

SKFM1020Y-D THRU SKFM10200Y-D

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SKFM1020Y-D THRU SKFM10200Y-D

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

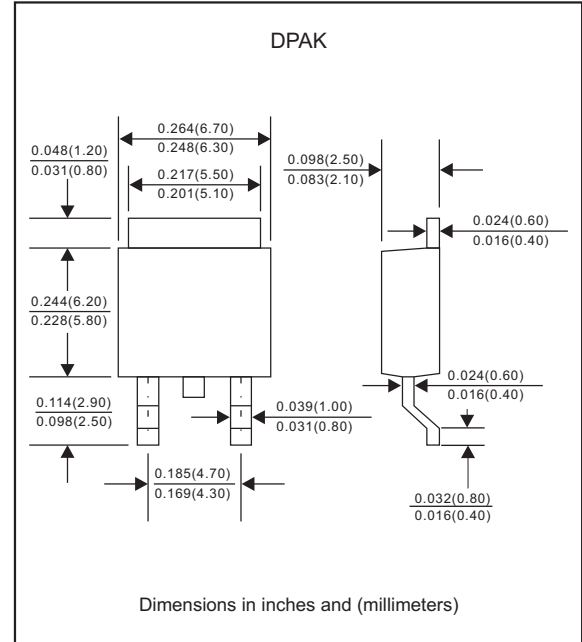
Features

- 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" indicates Halogen-free part, ex.SKFM1020Y-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	SKFM1020Y-D	SKFM1040Y-D	SKFM1045Y-D	SKFM1050Y-D	SKFM1060Y-D	SKFM1080Y-D	SKFM10100Y-D	SKFM10150Y-D	SKFM10200Y-D	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	20	40	45	50	60	80	100	150	200	V
Maximum RMS voltage	V_{RMS}	14	28	31.5	35	42	56	70	105	140	V
Maximum continuous reverse voltage	V_R	20	40	45	50	60	80	100	150	200	V
Maximum average forward rectified current	I_o	10.0									A
Non-repetitive peak forward surge current 8.3ms single half sine-wave	I_{FSM}	150									A
Typical junction capacitance (Note 1)	C_J	700									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	SKFM1020Y-D	SKFM1040Y-D	SKFM1045Y-D	SKFM1050Y-D	SKFM1060Y-D	SKFM1080Y-D	SKFM10100Y-D	SKFM10150Y-D	SKFM10200Y-D	UNIT	
Maximum instantaneous forward voltage at $I_F=10.0\text{A}$	V_F	0.55			0.70		0.85		0.90		0.92	V
Maximum reverse leakage current at rated V_R	I_R					0.5						mA
						20						mA

Thermal characteristics

PARAMETER	SYMBOLS	SKFM1020Y-D	SKFM1040Y-D	SKFM1045Y-D	SKFM1050Y-D	SKFM1060Y-D	SKFM1080Y-D	SKFM10100Y-D	SKFM10150Y-D	SKFM10200Y-D	UNIT	
Typical thermal resistance junction to ambient (Note 2)	$R_{\theta JA}$						23					$^{\circ}\text{C/W}$
Typical thermal resistance junction to case (Note 2)	$R_{\theta JC}$						10					$^{\circ}\text{C/W}$

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 (SKFM1020Y-D THRU SKFM10200Y-D)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

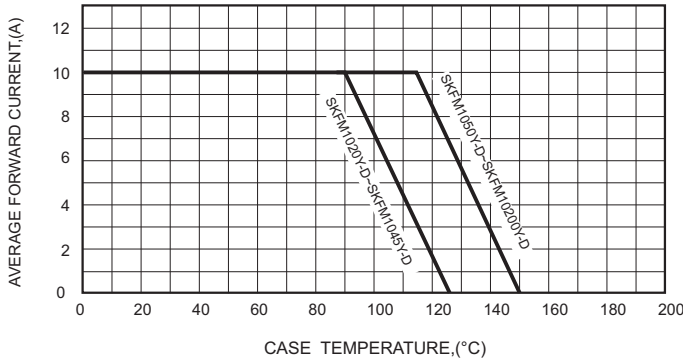


FIG.2-TYPICAL FORWARD CHARACTERISTICS

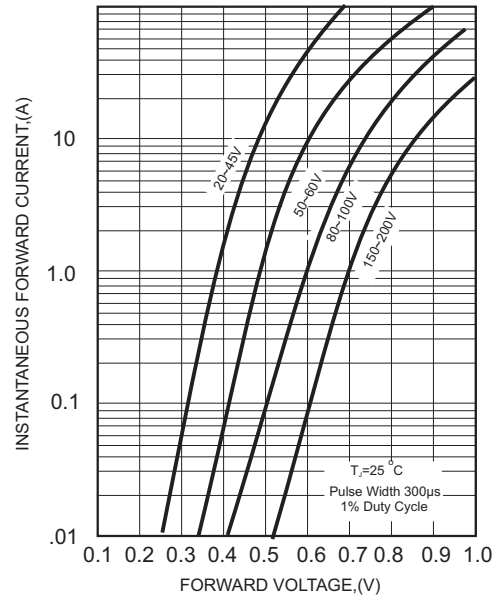


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

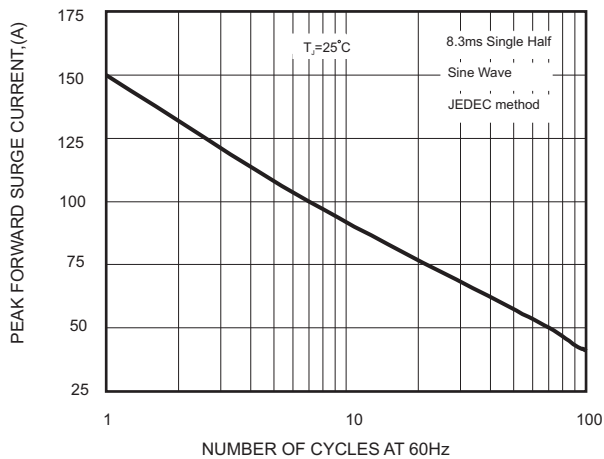


FIG.4- TYPICAL REVERSE CHARACTERISTICS

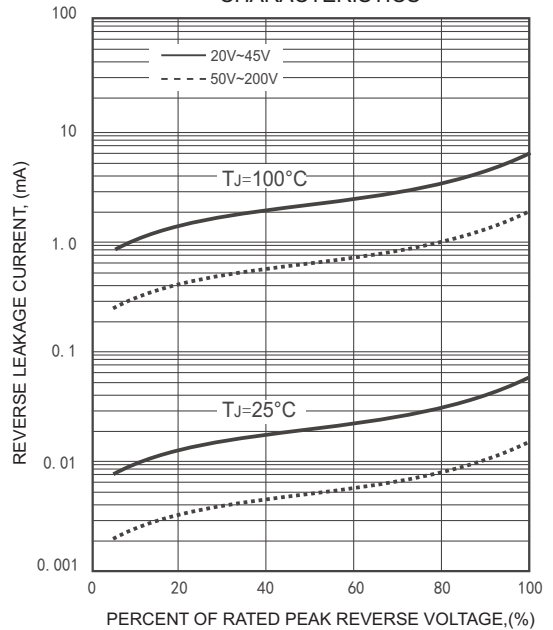
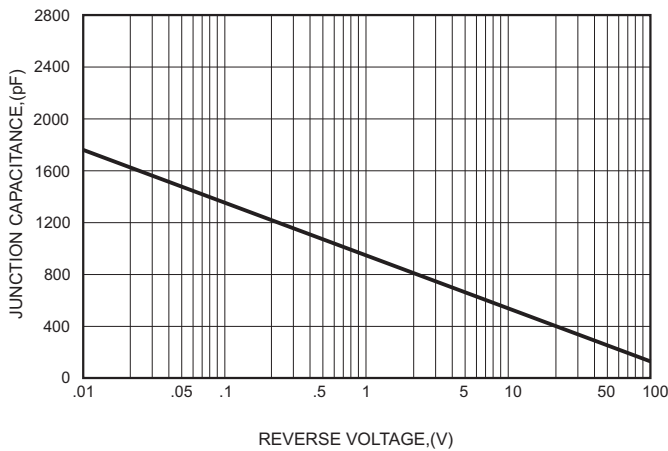


FIG.5-TYPICAL JUNCTION CAPACITANCE



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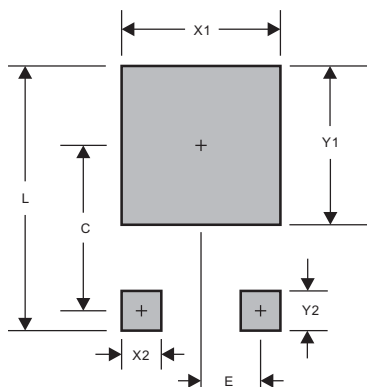
Pinning information

Simplified outline	Symbol

Marking

Type number	Marking code
SKFM1020Y-D	SK1020Y
SKFM1040Y-D	SK1040Y
SKFM1045Y-D	SK1045Y
SKFM1050Y-D	SK1050Y
SKFM1060Y-D	SK1060Y
SKFM1080Y-D	SK1080Y
SKFM10100Y-D	SK10100Y
SKFM10150Y-D	SK10150Y
SKFM10200Y-D	SK10200Y

Suggested solder pad layout

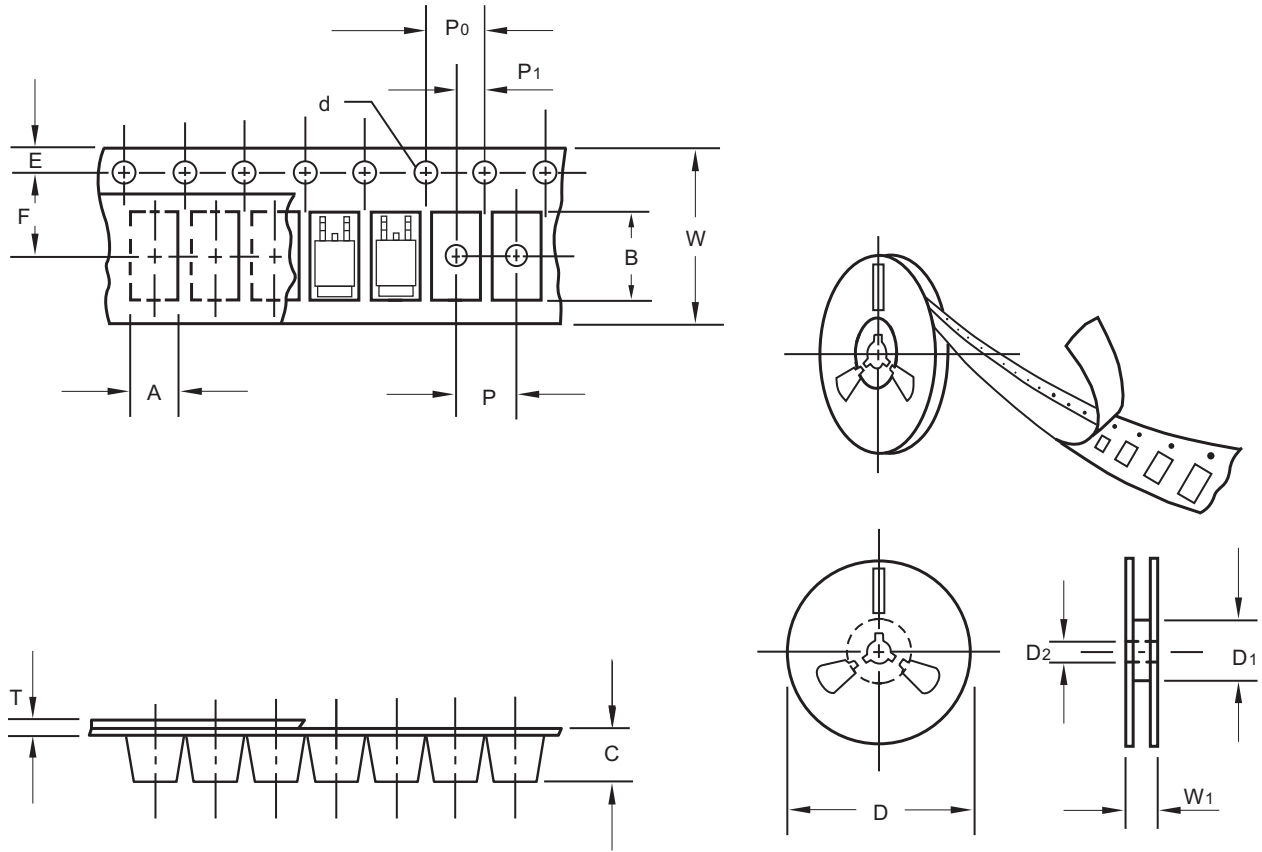


PACKAGE	DPAK
C	0.272(6.90)
E	0.091(2.30)
L	0.457(11.60)
X1	0.276(7.00)
X2	0.059(1.50)
Y1	0.276(7.00)
Y2	0.098(2.50)

Dimensions in inches and (millimeters)

SKFM1020Y-D THRU SKFM10200Y-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.

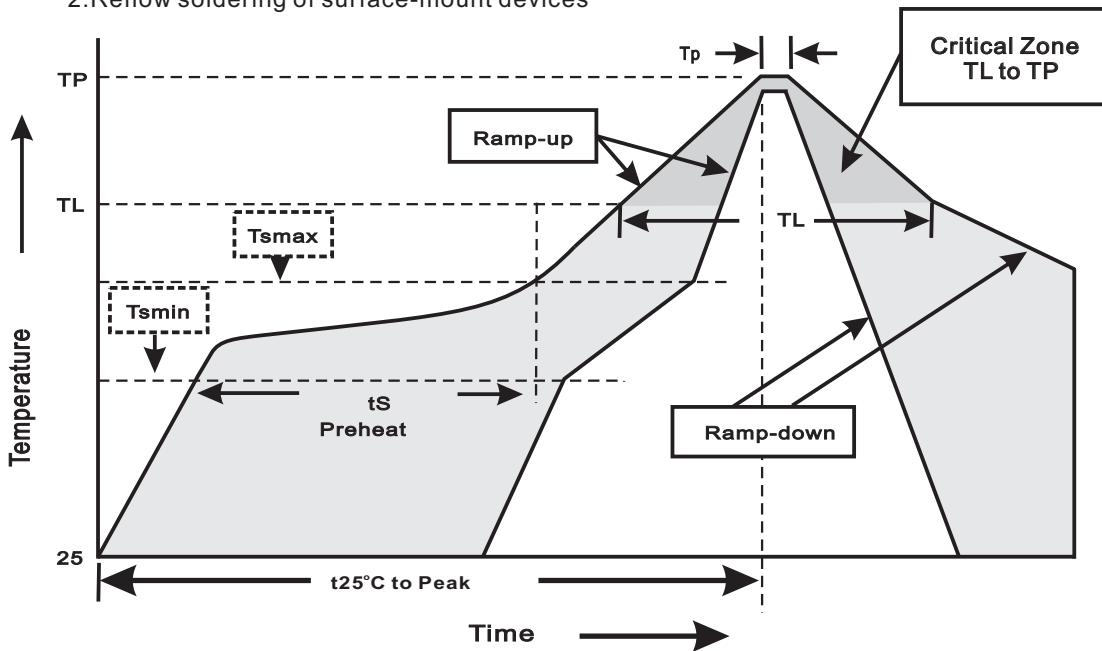
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Reel packing

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(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} 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	<3°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.	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 _{SIG} 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