



SGM3200

Charge Pump Boost DC/DC Integrated Load Switch

GENERAL DESCRIPTION

The SGM3200 is a regulated switched-capacitor boost converter with low-power consumption. This device is characterized by very low quiescent current. There is no need to connect inductors outside the chip. The small package size makes the device very suitable for space limited applications.

Different input voltages can produce a regulated output voltage. It is capable of supplying 500mA output current. A 500mA current limit load switch is integrated in the SGM3200.

SGM3200 has thermal shutdown function to protect the equipment under short-circuit conditions.

The SGM3200 is available in a Green TDFN-3×3-8L package and is rated over the -40 °C to +85 °C temperature range.

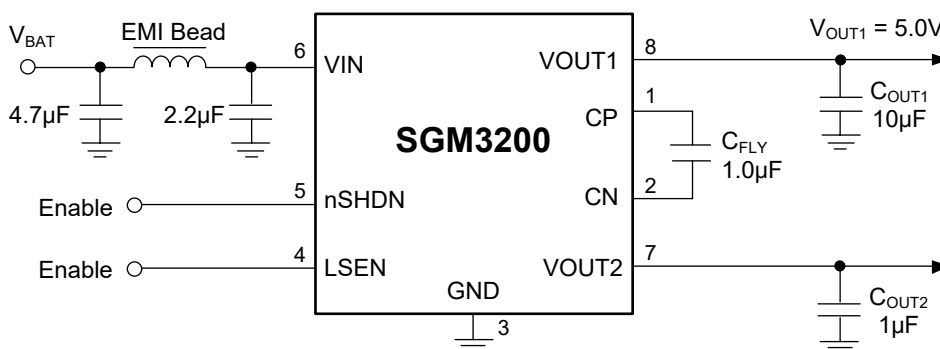
FEATURES

- **Input Voltage Range: 2.7V to 5.0V**
- **Boost Converter**
- **Quiescent Current: 70µA (TYP)**
- **5V Regulated Output Voltages with ±3% Accuracy**
- **VOUT1 Provides Continuous 5V/500mA Output**
- **VOUT2 Provides 500mA Current Limit Load Switch Output**
- **High Switching Frequency: 1.7MHz**
- **1.8V Logic-Controlled Shutdown of Charge Pump**
- **1.8V Logic-Controlled LSEN Pin to Control Load Switch**
- **Integrated Protection Features:**
 - ◆ **Short-Circuit Protection**
 - ◆ **Over-Temperature Protection**
 - ◆ **Over-Current Protection**
- **Available in a Green TDFN-3×3-8L Package**

APPLICATIONS

- Cellular Phones
- Digital Cameras
- LEDs for Camera Flash
- LED/Display Backlight Drivers

TYPICAL APPLICATION



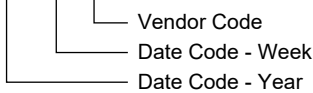
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM3200	TDFN-3×3-8L	-40°C to +85°C	SGM3200YTDB8G/TR	SGM MADB XXXXX	Tape and Reel, 3000

MARKING INFORMATION

NOTE: XXXXX = Date Code and Vendor Code.

XXXXX



Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

ABSOLUTE MAXIMUM RATINGS

V _{IN} to GND	-0.3V to 6V
V _{OUT1} to GND	-0.3V to 6V
V _{OUT2} to GND	-0.3V to V _{OUT1} + 0.3V
CP to GND	-0.3V to 6V
CN to GND	0.3V to V _{IN} + 0.3V
nSHDN, LSEN to GND	-0.3V to 6V
Operating Temperature Range	-40°C to +85°C
Junction Temperature	+150°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10s)	+260°C
ESD Susceptibility	
HBM	2000V
MM	200V

OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

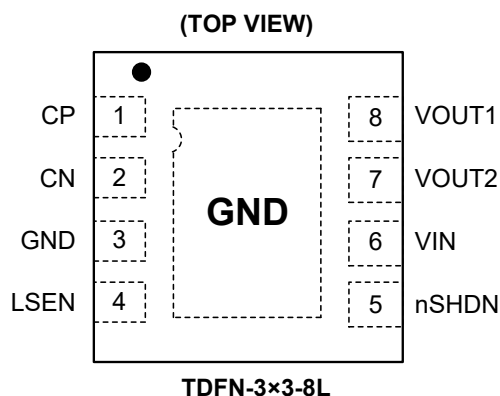
ESD SENSITIVITY CAUTION

This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

PIN CONFIGURATION



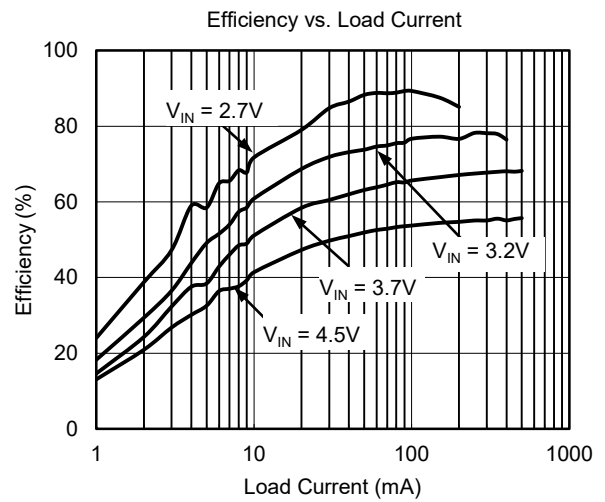
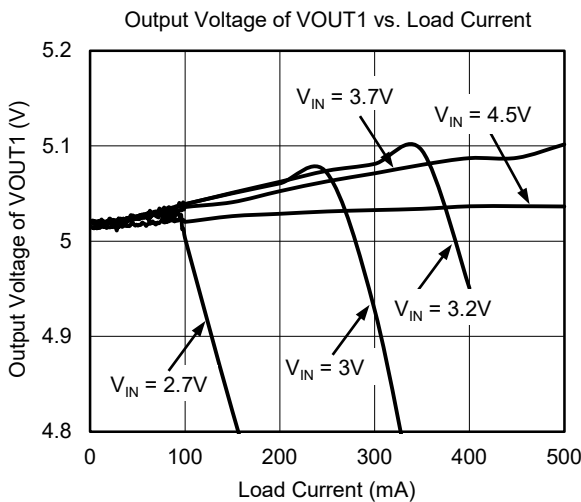
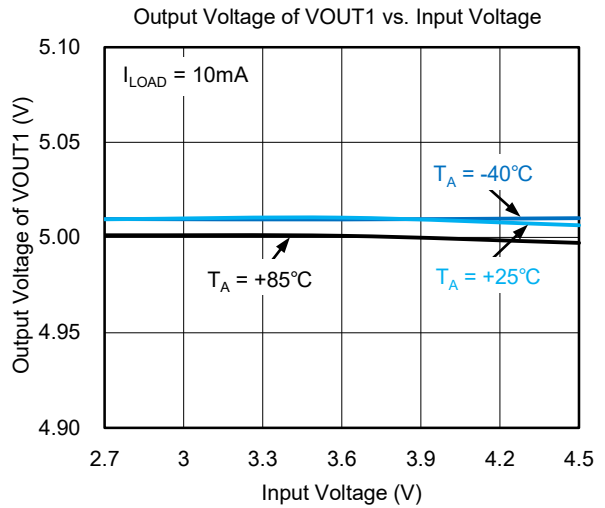
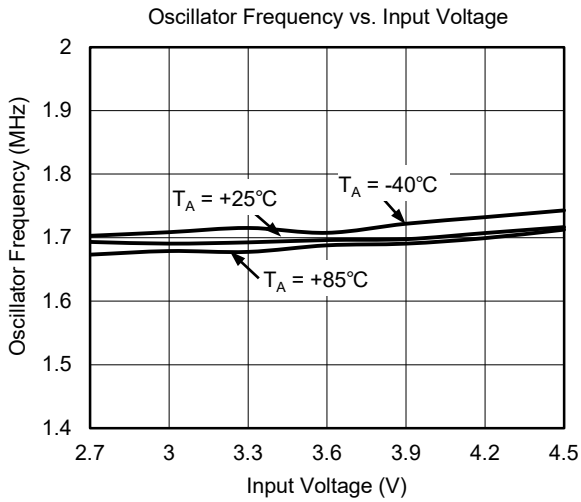
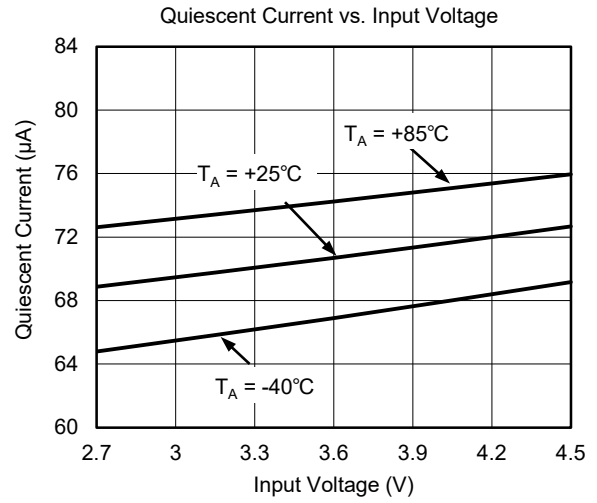
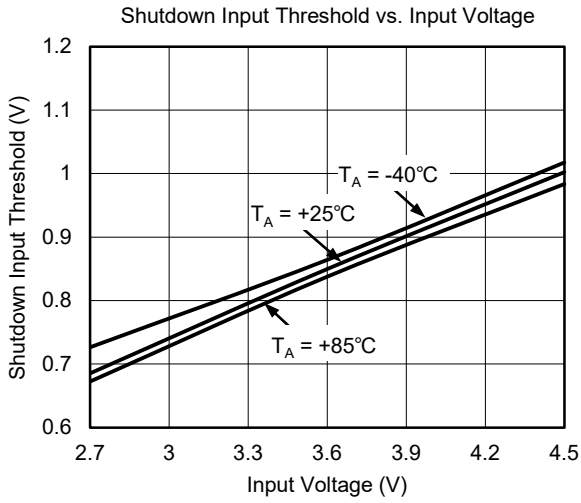
PIN DESCRIPTION

PIN	NAME	FUNCTION
1	CP	Positive Terminal of the Flying Capacitor.
2	CN	Negative Terminal of the Flying Capacitor.
3	GND	Ground.
4	LSEN	Load Switch Enable Pin. Logic high to turn on the load switch, VOUT2 is connected with VOUT1. Logic low to turn off load switch, VOUT2 is disconnected with VOUT1.
5	nSHDN	Shutdown Input Pin. Logic low to shut down the device.
6	VIN	Input Power Supply Pin.
7	VOUT2	Load Switch Output Pin. Controlled by the LSEN pin. Provide 500mA current limit.
8	VOUT1	Regulated Output Pin. Provide continuous 5V/500mA output.
Exposed Pad	GND	GND.

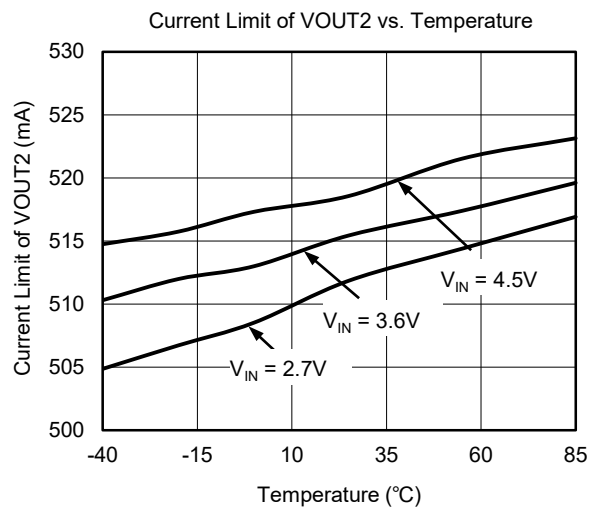
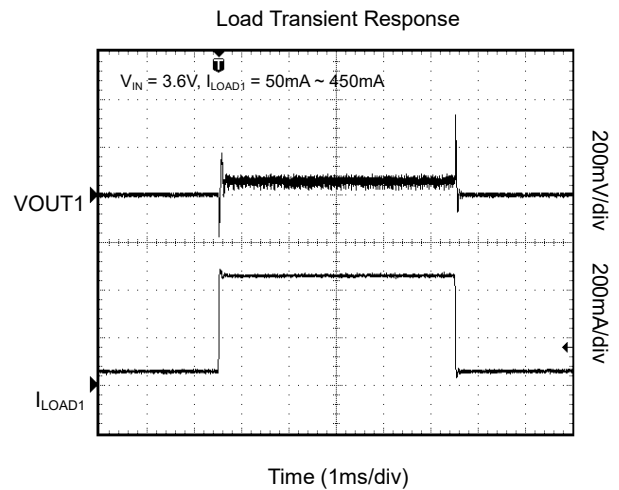
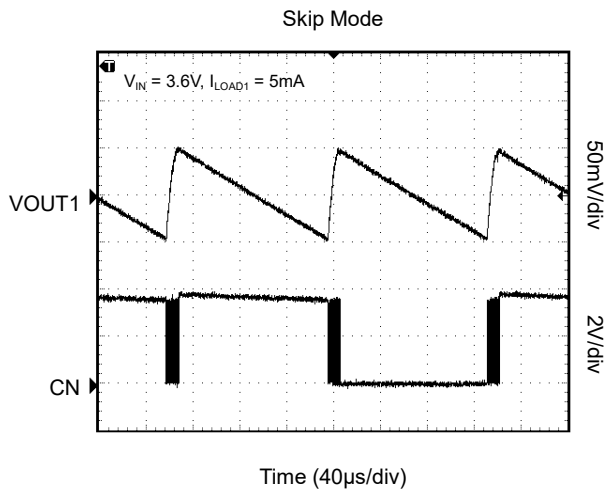
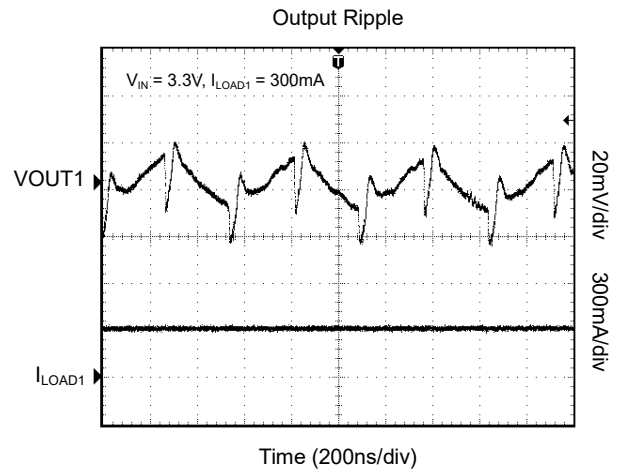
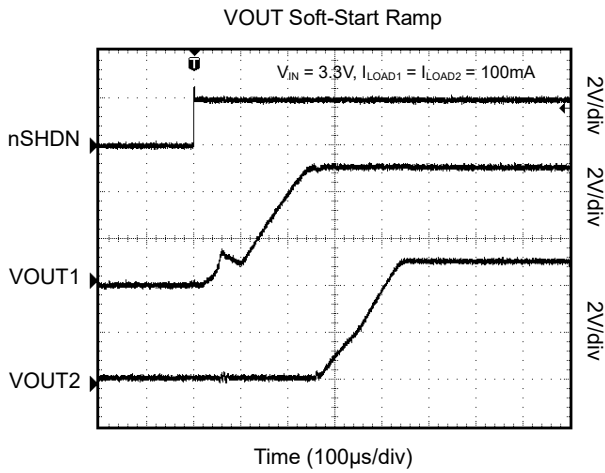
ELECTRICAL CHARACTERISTICS(T_A = 25°C, C_{FLY} = 1μF, C_{IN} = 10μF, C_{OUT1} = 10μF, C_{OUT2} = 1μF, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage Range	V _{IN}	V _{OUT1} = 5.0V	2.7		V _{OUT1}	V
Output Voltage	V _{OUT1}	V _{IN} = 3.6V, I _{OUT1} = I _{OUT2} = 0mA	4.85	5	5.15	V
Quiescent Power Supply Current	I _Q	2.7V < V _{IN} < 5V, LSEN = GND		70	100	μA
Shutdown Supply Current	I _{SHDN}	2.7V < V _{IN} < 5V, nSHDN = GND		0.1	2	μA
Ripple Voltage	V _{RIPPLE}	V _{IN} = 3.3V, I _{OUT1} = 300mA		40		mV _{P-P}
Efficiency	η	V _{IN} = 3.3V, I _{OUT1} = 300mA		75		%
Frequency	f _{OSC}	Oscillator Free Running		1.7		MHz
Turn-On Time	t _{ON}	V _{IN} = 3V, I _{OUT} = 0mA		0.2		ms
nSHDN, LSEN						
Logic Input Threshold High	V _{IH}		1.6			V
Logic Input Threshold Low	V _{IL}				0.5	
Logic Input Leakage Current	I _{leakage}	Clamped on V _{IN} or GND			1	μA

TYPICAL PERFORMANCE CHARACTERISTICS



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



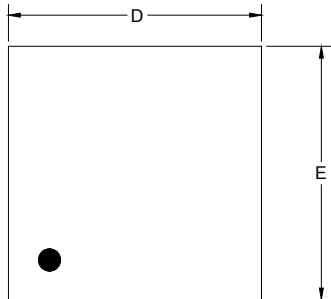
REVISION HISTORY

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

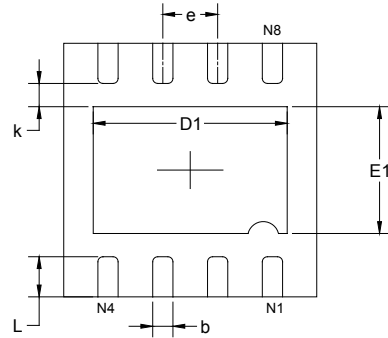
Changes from Original (DECEMBER 2013) to REV.A	Page
Changed from product preview to production data.....	All

PACKAGE OUTLINE DIMENSIONS

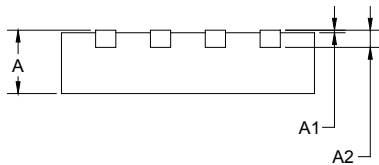
TDFN-3x3-8L



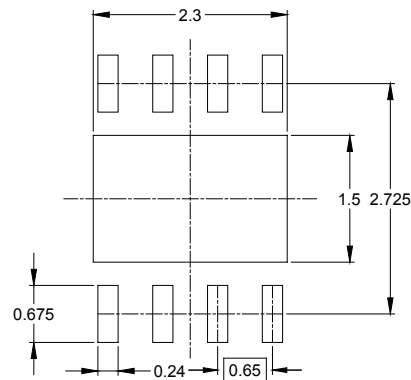
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	2.900	3.100	0.114	0.122
D1	2.200	2.400	0.087	0.094
E	2.900	3.100	0.114	0.122
E1	1.400	1.600	0.055	0.063
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.650 TYP		0.026 TYP	
L	0.375	0.575	0.015	0.023

PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TDFN-3×3-8L	13"	12.4	3.35	3.35	1.13	4.0	8.0	2.0	12.0	Q1

DD0001

PACKAGE INFORMATION

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

Reel Type	Length (mm)	Width (mm)	Height (mm)	Pizza/Carton
13"	386	280	370	5

DD0002