

### GENERAL DESCRIPTION

The 74AHC541 is an octal buffer/line driver with 3-state outputs, which can accept supply voltage range from 2.0V to 5.5V.

The 3-state control gate is a two-input AND gate with active low inputs.  $\overline{OE1}$  and  $\overline{OE2}$  are two output enable inputs. When  $\overline{OE1}$  and  $\overline{OE2}$  are low, data transmits from An inputs to the Yn outputs. When  $\overline{OE1}$  or  $\overline{OE2}$  is high, all outputs are in high-impedance state.

$\overline{OE1}$  and  $\overline{OE2}$  should be connected to  $V_{CC}$  by using a pull-up resistor to ensure the high-impedance state in the period of power-up or power-down, and the minimum of the resistor depends on the current-sinking capability of the driver.

### FUNCTION TABLE

| INPUT            |                  | OUTPUT |    |
|------------------|------------------|--------|----|
| $\overline{OE1}$ | $\overline{OE2}$ | An     | Yn |
| L                | L                | L      | L  |
| L                | L                | H      | H  |
| H                | X                | X      | Z  |
| X                | H                | X      | Z  |

H = High Voltage Level  
 L = Low Voltage Level  
 Z = High-Impedance State  
 X = Don't Care

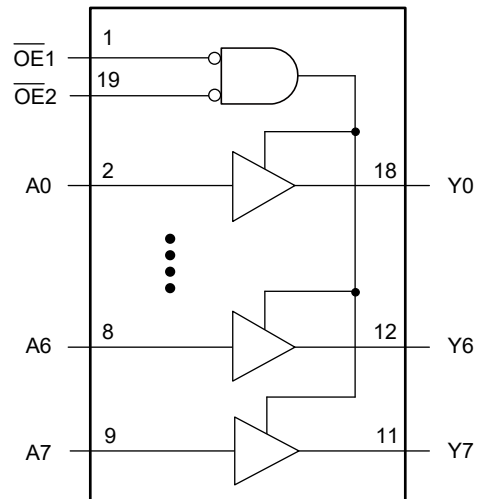
### FEATURES

- **Wide Supply Voltage Range: 2.0V to 5.5V**
- **+8mA/-8mA Output Current**
- **3-State Buffers**
- **-40°C to +125°C Operating Temperature Range**
- **Available in Green SOIC-20 and TSSOP-20 Packages**

### APPLICATIONS

- Mother Board for Server, PC and Notebook Pad
- Telecom Equipment
- LED Display
- Industrial/Medical Equipment

### LOGIC DIAGRAM



**74AHC541**

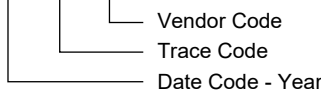
**PACKAGE/ORDERING INFORMATION**

| MODEL    | PACKAGE DESCRIPTION | SPECIFIED TEMPERATURE RANGE | ORDERING NUMBER   | PACKAGE MARKING       | PACKING OPTION      |
|----------|---------------------|-----------------------------|-------------------|-----------------------|---------------------|
| 74AHC541 | SOIC-20             | -40°C to +125°C             | 74AHC541XS20G/TR  | 74AHC541XS20<br>XXXXX | Tape and Reel, 1500 |
|          | TSSOP-20            | -40°C to +125°C             | 74AHC541XTS20G/TR | 05RXTS20<br>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 <sup>(1)</sup>**

|   |                                       |
|---|---------------------------------------|
| Supply Voltage, $V_{CC}$ .....  | -0.5V to 7.0V                         |
| Input Voltage, $V_I$ <sup>(2)</sup> .....                             | -0.5V to 7.0V                         |
| Output Voltage, $V_O$ <sup>(2)</sup> .....                            | -0.5V to MIN (7.0V, $V_{CC} + 0.5V$ ) |
| Input Clamping Current, $I_{IK}$ ( $V_I < 0V$ ).....                  | -20mA                                 |
| Output Clamping Current, $I_{OK}$ ( $V_O < 0V$ or $V_O > V_{CC}$ )... | $\pm 20mA$                            |
| Output Current, $I_O$ ( $V_O < 0V$ to $V_{CC}$ ).....                 | $\pm 25mA$                            |
| Supply Current, $I_{CC}$ .....  | 75mA                                  |
| Ground Current, $I_{GND}$ .....                                       | -75mA                                 |
| Junction Temperature <sup>(3)</sup> .....                             | +150°C                                |
| Storage Temperature Range.....  | -65°C to +150°C                       |
| Lead Temperature (Soldering, 10s).....                                | +260°C                                |
| ESD Susceptibility  |                                       |
| HBM.....  | 4000V                                 |
| CDM.....  | 1000V                                 |

**RECOMMENDED OPERATING CONDITIONS**

|  |                 |
|--|-----------------|
| Supply Voltage, $V_{CC}$ .....                           | 2.0V to 5.5V    |
| Input Voltage, $V_I$ .....                               | 0V to 5.5V      |
| Output Voltage, $V_O$ .....                              | 0V to $V_{CC}$  |
| Output Current, $I_O$ .....                              | $\pm 8mA$       |
| Input Transition Rise and Fall Rate, $\Delta t/\Delta V$ |                 |
| $V_{CC} = 3.3V \pm 0.3V$ .....                           | 100ns/V (MAX)   |
| $V_{CC} = 5.0V \pm 0.5V$ .....                           | 20ns/V (MAX)    |
| Operating Temperature Range.....                         | -40°C to +125°C |

**OVERSTRESS CAUTION**

1. 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.
2. The input and output voltage ratings may be exceeded if the input and output clamp current ratings are observed.
3. The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability.

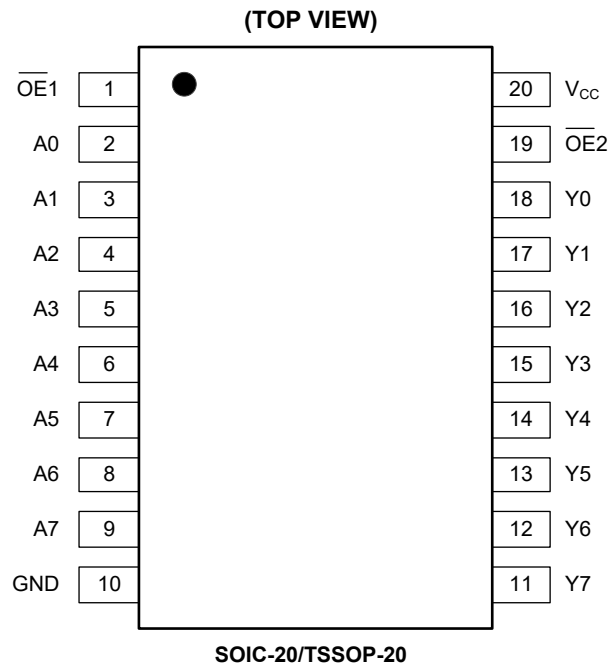
**ESD SENSITIVITY CAUTION**

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

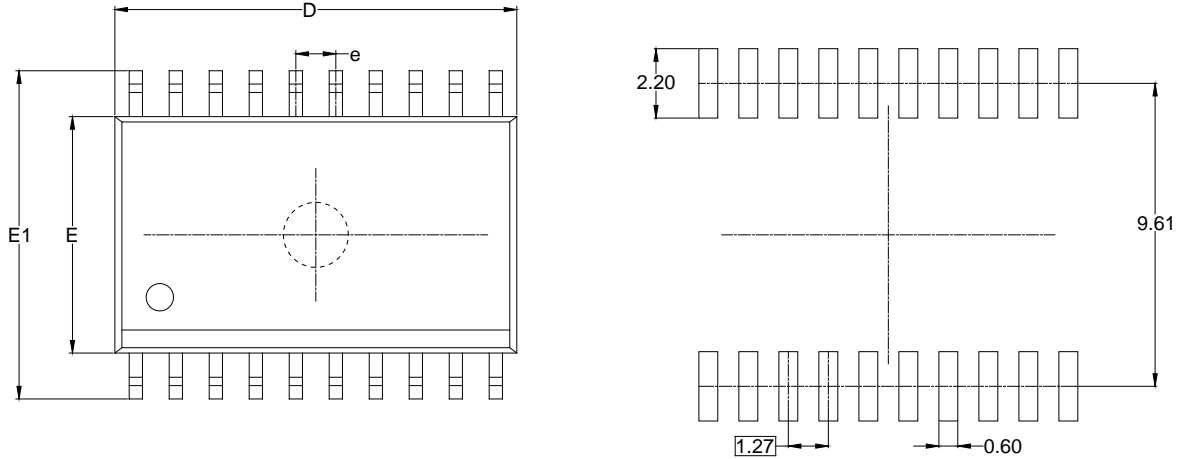


## PIN DESCRIPTION

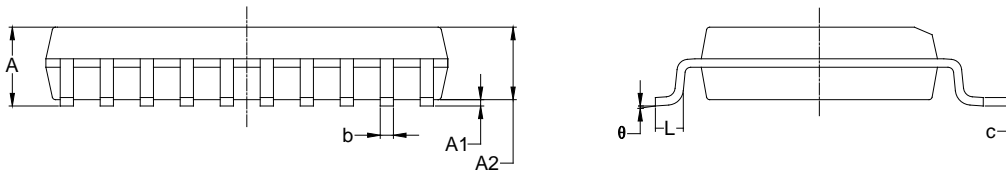
| PIN                            | NAME                                | FUNCTION                           |
|--------------------------------|-------------------------------------|------------------------------------|
| 1, 19                          | $\overline{OE}1$ , $\overline{OE}2$ | Output Enable Inputs (Active Low). |
| 2, 3, 4, 5, 6, 7, 8, 9         | A0, A1, A2, A3, A4, A5, A6, A7      | Data Inputs.                       |
| 18, 17, 16, 15, 14, 13, 12, 11 | Y0, Y1, Y2, Y3, Y4, Y5, Y6, Y7      | Data Outputs.                      |
| 10                             | GND                                 | Ground.                            |
| 20                             | V <sub>CC</sub>                     | Supply Voltage.                    |

PACKAGE OUTLINE DIMENSIONS

SOIC-20



RECOMMENDED LAND PATTERN (Unit: mm)

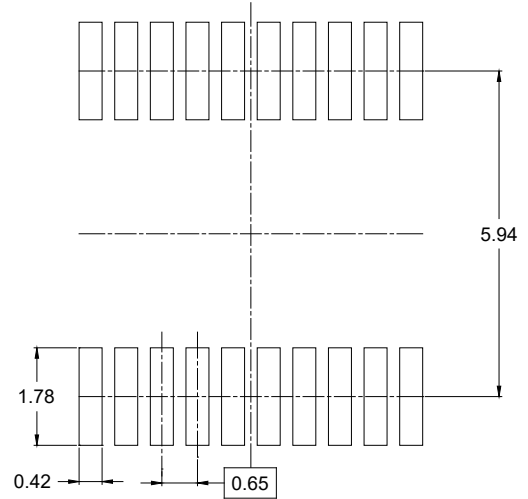
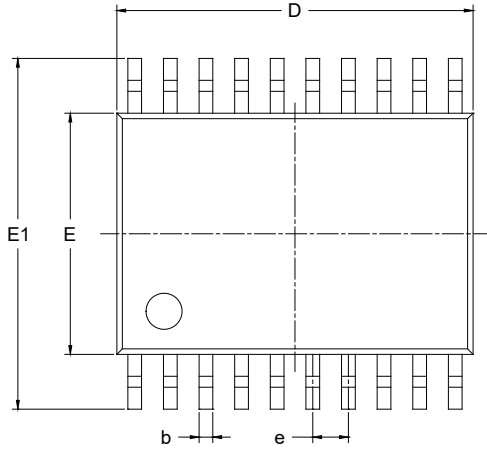


| Symbol | Dimensions<br>In Millimeters |        | Dimensions<br>In Inches |       |
|--------|------------------------------|--------|-------------------------|-------|
|        | MIN                          | MAX    | MIN                     | MAX   |
| A      | 2.350                        | 2.650  | 0.093                   | 0.104 |
| A1     | 0.100                        | 0.300  | 0.004                   | 0.012 |
| A2     | 2.100                        | 2.500  | 0.083                   | 0.098 |
| b      | 0.330                        | 0.510  | 0.013                   | 0.020 |
| c      | 0.204                        | 0.330  | 0.008                   | 0.013 |
| D      | 12.520                       | 13.000 | 0.493                   | 0.512 |
| E      | 7.400                        | 7.600  | 0.291                   | 0.299 |
| E1     | 10.210                       | 10.610 | 0.402                   | 0.418 |
| e      | 1.27 BSC                     |        | 0.050 BSC               |       |
| L      | 0.400                        | 1.270  | 0.016                   | 0.050 |
| θ      | 0°                           | 8°     | 0°                      | 8°    |

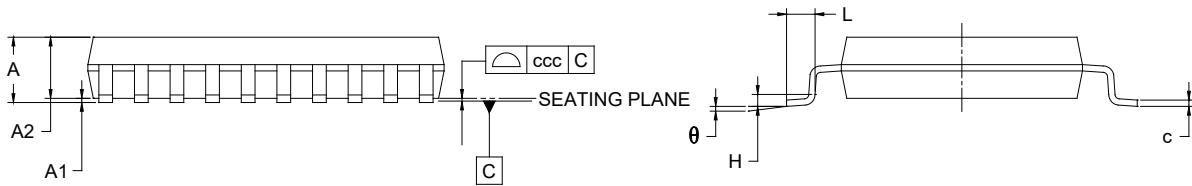
- NOTES:  
 1. Body dimensions do not include mode flash or protrusion.  
 2. This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

TSSOP-20



RECOMMENDED LAND PATTERN (Unit: mm)



| Symbol | Dimensions In Millimeters |     |       |
|--------|---------------------------|-----|-------|
|        | MIN                       | MOD | MAX   |
| A      | -                         | -   | 1.200 |
| A1     | 0.050                     | -   | 0.150 |
| A2     | 0.800                     | -   | 1.050 |
| b      | 0.190                     | -   | 0.300 |
| c      | 0.090                     | -   | 0.200 |
| D      | 6.400                     | -   | 6.600 |
| E      | 4.300                     | -   | 4.500 |
| E1     | 6.200                     | -   | 6.600 |
| e      | 0.650 BSC                 |     |       |
| L      | 0.450                     | -   | 0.750 |
| H      | 0.250 TYP                 |     |       |
| θ      | 0°                        | -   | 8°    |
| ccc    | 0.100                     |     |       |

NOTES:

1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.
3. Reference JEDEC MO-153.

## TAPE AND REEL INFORMATION

### REEL DIMENSIONS



### TAPE DIMENSIONS



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

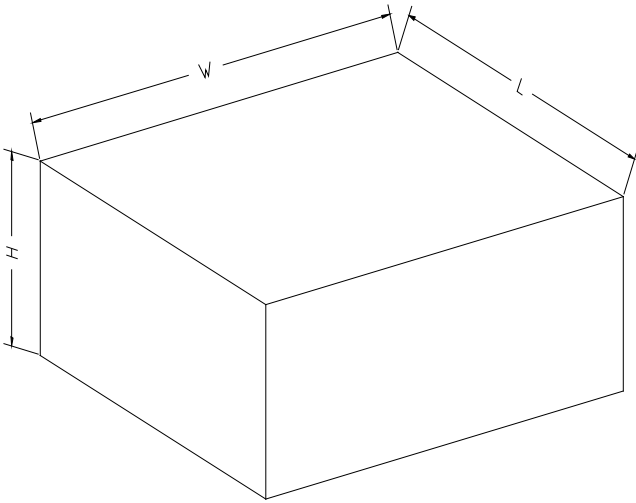
### KEY PARAMETER LIST OF TAPE AND REEL

| 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-20      | 13"           | 24.4               | 10.90   | 13.30   | 3.00    | 4.0     | 12.0    | 2.0     | 24.0   | Q1            |
| TSSOP-20     | 13"           | 16.4               | 6.80    | 6.90    | 1.50    | 4.0     | 8.0     | 2.0     | 16.0   | 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 |
|-----------|-------------|------------|-------------|--------------|
| 13"       | 386         | 280        | 370         | 5            |

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