

# FM751V-FL

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# FM751V-FL

## 30mA Surface Mount Small Signal Schottky Diode- 40V

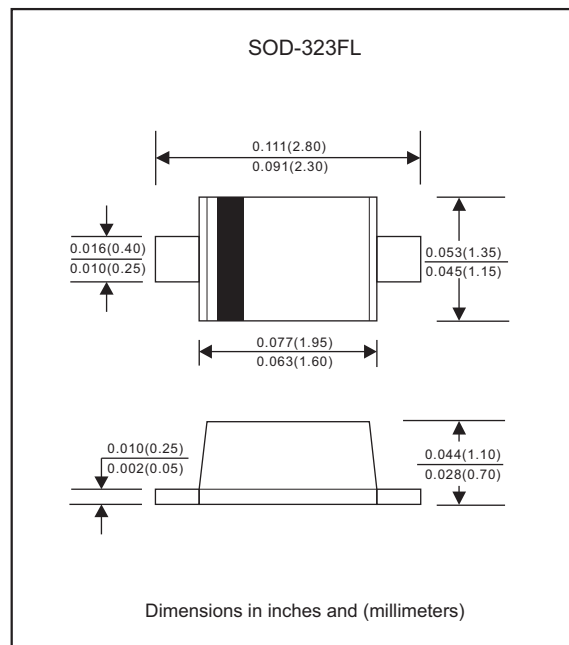
### Features

- Low Forward Voltage Drop
- Flat Lead SOD-323FL Small Outline Plastic Package
- Surface Device Type Mounting
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Suffix "-H" for Halogen-free part, ex. FM751V-FL-H.

### Mechanical data

- Epoxy:UL94-VO rated flame retardant
- Case : Molded plastic, SOD-323FL
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.004 gram

### Package outline



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

| PARAMETER                           | CONDITIONS      | Symbol    | Value    | UNIT               |
|-------------------------------------|-----------------|-----------|----------|--------------------|
| Power Dissipation                   |                 | $P_D$     | 200      | mW                 |
| Repetitive Peak Reverse Voltage     |                 | $V_{RRM}$ | 40       | V                  |
| Reverse Voltage                     |                 | $V_R$     | 30       | V                  |
| Forward Current                     |                 | $I_F$     | 30       | mA                 |
| Non-Repetitive Peak Forward Current | 60Hz for 1cycle | $I_{FSM}$ | 500      | mA                 |
| Operating Junction Temperature      |                 | $T_J$     | +125     | $^{\circ}\text{C}$ |
| Storage Temperature Range           |                 | $T_{STG}$ | -55~+125 | $^{\circ}\text{C}$ |

These ratings are limiting values above which the serviceability of the diode may be impaired.

### Electrical Characteristics (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER         | CONDITIONS                           | Symbol   | MIN. | TYP. | MAX. | UNIT          |
|-------------------|--------------------------------------|----------|------|------|------|---------------|
| Breakdown Voltage | $I_R = 10\mu\text{A}$                | $V_{BR}$ | 30   |      |      | V             |
| Forward voltage   | $I_F = 1.0\text{ mA}$                | $V_F$    |      |      | 0.37 | V             |
| Reverse current   | $V_R = 30\text{ V}$                  | $I_R$    |      |      | 0.5  | $\mu\text{A}$ |
| Diode capacitance | $V_R = 1\text{ V}, f = 1\text{ MHz}$ | $C_T$    |      | 2.0  |      | pF            |

## Rating and characteristic curves (FM751V-FL)

FIG.1-TYPICAL FORWARD CHARACTERISTICS

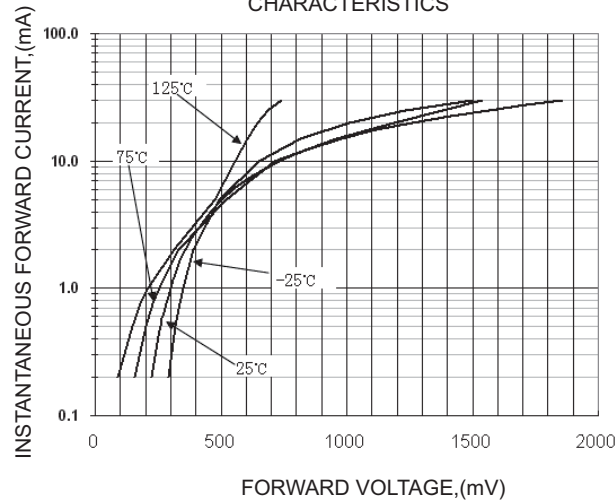


FIG.2 - TYPICAL REVERSE CHARACTERISTICS

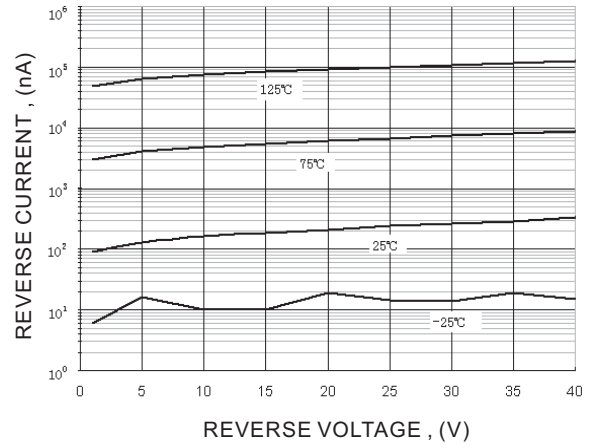
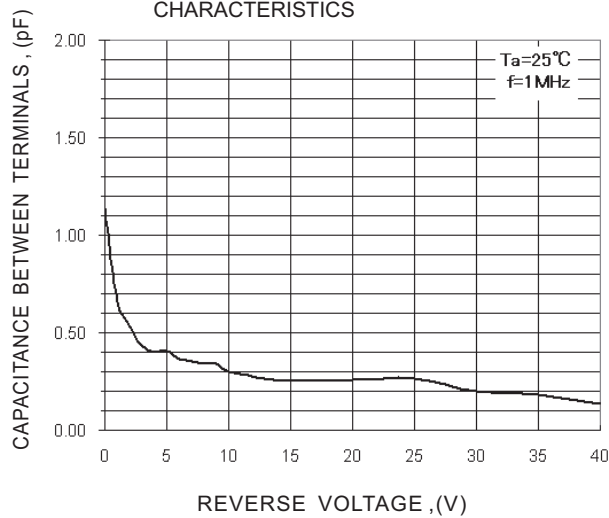


FIG.3-CAPACITANCE BETWEEN TERMINALS CHARACTERISTICS



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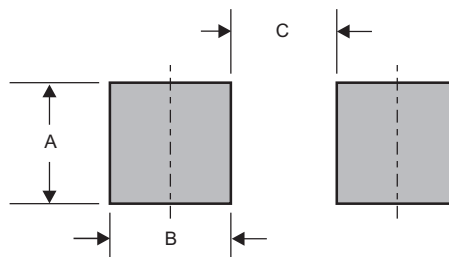
## Pinning information

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

## Marking

| Type number | Marking code |
|-------------|--------------|
| FM751V-FL   | B5,S8        |

## Suggested solder pad layout

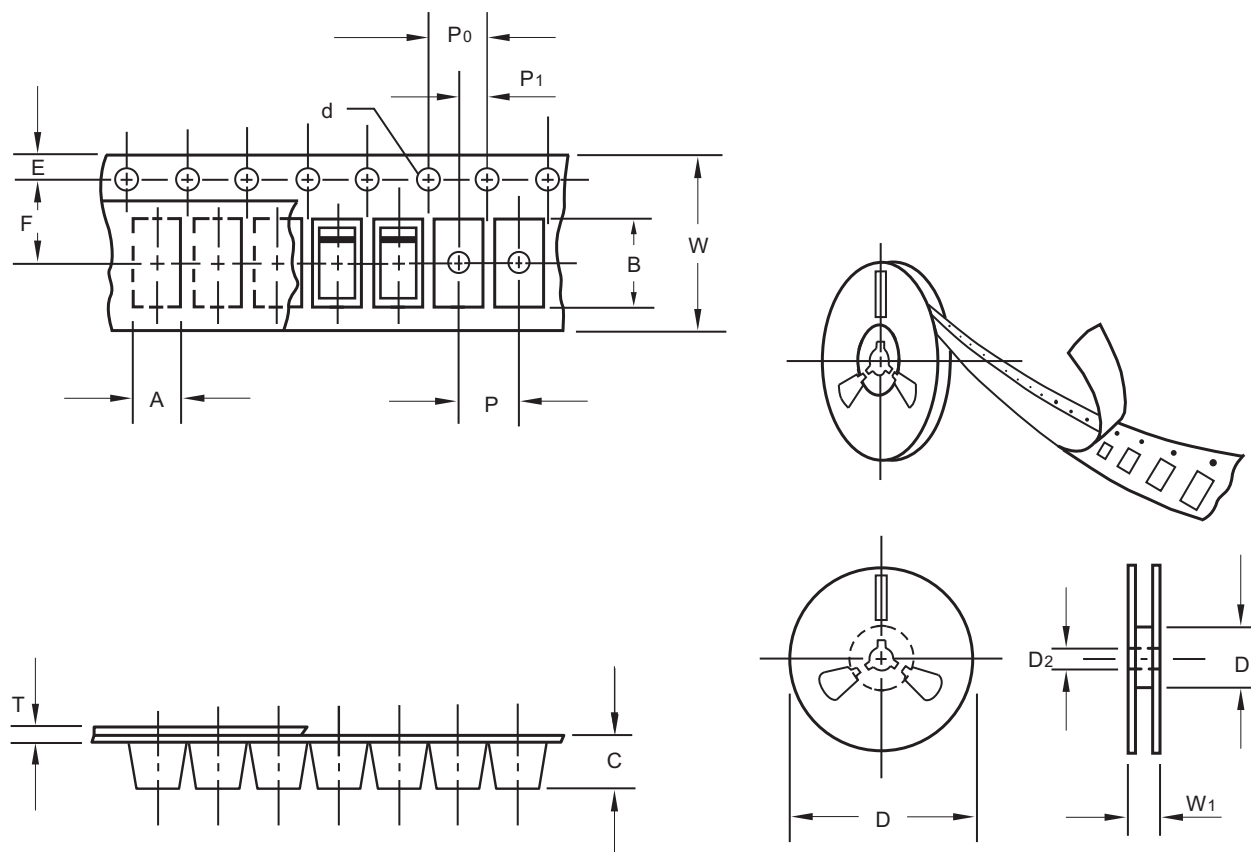


Dimensions in inches and (millimeters)

| PACKAGE   | A            | B            | C            |
|-----------|--------------|--------------|--------------|
| SOD-323FL | 0.032 (0.82) | 0.022 (0.56) | 0.069 (1.75) |

## FM751V-FL

## Packing information



unit:mm

| Item                      | Symbol | Tolerance | SOD-323FL |
|---------------------------|--------|-----------|-----------|
| Carrier width             | A      | 0.1       | 1.46      |
| Carrier length            | B      | 0.1       | 2.95      |
| Carrier depth             | C      | 0.1       | 1.25      |
| Sprocket hole             | d      | 0.1       | 1.50      |
| 13" Reel outside diameter | D      | 2.0       | -         |
| 13" Reel inner diameter   | D1     | min       | -         |
| 7" Reel outside diameter  | D      | 2.0       | 178.00    |
| 7" Reel inner diameter    | D1     | min       | 62.00     |
| Feed hole diameter        | D2     | 0.5       | 13.00     |
| Sprocket hole position    | E      | 0.1       | 1.75      |
| Punch hole position       | F      | 0.1       | 3.50      |
| Punch hole pitch          | P      | 0.1       | 4.00      |
| Sprocket hole pitch       | P0     | 0.1       | 4.00      |
| Embossment center         | P1     | 0.1       | 2.00      |
| Overall tape thickness    | T      | 0.1       | 0.23      |
| Tape width                | W      | 0.3       | 8.00      |
| Reel width                | W1     | 1.0       | 11.40     |

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

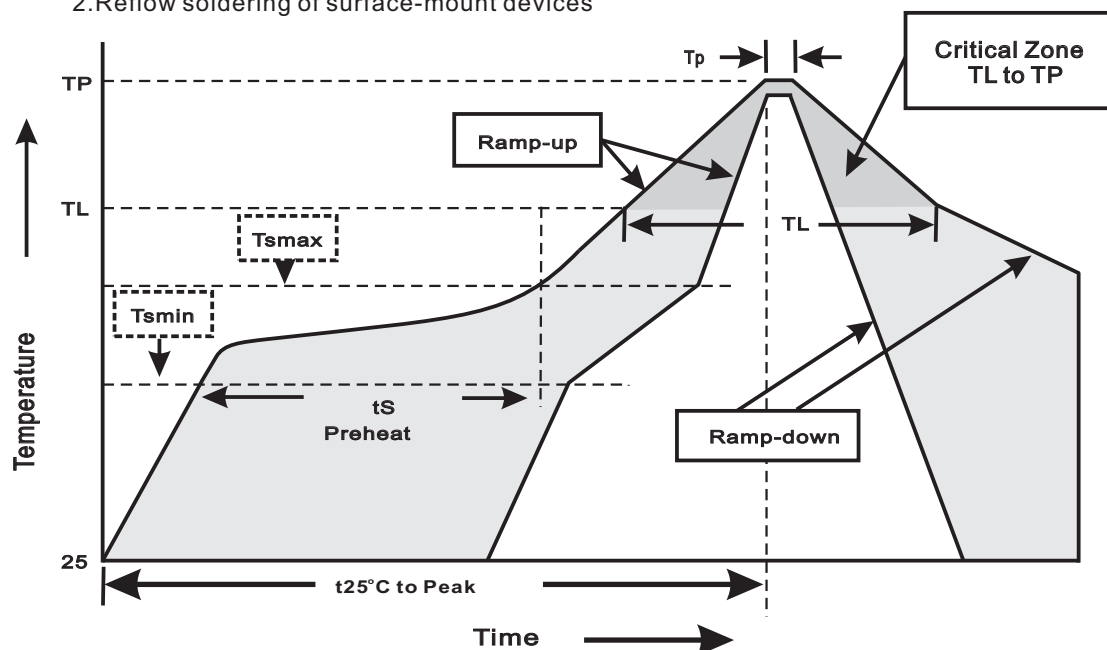
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## Reel packing

| 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) |
|-----------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| SOD-323FL | 7"        | 3,000      | 4.0                     | 30,000    | 183*183*123     | 178             | 382*262*387       | 240,000      | 9.5                       |

## 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 $T_P$ )                                                                    | $<3^{\circ}\text{C}/\text{sec}$                                          |
| Preheat<br>-Temperature Min( $T_{smin}$ )<br>-Temperature Max( $T_{smax}$ )<br>-Time(min to max)( $t_s$ ) | $150^{\circ}\text{C}$<br>$200^{\circ}\text{C}$<br>$60\sim 120\text{sec}$ |
| $T_{smax}$ to $T_L$<br>-Ramp-upRate                                                                       | $<3^{\circ}\text{C}/\text{sec}$                                          |
| Time maintained above:<br>-Temperature( $T_L$ )<br>-Time( $t_L$ )                                         | $217^{\circ}\text{C}$<br>$60\sim 260\text{sec}$                          |
| Peak Temperature( $T_P$ )                                                                                 | $255^{\circ}\text{C}-0/+5^{\circ}\text{C}$                               |
| Time within $5^{\circ}\text{C}$ of actual Peak Temperature( $t_P$ )                                       | $10\sim 30\text{sec}$                                                    |
| Ramp-down Rate                                                                                            | $<6^{\circ}\text{C}/\text{sec}$                                          |
| Time $25^{\circ}\text{C}$ to Peak Temperature                                                             | $<6\text{minutes}$                                                       |

# FM751V-FL

## High reliability test capabilities

| Item Test                         | Conditions                                                                                                                                 | Reference                     |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1. Solder Resistance              | at $260\pm5^{\circ}\text{C}$ for $10\pm2\text{sec.}$<br>immerse body into solder $1/16''\pm1/32''$                                         | MIL-STD-750D<br>METHOD-2031   |
| 2. Solderability                  | at $245\pm5^{\circ}\text{C}$ 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. 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   |
| 9. Forward Surge                  | 60Hz for 1cycle                                                                                                                            | MIL-STD-750D<br>METHOD-4066-2 |
| 10. Humidity                      | at $T_A=85^{\circ}\text{C}$ , RH=85% for 1000hrs.                                                                                          | MIL-STD-750D<br>METHOD-1021   |
| 11. High Temperature Storage Life | at $175^{\circ}\text{C}$ for 1000 hrs.                                                                                                     | MIL-STD-750D<br>METHOD-1031   |