

# A5821

## *BiMOS II 8-Bit Serial Input Latched Drivers*

### **Last Time Buy**

These parts are in production but have been determined to be LAST TIME BUY. This classification indicates that the product is obsolete and notice has been given. Sale of this device is currently restricted to existing customer applications. The device should not be purchased for new design applications because of obsolescence in the near future. Samples are no longer available.

Date of status change: May 2, 2005

Deadline for receipt of LAST TIME BUY orders: October 28, 2005

#### **Recommended Substitutions:**

*For new customers or new applications, refer to the [A6821](#).*

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NOTE: For detailed information on purchasing options, contact your local Allegro field applications engineer or sales representative.

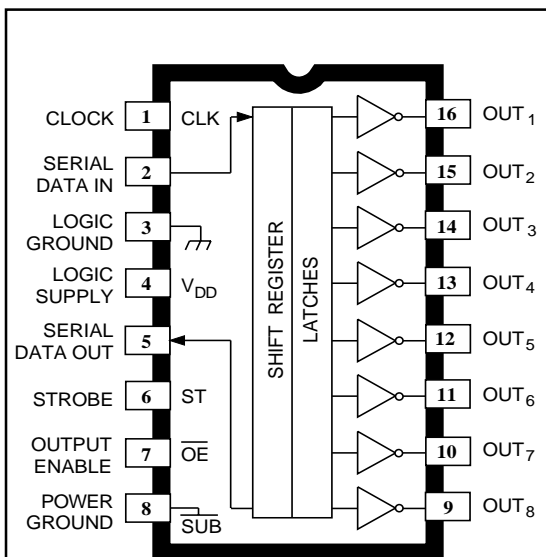
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# 5821

## BiMOS II 8-BIT SERIAL-INPUT, LATCHED DRIVERS



Dwg. PP-026A

Note the DIP package and the SOIC package are electrically identical and share common terminal number assignments.

### ABSOLUTE MAXIMUM RATINGS at 25°C Free-Air Temperature

|   |                            |
|---|----------------------------|
| Output Voltage, $V_{OUT}$ .....               | 50 V                       |
| Logic Supply Voltage, $V_{DD}$ .....          | 15 V                       |
| Input Voltage Range,<br>$V_{IN}$ .....        | -0.3 V to $V_{DD} + 0.3$ V |
| Continuous Output Current,<br>$I_{OUT}$ ..... | 500 mA                     |
| Package Power Dissipation, $P_D$              |                            |
| Package Code 'A' .....                        | 2.1 W                      |
| Package Code 'LW' .....                       | 1.5 W                      |
| Operating Temperature Range,<br>$T_A$ .....   | -20°C to +85°C             |
| Storage Temperature Range,<br>$T_S$ .....     | -55°C to +150°C            |

Caution: CMOS devices have input static protection but are susceptible to damage when exposed to extremely high static electrical charges.

A merged combination of bipolar and MOS technology gives these devices an interface flexibility beyond the reach of standard logic buffers and power driver arrays. The UCN5821A and UCN5821LW each have an eight-bit CMOS shift register and CMOS control circuitry, eight CMOS data latches, and eight bipolar current-sinking Darlington output drivers.

BiMOS II devices have much higher data-input rates than the original BiMOS circuits. With a 5 V logic supply, they will typically operate at better than 5 MHz. With a 12 V supply, significantly higher speeds are obtained. The CMOS inputs are compatible with standard CMOS and NMOS logic levels. TTL circuits may require the use of appropriate pull-up resistors. By using the serial data output, the drivers can be cascaded for interface applications requiring additional drive lines.

The UCN5821A are furnished in a standard 16-pin plastic DIP; the UCN5821LW are in a 16-lead wide-body SOIC for surface-mount applications. The UCN5821A is also available for operation from -40°C to +85°C. To order, change the prefix from 'UCN' to 'UCQ'.

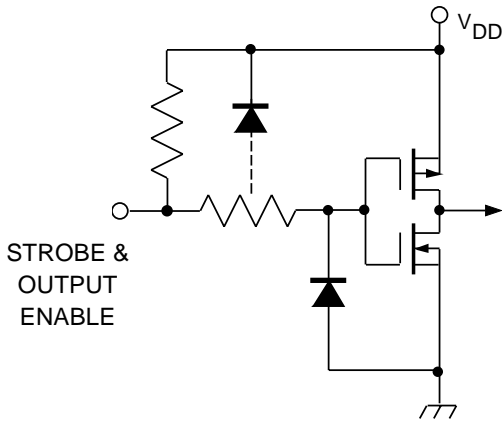
### FEATURES

- To 3.3 MHz Data Input Rate
- CMOS, NMOS, TTL Compatible
- Internal Pull-Down Resistors
- Low-Power CMOS Logic & Latches
- High-Voltage Current-Sink Outputs
- Automotive Capable

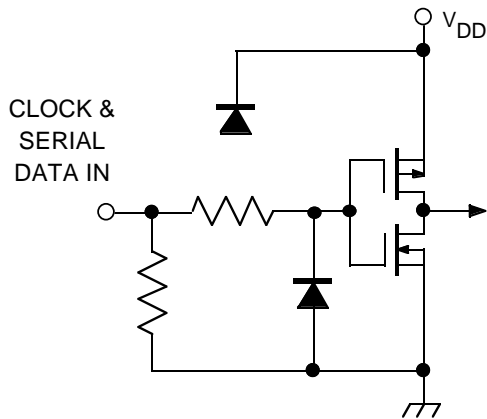
Always order by complete part number, e.g., **UCN5821A**.

# 5821 8-BIT SERIAL-INPUT, LATCHED DRIVERS

## TYPICAL INPUT CIRCUITS

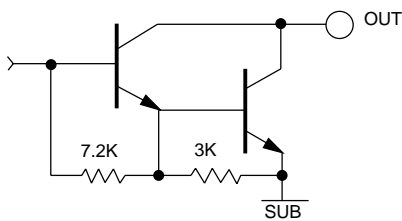


Dwg. EP-010-3



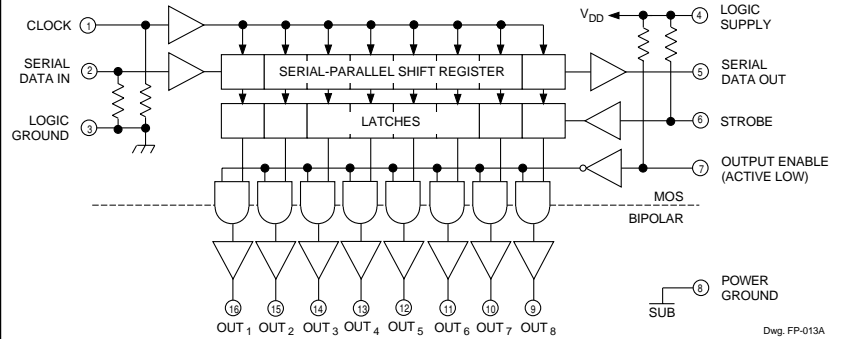
Dwg. EP-010-4A

## TYPICAL OUTPUT DRIVER



Dwg. No. A-14,314

## FUNCTIONAL BLOCK DIAGRAM



NOTE — There is an indeterminate resistance between logic ground and power ground. For proper operation, these terminals must be externally connected together.

| Number of Outputs ON<br>( $I_{OUT} = 200 \text{ mA}$<br>$V_{DD} = 12 \text{ V}$ ) | UCN5821A Max. Allowable Duty Cycle<br>at Ambient Temperature of |      |      |      |      |
|---|---|------|------|------|------|
|   | 25°C  | 40°C | 50°C | 60°C | 70°C |
| 8   | 90%   | 79%  | 72%  | 65%  | 57%  |
| 7   | 100%  | 90%  | 82%  | 74%  | 65%  |
| 6   | 100%  | 100% | 96%  | 86%  | 76%  |
| 5   | 100%  | 100% | 100% | 100% | 91%  |
| 4   | 100%  | 100% | 100% | 100% | 100% |
| 3   | 100%  | 100% | 100% | 100% | 100% |
| 2   | 100%  | 100% | 100% | 100% | 100% |
| 1   | 100%  | 100% | 100% | 100% | 100% |

| Number of Outputs ON<br>( $I_{OUT} = 200 \text{ mA}$<br>$V_{DD} = 12 \text{ V}$ ) | UCN5821LW Max. Allowable Duty Cycle<br>at Ambient Temperature of |      |      |      |      |
|---|--|------|------|------|------|
|   | 25°C   | 40°C | 50°C | 60°C | 70°C |
| 8   | 67%  | 59%  | 54%  | 49%  | 43%  |
| 7   | 77%  | 68%  | 62%  | 56%  | 49%  |
| 6   | 90%  | 79%  | 72%  | 65%  | 57%  |
| 5   | 100%   | 95%  | 86%  | 78%  | 68%  |
| 4   | 100%   | 100% | 100% | 98%  | 86%  |
| 3   | 100%   | 100% | 100% | 100% | 100% |
| 2   | 100%   | 100% | 100% | 100% | 100% |
| 1   | 100%   | 100% | 100% | 100% | 100% |

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**LATCHED DRIVERS**

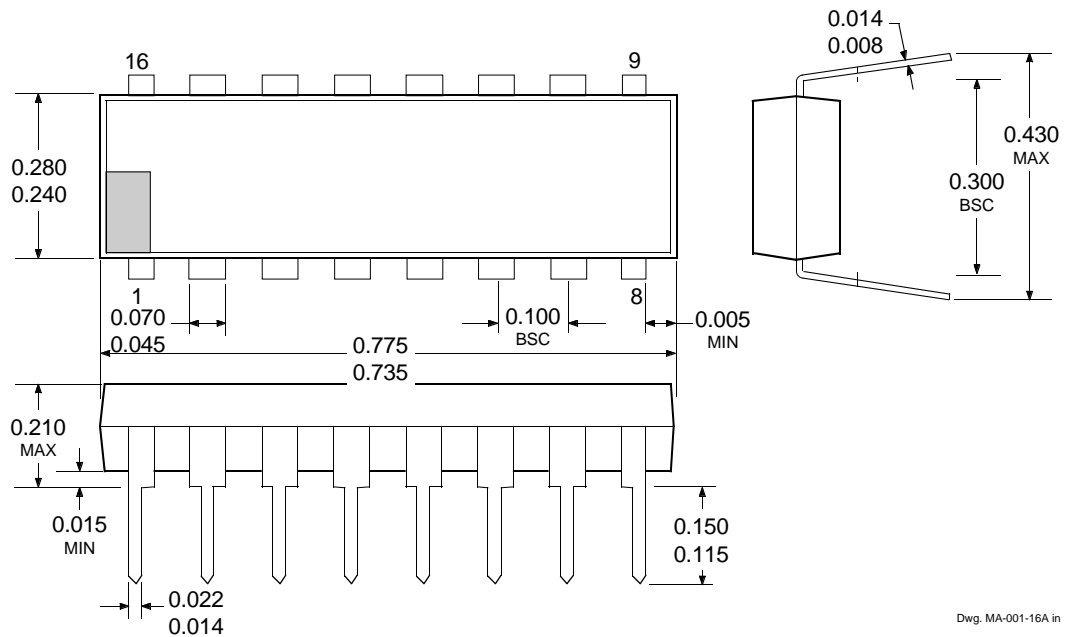
**ELECTRICAL CHARACTERISTICS at  $T_A = +25^\circ\text{C}$ ,  $V_{DD} = 5\text{ V}$  (unless otherwise specified).**

| Characteristic                       | Symbol        | Test Conditions   | Limits |      |                  |
|--------------------------------------|---------------|---|--------|------|------------------|
|                                      |               |   | Min.   | Max. | Units            |
| Output Leakage Current               | $I_{CEX}$     | $V_{OUT} = 50\text{ V}$                                     | —      | 50   | $\mu\text{A}$    |
|                                      |               | $V_{OUT} = 50\text{ V}$ , $T_A = +70^\circ\text{C}$         | —      | 100  | $\mu\text{A}$    |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_{OUT} = 100\text{ mA}$                                   | —      | 1.1  | V                |
|                                      |               | $I_{OUT} = 200\text{ mA}$                                   | —      | 1.3  | V                |
|                                      |               | $I_{OUT} = 350\text{ mA}$ , $V_{DD} = 7.0\text{ V}$         | —      | 1.6  | V                |
| Input Voltage                        | $V_{IN(0)}$   |   | —      | 0.8  | V                |
|                                      |               | $V_{DD} = 12\text{ V}$                                      | 10.5   | —    | V                |
|                                      | $V_{IN(1)}$   | $V_{DD} = 5.0\text{ V}$                                     | 3.5    | —    | V                |
| Input Resistance                     | $r_{IN}$      | $V_{DD} = 12\text{ V}$                                      | 50     | —    | $\text{k}\Omega$ |
|                                      |               | $V_{DD} = 5.0\text{ V}$                                     | 50     | —    | $\text{k}\Omega$ |
| Supply Current                       | $I_{DD(ON)}$  | One Driver ON, $V_{DD} = 12\text{ V}$                       | —      | 4.5  | mA               |
|                                      |               | One Driver ON, $V_{DD} = 10\text{ V}$                       | —      | 3.9  | mA               |
|                                      |               | One Driver ON, $V_{DD} = 5.0\text{ V}$                      | —      | 2.4  | mA               |
|                                      | $I_{DD(OFF)}$ | $V_{DD} = 5.0\text{ V}$ , All Drivers OFF, All Inputs = 0 V | —      | 1.6  | mA               |
|                                      |               | $V_{DD} = 12\text{ V}$ , All Drivers OFF, All Inputs = 0 V  | —      | 2.9  | mA               |



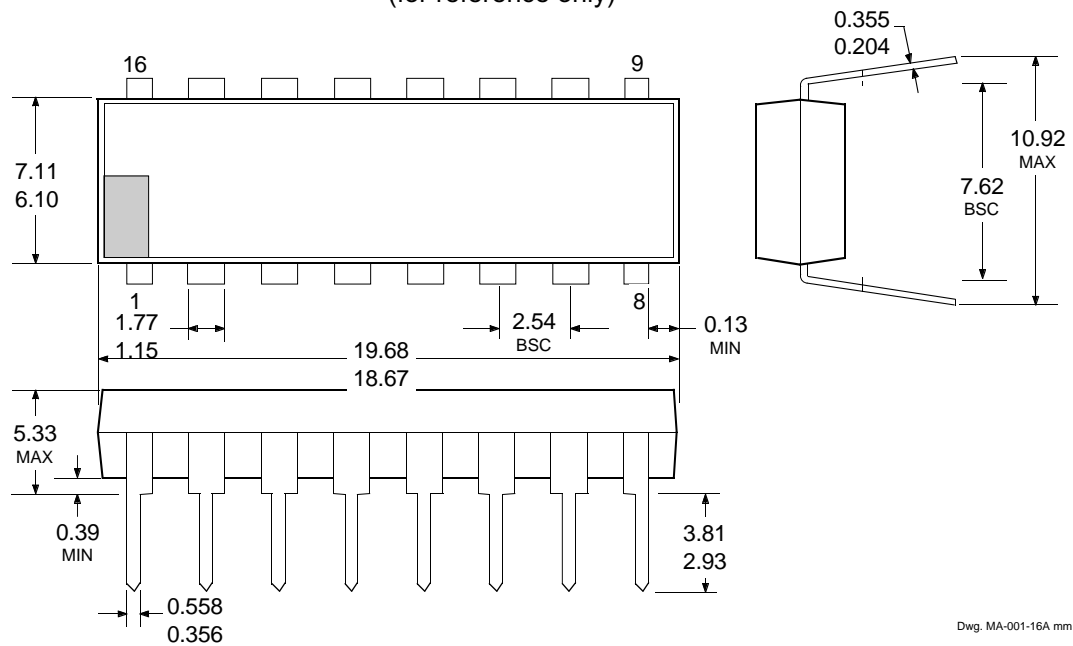
# 5821 8-BIT SERIAL-INPUT, LATCHED DRIVERS

## UCN5821A Dimensions in Inches (controlling dimensions)



Dwg. MA-001-16A in

## Dimensions in Millimeters (for reference only)

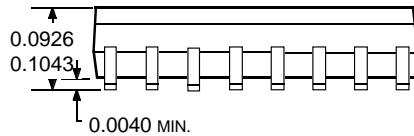
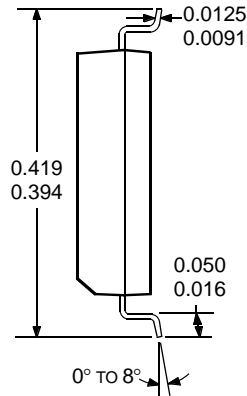
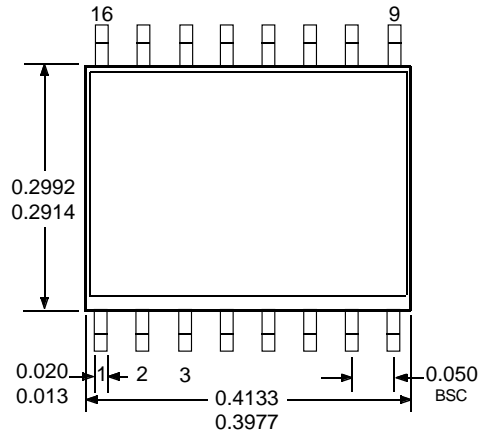


Dwg. MA-001-16A mm

- NOTES:
1. Lead thickness is measured at seating plane or below.
  2. Lead spacing tolerance is non-cumulative.
  3. Exact body and lead configuration at vendor's option within limits shown.

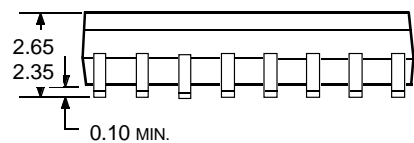
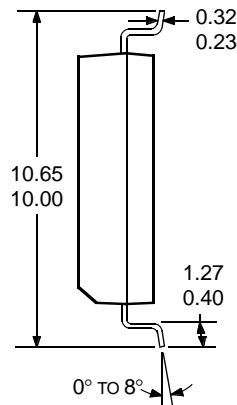
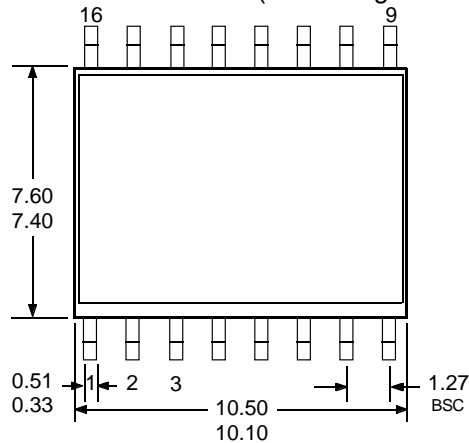
**5821**  
**8-BIT SERIAL-INPUT,**  
**LATCHED DRIVERS**

**UCN5821LW**  
**Dimensions in Inches**  
 (for reference only)



Dwg. MA-008-16A in

**Dimensions in Millimeters**  
 (controlling dimensions)



Dwg. MA-008-16A mm

- NOTES: 1. Lead spacing tolerance is non-cumulative.  
 2. Exact body and lead configuration at vendor's option within limits shown.

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**8-BIT SERIAL-INPUT,**  
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