SKFM540YW-D THRU SKFM5200YW-D

List

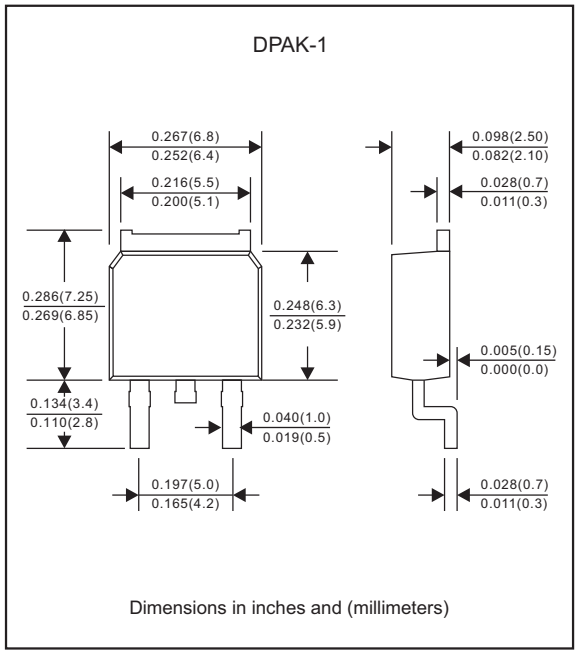
SKFM540YW-D THRU SKFM5200YW-D

5.0A Surface Mount
Schottky Barrier Rectifiers 40V-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" indicates Halogen free parts, ex. SKFM540YW-D-H.

Package outline



Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, TO-252 / DPAK-1
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.34 gram

Maximum Ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	SKFM 540YW-D	SKFM 545YW-D	SKFM 560YW-D	SKFM 5100YW-D	SKFM 5150YW-D	SKFM 5200YW-D	UNIT
Repetitive peak reverse voltage	V_{RRM}	40	45	60	100	150	200	V
RMS voltage	V_{RMS}	28	31.5	42	70	105	140	V
DC blocking voltage	V_{DC}	40	45	60	100	150	200	V
Average forward rectified current	I_O	5						A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	150						A
Operating junction temperature range	T_J	-55 to +125		-55 to +150				°C
Storage temperature range	T_{STG}	-55 to +150						°C

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

PARAMETER	SYMBOLS	SKFM 540YW-D	SKFM 545YW-D	SKFM 560YW-D	SKFM 5100YW-D	SKFM 5150YW-D	SKFM 5200YW-D	UNIT
Forward voltage per leg at I_F=5A	V_F	0.60		0.70	0.85	0.90	0.92	V
DC reverse current at T_J=25°C	I_R	0.5						mA
at rated DC blocking voltage at T_J=100°C		20						

Thermal Characteristics

PARAMETER	SYMBOLS	SKFM 540YW-D	SKFM 545YW-D	SKFM 560YW-D	SKFM 5100YW-D	SKFM 5150YW-D	SKFM 5200YW-D	UNIT
Typical thermal resistance junction to case per leg	$R_{\theta JC}$	15						°C/W

Rating and characteristic curves (SKFM540YW-D THRU SKFM5200YW-D)

FIG.1-DERATING CURVE OUTPUT RECTIFIED CURRENT

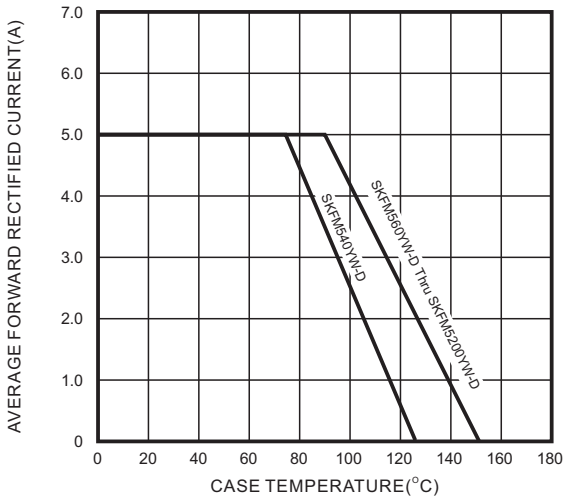


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

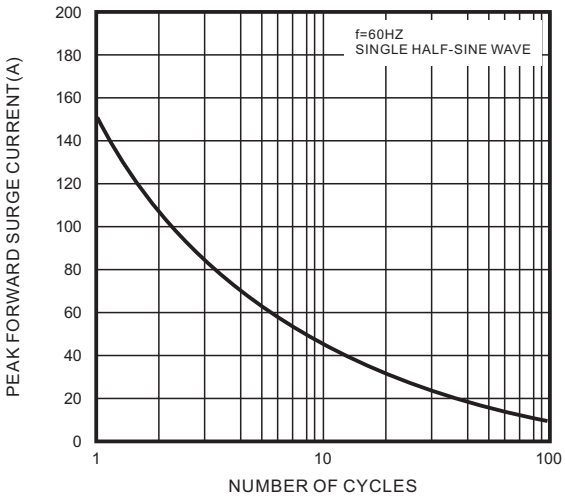


FIG.3-TYPICAL REVERSE LEAKAGE CHARACTERISTICS

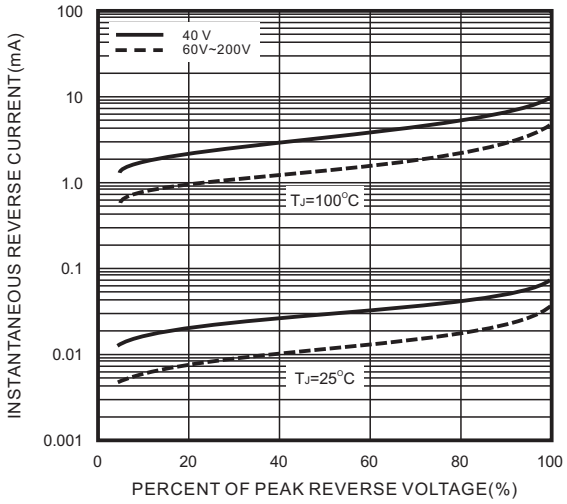
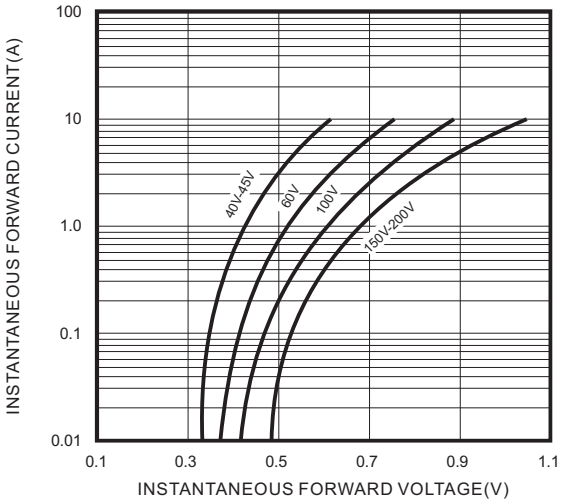
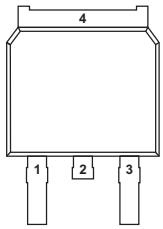
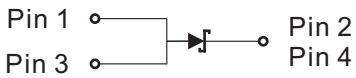


FIG.4-TYPICAL FORWARD VOLTAGE CHARACTERISTICS



SKFM540YW-D THRU SKFM5200YW-D

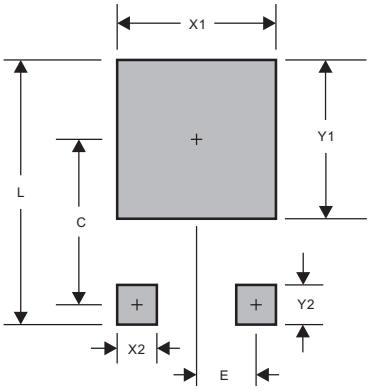
Pinning information

Pin	Simplified outline	Symbol
Pin1: anode Pin2&Pin4: cathode Pin3 anode		

Marking

Type number	Marking code
SKFM540YW-D	SK540Y, MBR540YS
SKFM545YW-D	SK545Y, MBR545YS
SKFM560YW-D	SK560Y, MBR560YS
SKFM510YW-D	SK5100Y, MBR5100YS
SKFM5150YW-D	SK5150Y, MBR5150YS
SKFM5200YW-D	SK5200Y, MBR5200YS

Suggested solder pad layout

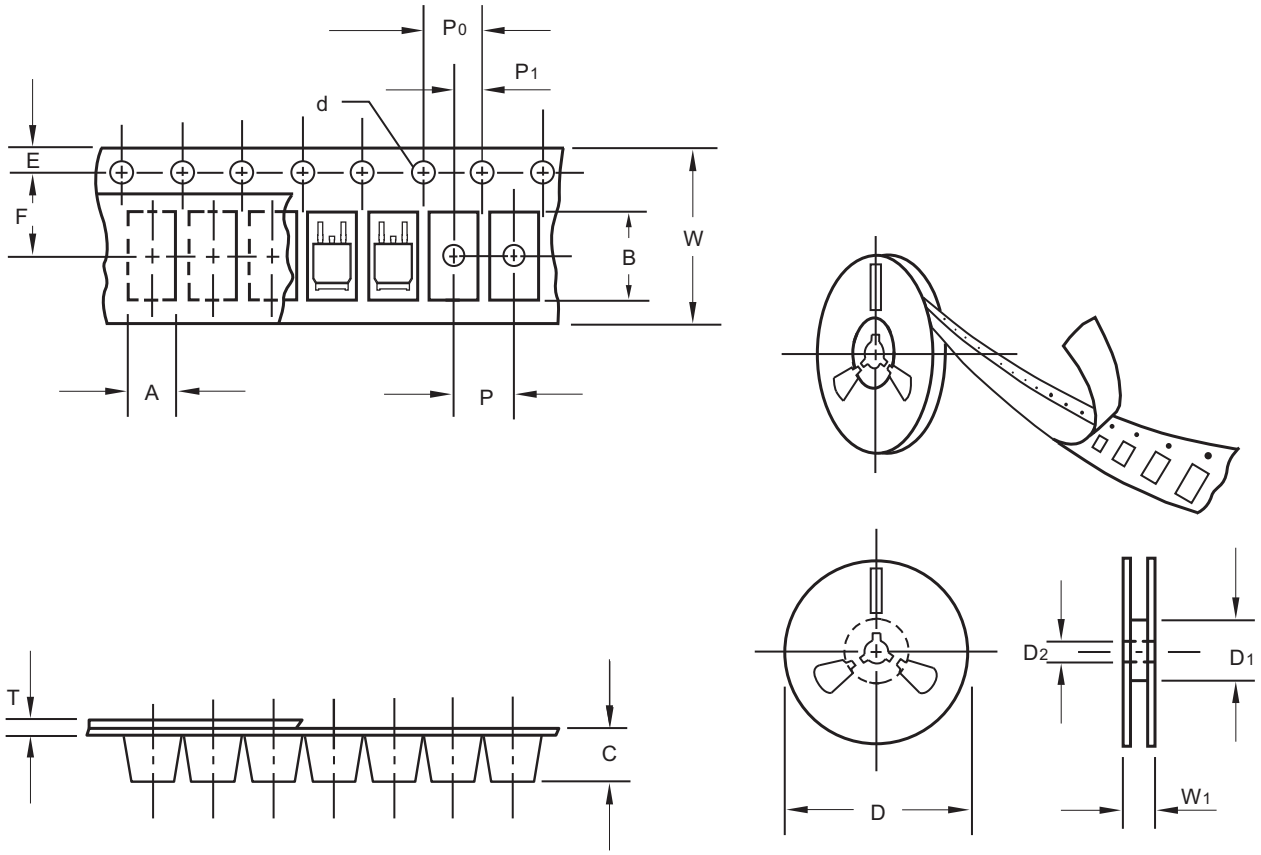


PACKAGE	DPAK-1
C	0.261(6.64)
E	0.091(2.30)
L	0.457(11.60)
X1	0.240(6.10)
X2	0.056(1.42)
Y1	0.298(7.57)
Y2	0.109(2.76)

Dimensions in inches and (millimeters)

SKFM540YW-D THRU SKFM5200YW-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	D_1	min	50.00
7" Reel outside diameter	D	2.0	-
7" Reel inner diameter	D_1	min	-
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.30
Tape width	W	0.3	16.00
Reel width	W_1	1.0	22.00

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

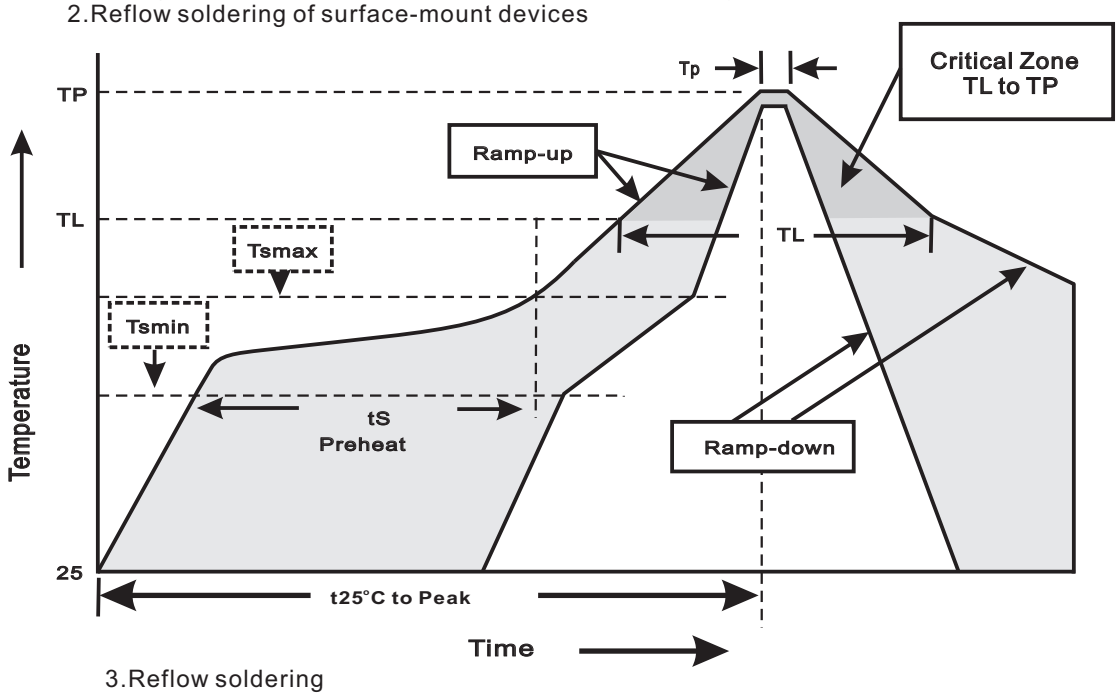
SKFM540YW-D THRU SKFM5200YW-D

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	340*340*38	330	360*360*360	40,000	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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°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°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