

SGFM201CC-D2 Thru SGFM208CC-D2

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20A Surface Mount Super Fast Rectifiers 50V ~ 600V

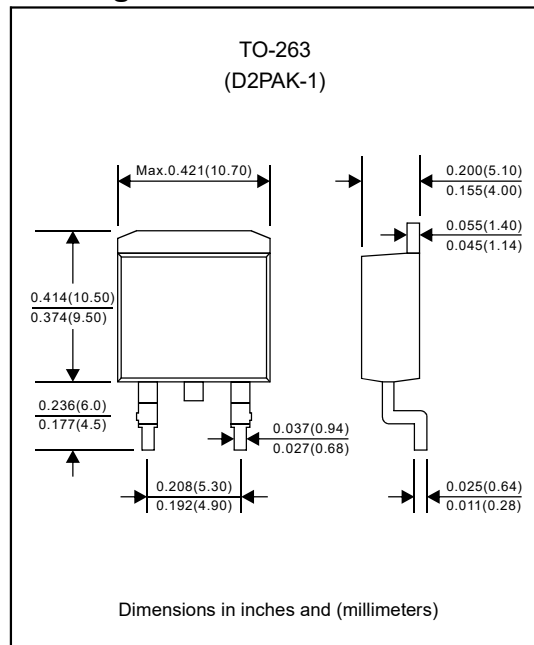
Features

- The plastic package carries Underwriters Laboratory Flame ability Classification 94V-0.
- Low reverse leakage.
- High forward surge current capability.
- High temperature soldering guaranteed 260°C/10 seconds at terminals.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen free parts, ex. SGFM201CC-D2-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, TO-263 / D2PAK-1.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Polarity: Polarity symbol marking on body .
- Mounting Position : Any.

Package outline



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

Parameter	Symbol	Ratings						Unit
		SGFM201 CC-D2	SGFM202 CC-D2	SGFM204 CC-D2	SGFM206 CC-D2	SGFM207 CC-D2	SGFM208 CC-D2	
Maximum repetitive peak reverse voltage	V _{RRM}	50	100	200	400	500	600	V
Maximum RMS voltage	V _{RMS}	35	70	140	280	350	420	V
Maximum DC blocking voltage	V _{DC}	50	100	200	400	500	600	V
Maximum average forward rectified current at T _c =110°C (Per device) (Per diode)	I _(AV)	20 10						A
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I _{FSM}	200						A
Maximum instantaneous forward voltage per diode at 10.0A	V _F	1.0			1.5	2.0		V
Maximum DC reverse current at rated DC blocking voltage (T_A=25°C) (T_A=125°C)	I _R	10 500						μA
Maximum reverse recovery time	T _{rr}	35						ns
Typical thermal resistance	R _{θJC}	3.5						°C/W
Operating junction temperature range	T _J	-55 to +150						°C
Storage temperature range	T _{STG}	-55 to +150						°C

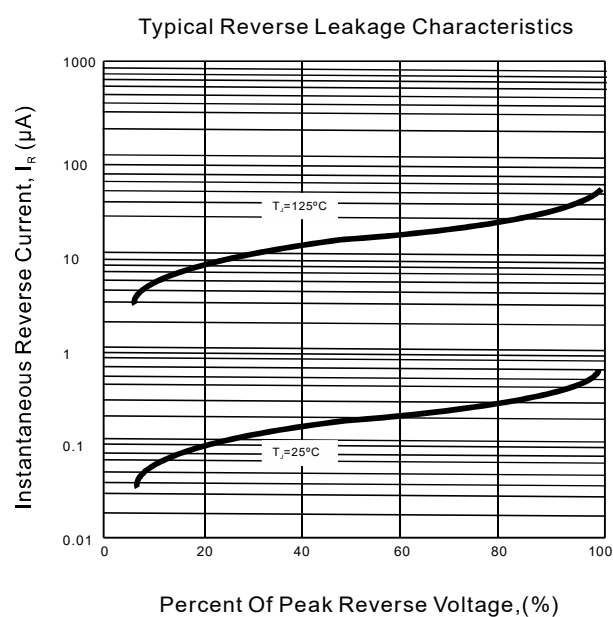
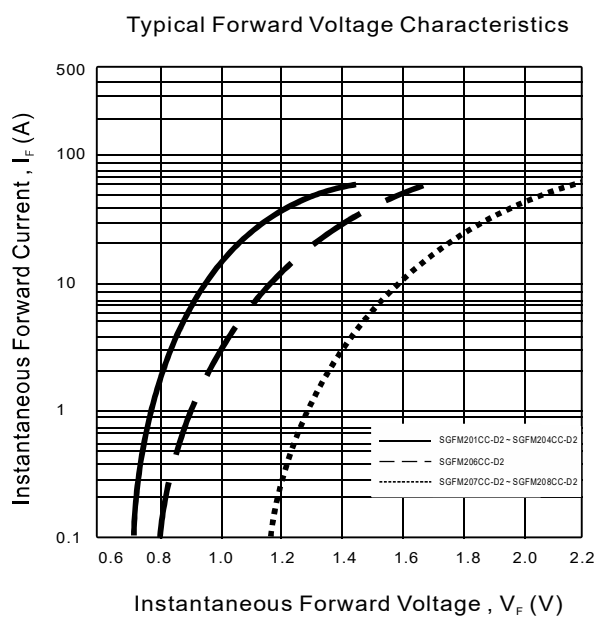
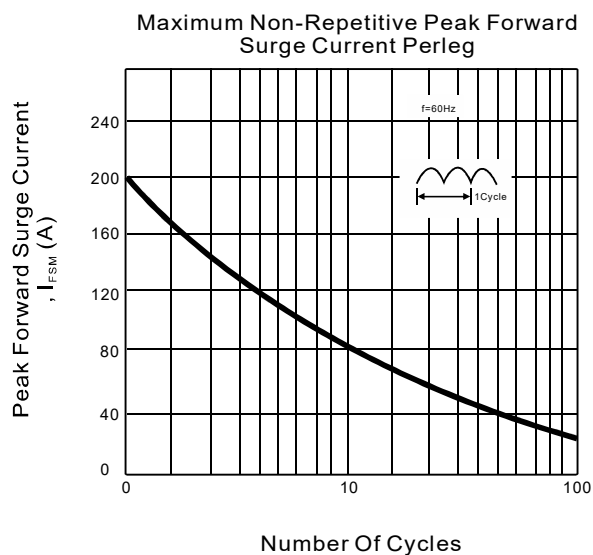
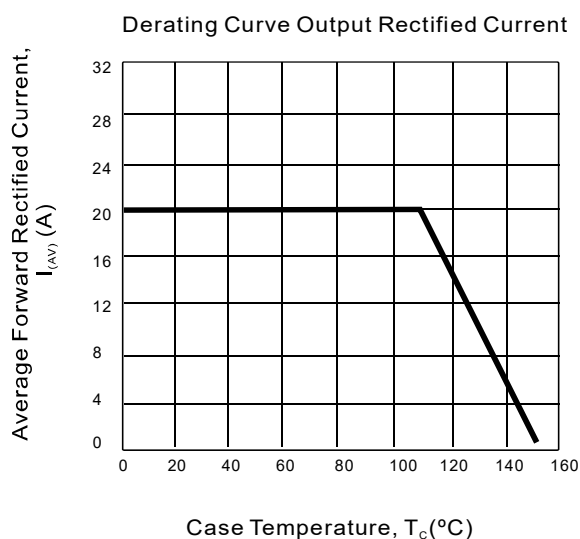
Note :

1.Reverse recovery time test condition : $I_F=0.5\text{A}$, $I_R=1.0\text{A}$, $I_{rr}=0.25\text{A}$.

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

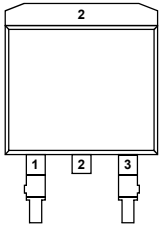
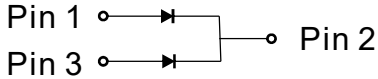
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Rating and characteristic curves



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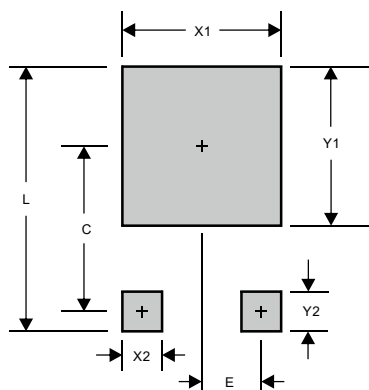
Pinning information

Pin	Simplified outline	Symbol
Pin1 Anode Pin2 Cathode Pin3 Anode		

Marking

Type number	Marking code
SGFM201CC-D2	SF2005CT
SGFM202CC-D2	SF2010CT
SGFM204CC-D2	SF2020CT
SGFM206CC-D2	SF2040CT
SGFM207CC-D2	SF2050CT
SGFM208CC-D2	SF2060CT

Suggested solder pad layout

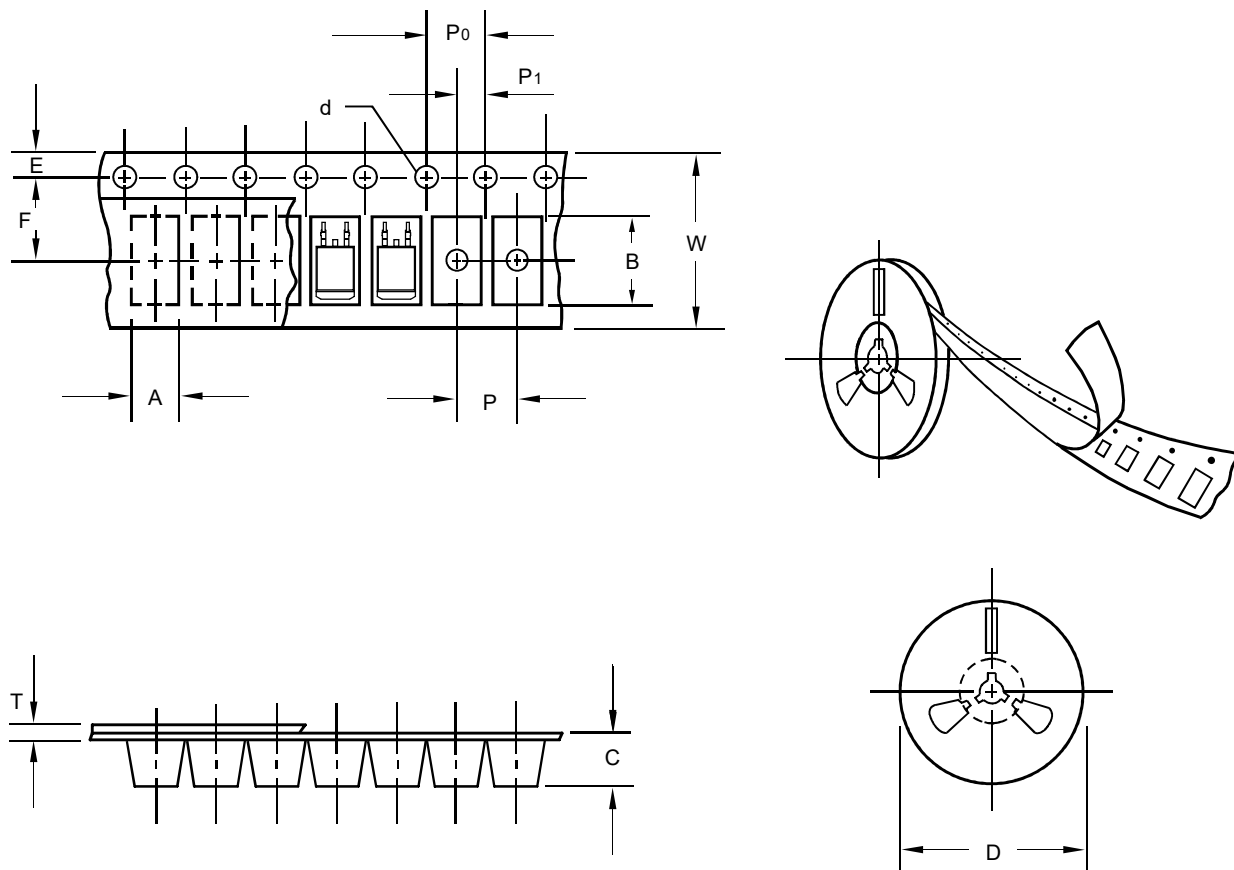


PACKAGE	D2PAK-1
C	0.374(9.50)
E	0.098(2.50)
L	0.665(16.90)
X1	0.425(10.80)
X2	0.071(1.80)
Y1	0.449(11.40)
Y2	0.138(3.50)

Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	D2PAK-1
Carrier width	A	0.1	10.5
Carrier length	B	0.1	15.55
Carrier depth	C	0.1	4.9
Sprocket hole	d	0.1	1.5
13" Reel outside diameter	D	2.0	330
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	11.5
Punch hole pitch	P	0.1	16.0
Sprocket hole pitch	P ₀	0.1	4.0
Embossment center	P ₁	0.1	2.0
Overall tape thickness	T	0.1	0.4
Tape width	W	0.3	24.0

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

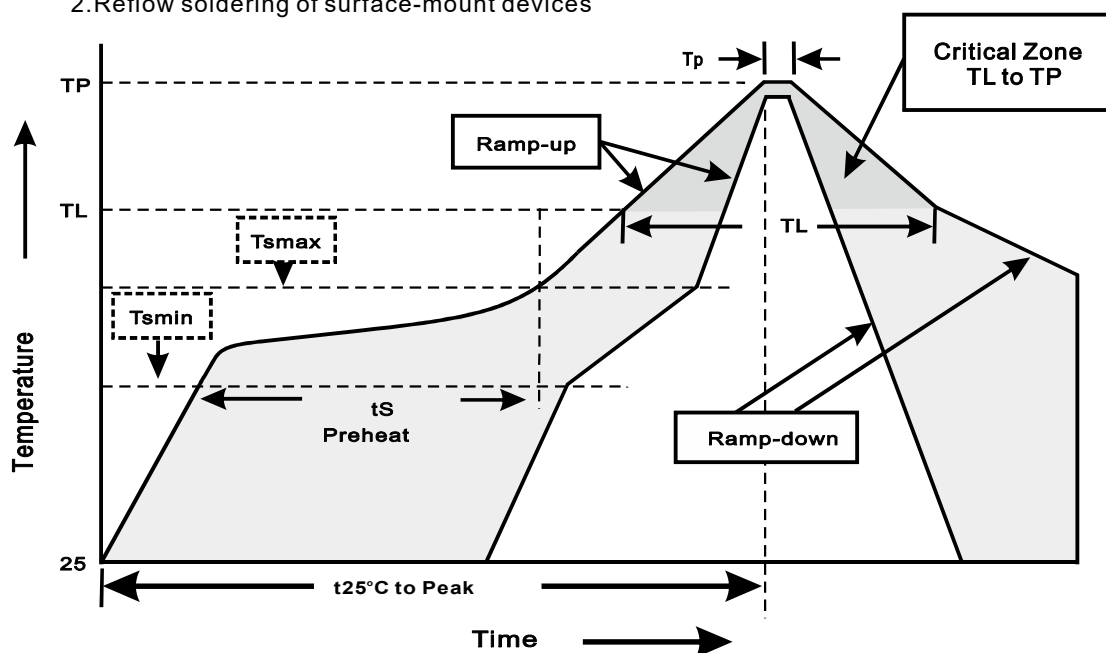
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Reel packing

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)
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 _{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 $260 \pm 5^\circ\text{C}$ 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