

SN74LV8154-EP DUAL 16 BIT BINARY COUNTER WITH 3-STATE OUTPUT REGISTERS

SCLS704A – JULY 2006 – REVISED SEPTEMBER 2007

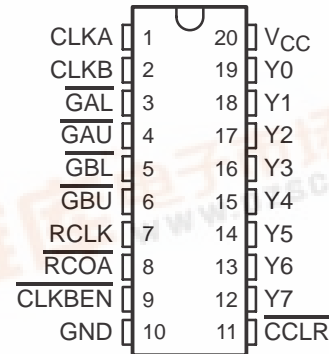
查询"SN74LV8154-EP"供应商

- Controlled Baseline
 - One Assembly Site
 - One Test Site
 - One Fabrication Site
- Extended Temperature Performance of -55°C to 125°C
- Enhanced Diminishing Manufacturing Sources (DMS) Support
- Enhanced Product-Change Notification
- Qualification Pedigree[†]
- Can Be Used as Two 16 Bit Counters or a Single 32 Bit Counter
- 2-V to 5.5-V V_{CC} Operation
- Max t_{pd} of 25 ns at 5 V (RCLK to Y)
- Typical V_{OLP} (Output Ground Bounce) <0.7 V at $V_{\text{CC}} = 5$ V, $T_{\text{A}} = 25^{\circ}\text{C}$
- Typical V_{OHV} (Output V_{OH} Undershoot) >4.4 V at $V_{\text{CC}} = 5$ V, $T_{\text{A}} = 25^{\circ}\text{C}$
- I_{off} Supports Partial-Power-Down Mode Operation
- Latch-Up Performance Exceeds 250 mA Per JESD 17

- ESD Protection Exceeds JESD 22
 - 2000-V Human-Body Model (A114-A)
 - 200-V Machine Model (A115-A)
 - 1000-V Charged-Device Model (C101)

[†] Component qualification in accordance with JEDEC and industry standards to ensure reliable operation over an extended temperature range. This includes, but is not limited to, Highly Accelerated Stress Test (HAST) or biased 85/85, temperature cycle, autoclave or unbiased HAST, electromigration, bond intermetallic life, and mold compound life. Such qualification testing should not be viewed as justifying use of this component beyond specified performance and environmental limits.

PW PACKAGE
(TOP VIEW)



description/ordering information

The SN74LV8154 is a dual 16 bit binary counter with 3-state output registers, designed for 2-V to 5.5-V V_{CC} operation.

This 16 bit counter (A or B) feeds a 16 bit storage register and each storage register is further divided into an upper byte and lower byte. The $\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, and $\overline{\text{GBU}}$ inputs are used to select the byte that needs to be output at Y0–Y7. CLKA is the clock for A counter and CLKB is the clock for B counter. RCLK is the clock for the A and B storage registers. All three clock signals are positive-edge triggered.

A 32 bit counter can be realized by connecting CLKA and CLKB together and by connecting $\overline{\text{RCOA}}$ to $\overline{\text{CLKBEN}}$.

To ensure the high-impedance state during power up or power down, $\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, and $\overline{\text{GBU}}$ should be tied to V_{CC} through a pullup resistor; the minimum value of the resistor is determined by the current-sinking capability of the driver.

This device is fully specified for partial-power-down applications using I_{off} . The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

ORDERING INFORMATION[†]

T_{A}	PACKAGE [‡]		ORDERABLE PART NUMBER	TOP-SIDE MARKING
-55°C to 125°C	TSSOP – PW	Tape and reel	SN74LV8154MPWREP	LV8154ME

[†] For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI website at www.ti.com.

[‡] Package drawings, standard packing quantities, thermal data, symbolization, and PCB design guidelines are available at www.ti.com/packageing.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS
INSTRUMENTS**

POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

Copyright © 2007, Texas Instruments Incorporated



SCLS 2044-1 JULY 2006 - REVISED SEPTEMBER 2007

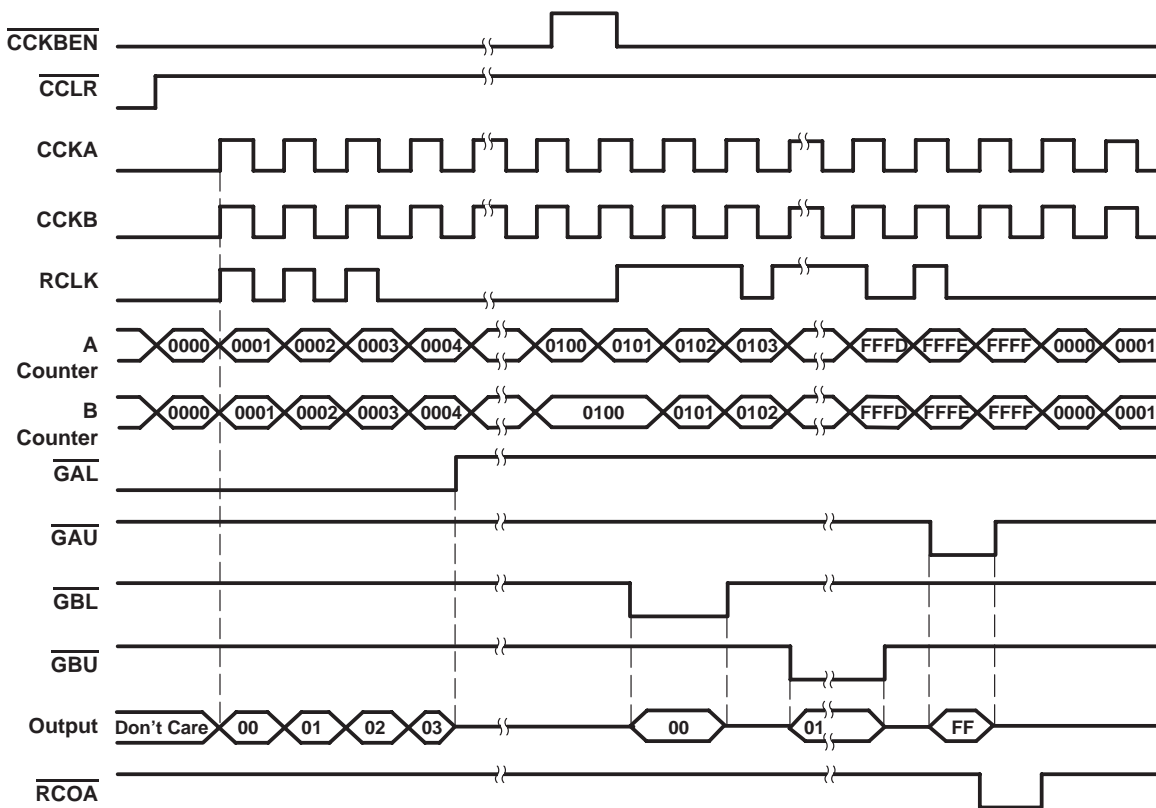
SCLS 2044-1 JULY 2006 - REVISED SEPTEMBER 2007

FUNCTION TABLE

INPUTS				OUTPUT Yn
$\overline{\text{GAL}}$	$\overline{\text{GAU}}$	$\overline{\text{GBL}}$	$\overline{\text{GBU}}$	
L	H	H	H	Lower byte in A register
H	L	H	H	Upper byte in A register
H	H	L	H	Lower byte in B register
H	H	H	L	Upper byte in B register
H	H	H	H	Z

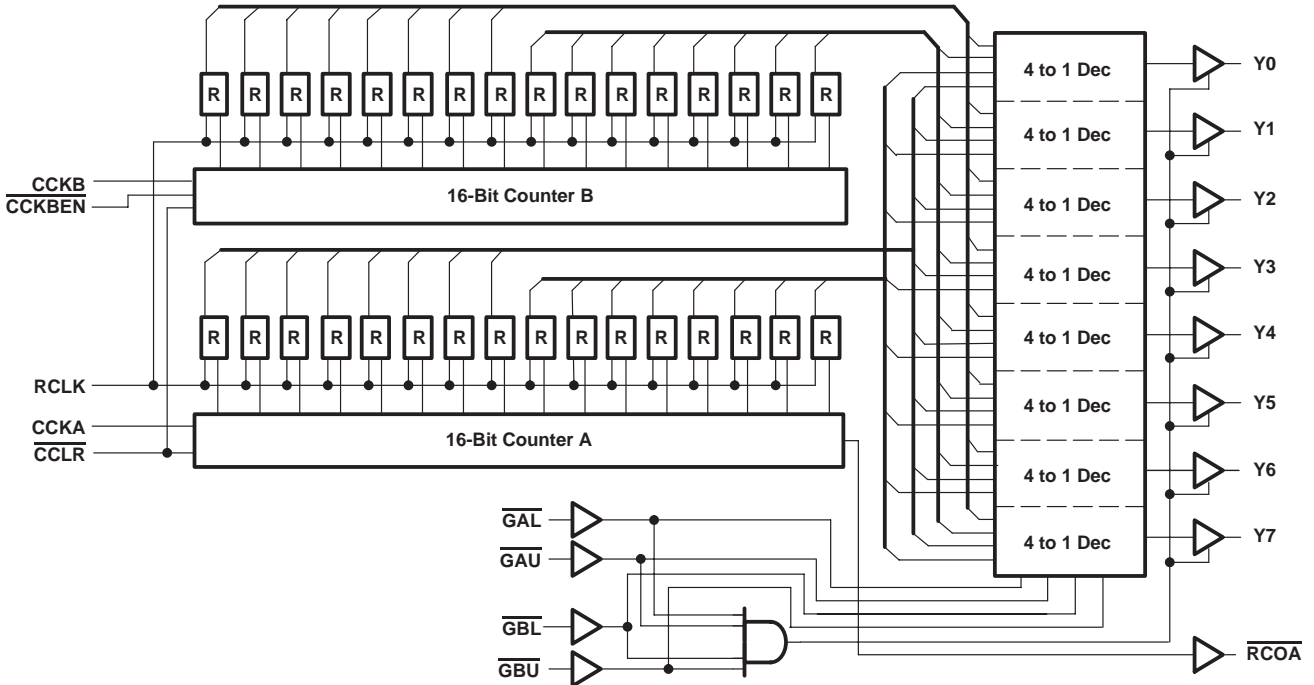
Combinations of GAL, GAU, GBL, and GBU, other than those shown above, are prohibited. If more than one input is L at the same time, the output data (Y0–Y7) may be invalid.

timing diagram



[查询"SN74LV8154-EP"供应商](#)

block diagram



absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]

Supply voltage range, V_{CC}	–0.5 V to 7 V
Input voltage range, V_I (see Note 1)	–0.5 V to 7 V
Voltage range applied to any output in the high-impedance or power-off state, V_O (see Note 1)	–0.5 V to 7 V
Output voltage range, V_O (see Note 1 and Note 2)	–0.5 V to $V_{CC} + 0.5$ V
Input clamp current, I_{IK} ($V_I < 0$ V)	–20 mA
Output clamp current, I_{OK} ($V_O < 0$ V)	–50 mA
Continuous output current, I_O ($V_O = 0$ V to V_{CC})	±35 mA
Continuous current through V_{CC} or GND	±70 mA
Package thermal impedance, θ_{JA} (see Note 3)	83°C/W
Storage temperature range, T_{stg}	–65°C to 150°C

[†] Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

- NOTES:
1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.
 2. This value is limited to 5.5 V maximum.
 3. The package thermal impedance is calculated in accordance with JESD 51-7.

SN74LV8154-EP

DUAL 16 BIT BINARY COUNTER

WITH 3-STATE OUTPUT REGISTERS

SCL325441 "SN74LV8154-EP" (Rev. 2007)

recommended operating conditions (see Note 4)

		V _{CC}	MIN	MAX	UNIT
V _{CC}	Supply voltage		2	5.5	V
V _{IH}	High-level input voltage	2 V	1.5		V
		3 V to 3.6 V	V _{CC} × 0.7		
		4.5 V to 5.5 V	V _{CC} × 0.7		
V _{IL}	Low-level input voltage	2 V		0.5	V
		3 V to 3.6 V	V _{CC} × 0.3		
		4.5 V to 5.5 V	V _{CC} × 0.3		
V _I	Input voltage		0	5.5	V
V _O	Output voltage	High or low state	0	V _{CC}	V
		3-state	0	5.5	
I _{OH}	Yn outputs	2 V		–50	μA
		3 V to 3.6 V		–6	mA
		4.5 V to 5.5 V		–12	
	$\overline{\text{RCOA}}$	2 V		–50	μA
		3 V to 3.6 V		–6	mA
		4.5 V to 5.5 V		–12	
I _{OL}	Yn outputs	2 V		50	μA
		3 V to 3.6 V		6	mA
		4.5 V to 5.5 V		12	
	$\overline{\text{RCOA}}$	2 V		50	μA
		3 V to 3.6 V		6	mA
		4.5 V to 5.5 V		12	
Δt/Δv	Input transition rise or fall rate	3 V to 3.6 V		100	ns/V
		4.5 V to 5.5 V		20	
T _A	Operating free-air temperature		–55	125	°C

NOTE 4: All unused inputs of the device must be held at V_{CC} or GND to ensure proper device operation. See the TI application report, *Implications of Slow or Floating CMOS Inputs*, literature number SCBA004.

[查询"SN74LV8154-EP"供应商](#)

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS	V _{CC}	MIN	TYP	MAX	UNIT
V _{OH}	Y _n	I _{OH} = –50 µA	2 V	1.9			V
		I _{OH} = –6 mA	3 V	2.48			
		I _{OH} = –12 mA	4.5 V	3.8			
	$\overline{\text{RCOA}}$	I _{OH} = –50 µA	2 V	1.9			
		I _{OH} = –6 mA	3 V	2.48			
		I _{OH} = –12 mA	4.5 V	3.8			
V _{OL}	Y _n	I _{OL} = 50 µA	2 V			0.1	V
		I _{OL} = 6 mA	3 V			0.44	
		I _{OL} = 12 mA	4.5 V			0.55	
	$\overline{\text{RCOA}}$	I _{OL} = 50 µA	2 V			0.1	
		I _{OL} = 6 mA	3 V			0.44	
		I _{OL} = 12 mA	4.5 V			0.55	
I _I		V _I = 5.5 V or GND	0 V to 5.5 V			±1	µA
I _{OZ}		V _O = V _{CC} or GND	5.5 V			±5	µA
I _{CC}		V _I = V _{CC} or GND, I _O = 0	5.5 V			20	µA
I _{off}		V _I or V _O = 0 V to 5.5 V	0 V			5	µA
C _i		V _I = V _{CC} or GND	5 V		3		pF
C _o		V _O = V _{CC} or GND	5 V		5		pF

timing requirements over recommended operating free-air temperature range, V_{CC} = 3.3 V ± 0.3 V (unless otherwise noted) (see Figure 1)

			MIN	MAX	UNIT
t _w	Pulse duration	CLKA, CLKB, and RCLK high or low	10		ns
		$\overline{\text{CCLR}}$ low	22		
t _{su}	Setup time	$\overline{\text{CLKBEN}}$ low before CLKB↑	13		ns
		$\overline{\text{CCLR}}$ high (inactive) before CLKA↑ or CLKB↑	13		
		CLKA↑ or CLKB↑ before RCLK↑	13		
		RCLK↑ before $\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, or $\overline{\text{GBU}}$ low	13		
		$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, or $\overline{\text{GBU}}$ high (inactive) before RCLK↑	13		
t _h	Hold time	$\overline{\text{CLKBEN}}$ low after CLKB↑	0		ns
		CLKA or CLKB after RCLK	0		
t _z [†]	Z-period	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, and $\overline{\text{GBU}}$ all high before one of them switches low	200		ns

[†] t_z condition: C_L = 50 pF, R_L = 1 kΩ

SN74LV8154-EP

DUAL 16 BIT BINARY COUNTER

WITH 3-STATE OUTPUT REGISTERS

SCL325416 "SN74LV8154-EP" (Rev. 2007)

timing requirements over recommended operating free-air temperature range, $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$ (unless otherwise noted) (see Figure 1)

		MIN	MAX	UNIT
t_w Pulse duration	CLKA, CLKB, and RCLK high or low	10		ns
	$\overline{\text{CCLR}}$ low	20		
t_{su} Setup time	$\overline{\text{CLKBEN}}$ low before $\text{CLKB}\uparrow$	10		ns
	$\overline{\text{CCLR}}$ high (inactive) before $\text{CLKA}\uparrow$ or $\text{CLKB}\uparrow$	10		
	$\text{CLKA}\uparrow$ or $\text{CLKB}\uparrow$ before $\text{RCLK}\uparrow$	10		
	$\text{RCLK}\uparrow$ before $\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, or $\overline{\text{GBU}}$ low	10		
	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, or $\overline{\text{GBU}}$ high (inactive) before $\text{RCLK}\uparrow$	10		
t_h Hold time	$\overline{\text{CLKBEN}}$ low after $\text{CLKB}\uparrow$	0		ns
	CLKA or CLKB after RCLK	0		
t_z^\dagger Z period	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, and $\overline{\text{GBU}}$ all high before one of them switches low	200		ns

$^\dagger t_z$ condition: $C_L = 50\text{ pF}$, $R_L = 1\text{ k}\Omega$

switching characteristics over recommended operating free-air temperature range, $V_{CC} = 3.3\text{ V} \pm 0.3\text{ V}$ (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	$T_A = 25^\circ\text{C}$	MIN	MAX	UNIT
				TYP			
f_{MAX}			$C_L = 50\text{ pF}$		25		MHz
t_{pd}	RCLK	Y	$C_L = 50\text{ pF}$	25	1	42	ns
	CLKA	$\overline{\text{RCOA}}$		28	1	46	
t_{PLH}	$\overline{\text{CCLR}}$	$\overline{\text{RCOA}}$		20	1	35	ns
t_{en}	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, $\overline{\text{GBU}}$	Y		30	1	50	ns
t_{dis}	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, $\overline{\text{GBU}}$	Y		14	1	24	ns

switching characteristics over recommended operating free-air temperature range, $V_{CC} = 5\text{ V} \pm 0.5\text{ V}$ (unless otherwise noted) (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	LOAD CAPACITANCE	$T_A = 25^\circ\text{C}$	MIN	MAX	UNIT
				TYP			
f_{MAX}			$C_L = 50\text{ pF}$		25		MHz
t_{pd}	RCLK	Y	$C_L = 50\text{ pF}$	16	1	27	ns
	CLKA	$\overline{\text{RCOA}}$		17	1	28	
t_{PLH}	$\overline{\text{CCLR}}$	$\overline{\text{RCOA}}$		13	1	21	ns
t_{en}	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, $\overline{\text{GBU}}$	Y		18	1	30	ns
t_{dis}	$\overline{\text{GAL}}$, $\overline{\text{GAU}}$, $\overline{\text{GBL}}$, $\overline{\text{GBU}}$	Y		9	1	16	ns



[查询"SN74LV8154-EP"供应商](#)

noise characteristics, $V_{CC} = 5\text{ V}$, $C_L = 50\text{ pF}$

PARAMETER	$T_A = 25^\circ\text{C}$	UNIT
	TYP	
$V_{OL(P)}$ Quiet output, maximum dynamic V_{OL}	0.7	V
$V_{OL(V)}$ Quiet output, minimum dynamic V_{OL}	-0.75	V
$V_{OH(V)}$ Quiet output, minimum dynamic V_{OH}	4.4	V

operating characteristics, $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$

PARAMETER	TEST CONDITIONS	TYP	UNIT
C_{pd} Power dissipation capacitance	$C_L = \text{No load}$, $CCLK = 10\text{ MHz}$, $RCLK = 1\text{ MHz}$	56	pF

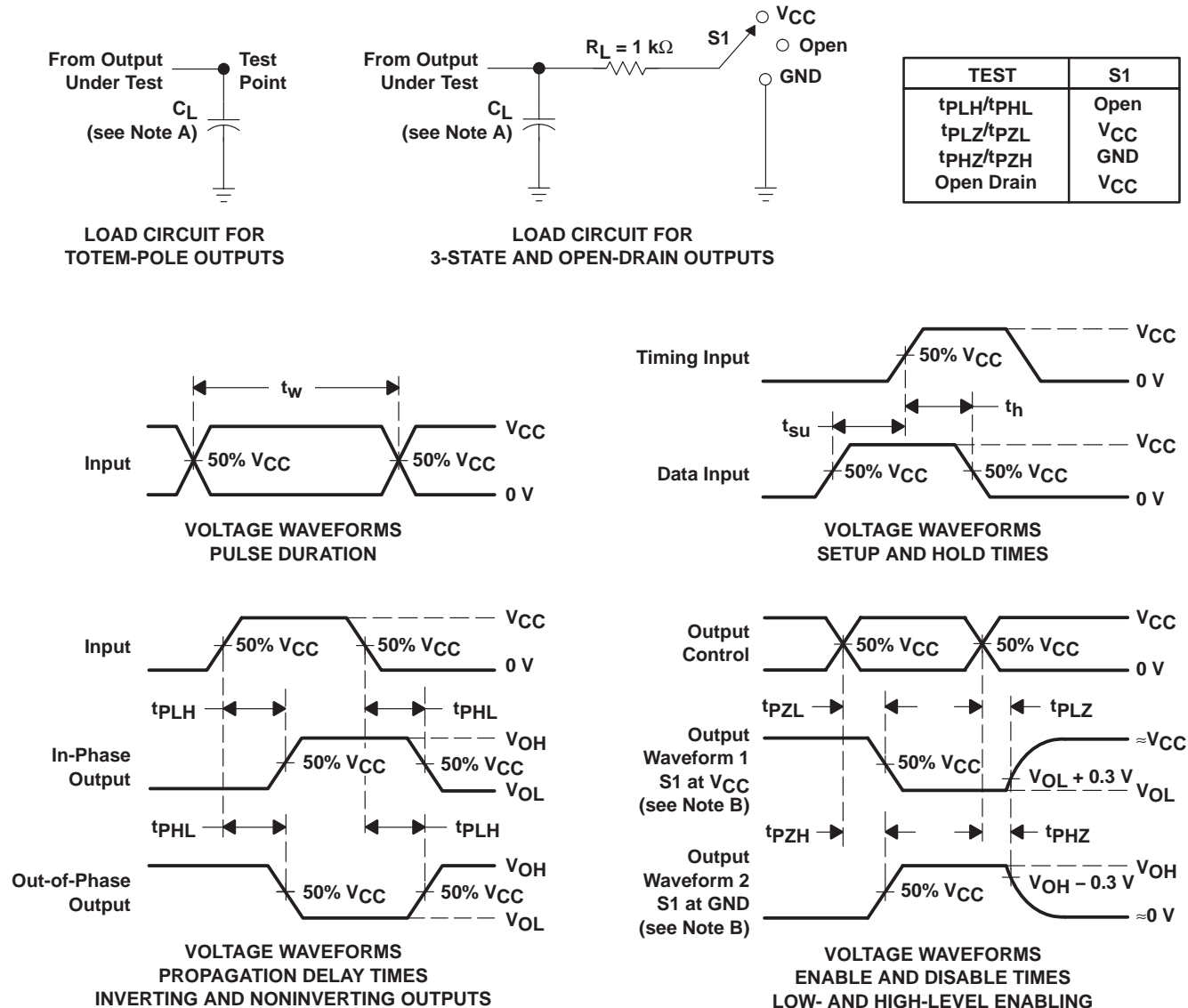
SN74LV8154-EP

DUAL 16 BIT BINARY COUNTER

WITH 3-STATE OUTPUT REGISTERS

SCL325411 "C" SN74LV8154-EP PRELIMINARY 2007

PARAMETER MEASUREMENT INFORMATION



- NOTES:
- A. C_L includes probe and jig capacitance.
 - B. Waveform 1 is for an output with internal conditions such that the output is low, except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high, except when disabled by the output control.
 - C. All input pulses are supplied by generators having the following characteristics: $PPR \leq 1\text{ MHz}$, $Z_O = 50\ \Omega$, $t_r \leq 3\text{ ns}$, $t_f \leq 3\text{ ns}$.
 - D. The outputs are measured one at a time, with one input transition per measurement.
 - E. t_{PLZ} and t_{PHZ} are the same as t_{dis} .
 - F. t_{PZL} and t_{PZH} are the same as t_{en} .
 - G. t_{PHL} and t_{PLH} are the same as t_{pd} .
 - H. All parameters and waveforms are not applicable to all devices.

Figure 1. Load Circuits and Voltage Waveforms

PACKAGING INFORMATION

Orderable Device	Status ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/Ball Finish	MSL Peak Temp ⁽³⁾
SN74LV8154MPWREP	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM
V62/06662-01XE	ACTIVE	TSSOP	PW	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM

⁽¹⁾ The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

Important Information and Disclaimer: The information provided on this page represents TI's knowledge and belief as of the date that it is provided. TI bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. TI has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. TI and TI suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

OTHER QUALIFIED VERSIONS OF SN74LV8154-EP :

- Catalog: [SN74LV8154](#)

NOTE: Qualified Version Definitions:

- Catalog - TI's standard catalog product

TAPE AND REEL INFORMATION



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74LV8154MPWREP	TSSOP	PW	20	2000	330.0	16.4	6.95	7.1	1.6	8.0	16.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74LV8154MPWREP	TSSOP	PW	20	2000	346.0	346.0	33.0

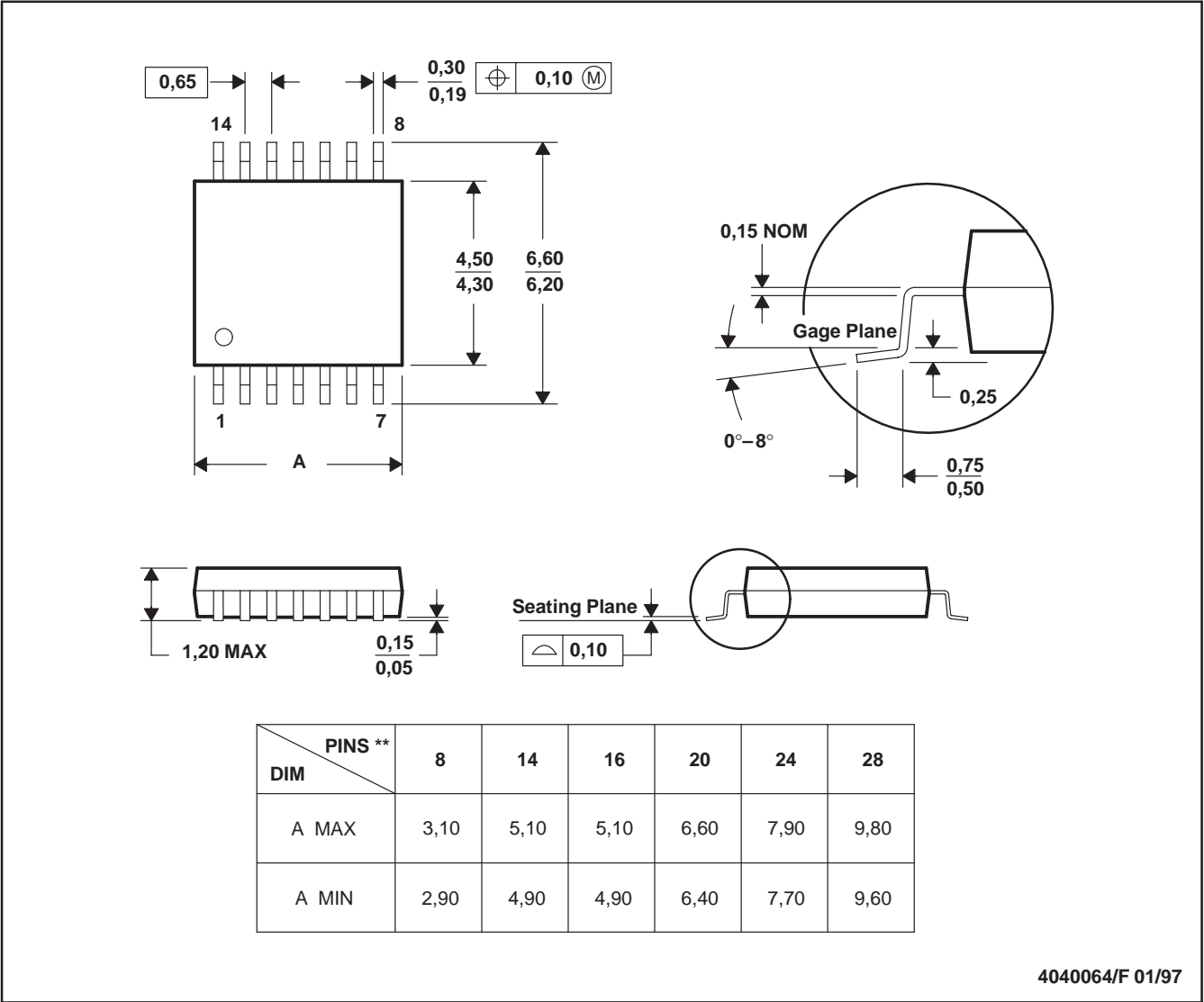
[查询"SN74LV8154-EP"供应商](#)

MTSS001C – JANUARY 1995 – REVISED FEBRUARY 1999

PW (R-PDSO-G**)

PLASTIC SMALL-OUTLINE PACKAGE

14 PINS SHOWN



- NOTES: A. All linear dimensions are in millimeters.
B. This drawing is subject to change without notice.
C. Body dimensions do not include mold flash or protrusion not to exceed 0,15.
D. Falls within JEDEC MO-153

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
RF/IF and ZigBee® Solutions	www.ti.com/lprf

Applications

Audio	www.ti.com/audio
Automotive	www.ti.com/automotive
Broadband	www.ti.com/broadband
Digital Control	www.ti.com/digitalcontrol
Medical	www.ti.com/medical
Military	www.ti.com/military
Optical Networking	www.ti.com/opticalnetwork
Security	www.ti.com/security
Telephony	www.ti.com/telephony
Video & Imaging	www.ti.com/video
Wireless	www.ti.com/wireless

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2009, Texas Instruments Incorporated