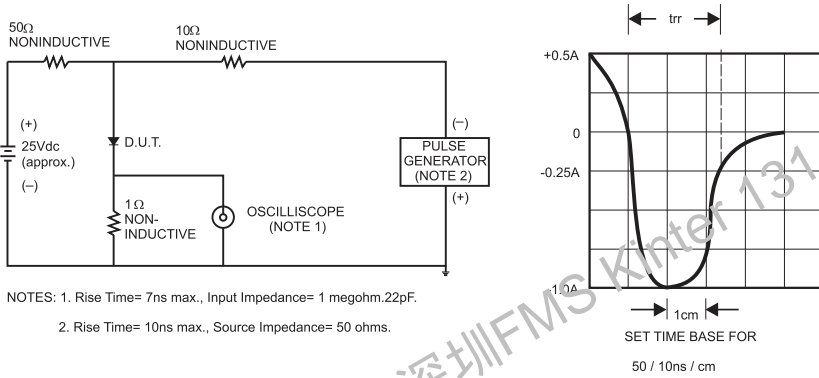


FIG.2-TYPICAL FORWARD CURRENT DERATING CURVE

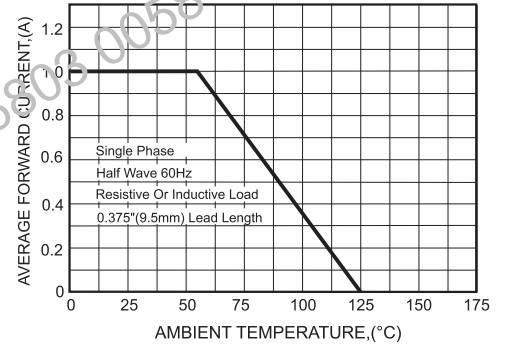


FIG.3-TYPICAL FORWARD CHARACTERISTICS

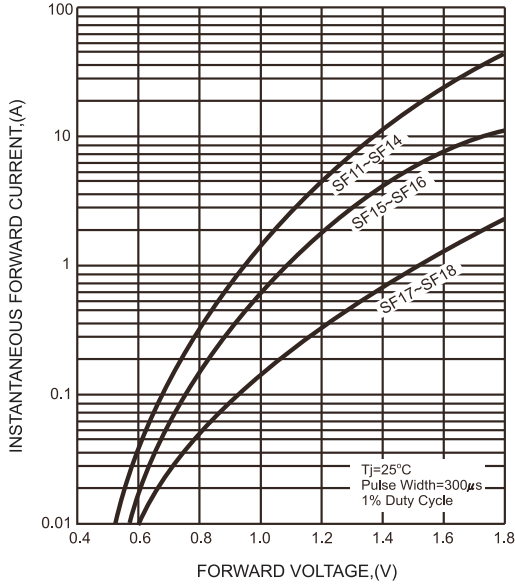


FIG.4-TYPICAL REVERSE CHARACTERISTICS

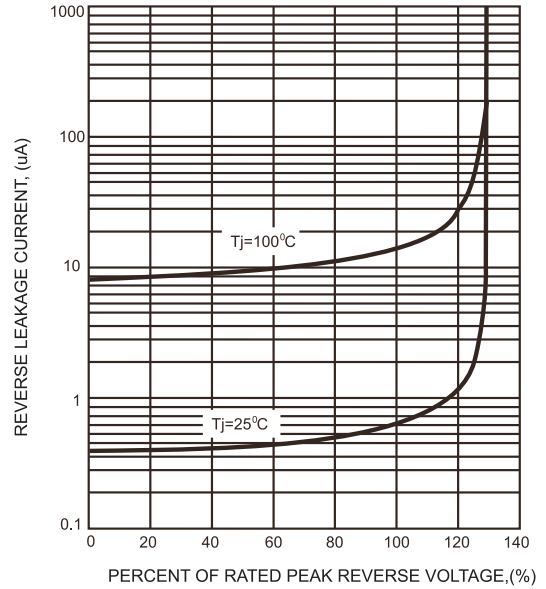


FIG.5-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

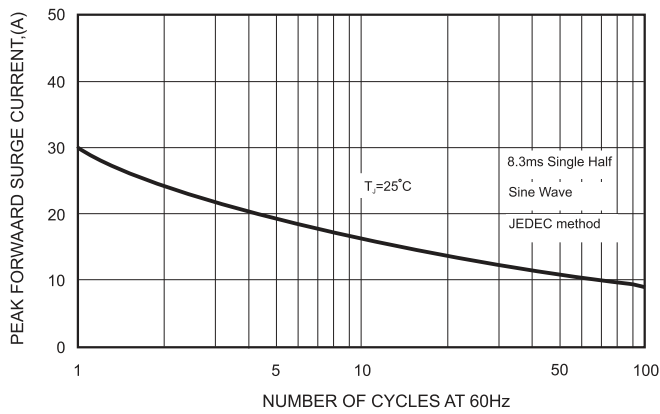
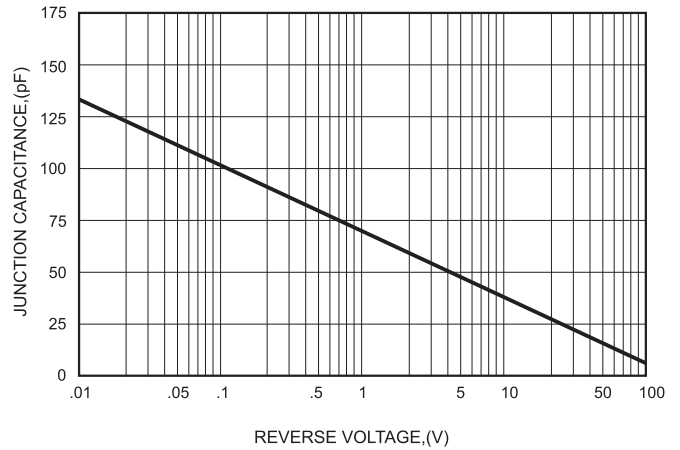




FIG.6-TYPICAL JUNCTION CAPACITANCE



# SF11 THRU SF18

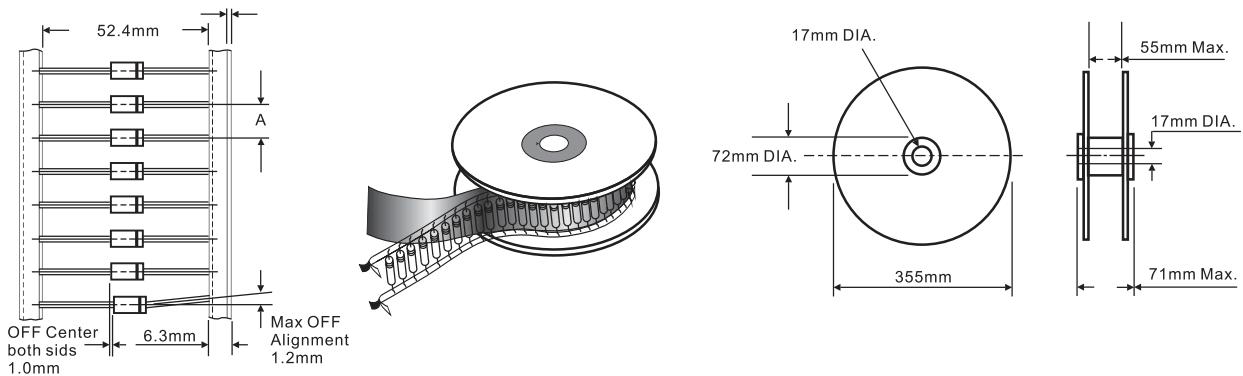
## Pinning information

| Pin                        | Simplified outline   | Symbol  |
|----------------------------|--|---|
| Pin1 cathode<br>Pin2 anode |  |  |

## Marking

| Type number | Marking code |
|-------------|--------------|
| SF11        | SF11         |
| SF12        | SF12         |
| SF13        | SF13         |
| SF14        | SF14         |
| SF15        | SF15         |
| SF16        | SF16         |
| SF17        | SF17         |
| SF18        | SF18         |

## Taping & bulk specifications for AXIAL devices



### REEL PACKING

| DEVICE CASE TYPE | Q'TY 1 (PCS / REEL) | COMPONENT SPACING "A" in FIG. A | CARTON SIZE (m/m) | Q'TY 2 (PCS / CARTON) | APPROX. CROSS WEIGHT(kg) |
|------------------|---------------------|---------------------------------|-------------------|-----------------------|--------------------------|
| DO-41            | 5,000               | 5 mm                            | 360 * 340 * 370   | 20,000                | 10.8                     |

### AMMO PACKING

| DEVICE CASE TYPE | Q'TY 1 (PCS / BOX) | INNER BOX SIZE (m/m) | CARTON SIZE (m/m) | Q'TY 2 (PCS / CARTON) | APPROX. CROSS WEIGHT(kg) |
|------------------|--------------------|----------------------|-------------------|-----------------------|--------------------------|
| DO-41            | 5,000              | 260 * 83 * 160       | 440 * 270 * 340   | 50,000                | 20.0                     |

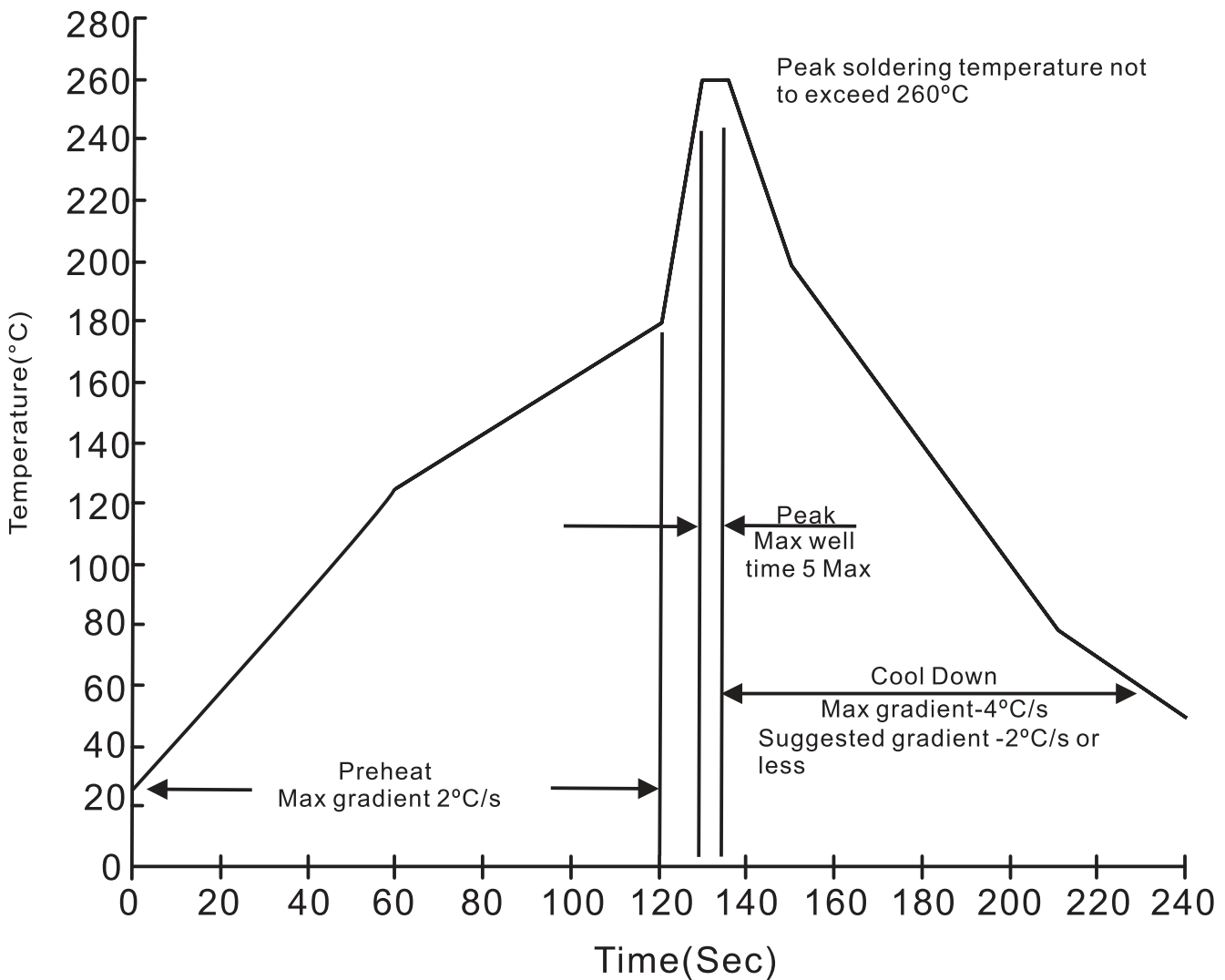
# SF11 THRU SF18

BULK PACKING

| DEVICE CASE TYPE | Q'TY 1 (PCS / BOX) | INNER BOX SIZE (m/m) | CARTON SIZE (m/m) | Q'TY 2 (PCS / CARTON) | APPROX. CROSS WEIGHT(kg) |
|------------------|--------------------|----------------------|-------------------|-----------------------|--------------------------|
| DO-41            | 1,000              | 194 * 84 * 20        | 465 * 220 * 260   | 50,000                | 20.6                     |

Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



## SF11 THRU SF18

## High reliability test capabilities

| Item Test                         | Conditions   | Reference                     |
|-----------------------------------|--|-------------------------------|
| 1. Solder Resistance              | at $260 \pm 5^\circ\text{C}$ for $10 \pm 2$ 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. Pull Test                      | 1.0kg in axial lead direction for 10 sec.<br>$I_F = I_O$   | MIL-STD-202F<br>METHOD-211A   |
| 4. Bend Lead                      | 1.0kg weight applied to each lead bending<br>arc $90^\circ \pm 5^\circ$ for 3 times, $I_F = I_O$   | MIL-STD-202F<br>METHOD-211A   |
| 5. High Temperature Reverse Bias  | $V_R = 80\%$ rate at $T_J = 125^\circ\text{C}$ for 168 hrs.  | MIL-STD-750D<br>METHOD-1038   |
| 6. Forward Operation Life         | Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs.  | MIL-STD-750D<br>METHOD-1027   |
| 7. 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   |
| 8. Pressure Cooker                | $15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.  | JESD22-A102                   |
| 9. 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   |
| 10. Thermal Shock                 | $0^\circ\text{C}$ for 5 min. rise to $100^\circ\text{C}$ for 5 min. total 10 cycles.   | MIL-STD-750D<br>METHOD-1056   |
| 11. Forward Surge                 | 8.3ms single half sine-wave superimposed<br>on rated load, one surge.  | MIL-STD-750D<br>METHOD-4066-2 |
| 12. Humidity                      | at $T_A = 85^\circ\text{C}$ , RH=85% for 1000hrs.  | MIL-STD-750D<br>METHOD-1021   |
| 13. High Temperature Storage Life | at $175^\circ\text{C}$ for 1000 hrs.   | MIL-STD-750D<br>METHOD-1031   |