

# SKFM1020C-D THRU SKFM10200C-D

## List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings and Electrical characteristics .....	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6
High reliability test capabilities.....	7

# SKFM1020C-D THRU SKFM10200C-D

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

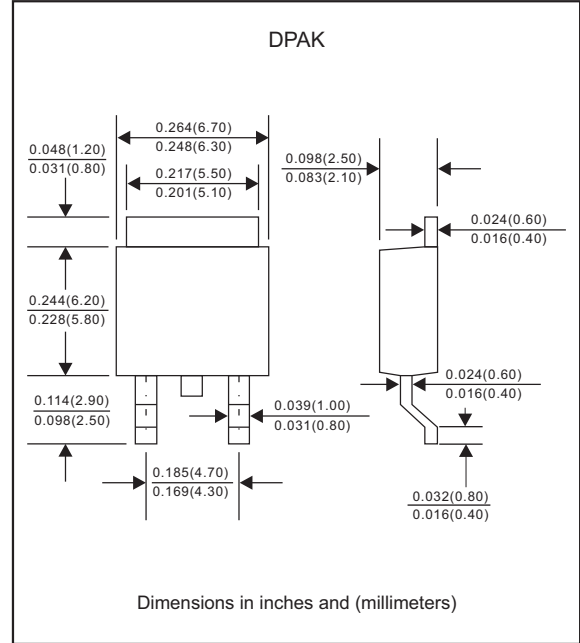
### Features

- 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 RoHS requirements
- 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 (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOLS	SKFM1020C-D	SKFM1030C-D	SKFM1040C-D	SKFM1045C-D	SKFM1050C-D	SKFM1060C-D	SKFM1080C-D	SKFM10100C-D	SKFM10150C-D	SKFM10200C-D	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	40	45	50	60	80	100	150	200	V
Maximum RMS voltage	$V_{RMS}$	14	21	28	31.5	35	42	56	70	105	140	V
Maximum continuous reverse voltage	$V_R$	20	30	40	45	50	60	80	100	150	200	V
Maximum average forward rectified current per device	$I_o$	10.0										A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	$I_{FSM}$	100										A
Typical junction capacitance (Note 1)	$C_J$	380										pF
Operating junction temperature range	$T_J$	-55 to +125					-55 to +150					$^{\circ}\text{C}$
Storage temperature range	$T_{STG}$	-65 to +175										$^{\circ}\text{C}$

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

PARAMETER	SYMBOLS	SKFM1020C-D	SKFM1030C-D	SKFM1040C-D	SKFM1045C-D	SKFM1050C-D	SKFM1060C-D	SKFM1080C-D	SKFM10100C-D	SKFM10150C-D	SKFM10200C-D	UNIT
Maximum instantaneous forward voltage per leg at $I_F=5.0\text{A}$	$V_F$	0.55				0.70		0.85		0.90	0.92	V
Maximum reverse leakage current at rated $V_R$ per leg	$I_R$	$T_J=25^{\circ}\text{C}$					0.5		$T_J=100^{\circ}\text{C}$			mA
							20					mA

### Thermal characteristics

PARAMETER	SYMBOLS	SKFM1020C-D	SKFM1030C-D	SKFM1040C-D	SKFM1045C-D	SKFM1050C-D	SKFM1060C-D	SKFM1080C-D	SKFM10100C-D	SKFM10150C-D	SKFM10200C-D	UNIT
Typical thermal resistance junction to ambient per leg (Note 2)	$R_{\theta JA}$						38					$^{\circ}\text{C}/\text{W}$
Typical thermal resistance junction to case per leg (Note 2)	$R_{\theta JC}$						21					$^{\circ}\text{C}/\text{W}$

Notes1: Measured at 1MHz and applied reverse voltage of 4.0V D.C

2: Mounted on FR-4 PCB copper, minimum recommended pad layout

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

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

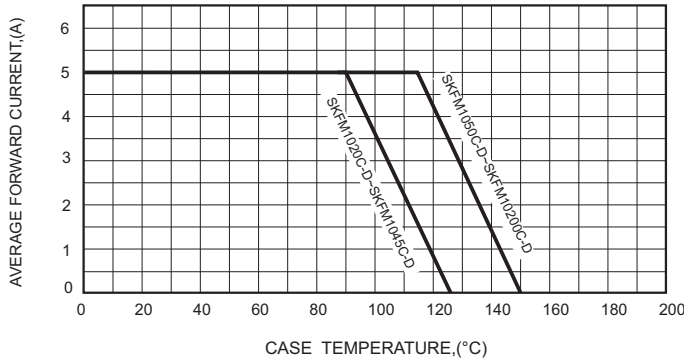


FIG.2-TYPICAL FORWARD CHARACTERISTICS

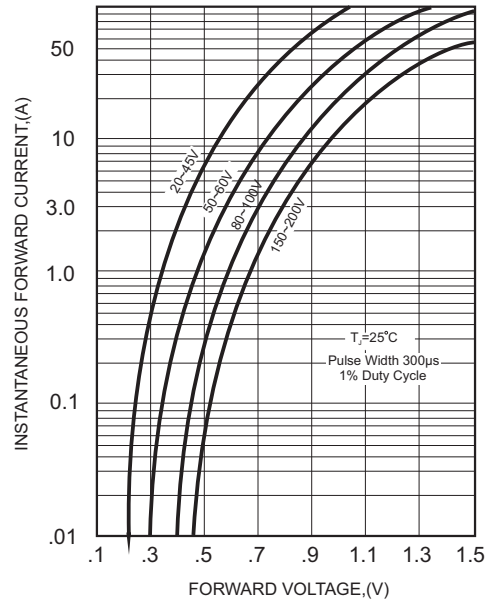


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

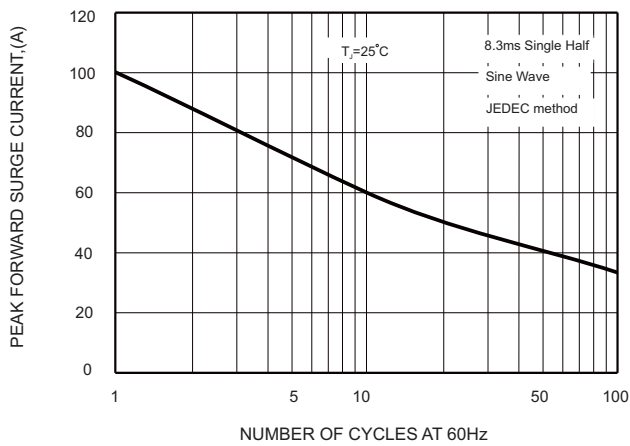


FIG.4 - TYPICAL REVERSE CHARACTERISTICS

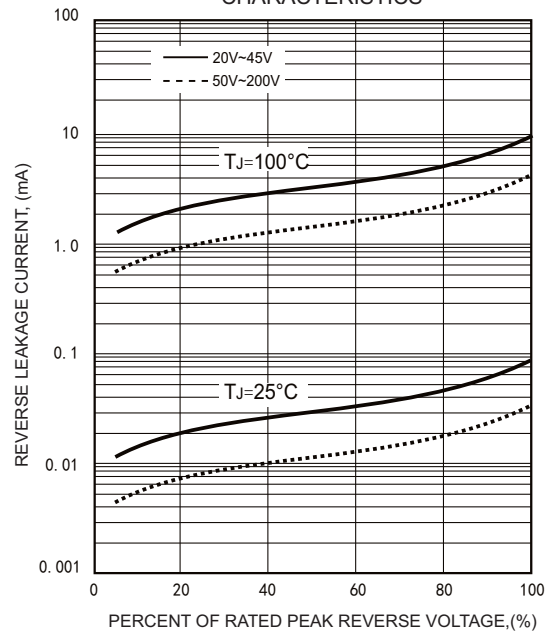
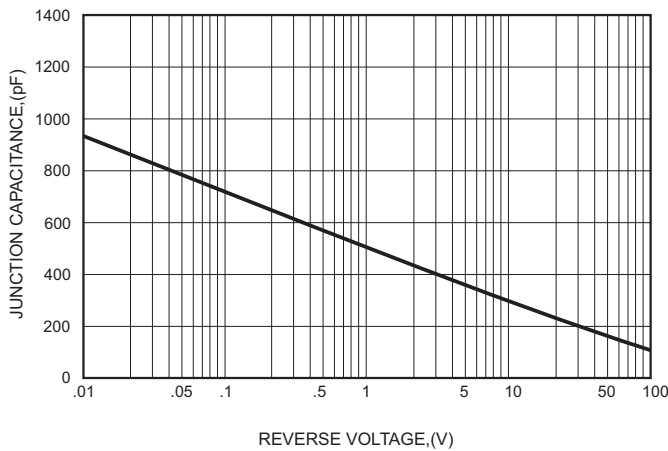
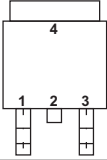
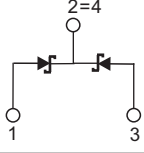


FIG.5-TYPICAL JUNCTION CAPACITANCE



# SKFM1020C-D THRU SKFM10200C-D

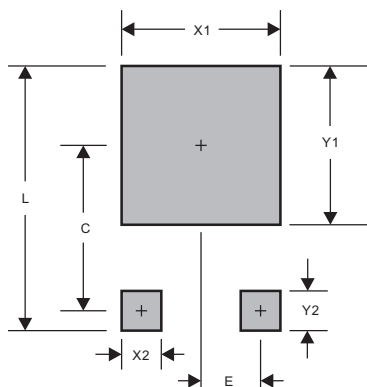
## Pinning information

Simplified outline	Symbol
	

## Marking

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

## Suggested solder pad layout

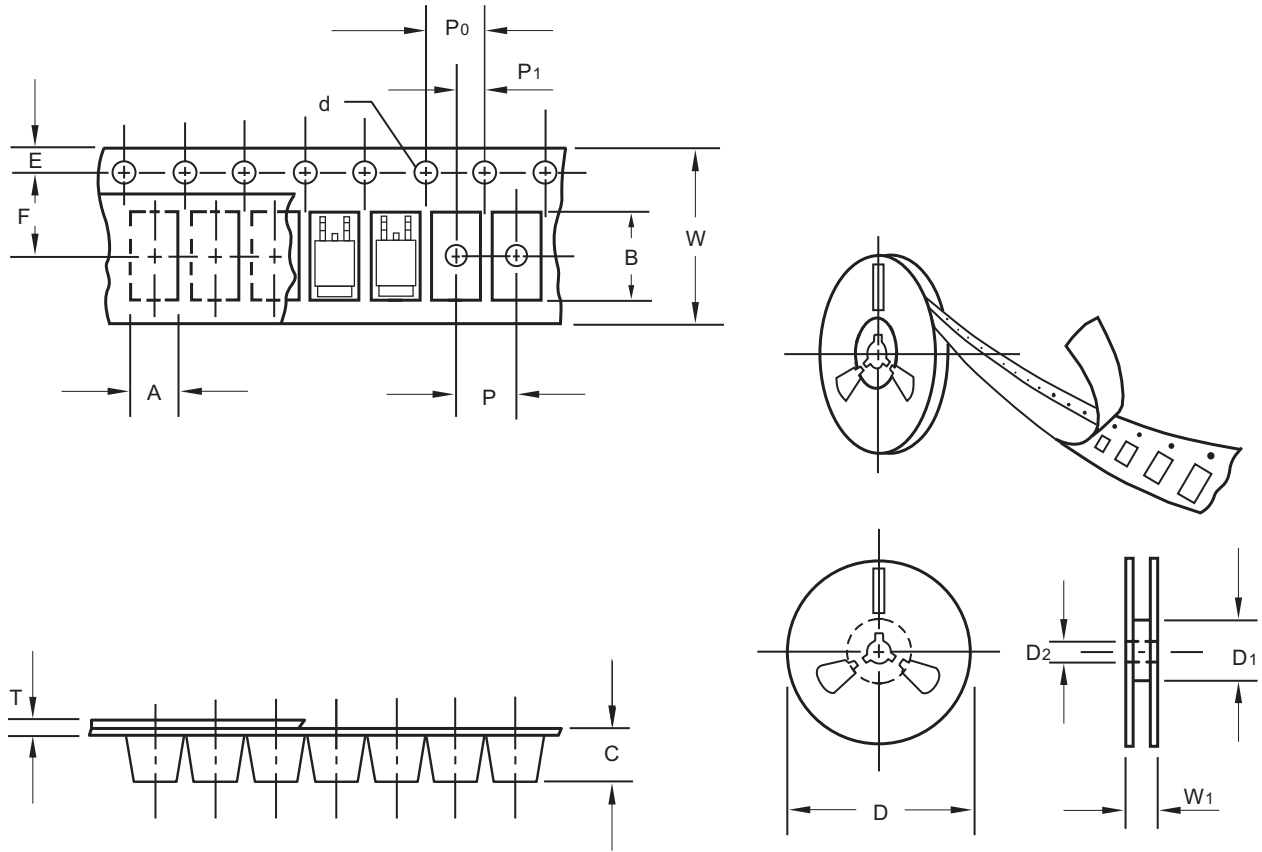


PACKAGE	DDPAK
C	0.272(6.90)
E	0.091(2.30)
L	0.457(11.60)
X1	0.276(7.00)
X2	0.059(1.50)
Y1	0.276(7.00)
Y2	0.098(2.50)

Dimensions in inches and (millimeters)

# SKFM1020C-D THRU SKFM10200C-D

## 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.

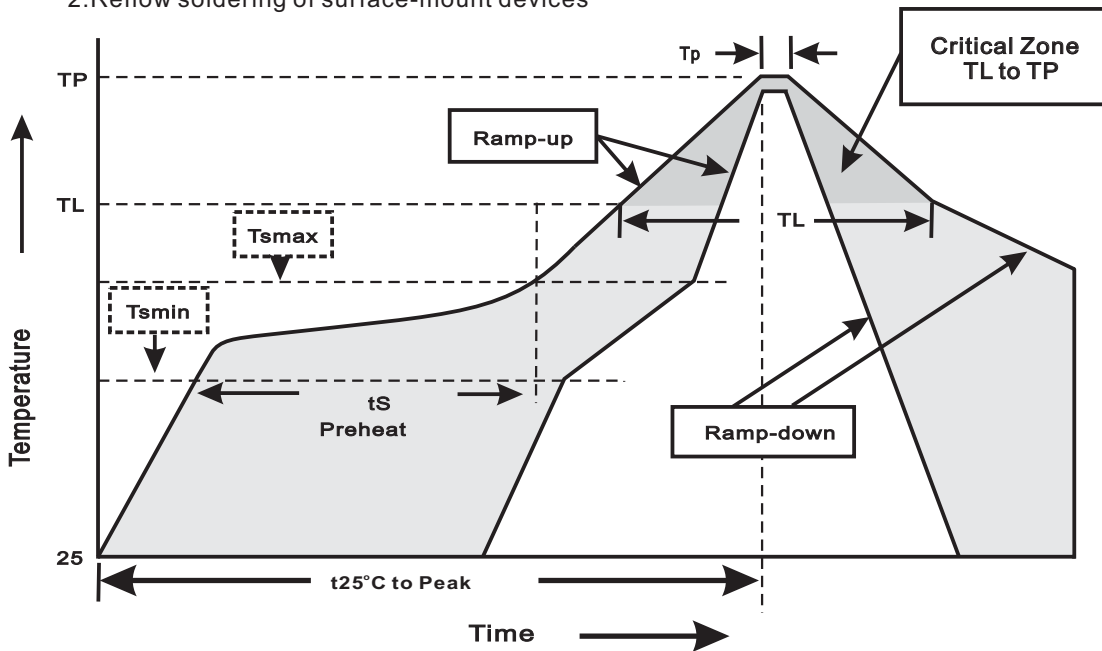
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## Reel packing

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	13"	3,000	8.0	6,000	335*335*38	330	350*350*225	30,000	15.5

## 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(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±5°C for 10±2sec.	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 $T_J=125^\circ\text{C}$ 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 <sub>SIG</sub> at $T_A=121^\circ\text{C}$ for 4 hrs.	JESD22-A102
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. 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