

SKFM1020C-D2 THRU SKFM10200C-D2

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

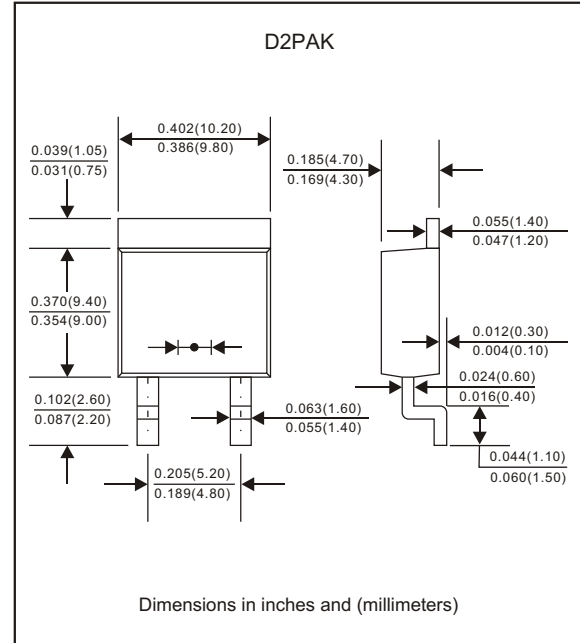
Package outline

Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance.
- Low profile surface mounted application in order to optimize board space.
- 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

Mechanical data

- Epoxy:UL94-V0 rated flameretardant
- Case : Molded plastic, TO-263/ D2PAK
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 1.70 gram



Maximum ratings (AT $T_A=25^{\circ}\text{C}$ 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 superimposed on rate load (JEDEC methode) | I_{FSM} | | | 150 | A |
| Reverse current | $V_R = V_{RRM} \quad T_A = 25^{\circ}\text{C}$ | I_R | | | 0.5 | mA |
| | $V_R = V_{RRM} \quad T_A = 100^{\circ}\text{C}$ | | | | 50 | |
| Thermal resistance | Junction to case | $R_{\theta JC}$ | | 3.0 | | $^{\circ}\text{C}/\text{W}$ |
| Storage temperature | | T_{STG} | -65 | | +175 | $^{\circ}\text{C}$ |

| SYMBOLS | V_{RRM}^{*1} (V) | V_{RMS}^{*2} (V) | V_R^{*3} (V) | V_F^{*4} (V) | Operating temperature T_J ($^{\circ}\text{C}$) |
|---------------|-----------------------|-----------------------|-------------------|-------------------|---|
| SKFM1020C-D2 | 20 | 14 | 20 | 0.55 | -55 to +125 |
| SKFM1030C-D2 | 30 | 21 | 30 | | |
| SKFM1040C-D2 | 40 | 28 | 40 | | |
| SKFM1050C-D2 | 50 | 35 | 50 | 0.75 | -55 to +125 |
| SKFM1060C-D2 | 60 | 42 | 60 | | |
| SKFM1080C-D2 | 80 | 56 | 80 | 0.85 | |
| SKFM10100C-D2 | 100 | 70 | 100 | | |
| SKFM10150C-D2 | 150 | 105 | 150 | 1.00 | |
| SKFM10200C-D2 | 200 | 140 | 200 | | |

*1 Repetitive peak reverse voltage

*2 RMS voltage

*3 Continuous reverse voltage

*4 Maximum forward voltage
 $I_F = 5.0\text{A}$

Rating and characteristic curves (SKFM1020C-D2 THRU SKFM10200C-D2)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

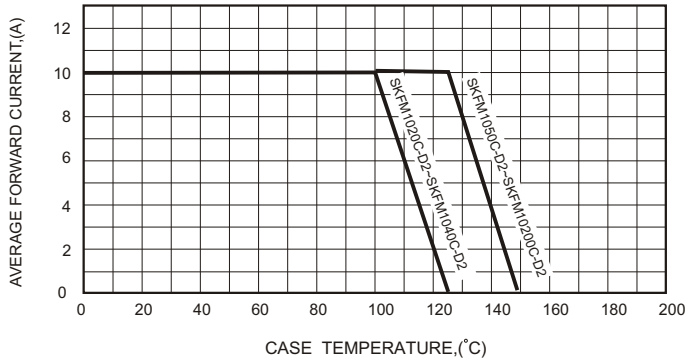


FIG.2-TYPICAL FORWARD CHARACTERISTICS

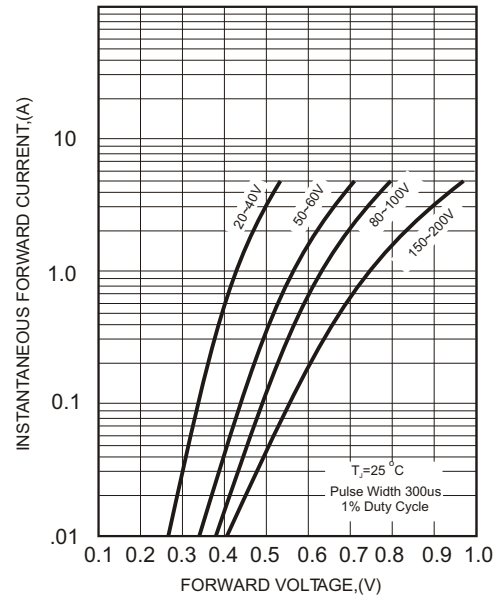


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

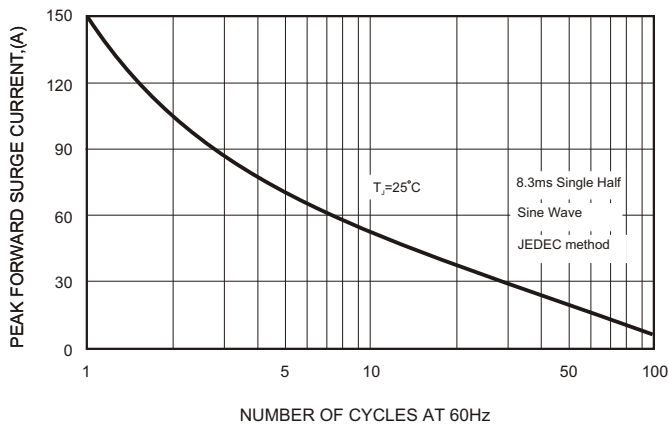
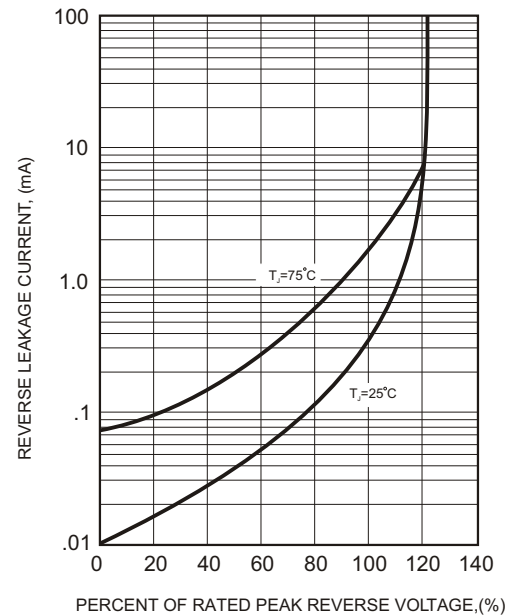
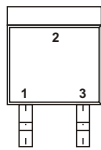
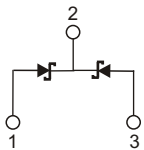


FIG.4 - TYPICAL REVERSE CHARACTERISTICS



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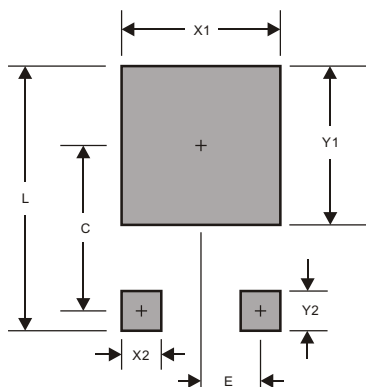
Pinning information

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

Marking

| Type number | Marking code |
|---------------|--------------|
| SKFM1020C-D2 | SK1020 |
| SKFM1030C-D2 | SK1030 |
| SKFM1040C-D2 | SK1040 |
| SKFM1050C-D2 | SK1050 |
| SKFM1060C-D2 | SK1060 |
| SKFM1080C-D2 | SK1080 |
| SKFM10100C-D2 | SK10100 |
| SKFM10150C-D2 | SK10150 |
| SKFM10200C-D2 | SK10200 |

Suggested solder pad layout

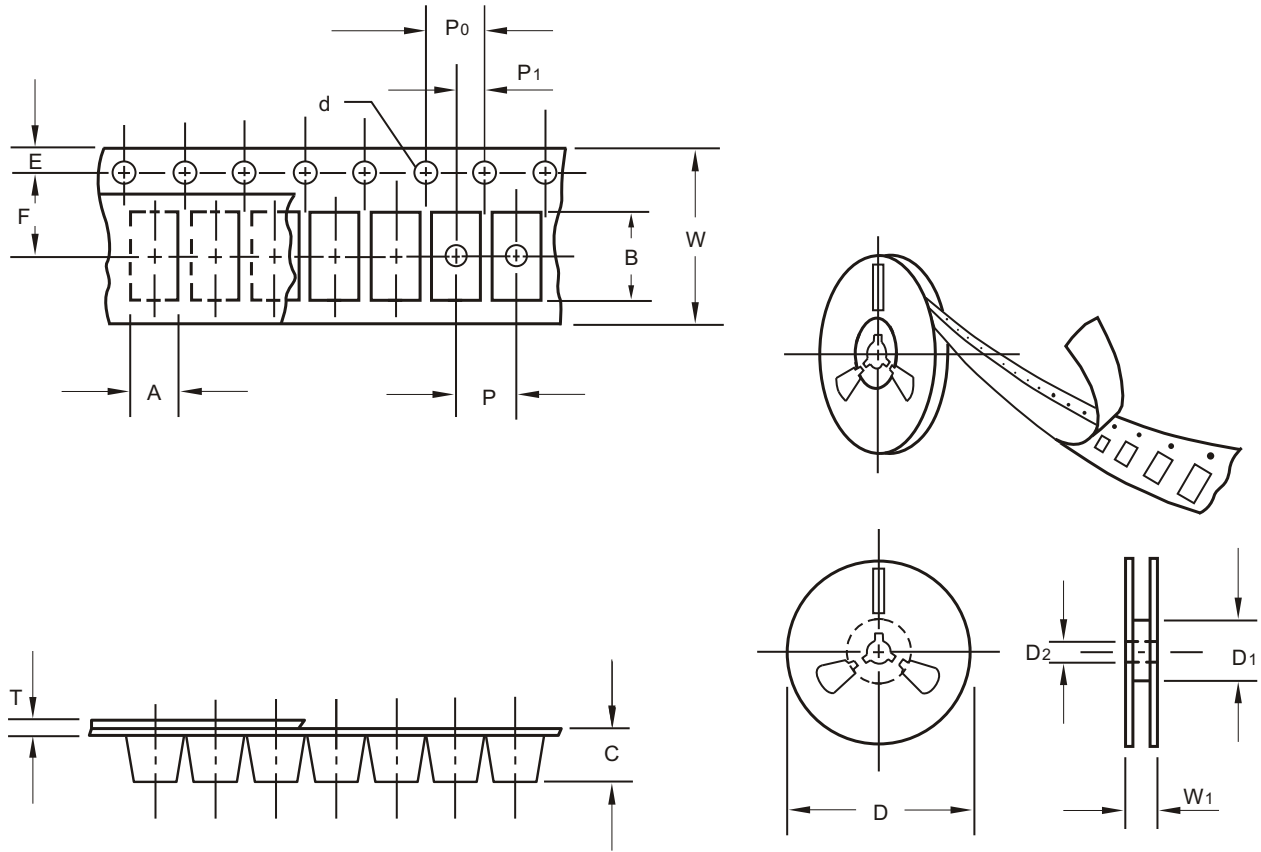


| PACKAGE | D2PAK |
|---------|--------------|
| C | 0.374(9.50) |
| E | 0.098(2.50) |
| L | 0.665(16.90) |
| X1 | 0.425(10.80) |
| X2 | 0.043(1.10) |
| Y1 | 0.449(11.40) |
| Y2 | 0.138(3.50) |

Dimensions in inches and (millimeters)

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Packing information



unit:mm

| Item | Symbol | Tolerance | D2PAK |
|---------------------------|--------|-----------|--------|
| Carrier width | A | 0.1 | 10.70 |
| Carrier length | B | 0.1 | 16.30 |
| Carrier depth | C | 0.1 | 5.10 |
| 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 | 11.50 |
| Punch hole pitch | P | 0.1 | 16.00 |
| 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 | 24.00 |
| Reel width | W1 | 1.0 | 30.00 |

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

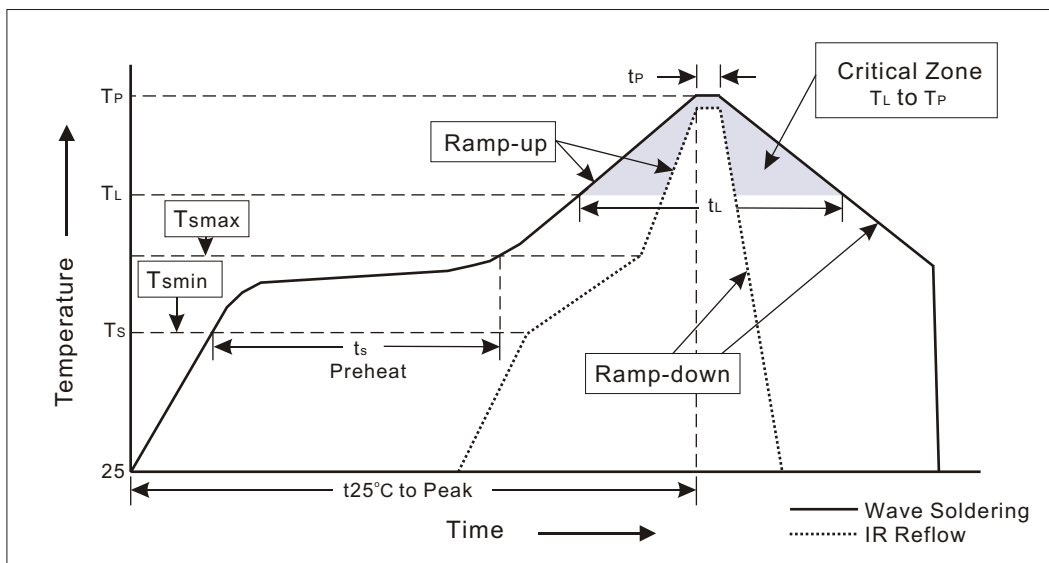
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Reel packing

| 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) |
|--------------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| D2PAK/TO-263 | 13" | 800 | 16.0 | 800 | 337*337*37 | 330 | 360*340*370 | 6,400 | 15.0 |

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=10°C~35°C Humidity=65%±15%
- 2.Reflow soldering of surface-mount devices



3.Flow (wave)soldering (solder dipping)

| Profile Feature | Soldering Condition |
|---|-----------------------------|
| Average ramp-up rate(T_L to T_P) | <3°C/sec |
| Preheat -Temperature Min(T_{Smin}) -Temperature Max(T_{Smax}) -Time(min to max)(t_s) | 100°C 150°C 60~120sec |
| T_{Smax} to T_L -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(T_L) -Time(t_L) | 183°C 60~150sec |
| 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 |

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High reliability test capabilities

| Item Test | Conditions | Reference |
|-----------------------------------|--|-------------------------------|
| 1. Solder Resistance | at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32" | MIL-STD-750D METHOD-2031 |
| 2. Solderability | at 245±5°C for 5 sec. | MIL-STD-202F METHOD-208 |
| 3. High Temperature Reverse Bias | $V_R=80\%$ rate at $T_A=125^\circ\text{C}$ for 168 hrs. | MIL-STD-750D METHOD-1026 |
| 4. Forward Operation Life | Rated average rectifier current at $T=25^\circ\text{C}$ 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. | |
| 7. Temperature Cycling | -55°C to +125°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 $T_A=65^\circ\text{C}$, RH=98% for 1000hrs. | MIL-STD-750D METHOD-1038 |
| 11. High Temperature Storage Life | at 175°C for 1000hrs. | MIL-STD-750D METHOD-1031 |
| 12. Solvent Resistance | Dip into Freon at 25°C for 1 min. | MIL-STD-202F METHOD-215 |