

**SKFM1040JW-D Thru SKFM10200JW-D****List**

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# SKFM1040JW-D Thru SKFM10200JW-D

## 10.0Amp Surface Mount Schottky Barrier Rectifiers : 40-200V

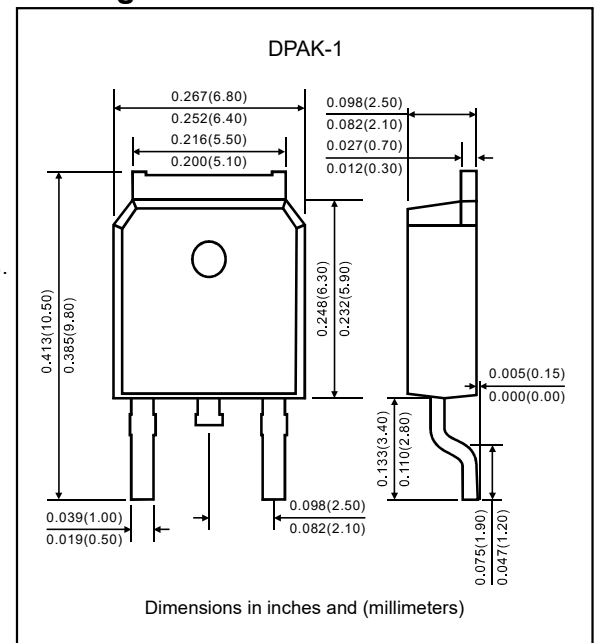
### Features

- The plastic package carries underwrites laboratory flammability classification 94V-0.
- Construction utilizes void-free molded plastic technique.
- Low reverse leakage.
- High forward surge current capability.
- High temperature soldering guaranteed 260°C/10 seconds at terminals.
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC.
- Suffix "-H" indicates Halogen free parts, ex. SKFM1040JW-D-H.

### Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, DPAK-1 (TO-252)
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.34 gram

### Package outline



### Maximum ratings and electrical characteristics (At $T_A=25^\circ\text{C}$ unless otherwise noted)

Rating at  $25^\circ\text{C}$  ambient temperature unless otherwise specified.

Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.

| Parameter                                                                                        | Symbol            | SKFM<br>1040JW-D | SKFM<br>1045JW-D | SKFM<br>1060JW-D | SKFM<br>10100JW-D | SKFM<br>10150JW-D | SKFM<br>10200JW-D | Unit |
|--------------------------------------------------------------------------------------------------|-------------------|------------------|------------------|------------------|-------------------|-------------------|-------------------|------|
| Maximum repetitive peak reverse voltage                                                          | V <sub>RRM</sub>  | 40               | 45               | 60               | 100               | 150               | 200               | V    |
| Maximum RMS voltage                                                                              | V <sub>RMS</sub>  | 28               | 31.5             | 42               | 70                | 105               | 140               | V    |
| Maximum DC blocking voltage                                                                      | V <sub>DC</sub>   | 40               | 45               | 60               | 100               | 150               | 200               | V    |
| Maximum average forward rectified current at T <sub>c</sub> =110°C                               | I <sub>(AV)</sub> | 10.0             |                  |                  |                   |                   |                   | A    |
| Peak forward surge current 8.3ms single half sine wave superimposed on rated load (JEDEC Method) | I <sub>FSM</sub>  | 150.0            |                  |                  |                   |                   |                   | A    |
| Maximum instantaneous forward voltage per diode at 10.0A                                         | V <sub>F</sub>    | 0.55             |                  | 0.75             | 0.85              | 0.95              |                   | V    |
| Maximum DC reverse current T <sub>A</sub> =25°C                                                  | I <sub>R</sub>    | 0.5              |                  |                  | 0.05              |                   |                   | mA   |
| At rated DC blocking voltage T <sub>A</sub> =125°C                                               |                   | 50               |                  |                  | 10                |                   |                   |      |
| Typical thermal resistance                                                                       | R <sub>BJC</sub>  | 4.5              |                  |                  |                   |                   |                   | °C/W |
| Operating junction temperature range                                                             | T <sub>J</sub>    | +150             |                  |                  |                   |                   |                   | °C   |
| Storage temperature range                                                                        | T <sub>STG</sub>  | -55 to +150      |                  |                  |                   |                   |                   | °C   |

## Rating and characteristic curves (SKFM1040JW-D Thru SKFM10200JW-D)

FIG. 1- DERATING CURVE OUTPUT RECTIFIED CURRENT

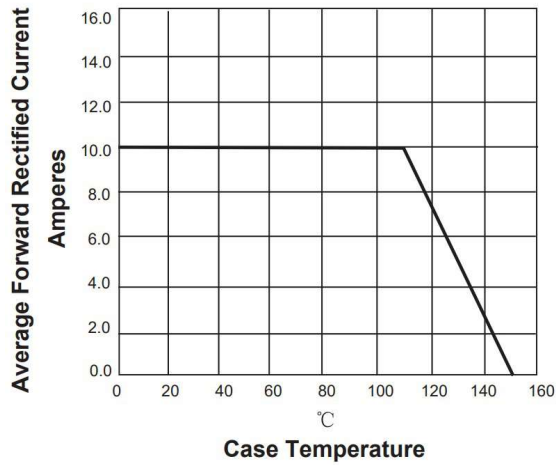


FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT PER LEG

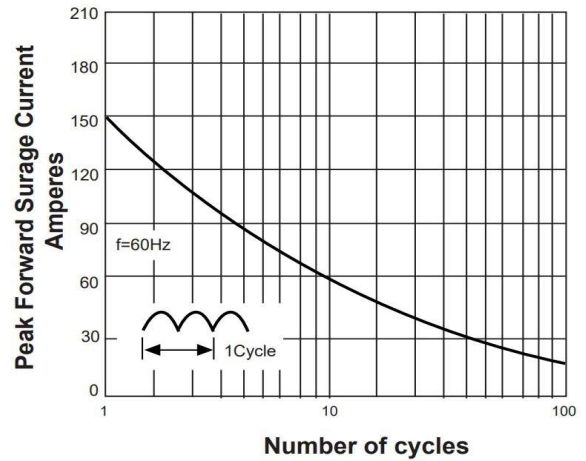


FIG. 3-TYPICAL FORWARD VOLTAGE CHARACTERISTICS

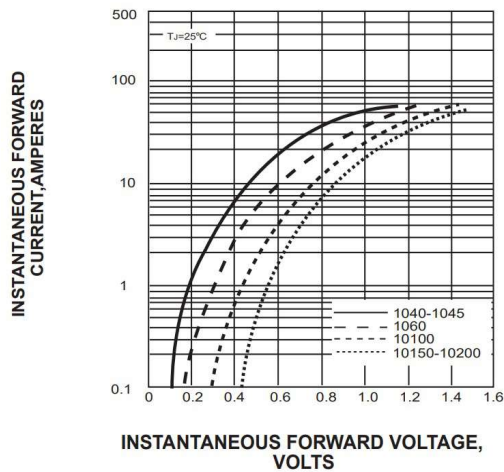
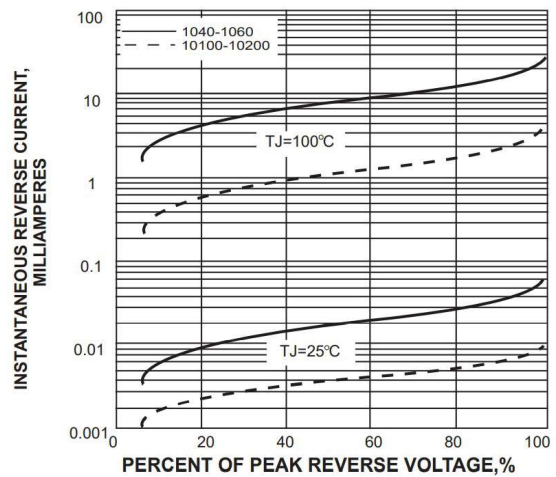
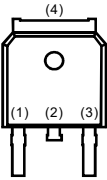
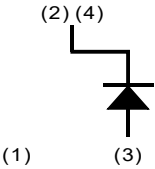


FIG. 4-TYPICAL REVERSE LEAKAGE CHARACTERISTICS

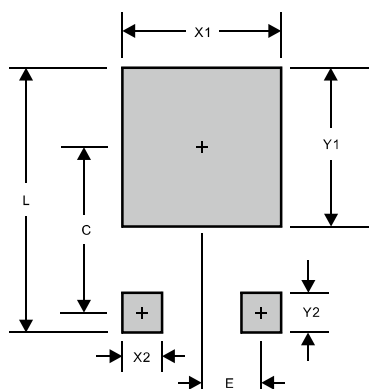


**SKFM1040JW-D Thru SKFM10200JW-D****Pinning information**

| Pin                                          | Simplified outline                                                                | Symbol                                                                              |
|----------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Pin1, None<br>Pin3, Anode<br>Pin2, 4 Cathode |  |  |

**Marking**

| Type number   | Marking code |
|---------------|--------------|
| SKFM1040JW-D  | MBR1040S     |
| SKFM1045JW-D  | MBR1045S     |
| SKFM1060JW-D  | MBR1060S     |
| SKFM10100JW-D | MBR10100S    |
| SKFM10150JW-D | MBR10150S    |
| SKFM10200JW-D | MBR10200S    |

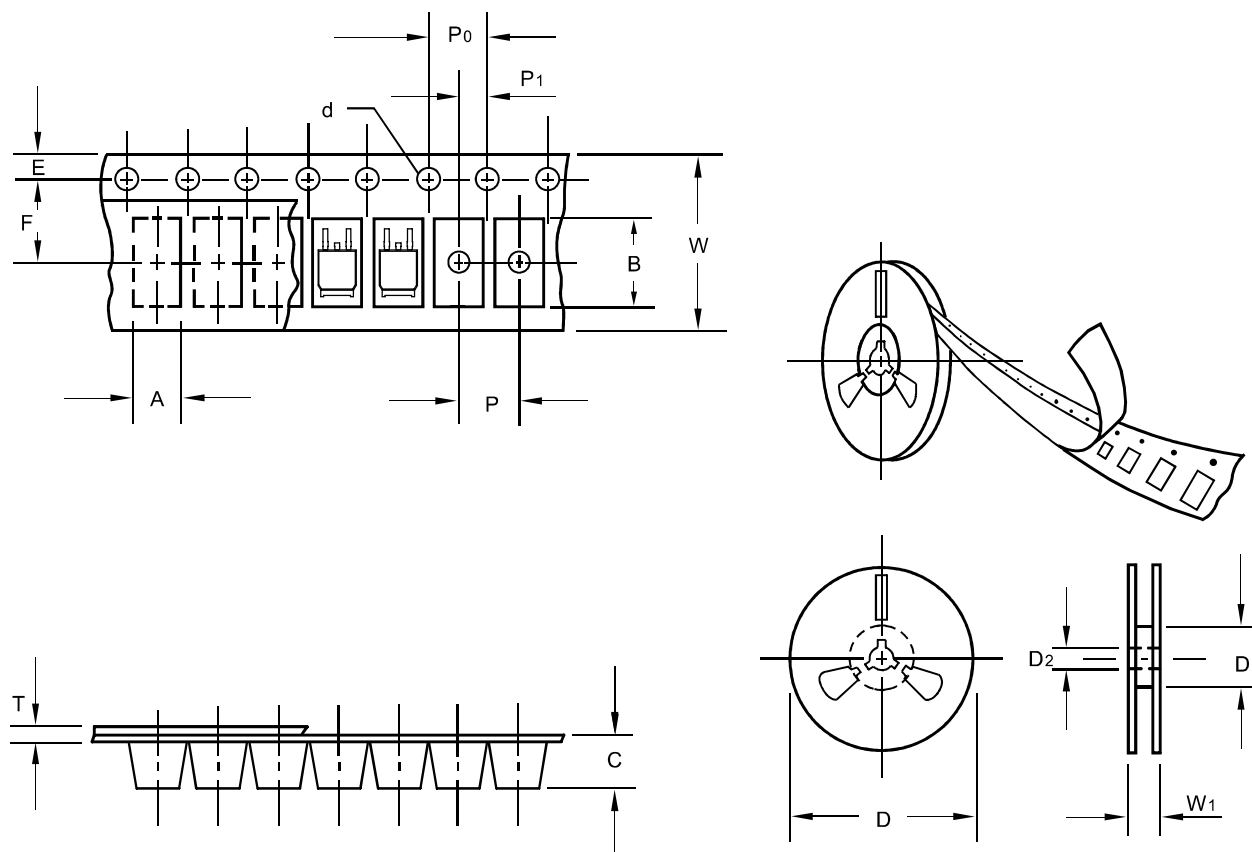
**Suggested solder pad layout**

| PACKAGE | DPAK-1       |
|---------|--------------|
| C       | 0.261(6.64)  |
| E       | 0.091(2.30)  |
| L       | 0.457(11.60) |
| X1      | 0.240(6.10)  |
| X2      | 0.056(1.42)  |
| Y1      | 0.298(7.57)  |
| Y2      | 0.109(2.76)  |

Dimensions in inches and (millimeters)

## SKFM1040JW-D Thru SKFM10200JW-D

## Packing information



unit:mm

| Item                      | Symbol | Tolerance | DPAK-1 |
|---------------------------|--------|-----------|--------|
| 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       | 1.55   |
| 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       | 0.30   |
| 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.

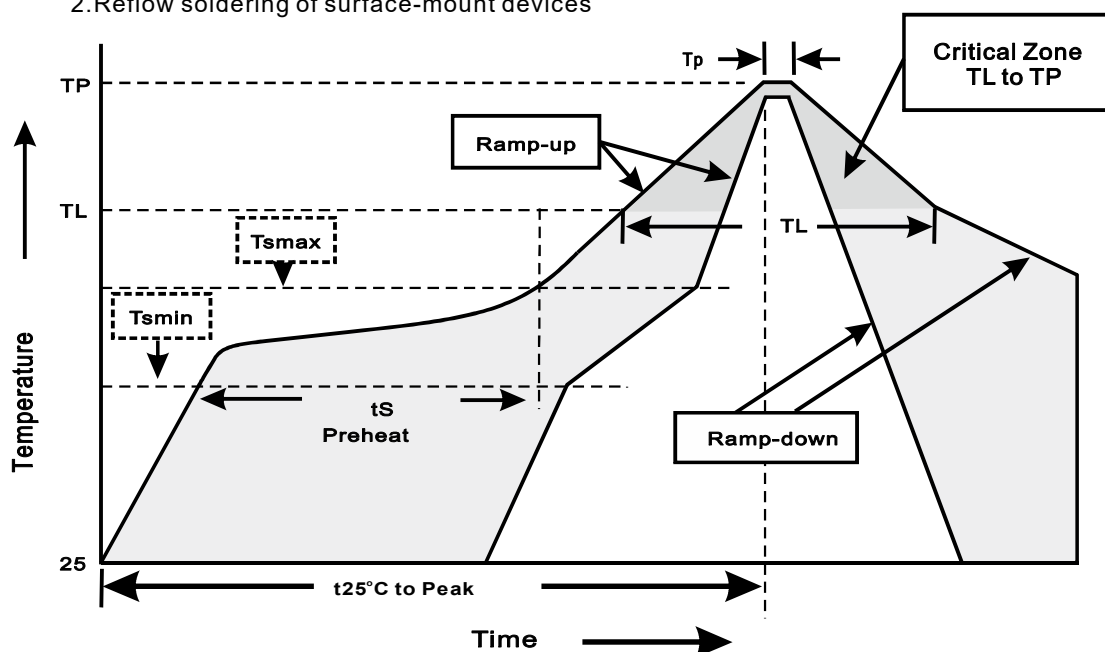
## SKFM1040JW-D Thru SKFM10200JW-D

## 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-1/ TO-252 | 13"       | 2,500      | 8.0                     | 5,000     | 335*335*38      | 330             | 350*350*225       | 40,000       | 15.0                      |

## 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(T <sub>L</sub> to T <sub>P</sub> )                                                                         | <3°C/sec                    |
| Preheat<br>-Temperature Min(T <sub>smmin</sub> )<br>-Temperature Max(T <sub>smmax</sub> )<br>-Time(min to max)(t <sub>s</sub> ) | 150°C<br>200°C<br>60~120sec |
| T <sub>smmax</sub> to T <sub>L</sub><br>-Ramp-upRate                                                                            | <3°C/sec                    |
| Time maintained above:<br>-Temperature(T <sub>L</sub> )<br>-Time(t <sub>L</sub> )                                               | 217°C<br>60~260sec          |
| Peak Temperature(T <sub>P</sub> )                                                                                               | 255°C-0/+5°C                |
| Time within 5°C of actual Peak Temperature(t <sub>P</sub> )                                                                     | 10~30sec                    |
| Ramp-down Rate                                                                                                                  | <6°C/sec                    |
| Time 25°C to Peak Temperature                                                                                                   | <6minutes                   |

**SKFM1040JW-D Thru SKFM10200JW-D****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. 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. Forward Surge                  | 8.3ms single half sine-wave , one surge.                                                                                                 | MIL-STD-750D<br>METHOD-4066-2 |
| 9. Humidity                       | at $T_A = 85^\circ\text{C}$ , RH=85% for 1000hrs.                                                                                        | MIL-STD-750D<br>METHOD-1021   |
| 10. High Temperature Storage Life | at $150^\circ\text{C}$ for 1000 hrs.                                                                                                     | MIL-STD-750D<br>METHOD-1031   |