

FM10L45-T2

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FM10L45-T2

10.0A Surface Mount Schottky Barrier Rectifiers- 45V

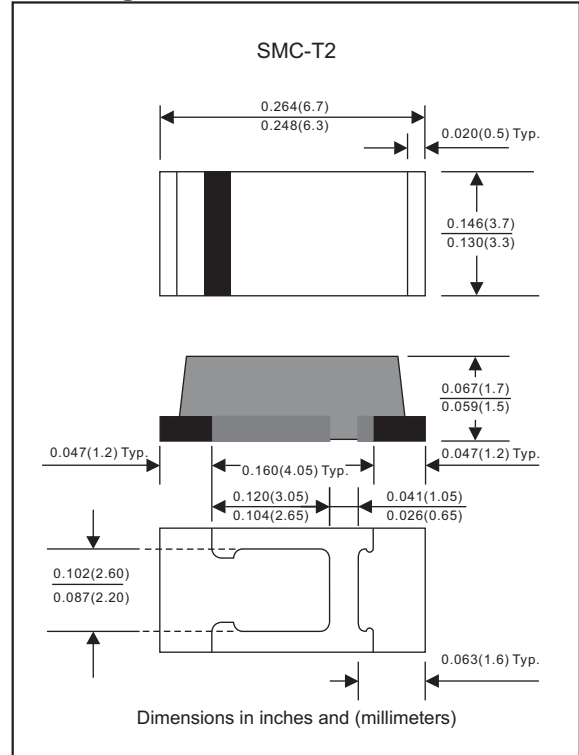
Features

- Low profile surface mounted application in order to optimize board space.
- Low power loss, high efficiency.
- Ultra Low forward voltage drop.
- High forward surge capability.
- High frequency operation.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen free parts, ex. FM10L45-T2-H.

Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SMC-T2
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.113gram

Package outline



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

| Parameter | Symbol | FM10L45-T2 | Unit |
|--|----------------|-------------|--------------------|
| Repetitive peak reverse voltage | V_{RRM} | 45 | V |
| RMS voltage | V_{RMS} | 31.5 | |
| Continuous reverse voltage | V_R | 45 | |
| Forward rectified current(Fig.1) | I_O | 10.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 280 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | $^{\circ}\text{C}$ |

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

| Parameter | Test Conditions | Symbol | MIN. | TYP. | MAX. | Unit |
|---------------------------|---|--------|------|------|------|------|
| Reverse breakdown voltage | $I_R=0.5\text{mA}$ | V_B | 45 | | | V |
| Forward voltage | $I_F=2.0\text{A}, T_J=25^{\circ}\text{C}$ | V_F | | 0.28 | - | V |
| | $I_F=3.0\text{A}, T_J=25^{\circ}\text{C}$ | | | 0.30 | - | |
| | $I_F=5.0\text{A}, T_J=25^{\circ}\text{C}$ | | | 0.33 | - | |
| | $I_F=10.0\text{A}, T_J=25^{\circ}\text{C}$ | | | 0.38 | 0.45 | |
| | $I_F=2.0\text{A}, T_J=100^{\circ}\text{C}$ | | | 0.19 | - | |
| | $I_F=3.0\text{A}, T_J=100^{\circ}\text{C}$ | | | 0.22 | - | |
| | $I_F=5.0\text{A}, T_J=100^{\circ}\text{C}$ | | | 0.26 | - | |
| | $I_F=10.0\text{A}, T_J=100^{\circ}\text{C}$ | | | 0.34 | 0.40 | |
| Reverse current | $V_R=45\text{V}, T_J=25^{\circ}\text{C}$ | I_R | | 0.20 | 0.50 | mA |
| | $V_R=45\text{V}, T_J=100^{\circ}\text{C}$ | | | 25 | 50 | |

Rating and characteristic curves (FM10L45-T2)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

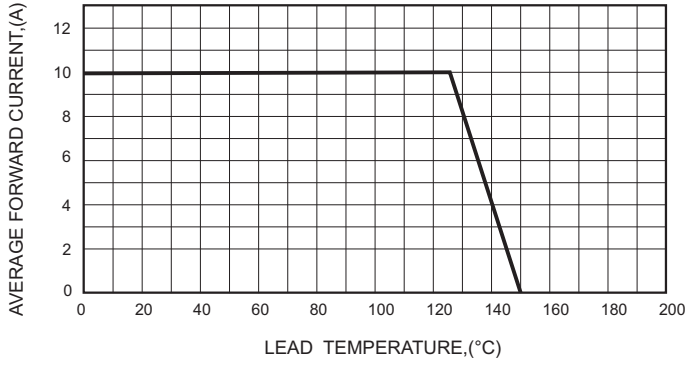


FIG.2-TYPICAL FORWARD CHARACTERISTICS

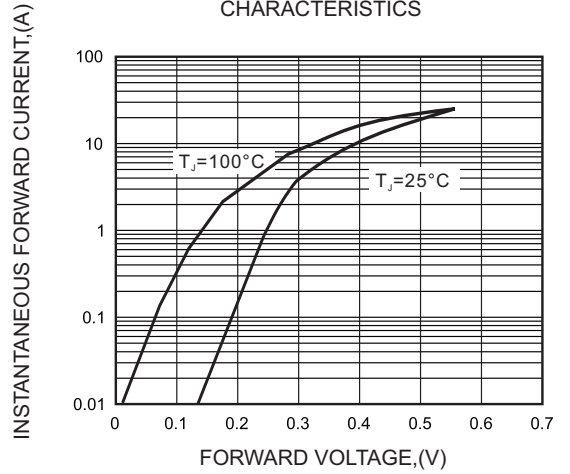


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

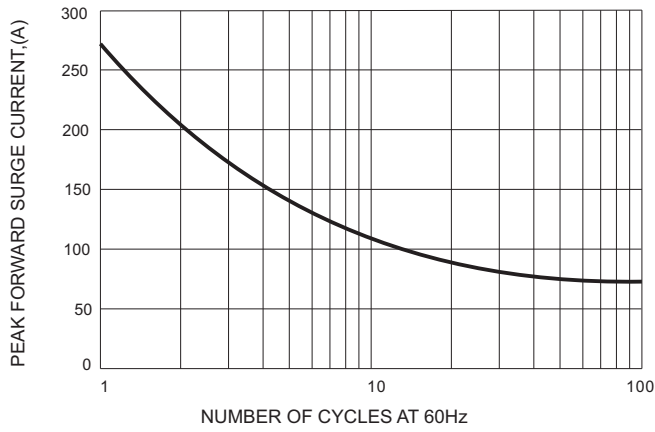
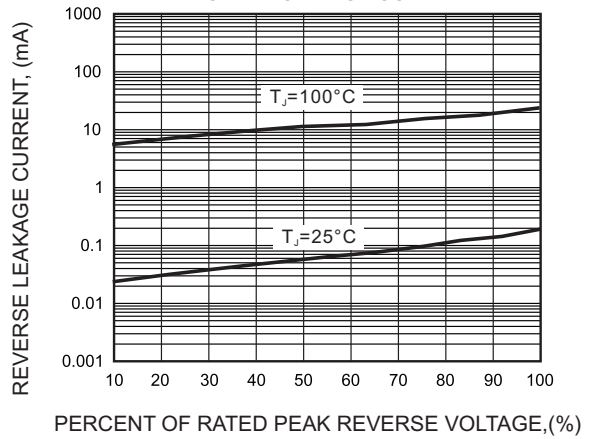




FIG.4 - TYPICAL REVERSE CHARACTERISTICS



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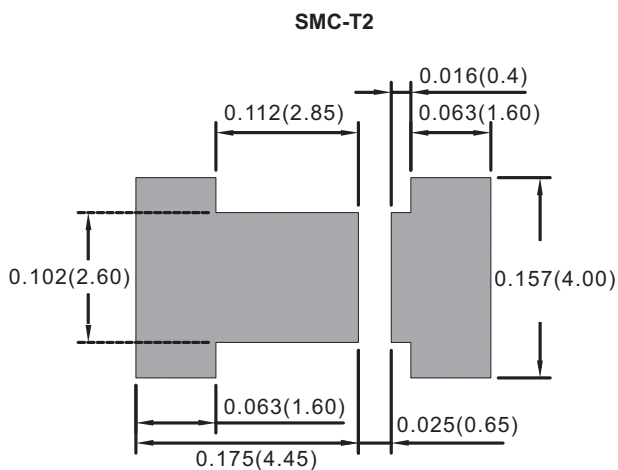
Pinning information

| Pin | Simplified outline | Symbol |
|----------------------------|---|---|
| Pin1 cathode Pin2 anode |  |  |

Marking

| Type number | Marking code |
|-------------|--------------|
| FM10L45-T2 | 10L45 |

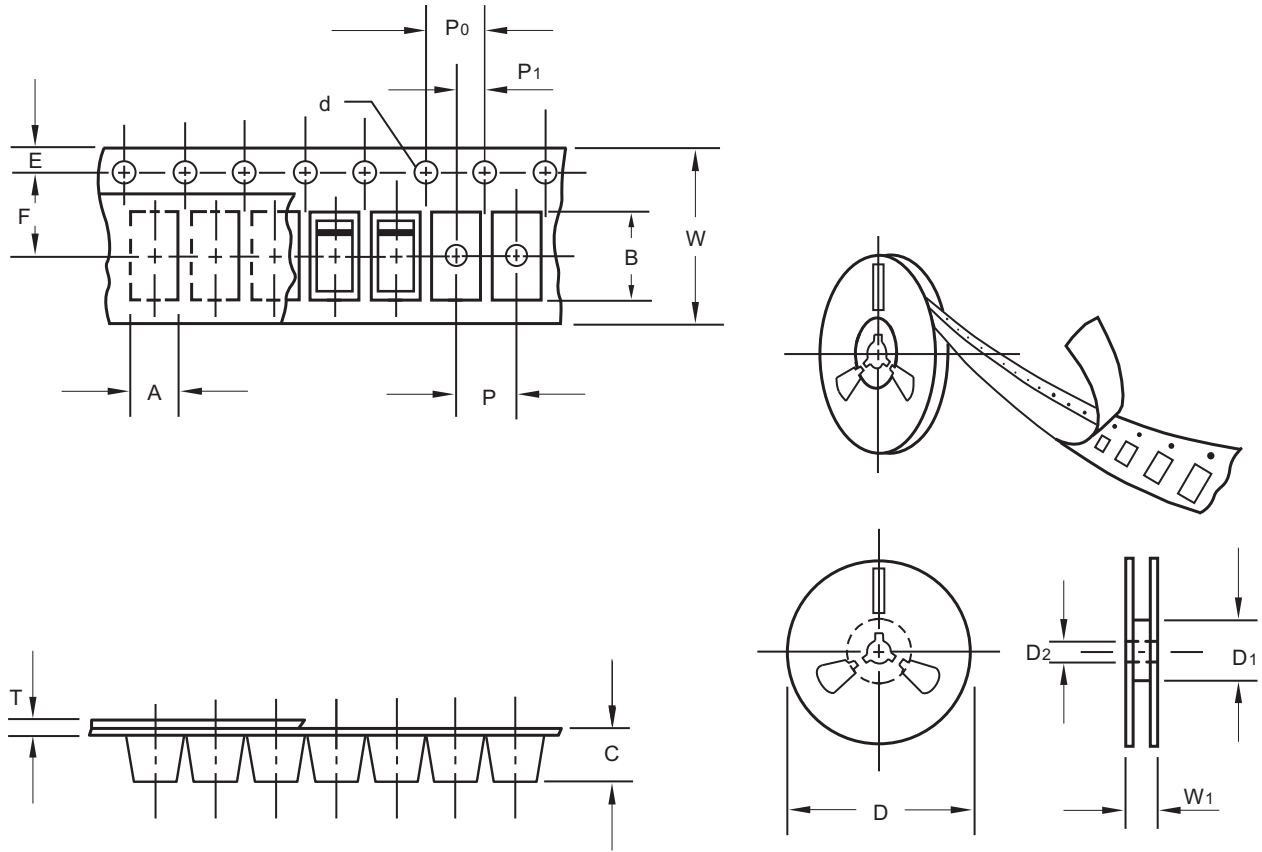
Suggested solder pad layout



Dimensions in inches and (millimeters)

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Packing information



unit:mm

| Item | Symbol | Tolerance | SMC-T2 |
|---------------------------|--------|-----------|--------|
| Carrier width | A | 0.1 | 3.85 |
| Carrier length | B | 0.1 | 7.02 |
| Carrier depth | C | 0.1 | 1.75 |
| Sprocket hole | d | 0.1 | 1.50 |
| 13" Reel outside diameter | D | 2.0 | 330.00 |
| 13" Reel inner diameter | D1 | min | 50.00 |
| 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 | 5.50 |
| Punch hole pitch | P | 0.1 | 8.00 |
| 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 | 12.00 |
| Reel width | W1 | 1.0 | 18.00 |

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

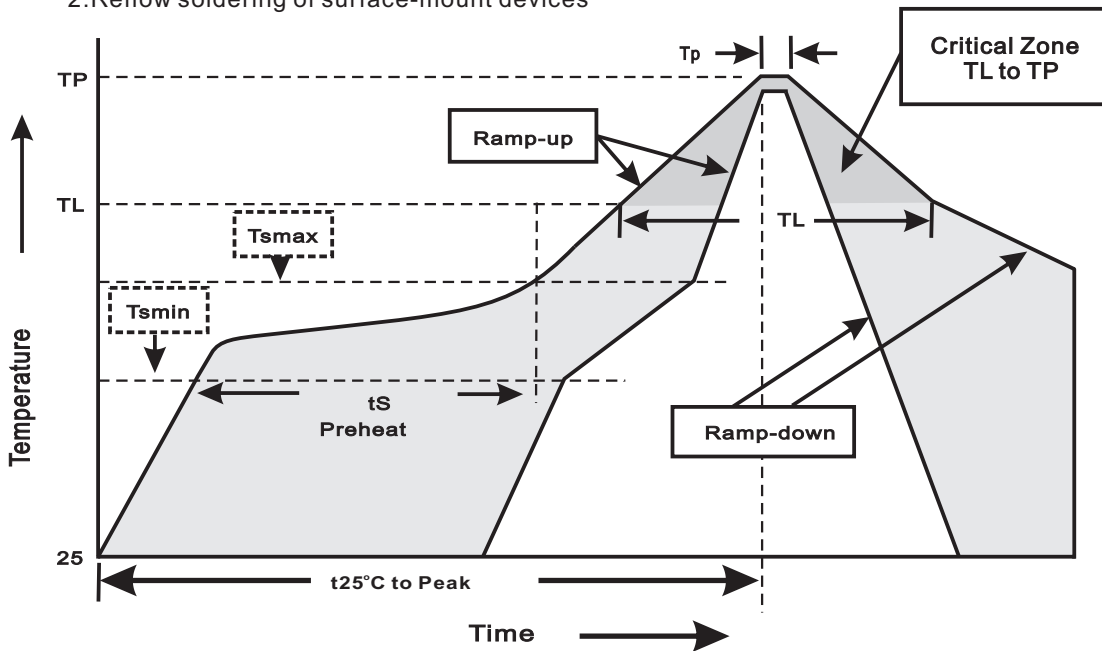
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Reel packing

| 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) |
|---------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| SMC-T2 | 13" | 3,000 | 8.0 | 6,000 | 337*337*37 | 330 | 350*330*360 | 48,000 | 17.2 |

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°C/sec |
| Preheat -Temperature Min(T _{smín}) -Temperature Max(T _{smáx}) -Time(min to max)(t _s) | 150°C 200°C 60~120sec |
| T _{smáx} to T _L -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(T _L) -Time(t _L) | 217°C 60~260sec |
| Peak Temperature(T _P) | 255°C-0/+5°C |
| Time within 5°C of actual Peak Temperature(t _P) | 10~30sec |
| Ramp-down Rate | <6°C/sec |
| Time 25°C to Peak Temperature | <6minutes |

FM10L45-T2**High reliability test capabilities**

| Item Test | Conditions | Reference |
|-----------------------------------|--|-------------------------------|
| 1. Solder Resistance | at $260\pm 5^{\circ}\text{C}$ for $10\pm 2\text{sec}$. immerse body into solder $1/16''\pm 1/32''$ | MIL-STD-750D METHOD-2031 |
| 2. Solderability | at $245\pm 5^{\circ}\text{C}$ for 5 sec. | MIL-STD-202F METHOD-208 |
| 3. High Temperature Reverse Bias | $V_R=80\%$ rate at $T_J=150^{\circ}\text{C}$ for 168 hrs. | MIL-STD-750D METHOD-1038 |
| 4. Forward Operation Life | Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs. | MIL-STD-750D METHOD-1027 |
| 5. Intermittent Operation Life | $T_A = 25^{\circ}\text{C}$, $I_F = I_O$ On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles. | MIL-STD-750D METHOD-1036 |
| 6. Pressure Cooker | $15P_{SIG}$ at $T_A=121^{\circ}\text{C}$ for 4 hrs. | JESD22-A102 |
| 7. Temperature Cycling | -55°C to $+125^{\circ}\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles. | MIL-STD-750D METHOD-1051 |
| 8. Thermal Shock | 0°C for 5 min. rise to 100°C for 5 min. total 10 cycles. | MIL-STD-750D METHOD-1056 |
| 9. Forward Surge | 8.3ms single half sine-wave superimposed on rated load, one surge. | MIL-STD-750D METHOD-4066-2 |
| 10. Humidity | at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs. | MIL-STD-750D METHOD-1021 |
| 11. High Temperature Storage Life | at 175°C for 1000 hrs. | MIL-STD-750D METHOD-1031 |