

### GENERAL DESCRIPTION

The SGM2242 is a high voltage, low quiescent current and low dropout voltage linear regulator. It is capable of supplying 500mA output current with typical dropout voltage of 750mV. The operating input voltage range is from 3V to 40V. The fixed output voltage range is from 1.8V to 12V and the adjustable output voltage range is from 1.25V to 24V.

Other features include current limit and thermal shutdown protection. The SGM2242 has automatic discharge function to quickly discharge  $V_{OUT}$  in the disabled status.

The SGM2242 is available in a Green SOIC-8 (Exposed Pad) package. It operates over an operating temperature range of  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ .

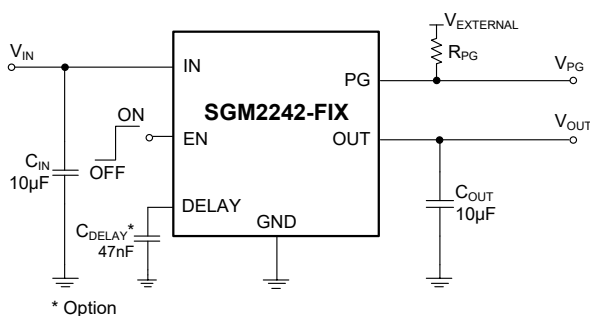
### FEATURES

- Operating Input Voltage Range: 3V to 40V
- Enable Pin Accept Voltages Higher than the Supply Voltage and up to 40V
- Fixed Output from 1.8V to 12V
- Adjustable Output from 1.25V to 24V
- 500mA Output Current
- Output Voltage Accuracy:  $\pm 1\%$  at  $+25^{\circ}\text{C}$
- Low Quiescent Current:  $3.8\mu\text{A}$  (TYP)
- Low Dropout Voltage: 750mV (TYP) at 500mA
- Current Limiting and Thermal Protection
- Support Power-Good Indicator Function
- With Output Automatic Discharge
- Stable with Small Case Size Ceramic Capacitors
- $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  Operating Temperature Range
- Available in a Green SOIC-8 (Exposed Pad) Package

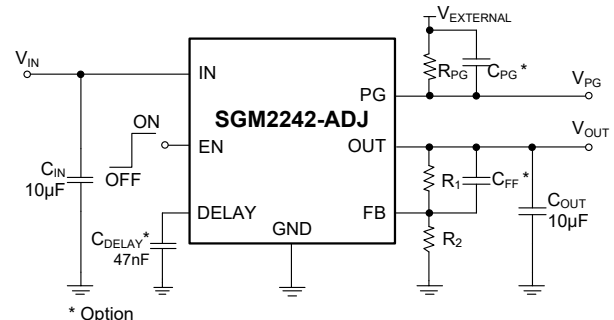
### APPLICATIONS

Battery-Powered Equipment  
Ultra-Low Power System  
Medical Equipment  
Industrial Equipment

### TYPICAL APPLICATION



Fixed Output Voltage Version



Adjustable Output Voltage Version

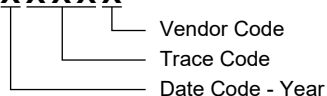
Figure 1. Typical Application Circuits

## PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM2242-1.8	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-1.8XPS8G/TR	SGM 24ZXPS8 XXXXX	Tape and Reel, 4000
SGM2242-2.5	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-2.5XPS8G/TR	SGM 250XPS8 XXXXX	Tape and Reel, 4000
SGM2242-3.0	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-3.0XPS8G/TR	SGM 251XPS8 XXXXX	Tape and Reel, 4000
SGM2242-3.3	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-3.3XPS8G/TR	SGM 1X6XPS8 XXXXX	Tape and Reel, 4000
SGM2242-3.6	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-3.6XPS8G/TR	SGM 252XPS8 XXXXX	Tape and Reel, 4000
SGM2242-4.2	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-4.2XPS8G/TR	SGM 253XPS8 XXXXX	Tape and Reel, 4000
SGM2242-5.0	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-5.0XPS8G/TR	SGM 1X5XPS8 XXXXX	Tape and Reel, 4000
SGM2242-8.0	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-8.0XPS8G/TR	SGM 254XPS8 XXXXX	Tape and Reel, 4000
SGM2242-9.0	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-9.0XPS8G/TR	SGM 255XPS8 XXXXX	Tape and Reel, 4000
SGM2242-12	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-12XPS8G/TR	SGM 256XPS8 XXXXX	Tape and Reel, 4000
SGM2242-ADJ	SOIC-8 (Exposed Pad)	-40°C to +125°C	SGM2242-ADJXPS8G/TR	SGM 1X4XPS8 XXXXX	Tape and Reel, 4000

## MARKING INFORMATION

NOTE: XXXXX = Date Code, Trace 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**

IN, EN to GND .....	-0.3V to 42V
OUT, FB to GND.....	-0.3V to 42V
PG to GND.....	-0.3V to 42V
DELAY to GND .....	-0.3V to 6V
Package Thermal Resistance	
SOIC-8 (Exposed Pad), $\theta_{JA}$ .....	40°C/W
SOIC-8 (Exposed Pad), $\theta_{JB}$ .....	16.7°C/W
SOIC-8 (Exposed Pad), $\theta_{JC(TOP)}$ .....	55.9°C/W
SOIC-8 (Exposed Pad), $\theta_{JC(BOT)}$ .....	6°C/W
Junction Temperature.....	+150°C
Storage Temperature Range .....	-65°C to +150°C
Lead Temperature (Soldering, 10s).....	+260°C
ESD Susceptibility <sup>(1) (2)</sup>	
HBM.....	±2000V
CDM .....	±1000V

**NOTES:**

1. For human body model (HBM), all pins comply with ANSI/ESDA/JEDEC JS-001 specifications.
2. For charged device model (CDM), all pins comply with ANSI/ESDA/JEDEC JS-002 specifications.

**RECOMMENDED OPERATING CONDITIONS**

Supply Voltage Range, $V_{IN}$ .....	3V to 40V
Enable Input Voltage Range, $V_{EN}$ .....	3V to 40V
Input Effective Capacitance, $C_{IN}$ .....	1 $\mu$ F (MIN)
Output Effective Capacitance, $C_{OUT}$ .....	1 $\mu$ F to 100 $\mu$ F
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.

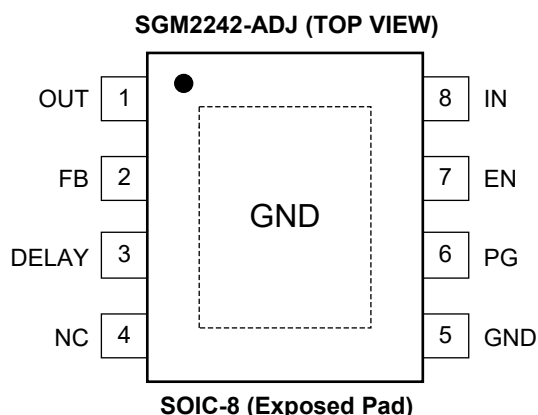
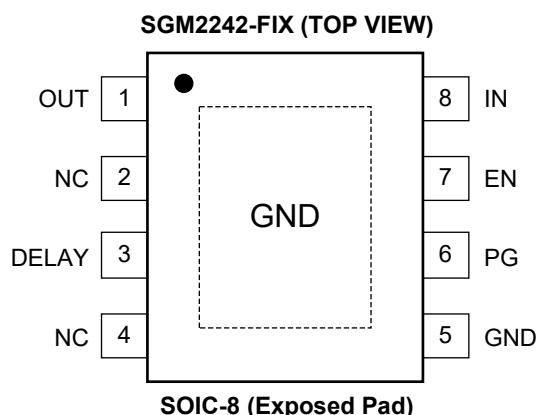
**ESD SENSITIVITY CAUTION**

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
1	OUT	Regulator Output Pin. It is recommended to use a ceramic capacitor with effective capacitance in the range of 1 $\mu$ F to 100 $\mu$ F to ensure stability. This ceramic capacitor should be placed as close as possible to OUT pin.
2	NC	No Connection (Fixed Version Only).
	FB	Feedback Voltage Input Pin (adjustable voltage version only). Connect this pin to the midpoint of an external resistor divider to adjust the output voltage. Place the resistors as close as possible to this pin.
3	DELAY	Power-Good Delay Pin. Keep this pin floating when it is not in use.
4	NC	No Connection.
5	GND	Ground.
6	PG	Power-Good Indicator Output Pin. An open-drain, active-high output that indicates the status of $V_{OUT}$ . When the output voltage reaches $PG_{HTH}$ of the target, the PG pin goes into a high-impedance state.
7	EN	Enable Pin. Drive EN high to turn on the regulator. Drive EN low to turn off the regulator.
8	IN	Input Supply Voltage Pin. It is recommended to use a 2.2 $\mu$ F or larger ceramic capacitor from IN pin to ground to get good power supply decoupling. This ceramic capacitor should be placed as close as possible to IN pin.
Exposed Pad	GND	Exposed Pad. Connect it to GND internally. Connect it to a large ground plane to maximize thermal performance. This pad is not an electrical connection point.

## FUNCTIONAL BLOCK DIAGRAMS

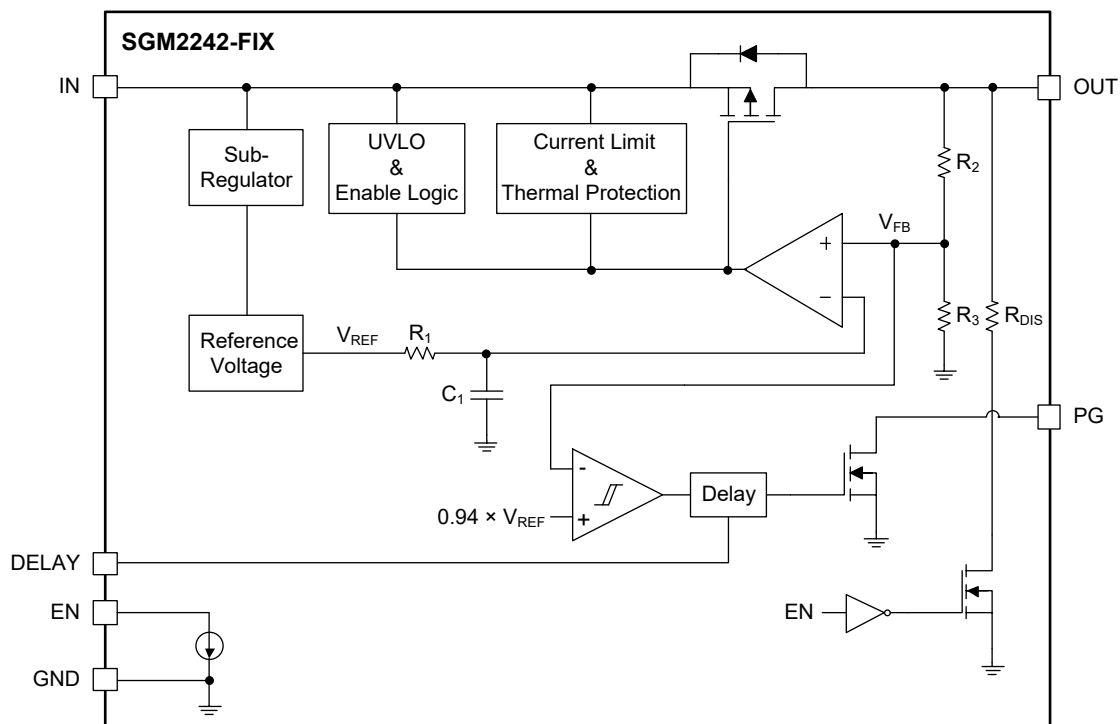


Figure 2. Block Diagram of Fixed Output Version

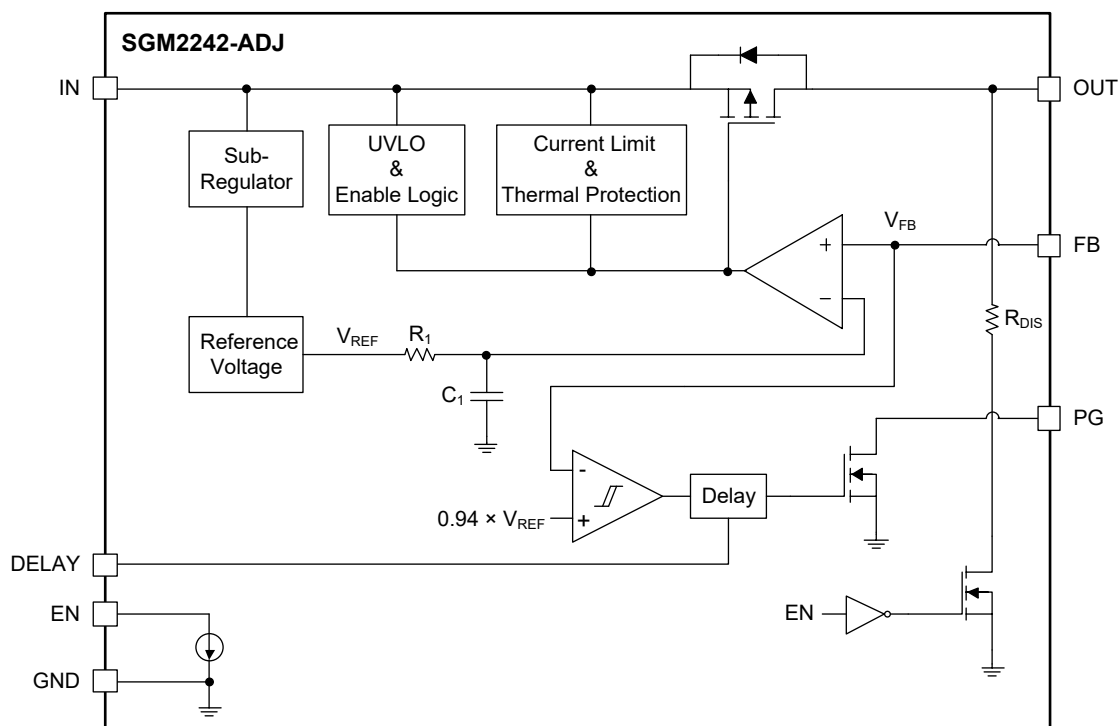
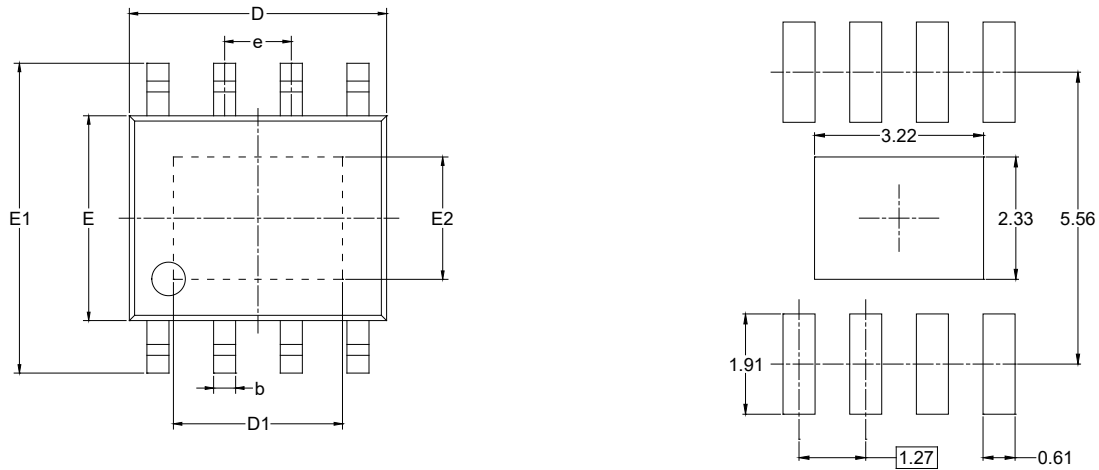


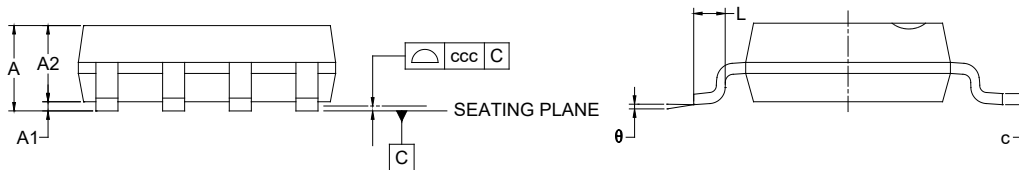
Figure 3. Block Diagram of Adjustable Output Version

## PACKAGE OUTLINE DIMENSIONS

### SOIC-8 (Exposed Pad)



RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A			1.700
A1	0.000	-	0.150
A2	1.250	-	1.650
b	0.330	-	0.510
c	0.170	-	0.250
D	4.700	-	5.100
D1	3.020	-	3.420
E	3.800	-	4.000
E1	5.800	-	6.200
E2	2.130	-	2.530
e	1.27 BSC		
L	0.400	-	1.270
θ	0°	-	8°
ccc	0.100		

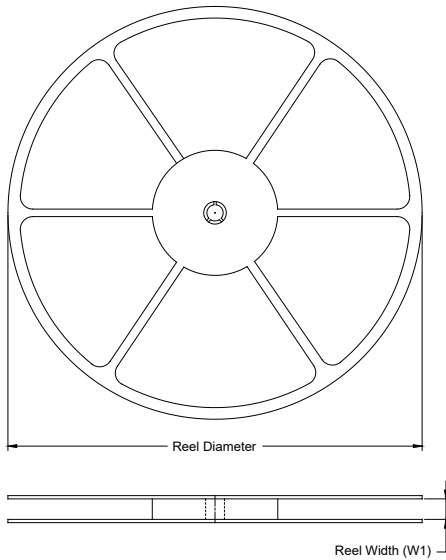
#### NOTES:

1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.
3. Reference JEDEC MS-012.

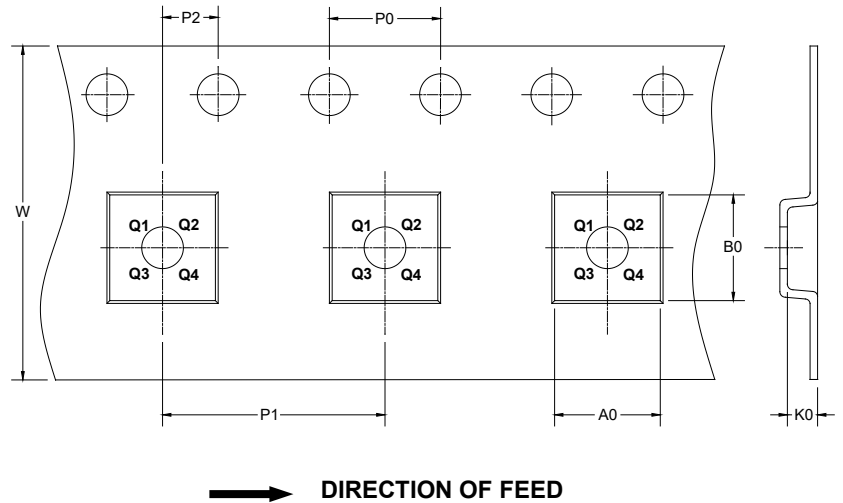
# PACKAGE INFORMATION

## TAPE AND REEL INFORMATION

### REEL DIMENSIONS



### TAPE DIMENSIONS



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

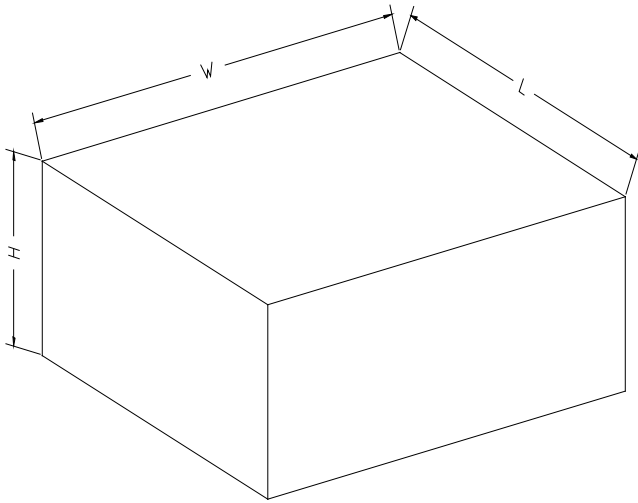
### KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SOIC-8 (Exposed Pad)	13"	12.4	6.40	5.40	2.10	4.0	8.0	2.0	12.0	Q1

DD00001

## 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