

SKFM1020C-D THRU SKFM10200C-D

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SKFM1020C-D THRU SKFM10200C-D

10.0A Surface Mount Schottky Barrier Rectifiers-20V-200V

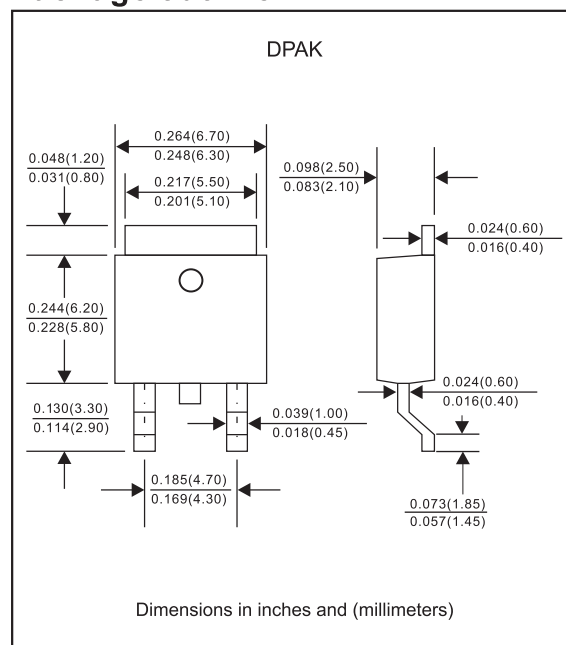
Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance.
- Low power loss, high efficiency.
- High current capability, low forward voltage drop.
- High surge capability.
- Guardring for overvoltage protection.
- Ultra high-speed switching.
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" for Halogen-free part, ex. SKFM1020C-D-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, TO-252 / DPAK
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.34 gram

Package outline



Maximum ratings and Electrical Characteristics (AT T_A=25°C unless otherwise noted)

| PARAMETER | CONDITIONS | Symbol | MIN. | TYP. | MAX. | UNIT |
|----------------------------|--|------------------|------|------|------|------|
| Forward rectified current | See Fig.1 | I _O | | | 10.0 | A |
| Forward surge current | 8.3ms single half sine-wave (JEDEC methode) | I _{FSM} | | | 100 | A |
| Reverse current | V _R = V _{RRM} T _J = 25°C | I _R | | | 0.5 | mA |
| | V _R = V _{RRM} T _J = 100°C | | | | 20 | |
| Diode junction capacitance | f=1MHz and applied 4V DC reverse voltage | C _J | | 380 | | pF |
| Storage temperature | | T _{STG} | -65 | | +175 | °C |

| SYMBOLS | V _{RRM} *1 (V) | V _{RMS} *2 (V) | V _R *3 (V) | V _F *4 (V) | Operating temperature T _J (°C) |
|--------------|----------------------------|----------------------------|--------------------------|--------------------------|--|
| SKFM1020C-D | 20 | 14 | 20 | 0.70 | -55 to +125 |
| SKFM1030C-D | 30 | 21 | 30 | | |
| SKFM1040C-D | 40 | 28 | 40 | | |
| SKFM1045C-D | 45 | 31.5 | 45 | 0.80 | -55 to +150 |
| SKFM1050C-D | 50 | 35 | 50 | | |
| SKFM1060C-D | 60 | 42 | 60 | | |
| SKFM1080C-D | 80 | 56 | 80 | 0.85 | -55 to +150 |
| SKFM10100C-D | 100 | 70 | 100 | | |
| SKFM10150C-D | 150 | 105 | 150 | | |
| SKFM10200C-D | 200 | 140 | 200 | 0.92 | |

- *1 Repetitive peak reverse voltage
- *2 RMS voltage
- *3 Continuous reverse voltage
- *4 Maximum forward voltage@I_F = 5.0A

Rating and characteristic curves (SKFM1020C-D THRU SKFM10200C-D)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

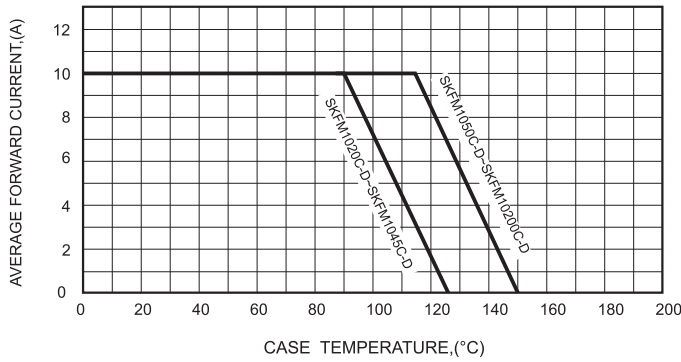


FIG.2-TYPICAL FORWARD CHARACTERISTICS

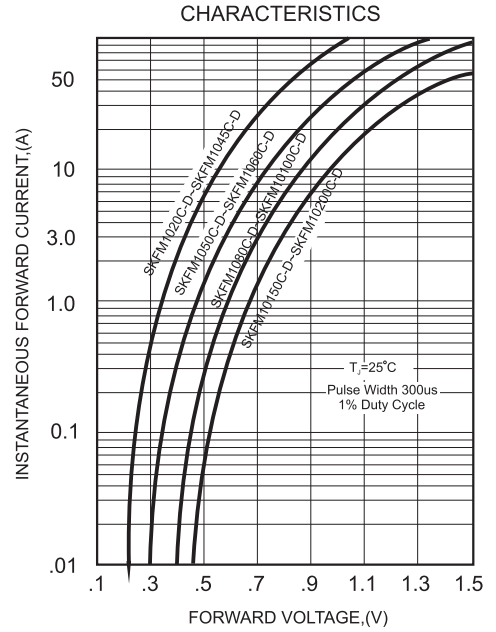


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

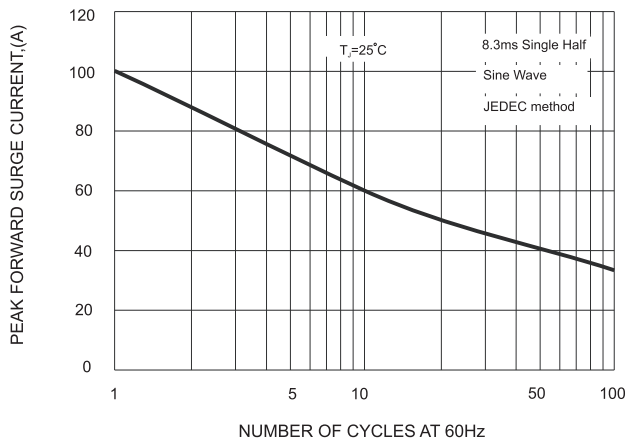


FIG.4 - TYPICAL REVERSE CHARACTERISTICS

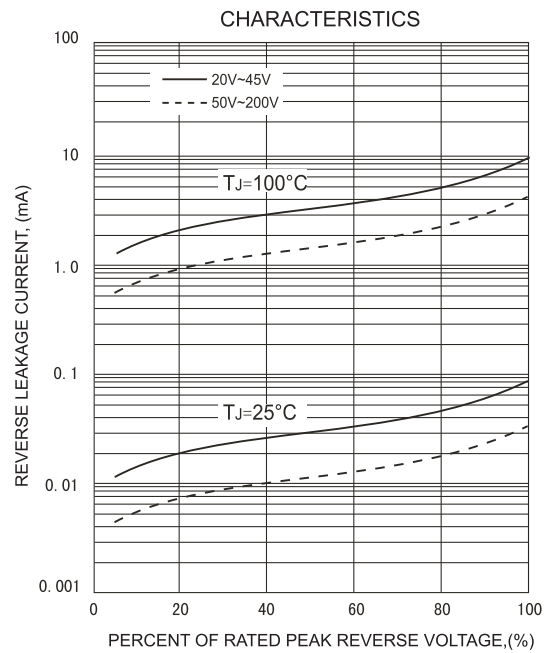
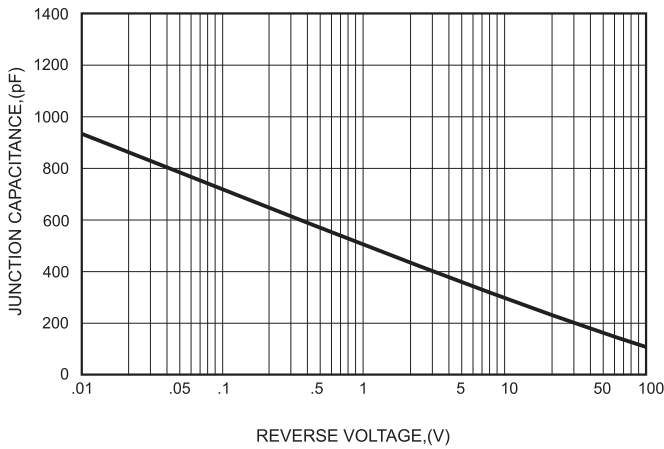
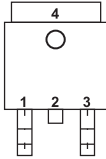
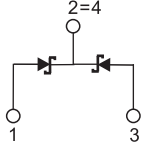


FIG.5-TYPICAL JUNCTION CAPACITANCE

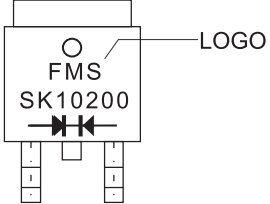


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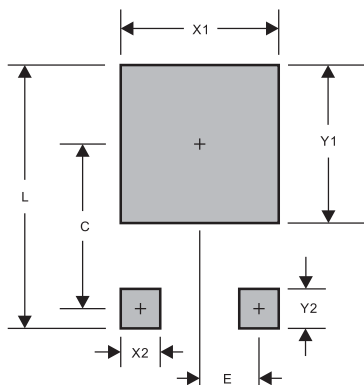
Pinning information

| Simplified outline | Symbol |
|---|---|
|  |  |

Marking

| Type number | Marking code | Example |
|--------------|--------------|--|
| SKFM1020C-D | SK1020 |  |
| SKFM1030C-D | SK1030 | |
| SKFM1040C-D | SK1040 | |
| SKFM1045C-D | SK1045 | |
| SKFM1050C-D | SK1050 | |
| SKFM1060C-D | SK1060 | |
| SKFM1080C-D | SK1080 | |
| SKFM10100C-D | SK10100 | |
| SKFM10150C-D | SK10150 | |
| SKFM10200C-D | SK10200 | |

Suggested solder pad layout

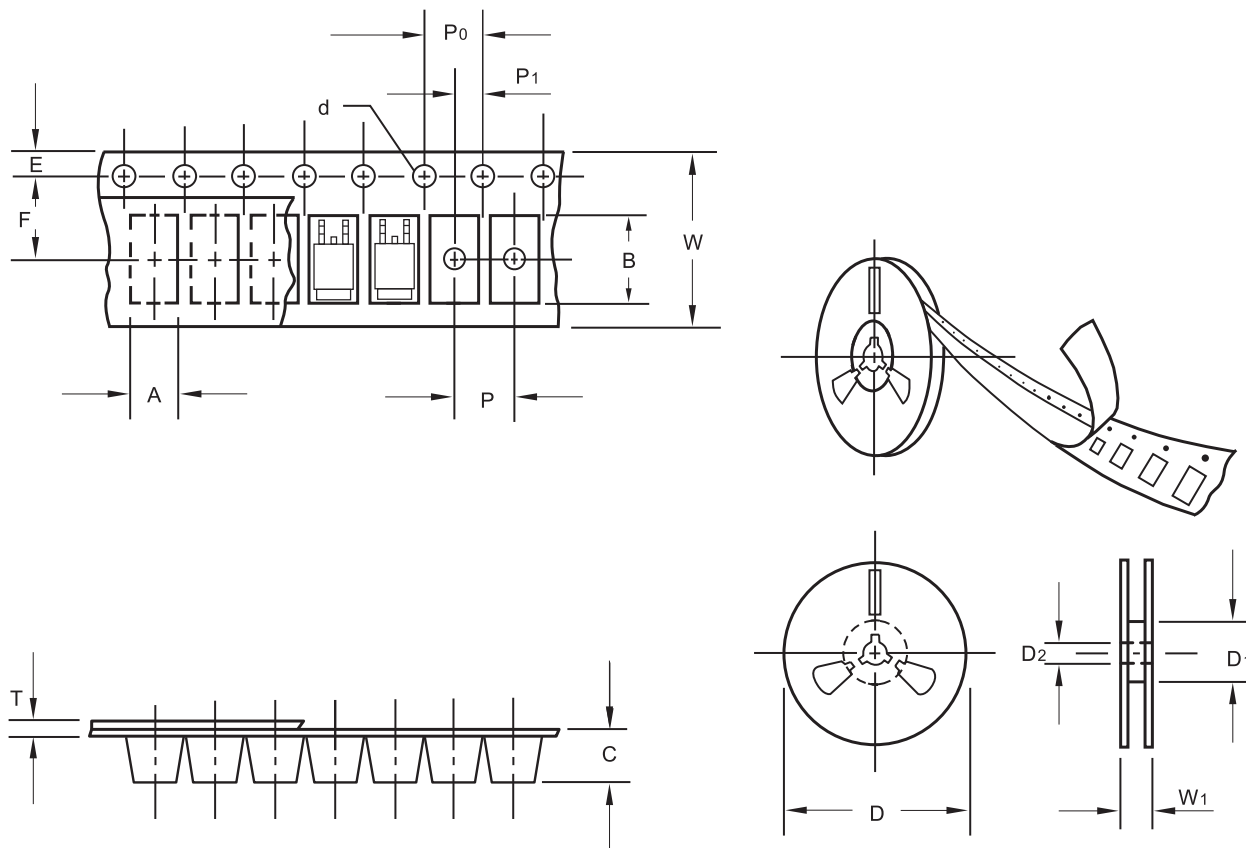


| PACKAGE | DPAK |
|---------|--------------|
| C | 0.272(6.90) |
| E | 0.091(2.30) |
| L | 0.457(11.60) |
| X1 | 0.276(7.00) |
| X2 | 0.059(1.50) |
| Y1 | 0.276(7.00) |
| Y2 | 0.098(2.50) |

Dimensions in inches and (millimeters)

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Packing information



unit:mm

| Item | Symbol | Tolerance | DPAK |
|---------------------------|--------|-----------|--------|
| Carrier width | A | 0.1 | 6.90 |
| Carrier length | B | 0.1 | 10.50 |
| Carrier depth | C | 0.1 | 2.70 |
| 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 | - |
| 7" Reel inner diameter | D1 | min | - |
| Feed hole diameter | D2 | 0.5 | 13.00 |
| Sprocket hole position | E | 0.1 | 1.75 |
| Punch hole position | F | 0.1 | 7.50 |
| 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 | 16.00 |
| Reel width | W1 | 1.0 | 22.00 |

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

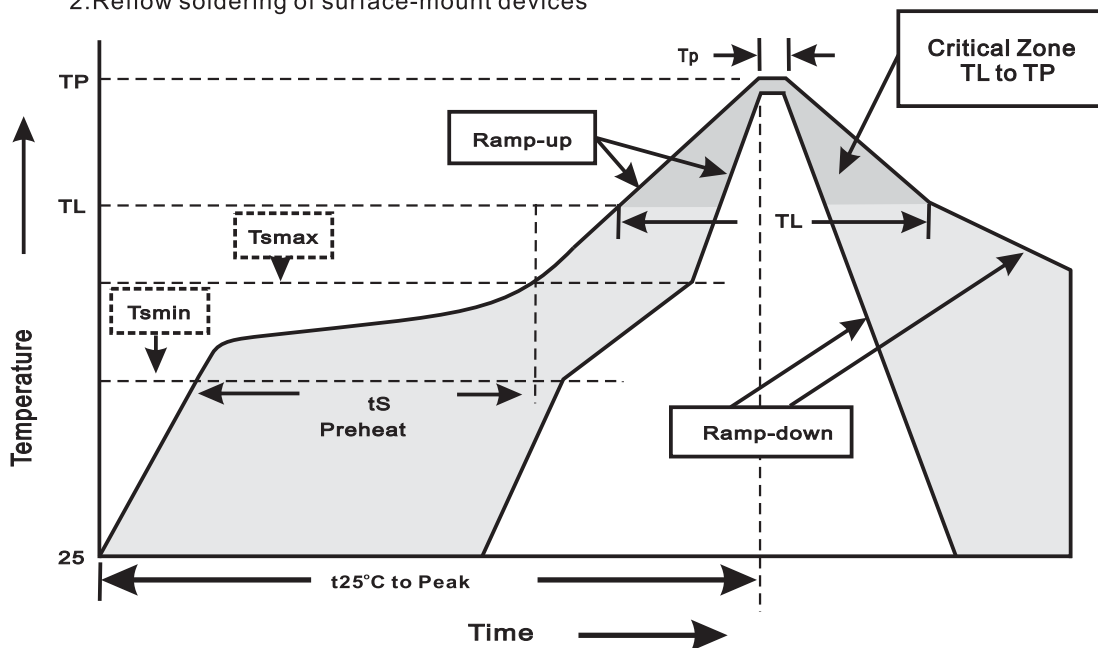
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Reel packing

| 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) |
|-------------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| DPAK/TO-252 | 13" | 2,500 | 8.0 | 5,000 | 335*335*43 | 330 | 350*330*360 | 48,000 | 22.0 |

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(TL to TP) | <3°C/sec |
| Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts) | 150°C 200°C 60~120sec |
| Tsmax to TL -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(TL) -Time(tL) | 217°C 60~260sec |
| Peak Temperature(TP) | 255°C-0/+5°C |
| Time within 5°C of actual Peak Temperature(tp) | 10~30sec |
| Ramp-down Rate | <3°C/sec |
| Time 25°C to Peak Temperature | <6minutes |

SKFM1020C-D THRU SKFM10200C-D**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 $T_J=125^{\circ}\text{C}$ 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. Forward Surge | 8.3ms single half sine-wave , one surge. | MIL-STD-750D METHOD-4066-2 |
| 9. Humidity | at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs. | MIL-STD-750D METHOD-1021 |
| 10. High Temperature Storage Life | at 175°C for 1000 hrs. | MIL-STD-750D METHOD-1031 |