

GENERAL DESCRIPTION

The SGM4566 is a 6-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 5.5V 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 SGM4566 has an output enable (OE) function, which controls the outputs states. When OE goes low, all outputs enter into the high-impedance state. 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 SGM4566 features the OE input circuit which is referenced to V_{CCA} .

The SGM4566 is available in Green TSSOP-16 and TQFN-2.6×1.8-16L 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 5.5V**
 - ♦ **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 TSSOP-16 and TQFN-2.6×1.8-16L Packages**

APPLICATIONS

- Universal Asynchronous Receiver/Transmitter
- General Purpose I/O (GPIO)
- Smart Phones
- Portable Equipment

TYPICAL APPLICATION

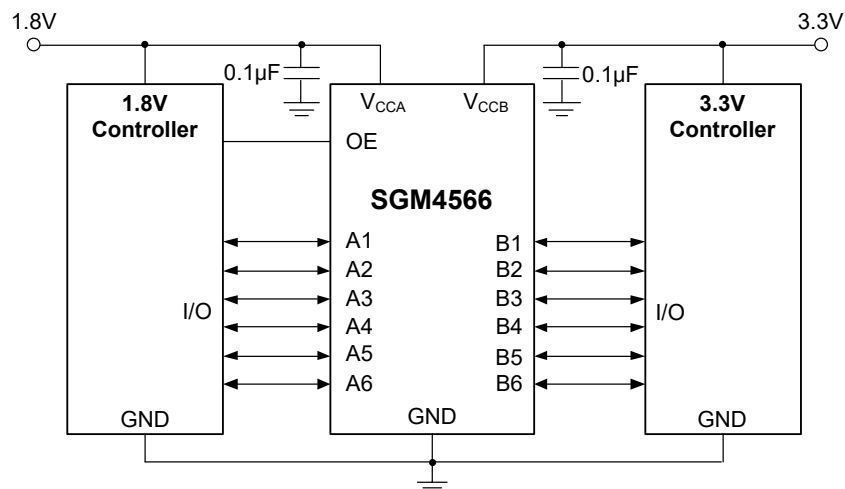


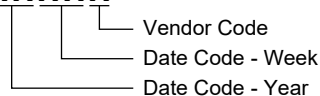
Figure 1. Typical Application Circuit

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4566	TSSOP-16	-40°C to +85°C	SGM4566YTS16G/TR	SGM4566 YTS16 XXXXX	Tape and Reel, 4000
	TQFN-2.6×1.8-16L	-40°C to +85°C	SGM4566YTQA16G/TR	4566 XXXXX	Tape and Reel, 3000

MARKING INFORMATION

NOTE: XXXXX = Date 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.

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.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

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.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage Range	
V_{CCA}	-0.3V to 6V
V_{CCB}	-0.3V to 6V
Input Voltage Range, V_I	
A Ports	-0.3V to 6V
B Ports	-0.3V to 6V
Output Voltage Range for the High-Impedance or Power-Off State, V_O	
A Ports	-0.3V to 6V
B Ports	-0.3V to 6V
Output Voltage Range for the High or Low State, V_O ⁽¹⁾	
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} ($V_O < 0$).....	-25mA
Continuous Current through V_{CCA} , V_{CCB} , or GND..	$\pm 100mA$
Junction Temperature.....	+150°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10s).....	+260°C
ESD Susceptibility	
HBM.....	4000V
MM.....	300V

NOTE:

1. V_{CCA} and V_{CCB} values are shown in the recommended operating conditions table.

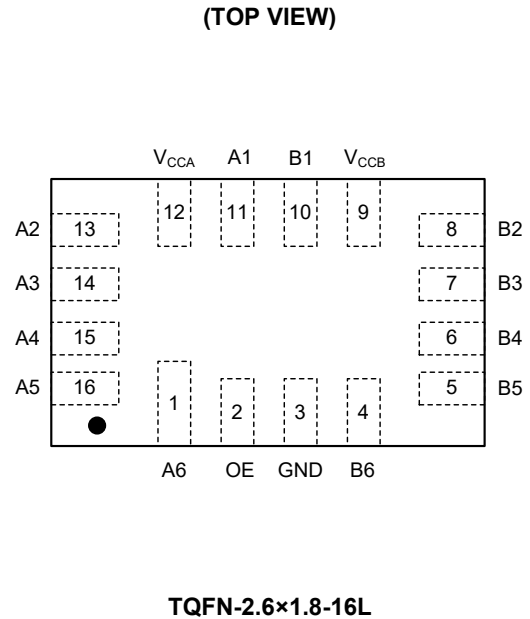
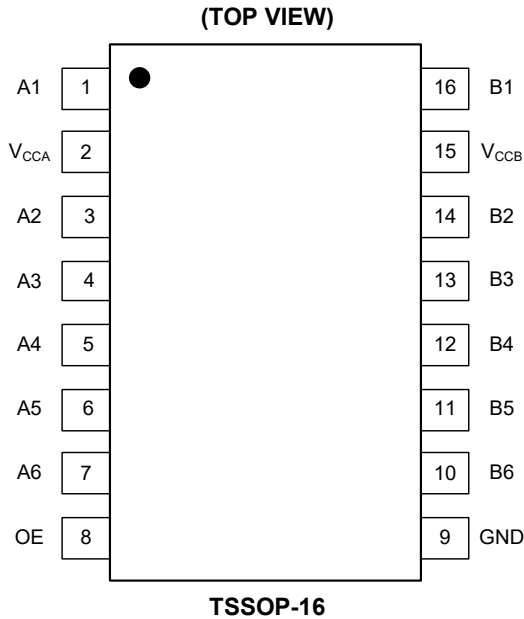
RECOMMENDED OPERATING CONDITIONS
(2) (3)

Supply Voltage Range	
V_{CCA}	1.2V to 5.5V
V_{CCB}	1.65V to 5.5V
High-Level Input Voltage, V_{IH}	
Data Inputs	$V_{CCI} \times 0.85$ ⁽⁴⁾ to V_{CCI}
OE Input	$V_{CCA} \times 0.85$ to 5.5V
Low-Level Input Voltage, V_{IL}	
Data Inputs	0V to $V_{CCI} \times 0.2$ ⁽⁴⁾
OE Input	0V to $V_{CCA} \times 0.2$
Output Voltage Range for the High-Impedance or Power-Off State, V_O	
A Ports.....	0V to 5.5V
B Ports.....	0V to 5.5V
Input Transition Rise or Fall Rate, $\Delta t/\Delta V$	
A Port Inputs.....	40ns/V (MAX)
B Port Inputs.....	40ns/V (MAX)
Operating Temperature Range.....	-40°C to +85°C

NOTES:

2. Ensure that the A side and B side of the unused data I/O pairs remain the same state, that is., both at V_{CCI} or both at GND.
3. Ensure that $V_{CCA} \leq V_{CCB}$ and V_{CCA} must not exceed 5.5V.
4. V_{CCI} is the supply voltage associated with the input ports.

PIN CONFIGURATIONS

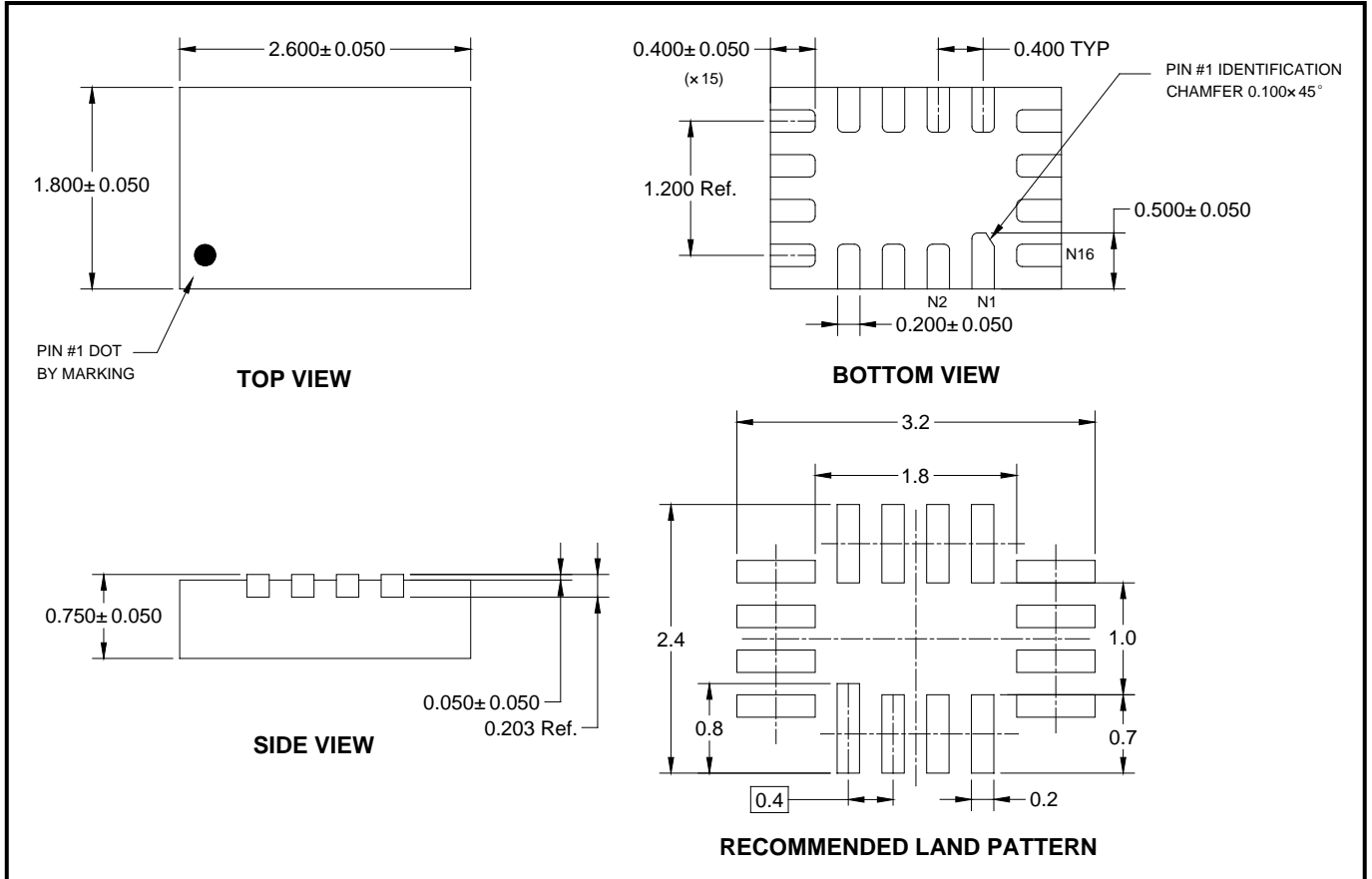


PIN DESCRIPTION

PIN		NAME	FUNCTION
TSSOP-16	TQFN-2.6x1.8-16L		
1	11	A1	Input/Output 1. It tracks the V_{CCA} supply.
2	12	V_{CCA}	Supply Voltage on A Ports. It can be operated from 1.2V to 5.5V, and V_{CCA} is always $\leq V_{CCB}$.
3	13	A2	Input/Output 2. It tracks the V_{CCA} supply.
4	14	A3	Input/Output 3. It tracks the V_{CCA} supply.
5	15	A4	Input/Output 4. It tracks the V_{CCA} supply.
6	16	A5	Input/Output 5. It tracks the V_{CCA} supply.
7	1	A6	Input/Output 6. It tracks the V_{CCA} supply.
8	2	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.
9	3	GND	Ground.
10	4	B6	Input/Output 6. It tracks the V_{CCB} supply.
11	5	B5	Input/Output 5. It tracks the V_{CCB} supply.
12	6	B4	Input/Output 4. It tracks the V_{CCB} supply.
13	7	B3	Input/Output 3. It tracks the V_{CCB} supply.
14	8	B2	Input/Output 2. It tracks the V_{CCB} supply.
15	9	V_{CCB}	Supply Voltage on B Ports. It can be operated from 1.65V to 5.5V.
16	10	B1	Input/Output 1. It tracks the V_{CCB} supply.

PACKAGE OUTLINE DIMENSIONS

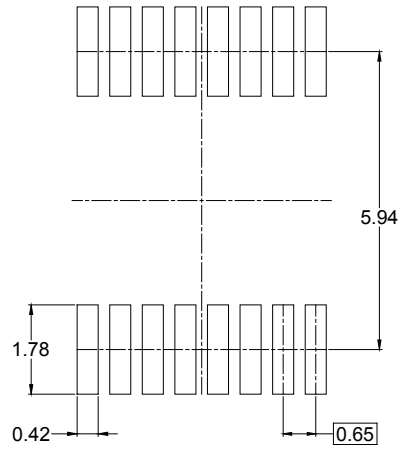
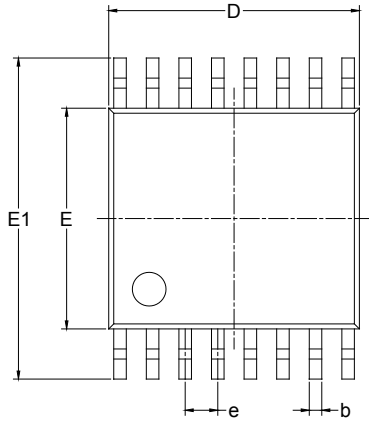
TQFN-2.6x1.8-16L



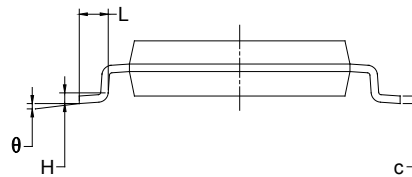
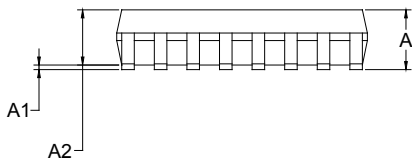
NOTE: All linear dimensions are in millimeters.

PACKAGE OUTLINE DIMENSIONS

TSSOP-16



RECOMMENDED LAND PATTERN (Unit: mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A		1.200		0.047
A1	0.050	0.150	0.002	0.006
A2	0.800	1.050	0.031	0.041
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
D	4.860	5.100	0.191	0.201
E	4.300	4.500	0.169	0.177
E1	6.200	6.600	0.244	0.260
e	0.650 BSC		0.026 BSC	
L	0.500	0.700	0.02	0.028
H	0.25 TYP		0.01 TYP	
θ	1°	7°	1°	7°

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
TQFN-2.6×1.8-16L	7"	9.0	2.01	2.81	0.93	4.0	4.0	2.0	8.0	Q1
TSSOP-16	13"	12.4	6.90	5.60	1.20	4.0	8.0	2.0	12.0	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
13"	386	280	370	5

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