

### GENERAL DESCRIPTION

The SGM2220 is a low quiescent current, low dropout and high input voltage linear regulator. It is capable of supplying 300mA output current with typical dropout voltage of 330mV. The operating input voltage range is from 2.2V to 13V and fixed output voltage range is from 0.8V to 5.0V.

Other features include short-circuit current limit and thermal shutdown protection.

The SGM2220 is available in Green SOT-23-5 and SOT-89-3 packages. It operates over an operating temperature range of -40°C to +125°C.

### FEATURES

- **Operating Input Voltage Range: 2.2V to 13V**
- **Fixed Outputs of 0.8V, 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 3.6V, 3.9V, 4.0V, 4.1V, 4.2V, 4.5V and 5.0V**
- **Low Power Consumption:**  
**0.9µA (TYP) at No Load**
- **Low Dropout Voltage:**  
**330mV (TYP) at 300mA,  $V_{OUT} = 5V$**
- **Current Limiting and Thermal Protection**
- **Stable with Small Case Size Ceramic Capacitors**
- **UVLO with Hysteresis**
- **Reverse Current Protection when  $V_{OUT} > V_{IN}$**
- **-40°C to +125°C Operating Temperature Range**
- **Available in Green SOT-23-5 and SOT-89-3 Packages**

### APPLICATIONS

Portable Electronics  
 Smartphone  
 Industrial and medical Equipment  
 Digital Cameras and Audio Devices

### TYPICAL APPLICATION

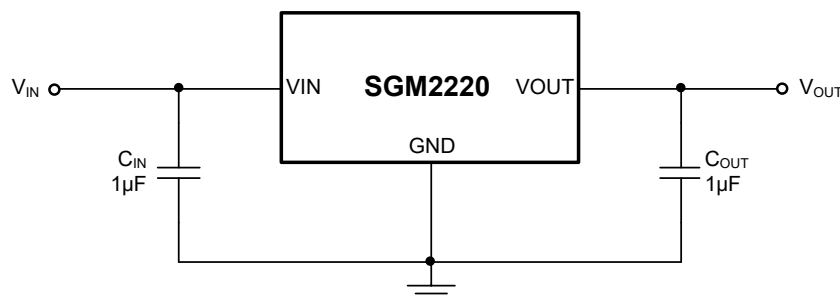


Figure 1. Typical Application Circuit

# 300mA, 0.9µA Low Quiescent Current, SGM2220 Low Dropout and High Voltage Regulator

## PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM2220-1.2	SOT-23-5	-40°C to +125°C	SGM2220-1.2XN5G/TR	0P5XX	Tape and Reel, 3000
SGM2220-1.5	SOT-23-5	-40°C to +125°C	SGM2220-1.5XN5G/TR	0P6XX	Tape and Reel, 3000
SGM2220-1.8	SOT-23-5	-40°C to +125°C	SGM2220-1.8XN5G/TR	02SXX	Tape and Reel, 3000
SGM2220-2.5	SOT-23-5	-40°C to +125°C	SGM2220-2.5XN5G/TR	0P7XX	Tape and Reel, 3000
SGM2220-2.8	SOT-23-5	-40°C to +125°C	SGM2220-2.8XN5G/TR	02TXX	Tape and Reel, 3000
SGM2220-3.0	SOT-23-5	-40°C to +125°C	SGM2220-3.0XN5G/TR	02UXX	Tape and Reel, 3000
SGM2220-3.3	SOT-23-5	-40°C to +125°C	SGM2220-3.3XN5G/TR	00LXX	Tape and Reel, 3000
SGM2220-3.6	SOT-23-5	-40°C to +125°C	SGM2220-3.6XN5G/TR	0P8XX	Tape and Reel, 3000
SGM2220-3.9	SOT-23-5	-40°C to +125°C	SGM2220-3.9XN5G/TR	02VXX	Tape and Reel, 3000
SGM2220-4.0	SOT-23-5	-40°C to +125°C	SGM2220-4.0XN5G/TR	02WXX	Tape and Reel, 3000
SGM2220-4.1	SOT-23-5	-40°C to +125°C	SGM2220-4.1XN5G/TR	02XXX	Tape and Reel, 3000
SGM2220-4.2	SOT-23-5	-40°C to +125°C	SGM2220-4.2XN5G/TR	02YXX	Tape and Reel, 3000
SGM2220-5.0	SOT-23-5	-40°C to +125°C	SGM2220-5.0XN5G/TR	00MXX	Tape and Reel, 3000
SGM2220-0.8	SOT-89-3	-40°C to +125°C	SGM2220-0.8XK3G/TR	00NXX	Tape and Reel, 1000
SGM2220-1.2	SOT-89-3	-40°C to +125°C	SGM2220-1.2XK3G/TR	0NZXX	Tape and Reel, 1000
SGM2220-1.5	SOT-89-3	-40°C to +125°C	SGM2220-1.5XK3G/TR	001XX	Tape and Reel, 1000
SGM2220-1.8	SOT-89-3	-40°C to +125°C	SGM2220-1.8XK3G/TR	00OXX	Tape and Reel, 1000
SGM2220-2.5	SOT-89-3	-40°C to +125°C	SGM2220-2.5XK3G/TR	002XX	Tape and Reel, 1000
SGM2220-2.8	SOT-89-3	-40°C to +125°C	SGM2220-2.8XK3G/TR	003XX	Tape and Reel, 1000
SGM2220-3.0	SOT-89-3	-40°C to +125°C	SGM2220-3.0XK3G/TR	0NUXX	Tape and Reel, 1000
SGM2220-3.3	SOT-89-3	-40°C to +125°C	SGM2220-3.3XK3G/TR	00PXX	Tape and Reel, 1000
SGM2220-3.6	SOT-89-3	-40°C to +125°C	SGM2220-3.6XK3G/TR	004XX	Tape and Reel, 1000
SGM2220-3.9	SOT-89-3	-40°C to +125°C	SGM2220-3.9XK3G/TR	00QXX	Tape and Reel, 1000
SGM2220-4.0	SOT-89-3	-40°C to +125°C	SGM2220-4.0XK3G/TR	02ZXX	Tape and Reel, 1000
SGM2220-4.5	SOT-89-3	-40°C to +125°C	SGM2220-4.5XK3G/TR	005XX	Tape and Reel, 1000
SGM2220-5.0	SOT-89-3	-40°C to +125°C	SGM2220-5.0XK3G/TR	07AXX	Tape and Reel, 1000

## MARKING INFORMATION

NOTE: XX = Date Code.

### SOT-23-5/SOT-89-3

**YYY X X**

Date Code - Week  
 Date Code - Year  
 Serial Number

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**

VIN to GND .....	-0.3V to 16V
VOUT to GND .....	-0.3V to 6V
Package Thermal Resistance	
SOT-23-5, $\theta_{JA}$ .....	161°C/W
SOT-23-5, $\theta_{JB}$ .....	39°C/W
SOT-23-5, $\theta_{JC(TOP)}$ .....	111°C/W
SOT-89-3, $\theta_{JA}$ .....	53°C/W
SOT-89-3, $\theta_{JB}$ .....	16°C/W
SOT-89-3, $\theta_{JC(TOP)}$ .....	93°C/W
SOT-89-3, $\theta_{JC(BOT)}$ .....	17°C/W
Junction Temperature .....	+150°C
Storage Temperature Range.....	-65°C to +150°C
Lead Temperature (Soldering, 10s) .....	+260°C
ESD Susceptibility	
HBM.....	6000V
CDM .....	1000V

**RECOMMENDED OPERATING CONDITIONS**

Input Voltage Range .....	2.2V to 13V
Input Effective Capacitance, $C_{IN}$ .....	0.5µF (MIN)
Output Effective Capacitance, $C_{OUT}$ .....	0.47µF to 10µF
Operating Junction Temperature Range .....	-40°C to +125°C

**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.

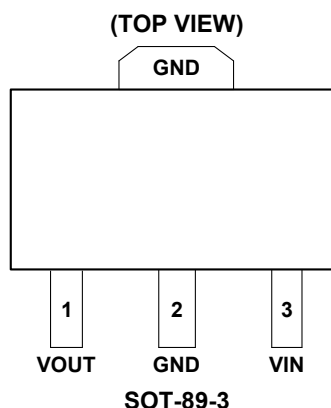
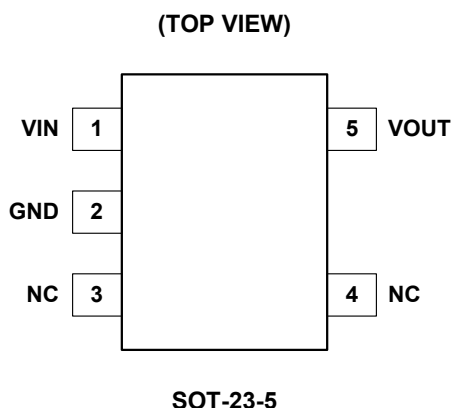
**ESD SENSITIVITY CAUTION**

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 CONFIGURATIONS**



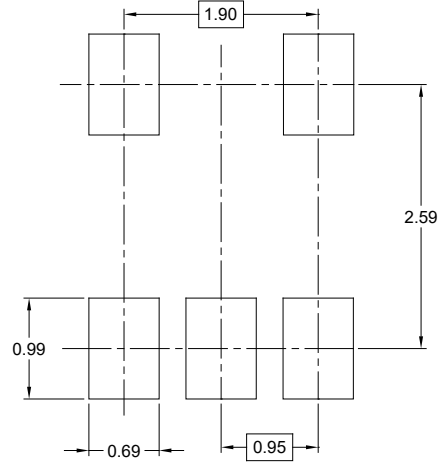
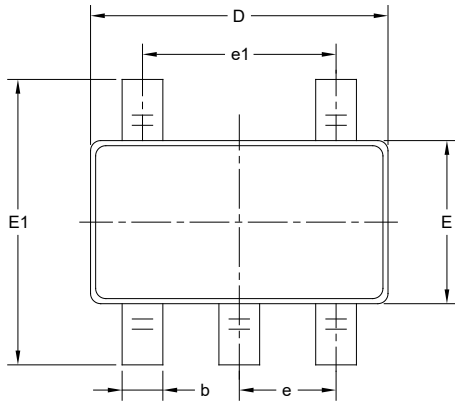
**PIN DESCRIPTION**

PIN		NAME	FUNCTION
SOT-23-5	SOT-89-3		
1	3	VIN	Input Supply Voltage Pin. It is recommended to use a 1µF or larger ceramic capacitor from VIN pin to ground to get good power supply decoupling. This ceramic capacitor should be placed as close as possible to VIN pin.
2	2	GND	Ground.
3, 4	–	NC	No Connection.
5	1	VOUT	Regulator Output Pin. It is recommended to use a ceramic capacitor with effective capacitance in the range of 0.47µF to 10µF to ensure stability. This ceramic capacitor should be placed as close as possible to VOUT pin.

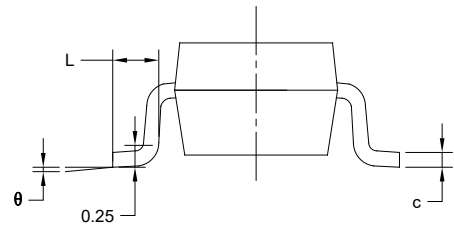
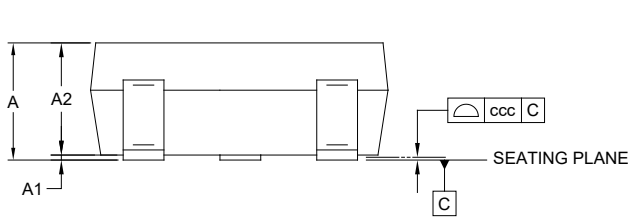
# PACKAGE INFORMATION

## PACKAGE OUTLINE DIMENSIONS

### SOT-23-5



RECOMMENDED LAND PATTERN (Unit: mm)



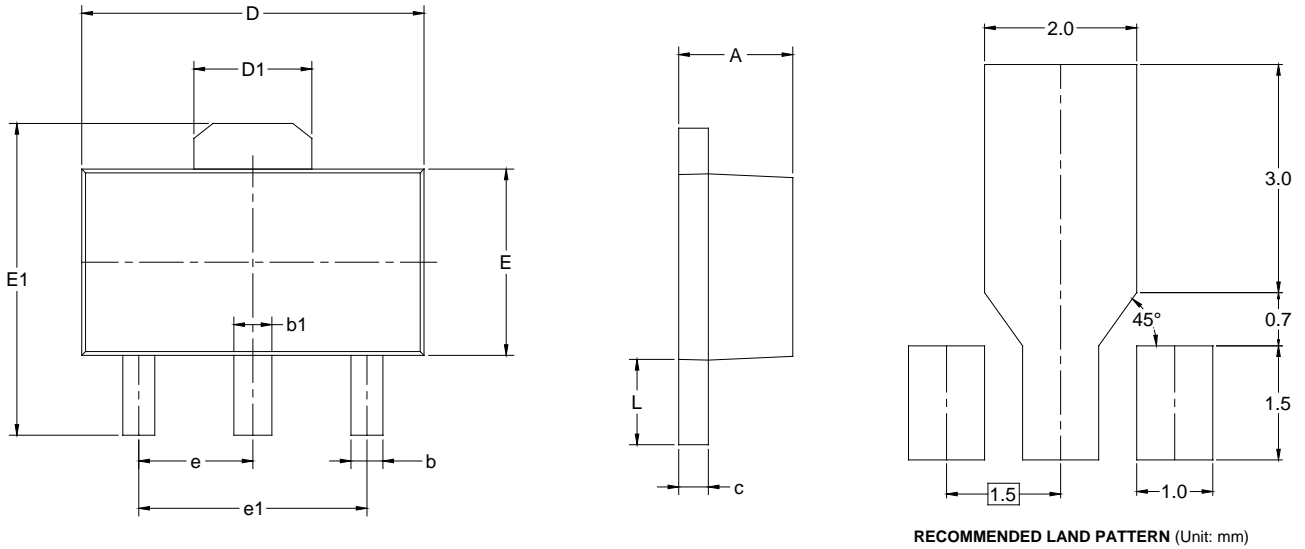
Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	-	-	1.450
A1	0.000	-	0.150
A2	0.900	-	1.300
b	0.300	-	0.500
c	0.080	-	0.220
D	2.750	-	3.050
E	1.450	-	1.750
E1	2.600	-	3.000
e	0.950 BSC		
e1	1.900 BSC		
L	0.300	-	0.600
$\theta$	0°	-	8°
ccc	0.100		

NOTES:

1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.
3. Reference JEDEC MO-178.

PACKAGE OUTLINE DIMENSIONS

SOT-89-3



RECOMMENDED LAND PATTERN (Unit: mm)

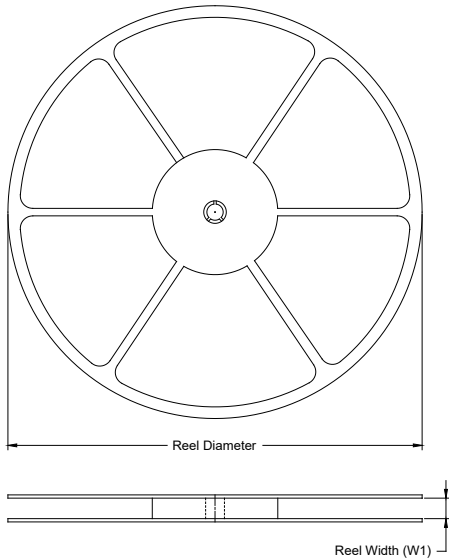
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

NOTES:

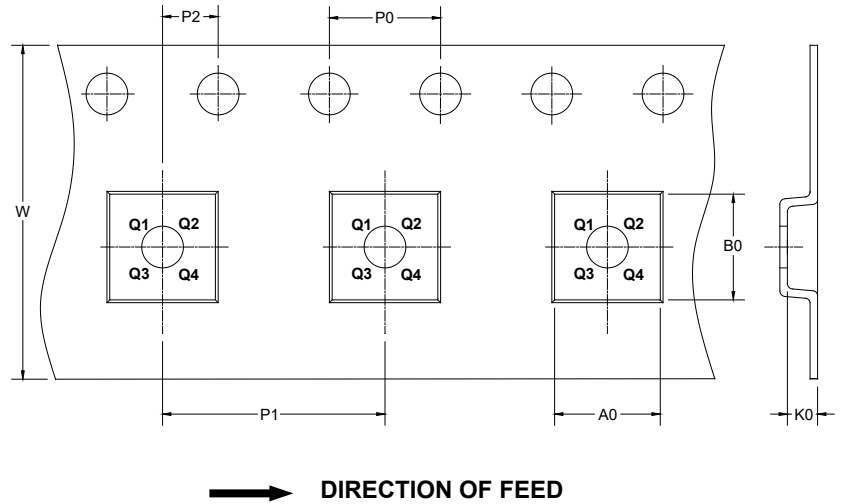
1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.

## 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
SOT-23-5	7"	9.5	3.20	3.20	1.40	4.0	4.0	2.0	8.0	Q3
SOT-89-3	7"	13.2	4.85	4.45	1.85	4.0	8.0	2.0	12.0	Q3

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# 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
7" (Option)	368	227	224	8
7"	442	410	224	18

DD0002