

SGFM161CC-D2 THRU SGFM168CC-D2

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

SGFM161CC-D2 THRU SGFM168CC-D2

**16.0A Surface Mount
Super Fast Rectifiers 50V-600V**

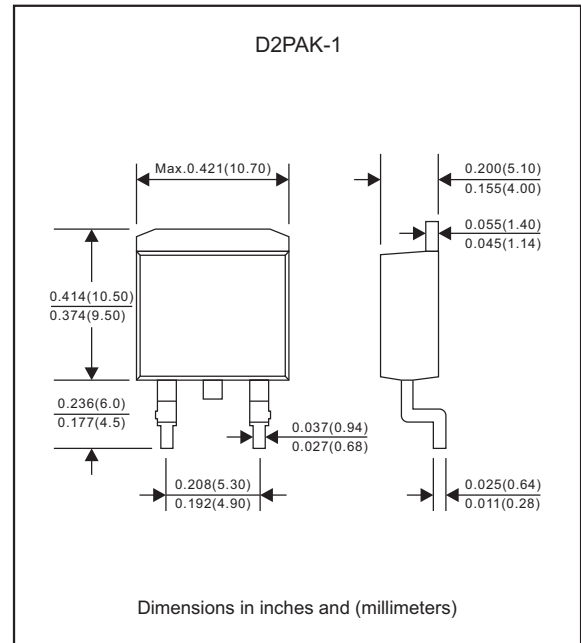
Features

- High forward surge current capability.
- Super fast recovery time for switching mode application.
- Low reverse leakage.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. SGFM161CC-D2-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, TO-263 / D2PAK-1
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 1.46 gram

Package outline



Maximum Ratings (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOLS	SGFM 161CC-D2	SGFM 162CC-D2	SGFM 164CC-D2	SGFM 166CC-D2	SGFM 167CC-D2	SGFM 168CC-D2	UNIT
Repetitive peak reverse voltage	V_{RRM}	50	100	200	400	500	600	V
RMS voltage	V_{RMS}	35	70	140	280	350	420	V
DC blocking voltage	V_{DC}	50	100	200	400	500	600	V
Average forward rectified current per device per diode	I_O	16 8						A
Peak forward surge current 8.3ms single half sine-wave (JEDEC method)	I_{FSM}	100						A
Operating junction temperature range	T_J	-55 to +150						$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55 to +150						$^{\circ}\text{C}$

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

PARAMETER	SYMBOLS	SGFM 161CC-D2	SGFM 162CC-D2	SGFM 164CC-D2	SGFM 166CC-D2	SGFM 167CC-D2	SGFM 168CC-D2	UNIT
Forward voltage per leg at $I_F = 8A$	V_F	1.0			1.3	1.7		V
DC reverse current at $T_A = 25^{\circ}C$ at rated DC blocking voltage at $T_A = 125^{\circ}C$	I_R	5 200						μA
Reverse recovery time	T_{rr}	35						nS

Thermal Characteristics

PARAMETER	SYMBOLS	SGFM 161CC-D2	SGFM 162CC-D2	SGFM 164CC-D2	SGFM 166CC-D2	SGFM 167CC-D2	SGFM 168CC-D2	UNIT
Typical thermal resistance junction to case per leg	$R_{\theta JC}$	3.5						$^{\circ}\text{C/W}$

Rating and characteristic curves (SGFM161CC-D2 THRU SGFM168CC-D2)

FIG.1-DERATING CURVE OUTPUT RECTIFIED CURRENT

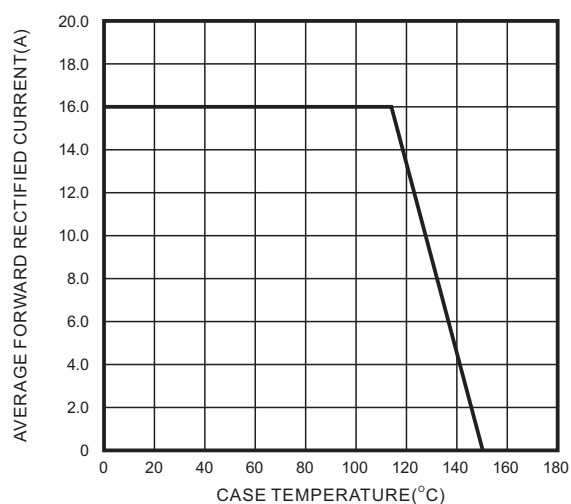


FIG.2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

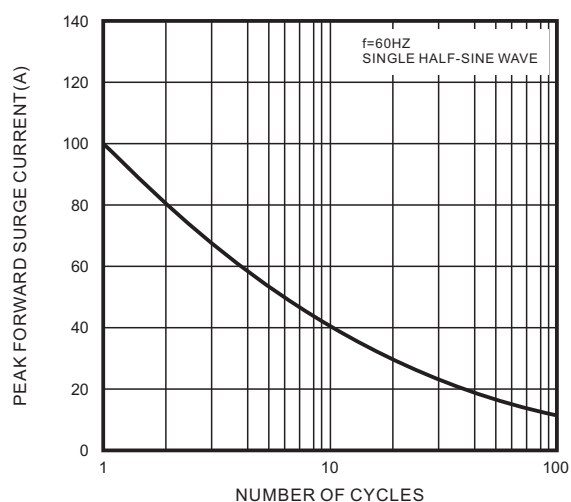


FIG.3-TYPICAL REVERSE LEAKAGE CHARACTERISTICS

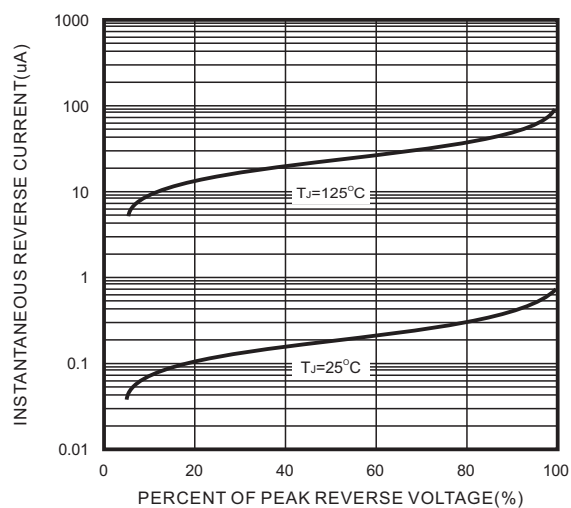
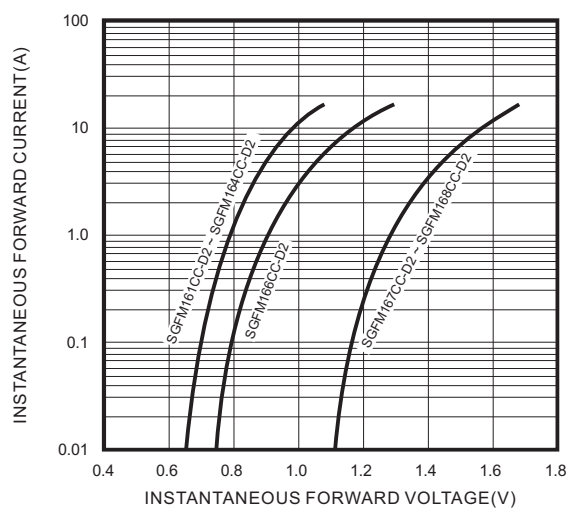
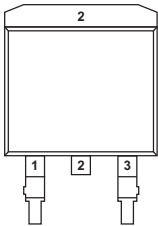
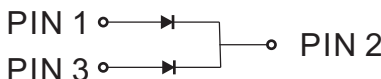


FIG.4-TYPICAL FORWARD VOLTAGE CHARACTERISTICS



SGFM161CC-D2 THRU SGFM168CC-D2

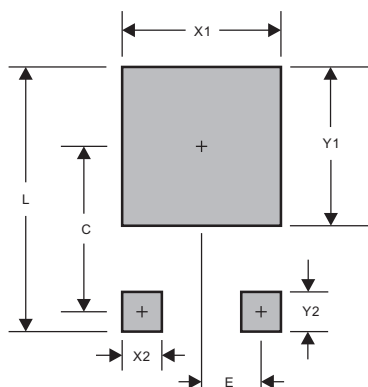
Pinning information

Pin	Simplified outline	Symbol
Pin1 anode Pin2 cathode Pin3 anode		

Marking

Type number	Marking code
SGFM161CC-D2	SF1605CT
SGFM162CC-D2	SF1610CT
SGFM164CC-D2	SF1620CT
SGFM166CC-D2	SF1640CT
SGFM167CC-D2	SF1650CT
SGFM168CC-D2	SF1660CT

Suggested solder pad layout

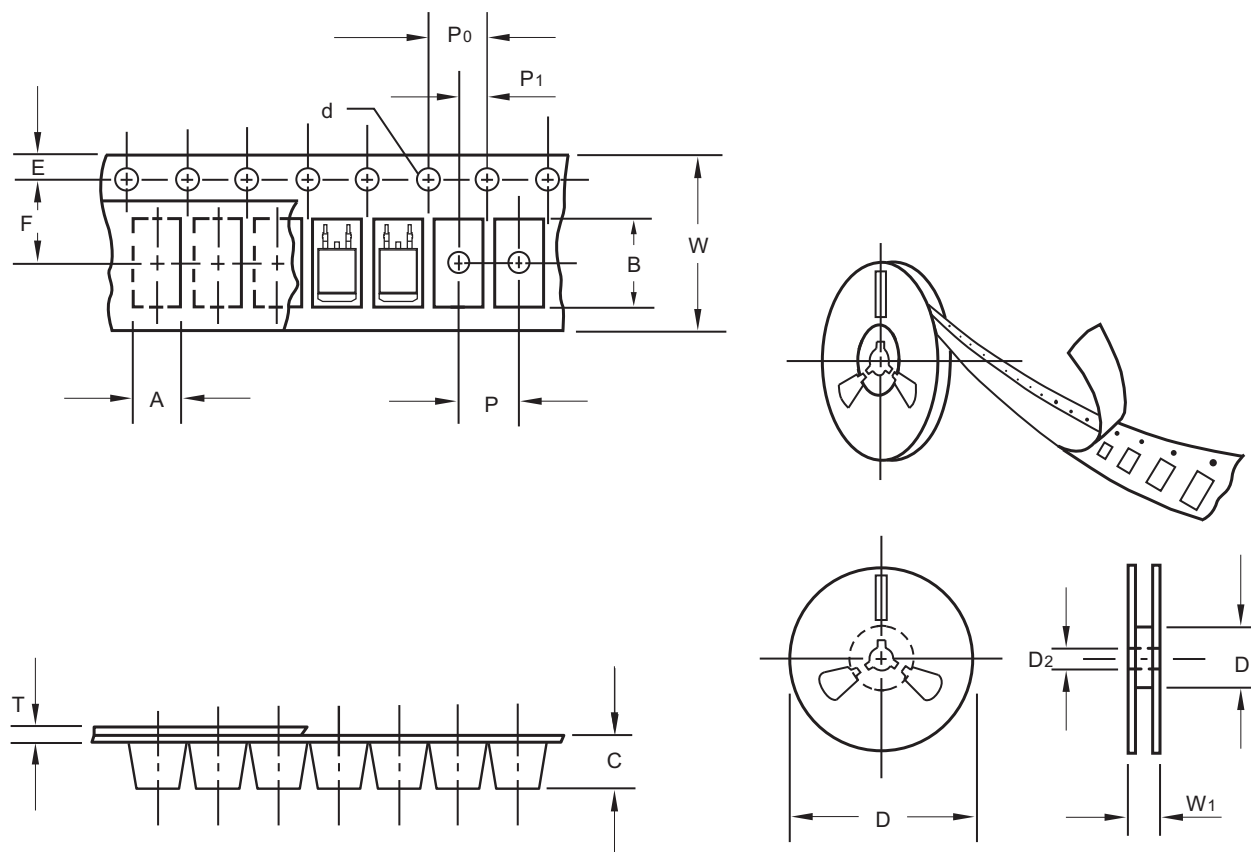


PACKAGE	D2PAK-1
C	0.374(9.50)
E	0.098(2.50)
L	0.665(16.90)
X1	0.425(10.80)
X2	0.071(1.80)
Y1	0.449(11.40)
Y2	0.138(3.50)

Dimensions in inches and (millimeters)

SGFM161CC-D2 THRU SGFM168CC-D2

Packing information



unit:mm

Item	Symbol	Tolerance	D2PAK-1
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.

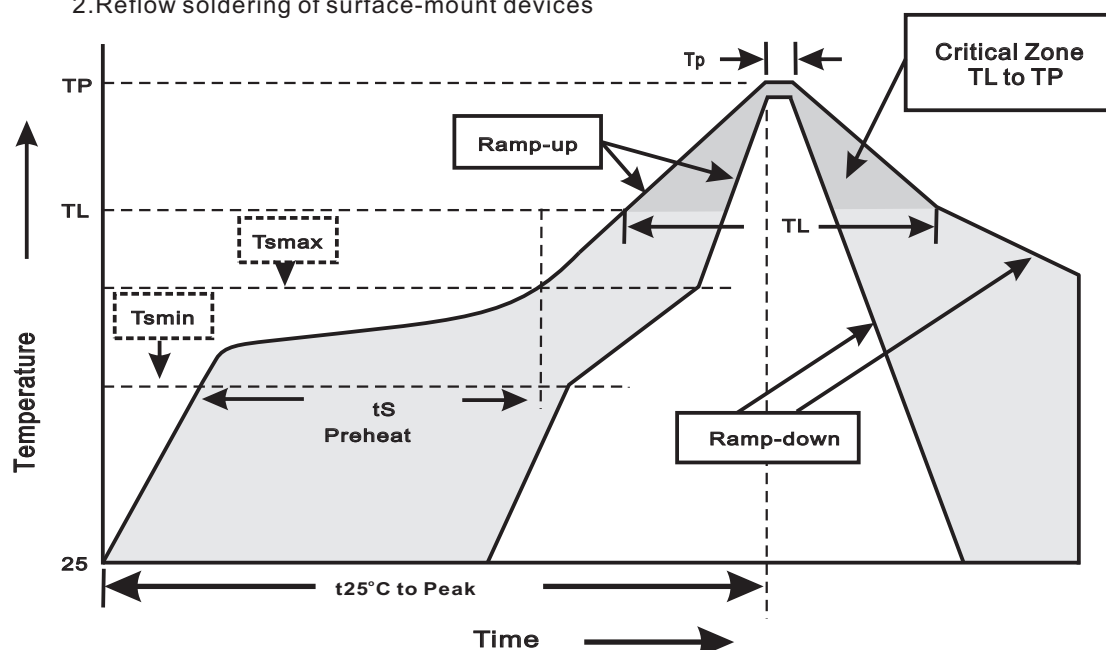
SGFM161CC-D2 THRU SGFM168CC-D2

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-1/ TO-263	13"	800	16.0	800	340*340*38	330	360*360*360	6,400	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 _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{min}) -Temperature Max(T _{max}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{max} 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

SGFM161CC-D2 THRU SGFM168CC-D2

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec}$.	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^\circ\text{C}$ 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 $+125^\circ\text{C}$ 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