

### GENERAL DESCRIPTION

The SGM71XX series is a set of high voltage and low power consumption linear regulators. It is capable of supplying 60mA output current. The operating input voltage is up to 36V. The output voltages are 3.3V and 4.4V in fixed output version.

Other features include current limit and thermal shutdown protection.

The SGM71XX series is available in a Green SOT-89-3 package. It operates over an ambient temperature range of -40°C to +85°C.

### FEATURES

- **High Input Voltage: Up to 36V**
- **Fixed Output Voltages:**  
3.3V (SGM7133);  
4.4V (SGM7144);
- **60mA Guaranteed Output Current**
- **Output Voltage Accuracy: ±2% at +25°C**
- **Low Dropout Voltage**
- **Low Power Consumption: 2.2µA (TYP)**
- **Low Temperature Coefficient**
- **Thermal Shutdown Protection**
- **Output Current Limit**
- **-40°C to +85°C Operating Temperature Range**
- **Available in a Green SOT-89-3 Package**

### APPLICATIONS

- Palmtops
- High-Power Boost Applications
- Power Source for Battery-Powered Equipment
- Home Electric/Electronic Appliances

### TYPICAL APPLICATION

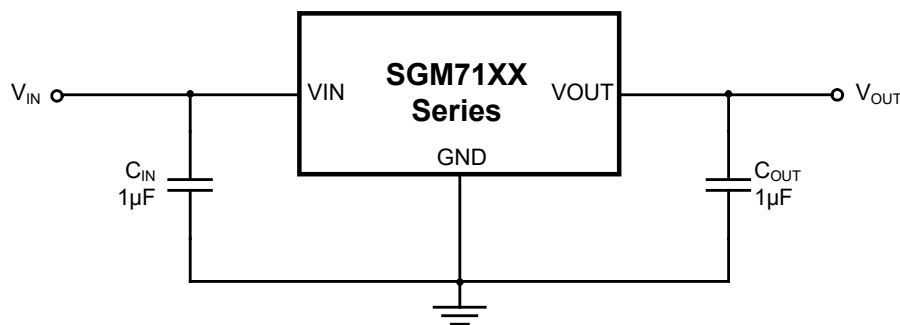


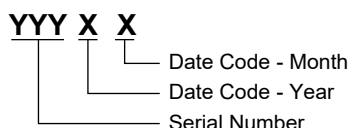
Figure 1. Typical Application Circuit

**PACKAGE/ORDERING INFORMATION**

MODEL	V <sub>OUT</sub> (V)	PACKAGE DESCRIPTION	ORDERING NUMBER	MARKING INFORMATION	PACKING OPTION
SGM7133	3.3	SOT-89-3	SGM7133YK3G/TR	G18XX	Tape and Reel, 1000
SGM7144	4.4	SOT-89-3	SGM7144YK3G/TR	SI9XX	Tape and Reel, 1000

**MARKING INFORMATION**

NOTE: XX = Date Code.



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<sub>IN</sub> to GND ..... -0.3V to 44V
- V<sub>OUT</sub> to GND ..... -0.3V to Min(V<sub>IN</sub> + 0.3V, 6V)
- Power Dissipation, P<sub>D</sub> @ T<sub>A</sub> = +25°C
- SOT-89-3 ..... 0.691W
- Package Thermal Resistance
- SOT-89-3, θ<sub>JA</sub> ..... 152°C/W
- Junction Temperature ..... +150°C
- Storage Temperature Range ..... -65°C to +150°C
- Lead Temperature (Soldering, 10s) ..... +260°C
- ESD Susceptibility
- HBM ..... 4000V
- MM ..... 200V
- CDM ..... 1000V

**RECOMMENDED OPERATING CONDITIONS**

- Input Voltage Range ..... 2.7V to 36V
- Operating Temperature Range ..... -40°C to +85°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.

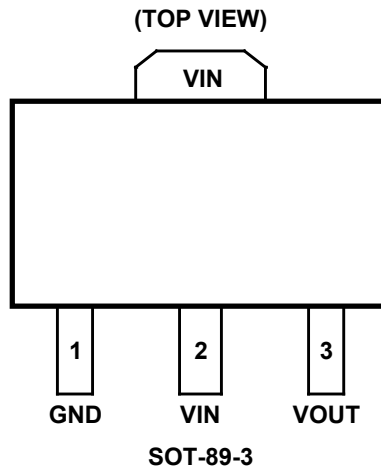
**ESD SENSITIVITY CAUTION**

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 CONFIGURATION**



**PIN DESCRIPTION**

PIN	NAME	FUNCTION
1	GND	Ground.
2	VIN	Regulator Input Pin. Up to 36V operation voltage. It is recommended to use a 1µF or larger ceramic capacitor from VIN pin to ground.
3	VOUT	Regulator Output Pin. It is recommended to use an output capacitor with effective capacitance in the range of 1µF to 10µF. The capacitor should be located very close to this pin.

**ELECTRICAL CHARACTERISTICS**(V<sub>IN</sub> = 15V, C<sub>IN</sub> = C<sub>OUT</sub> = 1μF, Full = -40°C to +85°C, typical values are at T<sub>A</sub> = +25°C, unless otherwise noted.)

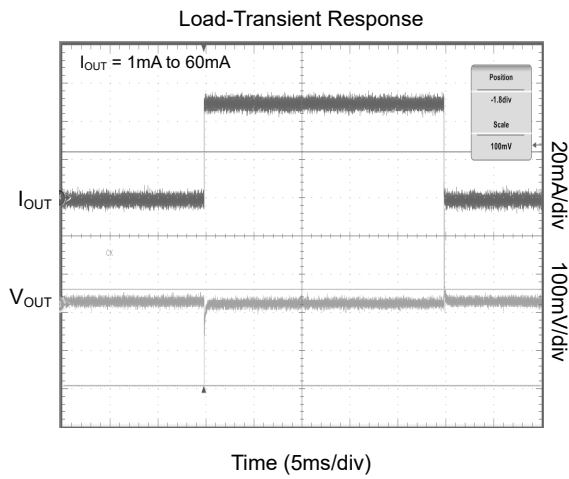
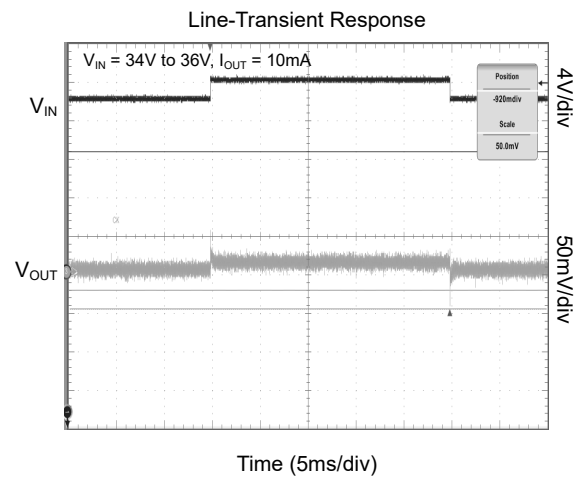
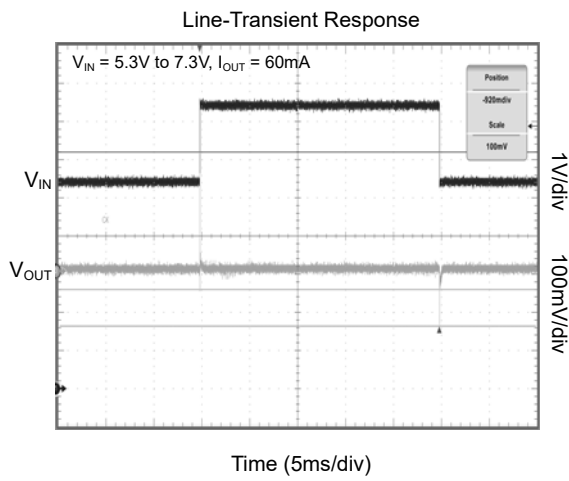
PARAMETER	SYMBOL	CONDITIONS	TEMP	MIN	TYP	MAX	UNITS
Input Voltage Range	V <sub>IN</sub>		Full	2.7		36	V
Output Voltage Accuracy		I <sub>OUT</sub> = 1mA	+25°C	-2		2	%
Ground Pin Current		No Load	+25°C		2.2	2.8	μA
			Full			3.2	
Maximum Output Current		V <sub>IN</sub> = V <sub>OUT</sub> + 2V	+25°C	60			mA
Dropout Voltage <sup>(1)</sup>	V <sub>DROP</sub>	I <sub>OUT</sub> = 60mA	+25°C		1600	2100	mV
			Full			2650	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V <sub>IN</sub> = V <sub>OUT</sub> + 2V to 36V, I <sub>OUT</sub> = 1mA	+25°C		0.005	0.025	%/V
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	V <sub>IN</sub> = V <sub>OUT</sub> + 2V, I <sub>OUT</sub> = 1mA to 60mA	+25°C		15	35	mV
Output Voltage Temperature Coefficient <sup>(2)</sup>	$\frac{\Delta V_{OUT}}{\Delta T_A \times V_{OUT}}$	V <sub>IN</sub> = V <sub>OUT</sub> + 2V or 4V, I <sub>OUT</sub> = 1mA	Full		65		ppm/°C

## NOTES:

1. The dropout voltage is defined as V<sub>IN</sub> - V<sub>OUT</sub>, when V<sub>OUT</sub> is 95% of the value of V<sub>OUT</sub> for V<sub>IN</sub> = V<sub>OUT</sub> + 2V.
2. Output voltage temperature coefficient is defined as the worst-case voltage change divided by the total temperature range.

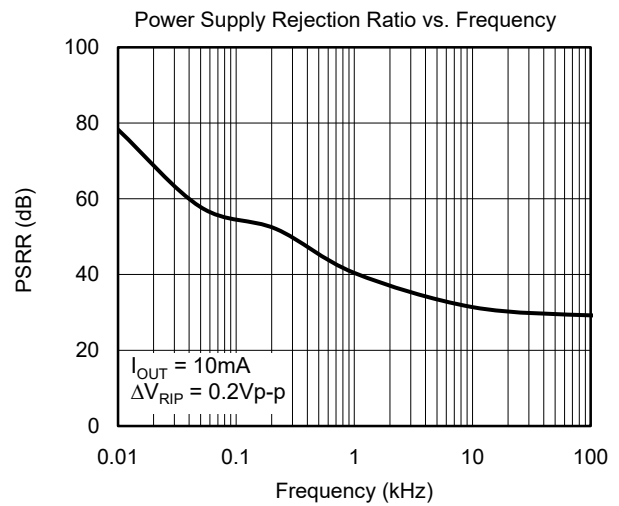
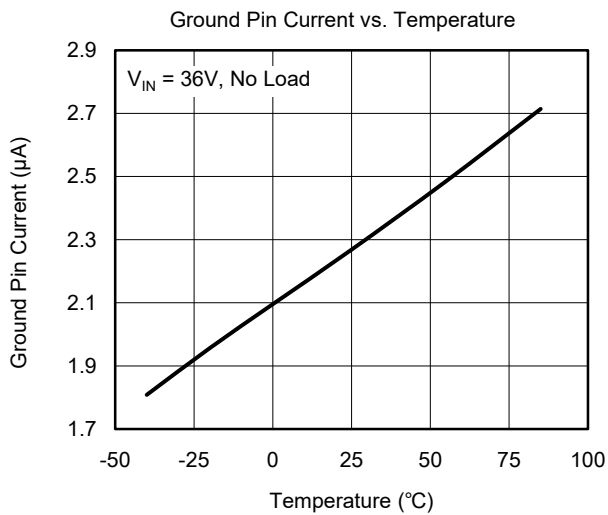
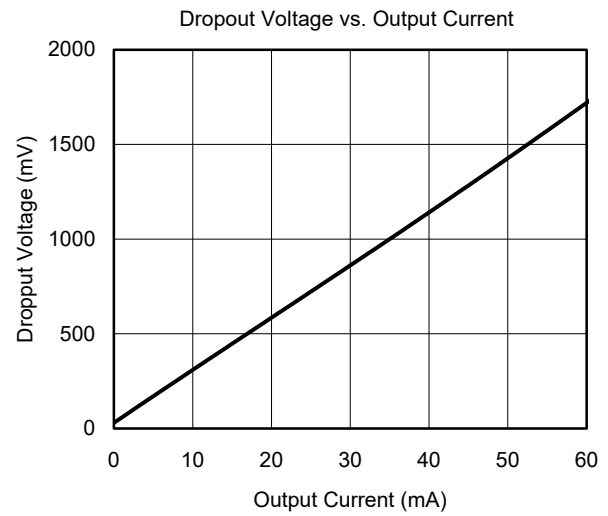
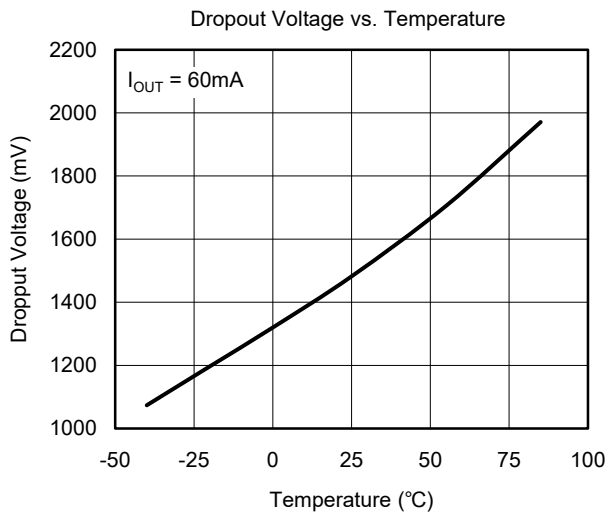
TYPICAL PERFORMANCE CHARACTERISTICS

SGM7133,  $V_{IN} = 5.3V$ ,  $C_{IN} = C_{OUT} = 1\mu F$ ,  $T_A = +25^\circ C$ , unless otherwise noted.



TYPICAL PERFORMANCE CHARACTERISTICS (continued)

SGM7133,  $V_{IN} = 5.3V$ ,  $C_{IN} = C_{OUT} = 1\mu F$ ,  $T_A = +25^\circ C$ , unless otherwise noted.



**APPLICATION INFORMATION**

**Input Capacitor Selection (C<sub>IN</sub>)**

The input decoupling capacitor is necessary to be connected as close as possible to the VIN pin for ensuring the device stability. 1µF or larger X7R or X5R ceramic capacitor is selected to get good dynamic performance.

When V<sub>IN</sub> is required to provide large current instantaneously, a large effective input capacitor is required. Multiple input capacitors can limit the input tracking inductance. Adding more input capacitors is available to restrict the ringing and to keep it below the device absolute maximum ratings.

**Output Capacitor Selection (C<sub>OUT</sub>)**

The output decoupling capacitor should be located as close as possible to the VOUT pin. C<sub>OUT</sub> with the

effective capacitance in the range of 1µF to 10µF X7R or X5R ceramic capacitor is selected to get good dynamic performance. For ceramic capacitor, temperature, DC bias and package size will change the effective capacitance, so enough margin of C<sub>OUT</sub> must be considered in design. Larger capacitance and lower ESR C<sub>OUT</sub> will help improve the load transient response and increase the high frequency PSRR.

**Thermal Shutdown**

The SGM71XX can detect the temperature of die. When the die temperature exceeds the threshold value of thermal shutdown, the SGM71XX will be in shutdown state.

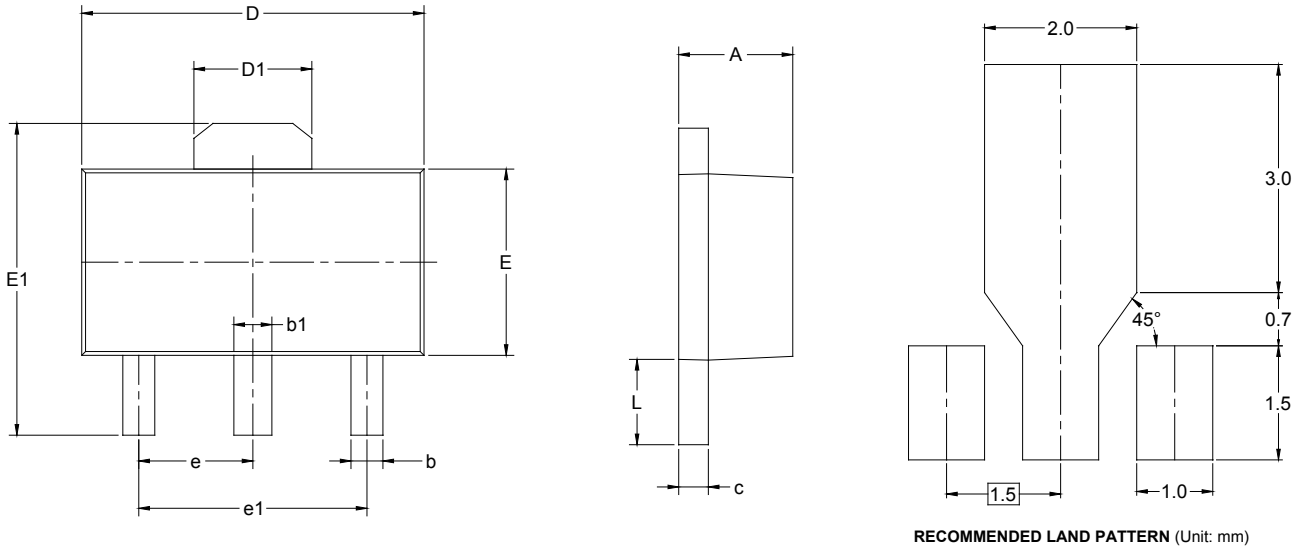
**REVISION HISTORY**

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

OCTOBER 2017 – REV.A to REV.A.1	Page
Changed the marking information for SGM7144YK3G .....	2
<b>Changes from Original (APRIL 2017) to REV.A</b>	
Changed from product preview to production data .....	All

PACKAGE OUTLINE DIMENSIONS

SOT-89-3

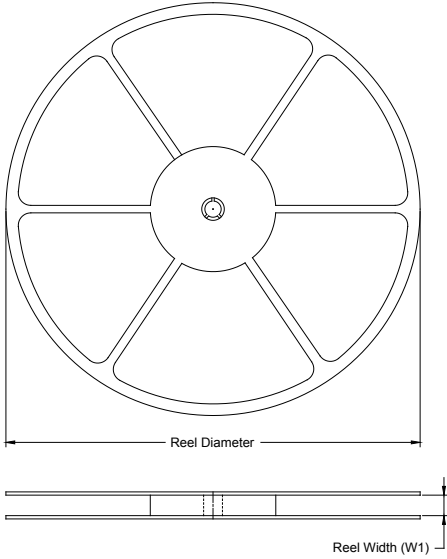


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060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

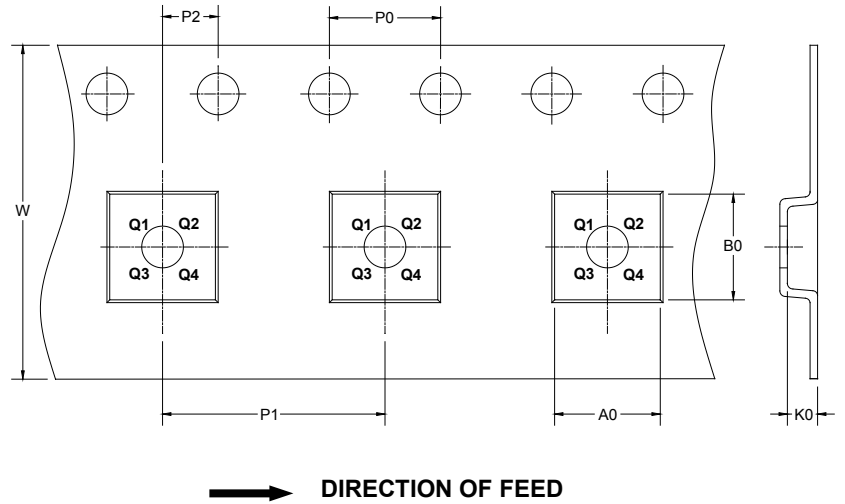


TAPE AND REEL INFORMATION

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-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

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