

### GENERAL DESCRIPTION

The SGM460 is an industry standard digital temperature sensor which integrates a dynamical and programmable limit window. It also features under-temperature and over-temperature alerts. And the SGM460 optimizes the temperature control, avoiding frequently reading temperatures from the controller or application processor.

The power supply voltage of the device is from 1.6V to 5.5V. The SMBus and two-wire interface are used to communicate with SGM460. A maximum of four SGM460 devices are allowed on the same bus.

The SGM460 is ideal for plenty of applications in which thermal management is critical for performance, such as computer, environmental applications and industrial equipment, etc.

The SGM460 is available in a Green WLCSP-0.77×1.17-6B package and operates over an ambient temperature range of -40°C to +125°C.

### FEATURES

- 1.6V to 5.5V Supply Voltage Range
- Temperature Accuracy:
  - -40°C to +125°C:  $\pm 0.75^{\circ}\text{C}$  (MAX)
- Low Quiescent Current: 3.2 $\mu\text{A}$  (TYP) Inactive
- Resolution: 12 Bits ( $0.0625^{\circ}\text{C}$ )
- Dynamically-Programmable Limit Window
- Under-Temperature and Over-Temperature Alerts
- Available in a Green WLCSP-0.77×1.17-6B Package

### APPLICATIONS

Computing: SSD, Server, PC and Notebook  
Industrial Equipment  
Telecom Equipment  
Medical Equipment

### TYPICAL APPLICATION

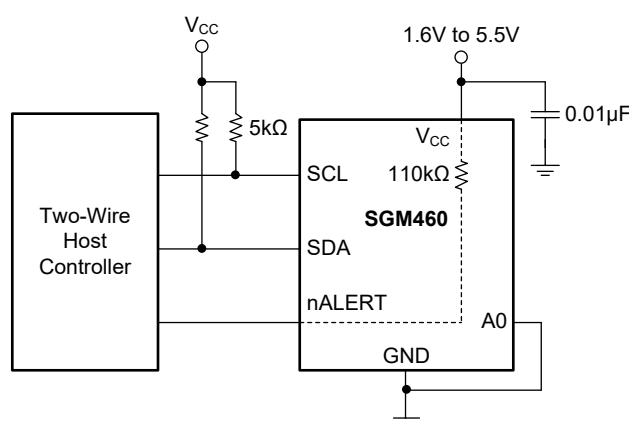


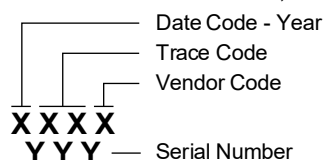
Figure 1. Typical Application Circuit

**PACKAGE/ORDERING INFORMATION**

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM460	WLCSP-0.77×1.17-6B	-40°C to +125°C	SGM460XG/TR	XXXX 0CM	Tape and Reel, 3000

**MARKING INFORMATION**

NOTE: XXXX = Date Code, Trace Code and Vendor 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**

Supply Voltage, $V_{CC}$	6.5V
Input Voltage at SCL and SDA <sup>(1)</sup>	-0.5V to 6.5V
Input Voltage at A0 and nALERT	-0.5V to $V_{CC} + 0.5V$ and $\leq 6.5V$
Package Thermal Resistance	
WLCSP-0.77×1.17-6B, $\theta_{JA}$	158°C/W
WLCSP-0.77×1.17-6B, $\theta_{JB}$	63.1°C/W
WLCSP-0.77×1.17-6B, $\theta_{JC}$	90.9°C/W
Junction Temperature	+150°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10s)	+260°C
ESD Susceptibility	
HBM	4000V
CDM	1000V

NOTE:

1. If A0 is connected to SCL or SDA, then the input voltage rating of A0 is adapted to SCL or SDA.

**RECOMMENDED OPERATING CONDITIONS**

Supply Voltage Range	1.6V to 5.5V
Operating Ambient 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.

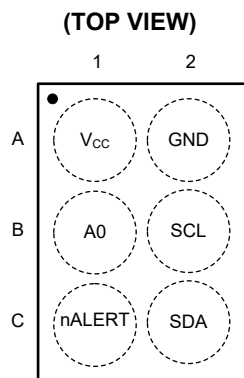
**ESD SENSITIVITY CAUTION**

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 CONFIGURATION



WLCSP-0.77×1.17-6B

## PIN DESCRIPTION

PIN	NAME	I/O	FUNCTION
A1	V <sub>CC</sub>	I	Power Supply.
A2	GND	—	Ground.
B1	A0	I	Address Selection Pin. Connect it to GND, V <sub>CC</sub> , SCL or SDA to get different addresses. See Table 2 for more details.
B2	SCL	I	Input Clock Pin. Open-drain input. Pull up to external power supply by a 5kΩ resistor.
C1	nALERT	O	Alert Output Pin. Open-drain output. nALERT is internally pull-up to V <sub>CC</sub> by a 110kΩ resistor.
C2	SDA	I/O	Input/Output Data Pin. Open-drain input/output. Pull up to external power supply by a 5kΩ resistor.

NOTE: I = input, O = output, I/O = input/output.

## FUNCTIONAL BLOCK DIAGRAM

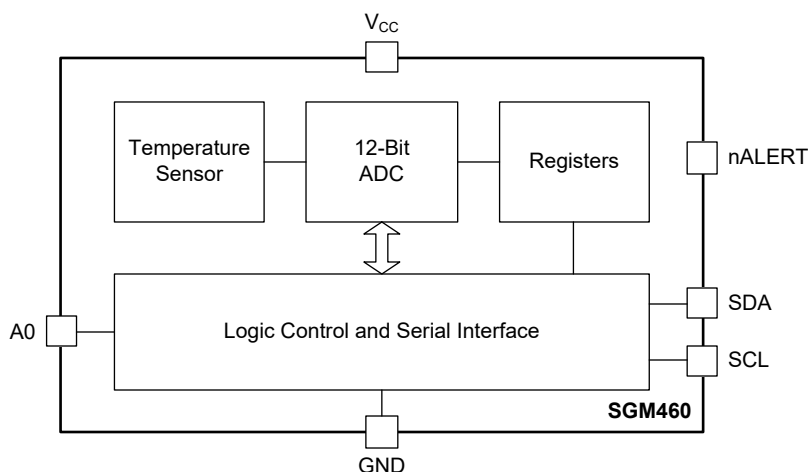
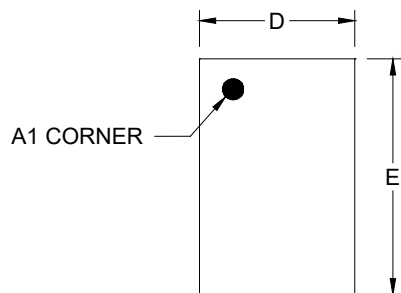


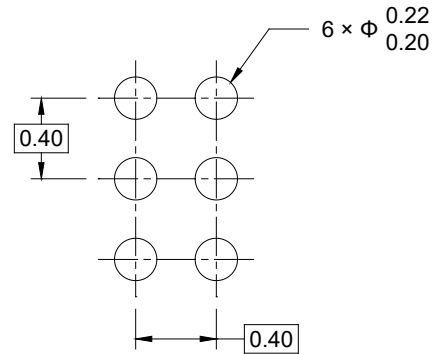
Figure 2. Block Diagram

## PACKAGE OUTLINE DIMENSIONS

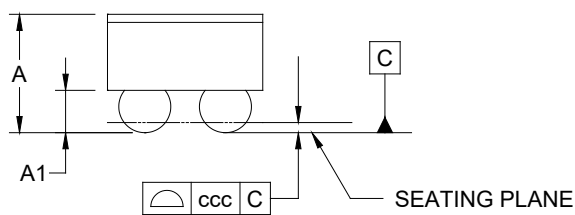
### WLCSP-0.77×1.17-6B



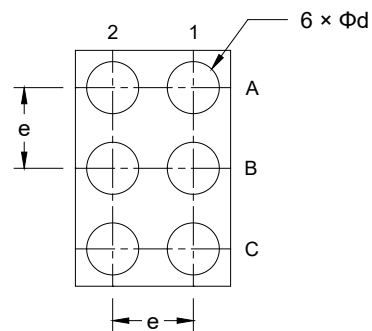
TOP VIEW



RECOMMENDED LAND PATTERN (Unit: mm)



SIDE VIEW



BOTTOM VIEW

Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	-	-	0.625
A1	0.190	-	0.230
D	0.740	-	0.800
E	1.140	-	1.200
d	0.228	-	0.288
e	0.400 BSC		
ccc	0.050		

NOTE: This drawing is subject to change without notice.

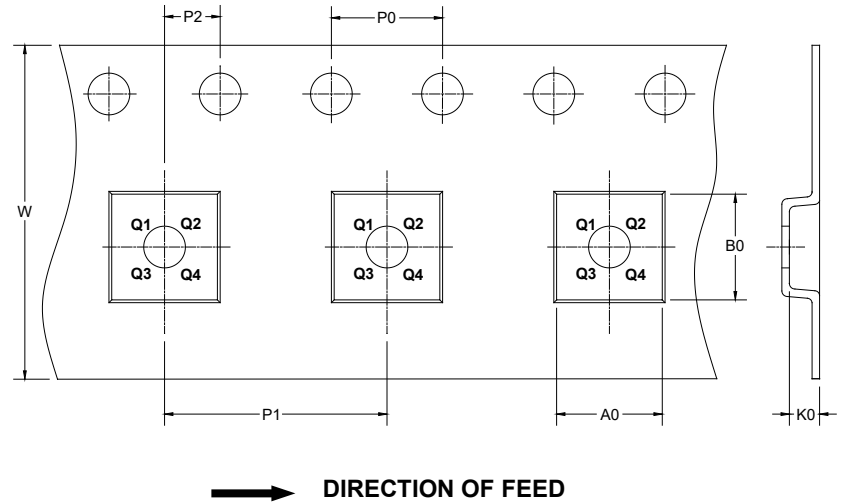
## PACKAGE INFORMATION

### 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
WLCSP-0.77×1.17-6B	7"	9.5	0.91	1.31	0.71	4.0	4.0	2.0	8.0	Q1

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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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