

GENERAL DESCRIPTION

The SGM4556 is a 2-bit, non-inverting, bidirectional voltage-level translator which features two independent configurable power-supply lines. The A and B ports track the V_{CCA} supply and V_{CCB} supply respectively. The supply voltage range is 1.2V to 5.0V for A ports and 1.65V to 5.5V for B ports. The device provides a bidirectional translation function between the different voltage nodes (including 1.2V, 1.5V, 1.8V, 2.5V, 3.3V and 5V).

The SGM4556 has an output enable (OE) function, which controls the outputs states. When OE goes low, all outputs enter into the high-impedance state. When V_{CCA} is powered, OE has an internal pull-down current source. The OE should be connected to GND via a pull-down resistor, and the minimum resistor value is depended on the current source capability of the driver.

The SGM4556 is available in Green XTDFN-1.4×1-8L and SOT-23-8 packages. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- **Power Supply Voltage Range ($V_{CCA} \leq V_{CCB}$)**
 - ◆ **A Ports: 1.2V to 5.0V**
 - ◆ **B Ports: 1.65V to 5.5V**
- **Support V_{CCA} or V_{CCB} Isolation**
 - ◆ **When V_{CCA} or V_{CCB} is Low, Device Enters Power-Down Mode**
- **OE Input Circuit Referenced to V_{CCA}**
- **Support Partial-Power-Down Function**
- **Support Push-Pull Output**
- **Low Power Consumption**
- **-40°C to +85°C Operating Temperature Range**
- **Available in Green XTDFN-1.4×1-8L and SOT-23-8 Packages**

APPLICATIONS

Universal Asynchronous Receiver/Transmitter (UART)
General Purpose I/O (GPIO)

TYPICAL APPLICATION

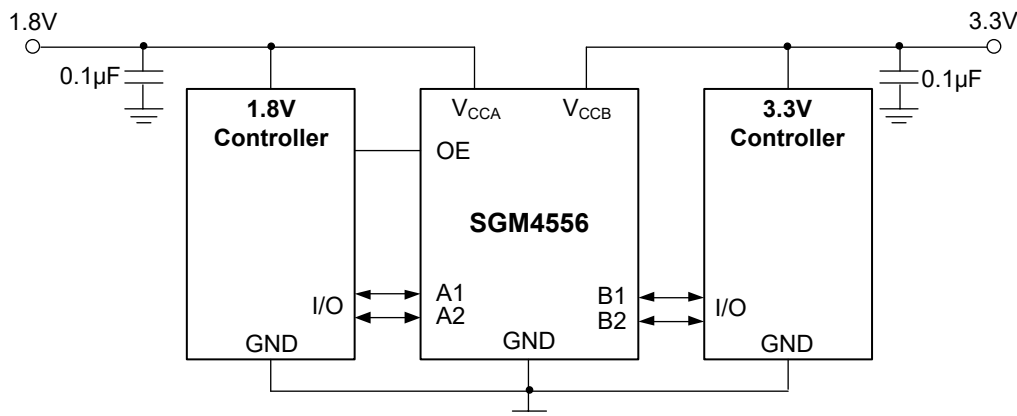


Figure 1. Typical Application Circuit

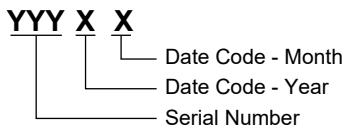
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4556	SOT-23-8	-40°C to +85°C	SGM4556YN8G/TR	SM2XX	Tape and Reel, 3000
	XTDFN-1.4×1-8L	-40°C to +85°C	SGM4556YXDO8G/TR	N8X	Tape and Reel, 5000

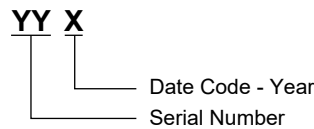
MARKING INFORMATION

NOTE: X = Date Code. XX = Date Code.

SOT-23-8



XTDFN-1.4×1-8L



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 Range

- V_{CCA}..... -0.3V to 6V
- V_{CCB}..... -0.3V to 6V
- Input Voltage Range, V_I ⁽¹⁾..... -0.3V to 6V
- Output Voltage Range for the High-Impedance or Power-Off State, V_O ⁽¹⁾
- A Ports -0.3V to 6V
- B Ports -0.3V to 6V
- Output Voltage Range for the High or Low State, V_O ⁽¹⁾⁽²⁾
- A Ports -0.3V to V_{CCA} + 0.3V
- B Ports -0.3V to V_{CCB} + 0.3V
- Input Clamp Current, I_{IK} (V_I < 0)..... -50mA
- Output Clamp Current, I_{OK} (V_O < 0)..... -50mA
- Continuous Output Current, I_O ±50mA
- Continuous Current through V_{CCA}, V_{CCB}, or GND..... ±100mA
- Junction Temperature..... +150°C
- Storage Temperature Range -65°C to +150°C
- Lead Temperature (Soldering, 10s)..... +260°C
- ESD Susceptibility
- HBM..... 4000V
- MM..... 400V

NOTES:

1. When the input and output current ratings are observed, the input and I/O negative voltage ratings may be exceeded.
2. V_{CCA} and V_{CCB} values are shown in the recommended operating conditions in Electrical Characteristics section.

RECOMMENDED OPERATING CONDITIONS

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.

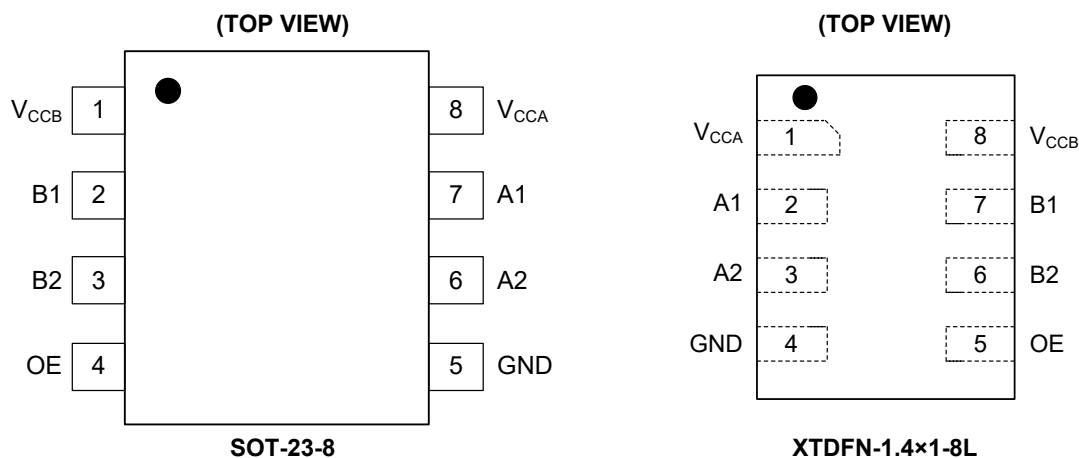
ESD SENSITIVITY CAUTION

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 CONFIGURATIONS

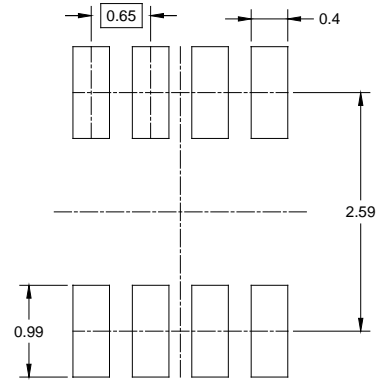
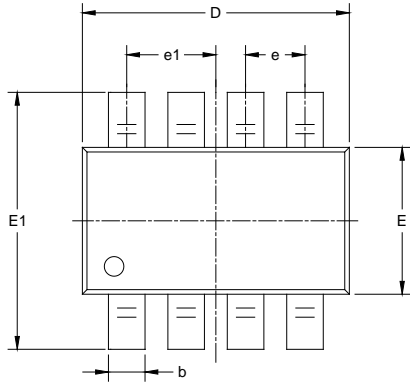


PIN DESCRIPTION

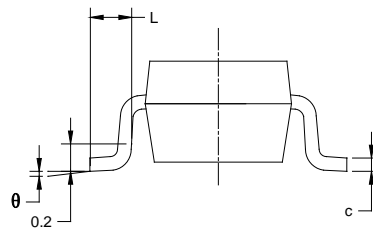
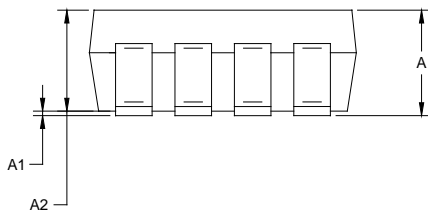
PIN		NAME	FUNCTION
SOT-23-8	XTDFN-1.4x1-8L		
1	8	V _{CCB}	Supply Voltage on B Ports. It can be operated from 1.65V to 5.5V.
2	7	B1	Channel 1 Input/Output B. It tracks the V _{CCB} supply.
3	6	B2	Channel 2 Input/Output B. It tracks the V _{CCB} supply.
4	5	OE	Output Enable Control Pin. Active high. When OE goes low, all outputs enter into the high-impedance state. It tracks the V _{CCA} supply.
5	4	GND	Ground.
6	3	A2	Channel 2 Input/Output A. It tracks the V _{CCA} supply.
7	2	A1	Channel 1 Input/Output A. It tracks the V _{CCA} supply.
8	1	V _{CCA}	Supply Voltage on A Ports. It can be operated from 1.2V to 5.0V, and V _{CCA} is always ≤ V _{CCB} .

PACKAGE OUTLINE DIMENSIONS

SOT-23-8



RECOMMENDED LAND PATTERN (Unit: mm)

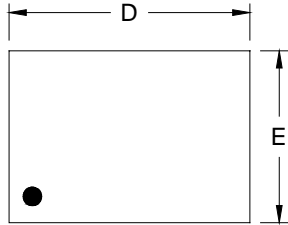


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.650 BSC		0.026 BSC	
e1	0.975 BSC		0.038 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

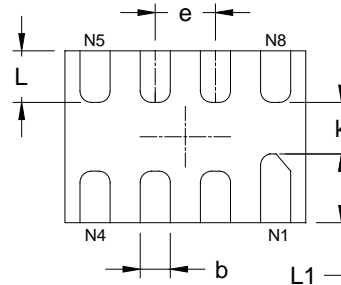
- NOTES:
 1. Body dimensions do not include mode flash or protrusion.
 2. This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

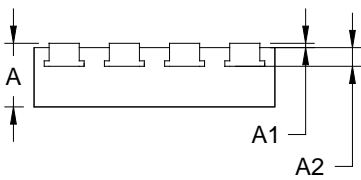
XTDFN-1.4x1-8L



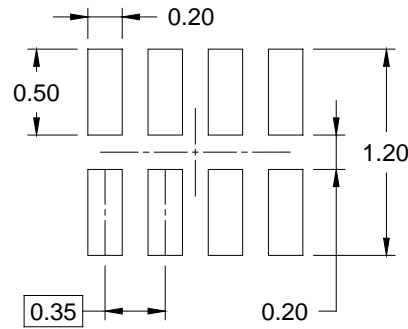
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.340	0.400	0.013	0.016
A1	0.000	0.050	0.000	0.002
A2	0.110 REF		0.004 REF	
D	1.350	1.450	0.053	0.057
E	0.950	1.050	0.037	0.041
k	0.200 MIN		0.008 MIN	
b	0.150	0.200	0.006	0.008
e	0.350 TYP		0.014 TYP	
L	0.250	0.350	0.010	0.014
L1	0.350	0.450	0.014	0.018

NOTE: 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-23-8	7"	9.5	3.17	3.23	1.37	4.0	4.0	2.0	8.0	Q3
XTDFN-1.4×1-8L	7"	9.5	1.15	1.60	0.50	4.0	4.0	2.0	8.0	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
7" (Option)	368	227	224	8
7"	442	410	224	18

DD0002