

GENERAL DESCRIPTION

The SGM4554 is a 1-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 port and 1.65V to 5.5V for B port. 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 SGM4554 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 SGM4554 is available in Green UTDFN-1.45×1-6L and SC70-6 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 Port: 1.2V to 5.0V
 - B Port: 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 UTDFN-1.45×1-6L and SC70-6 Packages**

APPLICATIONS

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

TYPICAL APPLICATION

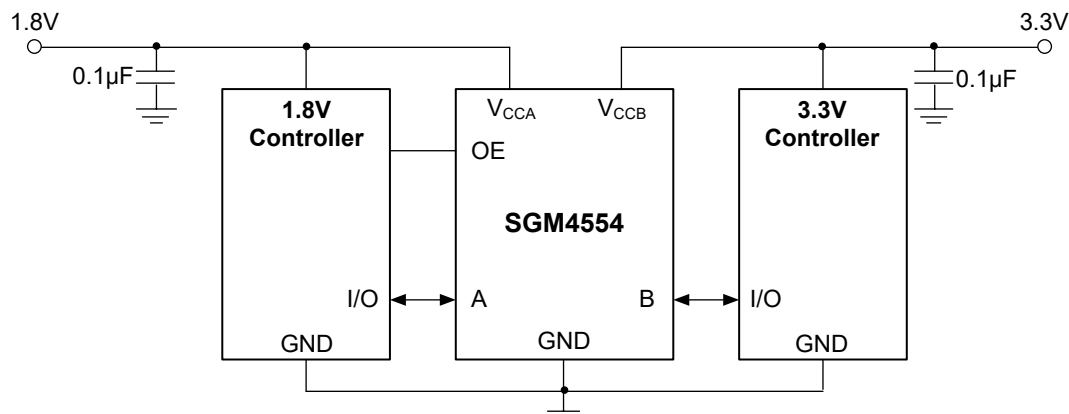


Figure 1. Typical Application Circuit

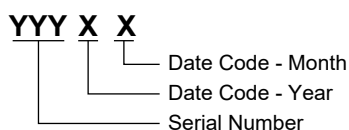
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4554	SC70-6	-40°C to +85°C	SGM4554YC6G/TR	SM1XX	Tape and Reel, 3000
	UTDFN-1.45×1-6L	-40°C to +85°C	SGM4554YUDL6G/TR	N7X	Tape and Reel, 5000

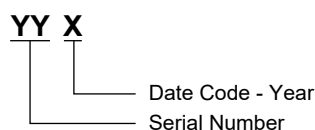
MARKING INFORMATION

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

SC70-6



UTDFN-1.45×1-6L



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}, V_{CCB} -0.3V to 6VInput Voltage Range, V_I ⁽¹⁾ -0.3V to 6VOutput Voltage Range for the High-Impedance or Power-Off State, V_O ⁽¹⁾

A Port..... -0.3V to 6V

B Port..... -0.3V to 6V

Output Voltage Range for the High or Low State, V_O ⁽¹⁾⁽²⁾A Port..... -0.3V to $V_{CCA} + 0.3V$ B Port..... -0.3V to $V_{CCB} + 0.3V$ Input Clamp Current, I_{IK} ($V_I < 0$) -50mAOutput Clamp Current, I_{OK} ($V_O < 0$) -50mAContinuous Output Current, I_O ±50mAContinuous 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.

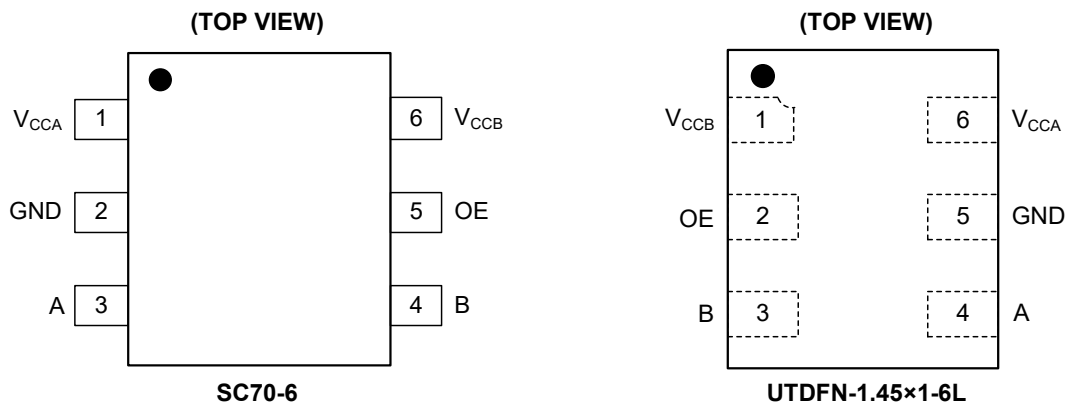
ESD SENSITIVITY CAUTION

This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. 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 very small parametric changes could cause the device not to meet its published specifications.

DISCLAIMER

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

PIN CONFIGURATIONS

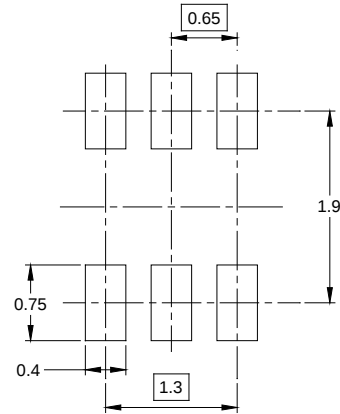
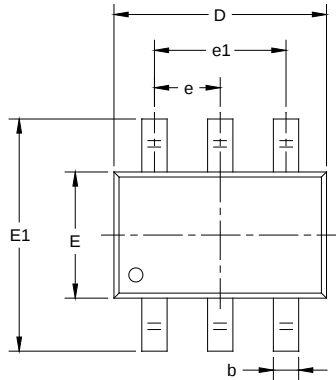


PIN DESCRIPTION

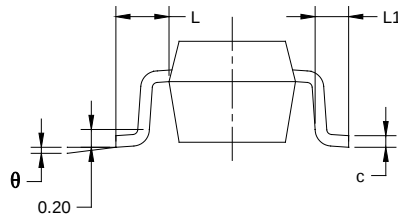
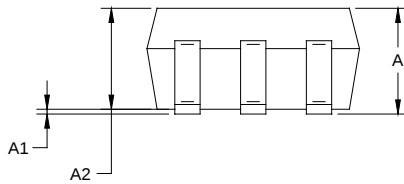
PIN		NAME	FUNCTION
SC70-6	UTDFN-1.45x1-6L		
1	6	V_{CCA}	Supply Voltage on A Port. It can be operated from 1.2V to 5.0V, and V_{CCA} is always $\leq V_{CCB}$.
2	5	GND	Ground.
3	4	A	Input/Output A. It tracks the V_{CCA} supply.
4	3	B	Input/Output B. It tracks the V_{CCB} supply.
5	2	OE	Output Enable Control Pin. Active high. When OE goes low, all outputs enter into the high-impedance state. It tracks the V_{CCA} supply.
6	1	V_{CCB}	Supply Voltage on B Port. It can be operated from 1.65V to 5.5V.

PACKAGE OUTLINE DIMENSIONS

SC70-6



RECOMMENDED LAND PATTERN (Unit: mm)



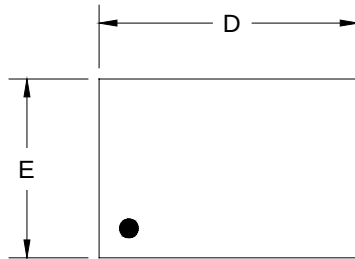
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.65 TYP		0.026 TYP	
e1	1.300 BSC		0.051 BSC	
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

NOTES:

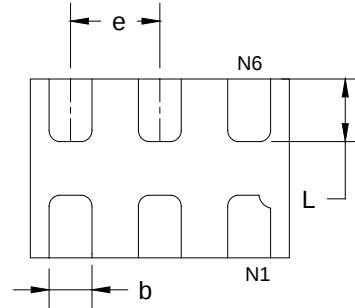
1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

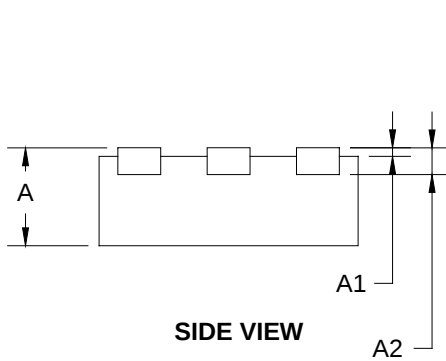
UTDFN-1.45×1-6L



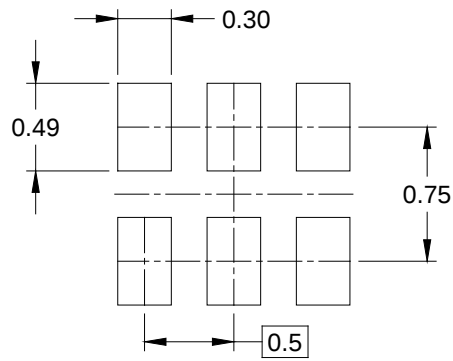
TOP VIEW



BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN (Unit: mm)

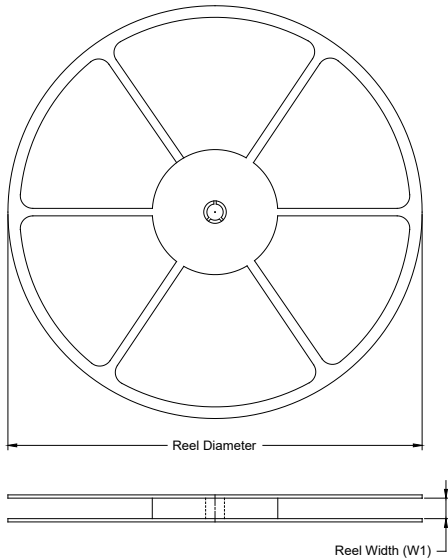
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.450	0.550	0.018	0.022
A1	0.000	0.050	0.000	0.002
A2	0.150 REF		0.006 REF	
D	1.374	1.526	0.054	0.060
E	0.924	1.076	0.036	0.042
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.274	0.426	0.011	0.017

NOTE: This drawing is subject to change without notice.

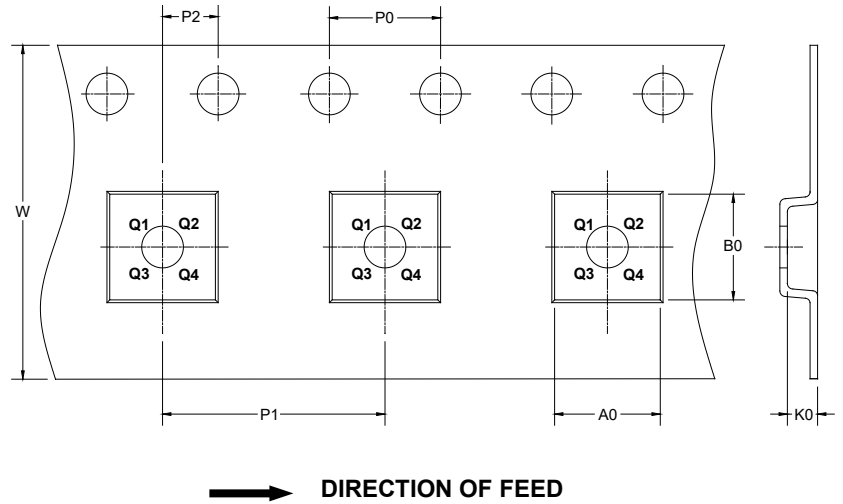
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

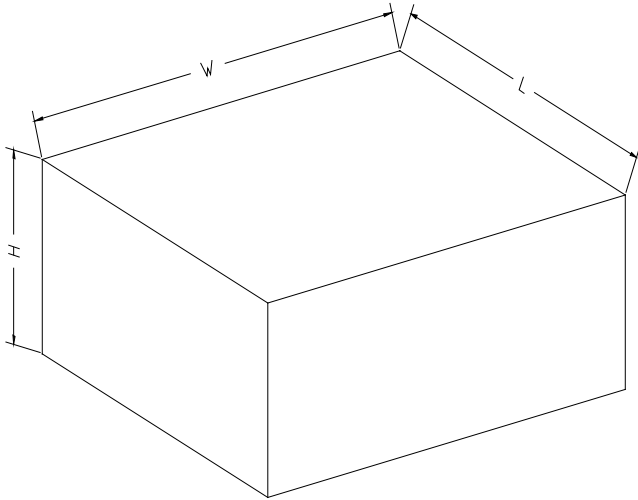
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
SC70-6	7"	9.5	2.40	2.50	1.20	4.0	4.0	2.0	8.0	Q3
UTDFN-1.45×1-6L	7"	9.5	1.15	1.60	0.75	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