

### GENERAL DESCRIPTION

The 74LV164 is an 8-bit serial-in and parallel-out shift register which can accept a wide supply voltage range from 1.0V to 5.5V.

This device provides gated serial inputs (DSA and DSB) and parallel data outputs (Q0 to Q7). DSA and DSB support serial data entry, where either input can allow data to enter through another input as an active high input. CP is a clock input. When the device is on low-to-high clock transition of the CP, data can be shifted.  $\overline{MR}$  is the master reset input that is separated from the other inputs. When  $\overline{MR}$  is held low, it can make the register clear and all outputs must be low level.

### FEATURES

- **Wide Operating Voltage Range: 1.0V to 5.5V**
- **Inputs Accept Voltages Higher than the Supply Voltage**
- **+12mA/-12mA Output Current**
- **CMOS Low Power Consumption**
- **Gated Serial Data Inputs**
- **Asynchronous Master Reset Input**
- **Outputs in High-Impedance State when  $V_{CC} = 0V$**
- **-40°C to +125°C Operating Temperature Range**
- **Available in Green SOIC-14 and TSSOP-14 Packages**

### APPLICATIONS

IP Routers  
Enterprise Switches

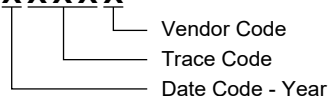
## PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
74LV164	SOIC-14	-40°C to +125°C	74LV164XS14G/TR	74LV164XS14 XXXXXX	Tape and Reel, 2500
	TSSOP-14	-40°C to +125°C	74LV164XTS14G/TR	74LV164 XTS14 XXXXXX	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 Range, $V_I$ <sup>(2)</sup> .....	-0.5V to 7.0V
Output Voltage Range, $V_O$ <sup>(2)</sup> .....	
High State or Low State .....	-0.5V to MIN(7.0V, $V_{CC} + 0.5V$ )
High-Impedance or Power-Off State .....	-0.5V to 7.0V
Input Clamp Current, $I_{IK}$ ( $V_I < 0V$ ) .....	-20mA
Output Clamp Current, $I_{OK}$ ( $V_O < 0V$ ) .....	-50mA
Continuous Output Current, $I_O$ .....	$\pm 25mA$
Continuous Current through $V_{CC}$ or GND .....	$\pm 50mA$
Junction Temperature <sup>(3)</sup> .....	+150°C
Storage Temperature Range .....	-65°C to +150°C
Lead Temperature (Soldering, 10s) .....	+260°C
ESD Susceptibility	
HBM .....	5000V
CDM .....	1000V

## RECOMMENDED OPERATING CONDITIONS

Supply Voltage, $V_{CC}$ <sup>(4)</sup> .....	1.0V to 5.5V
Input Voltage, $V_I$ .....	0V to 5.5V
Output Voltage Range, $V_O$	
High State or Low State .....	0V to $V_{CC}$
High-Impedance or Power-Off State .....	0V to 5.5V
Output Current, $I_O$ .....	$\pm 12mA$
Input Transition Rise or Fall Rate, $\Delta t/\Delta V$	
$V_{CC} = 1.0V$ to 2.0V .....	500ns/V (MAX)
$V_{CC} = 2.0V$ to 2.7V .....	200ns/V (MAX)
$V_{CC} = 2.7V$ to 3.6V .....	100ns/V (MAX)
$V_{CC} = 3.6V$ to 5.5V .....	50ns/V (MAX)
Operating 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.
- The input and output voltage ratings may be exceeded if the input and output clamp current ratings are observed.
- The performance capability of a high-performance integrated circuit in conjunction with its thermal environment can create junction temperatures which are detrimental to reliability.
- The electrical characteristics can be ensured within the  $V_{CC}$  range of 1.2V to 5.5V, but the 74LV164 can also operate normally at  $V_{CC} = 1.0V$  (input level is GND or  $V_{CC}$ ).

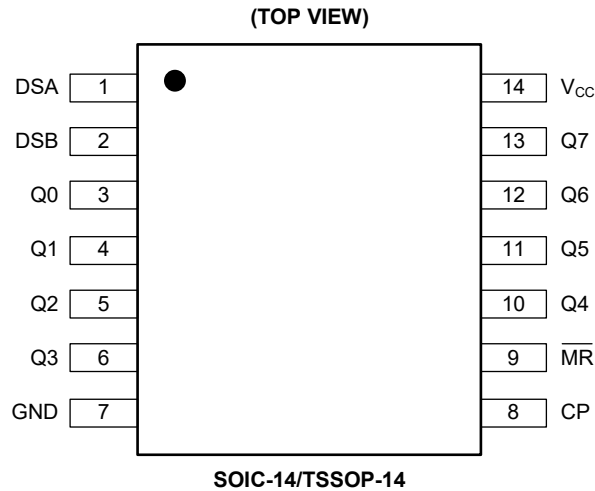
## ESD SENSITIVITY CAUTION

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

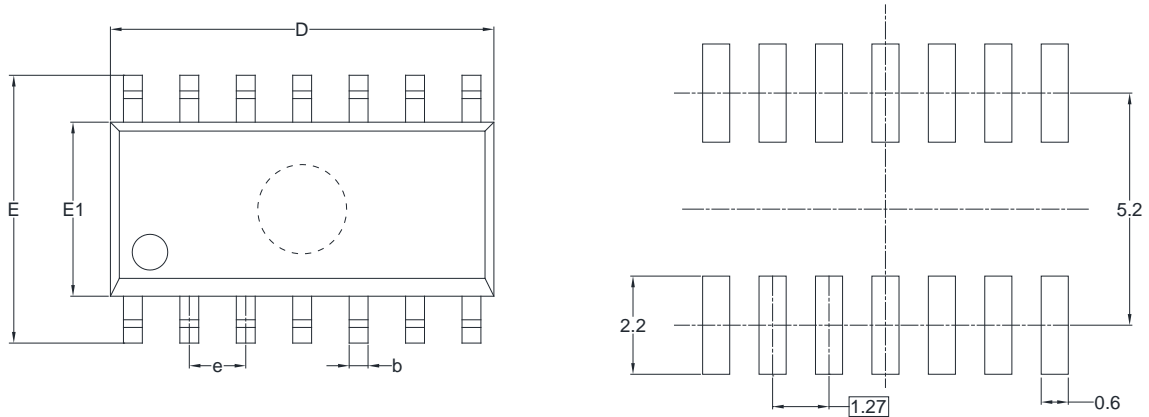


## PIN DESCRIPTION

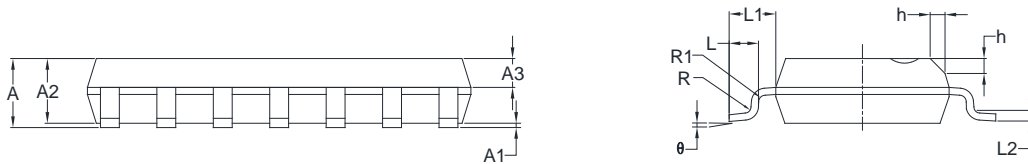
PIN	NAME	FUNCTION
1	DSA	Serial Data Input A.
2	DSB	Serial Data Input B.
3, 4, 5, 6, 10, 11, 12, 13	Q0, Q1, Q2, Q3, Q4, Q5, Q6, Q7	Parallel Data Outputs.
7	GND	Ground.
8	CP	Clock Input (Low-to-High Clock Transition, Edge-Triggered).
9	$\overline{\text{MR}}$	Master Reset Input (Active Low).
14	V <sub>CC</sub>	Supply Voltage.

PACKAGE OUTLINE DIMENSIONS

SOIC-14



RECOMMENDED LAND PATTERN (Unit: mm)



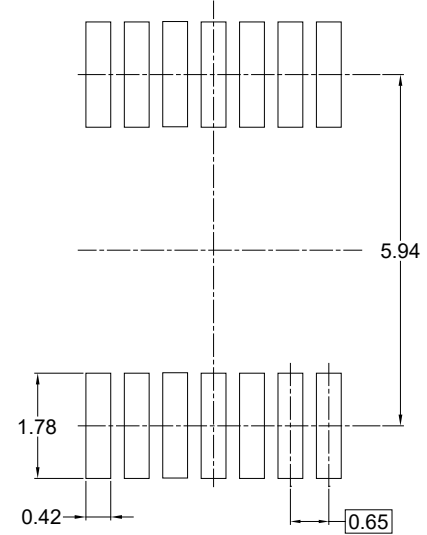
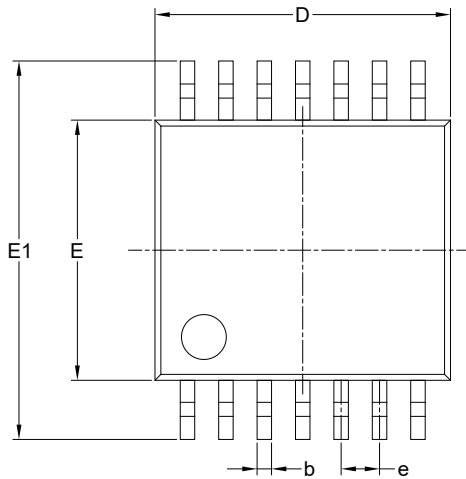
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	1.65	0.049	0.065
A3	0.55	0.75	0.022	0.030
b	0.36	0.49	0.014	0.019
D	8.53	8.73	0.336	0.344
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
L	0.45	0.80	0.018	0.032
L1	1.04 REF		0.040 REF	
L2	0.25 BSC		0.01 BSC	
R	0.07		0.003	
R1	0.07		0.003	
h	0.30	0.50	0.012	0.020
θ	0°	8°	0°	8°

NOTES:

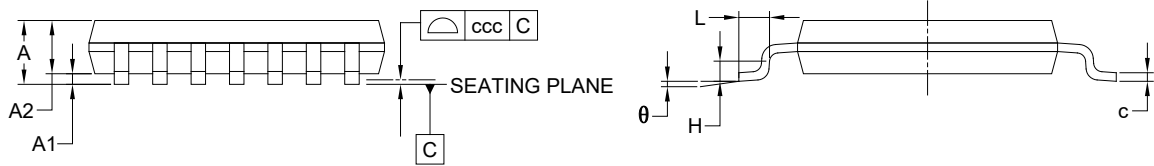
1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

TSSOP-14



RECOMMENDED LAND PATTERN (Unit: mm)



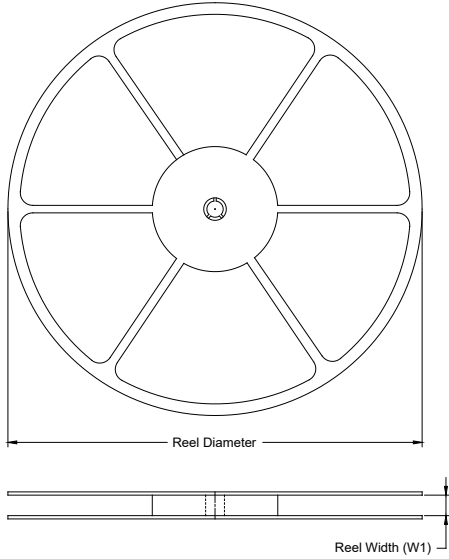
Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	-	-	1.200
A1	0.050	-	0.150
A2	0.800	-	1.050
b	0.190	-	0.300
c	0.090	-	0.200
D	4.860	-	5.100
E	4.300	-	4.500
E1	6.200	-	6.600
e	0.650 BSC		
L	0.450	-	0.750
H	0.250 TYP		
θ	0°	-	8°
ccc	0.100		

NOTES:

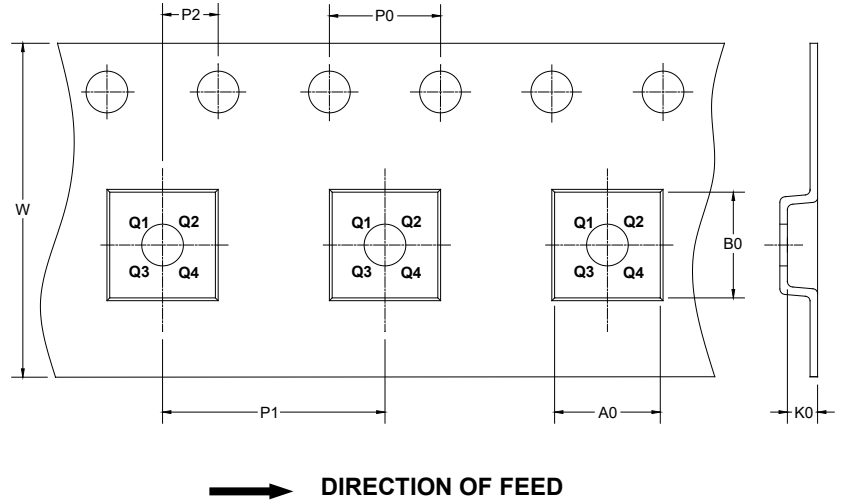
1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.
3. Reference JEDEC MO-153.

**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-14	13"	16.4	6.60	9.30	2.10	4.0	8.0	2.0	16.0	Q1
TSSOP-14	13"	12.4	6.80	5.40	1.50	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
13"	386	280	370	5

DD0002