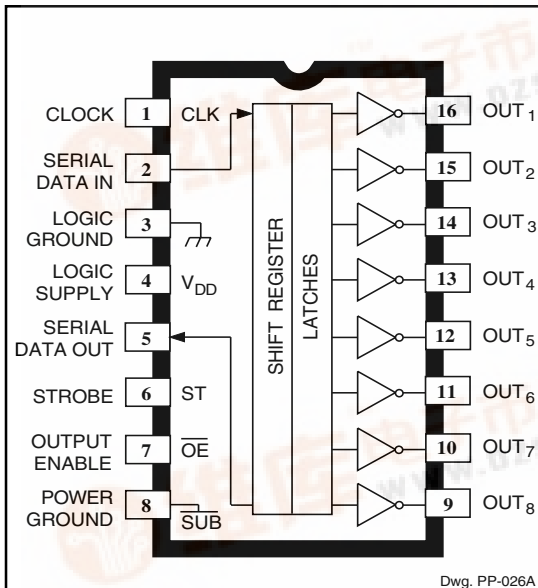


5821 AND 5822

Data Sheet
26185.12E

BiMOS II 8-BIT SERIAL-INPUT, LATCHED DRIVERS



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} | |
| UCN5821A & UCN5821LW..... | 50 V |
| UCN5822A & UCN5822LW..... | 80 V |
| Logic Supply Voltage, V_{DD} | 15 V |
| Input Voltage Range, V_{IN} | -0.3 V to $V_{DD} + 0.3$ V |
| Continuous Output Current, I_{OUT} | 500 mA |
| Package Power Dissipation, P_D | |
| Package Code 'A' | 2.1 W |
| Package Code 'LW' | 1.5 W |
| Operating Temperature Range, T_A | -20°C to +85°C |
| Storage Temperature Range, 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, UCN5821LW, UCN5822A, and UCN5822LW each have an eight-bit CMOS shift register and CMOS control circuitry, eight CMOS data latches, and eight bipolar current-sinking Darlington output drivers. The UCN5821A/LW and UCN5822A/LW are identical except for rated output voltage.

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 UCN5821/22A are furnished in a standard 16-pin plastic DIP; the UCN5821/22LW 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

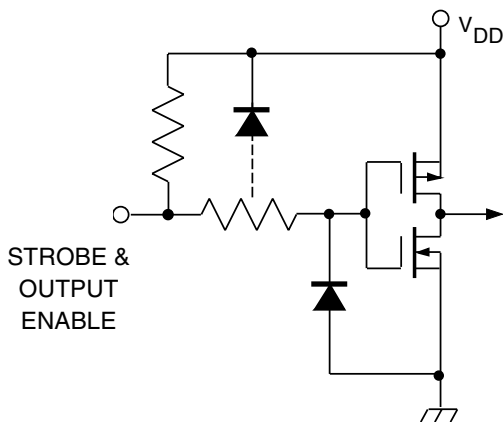
- To 3.3 MHz Data Input Rate
- CMOS, NMOS, TTL Compatible
- Internal Pull-Down Resistors
- Low-Power CMOS Logic & Latches
- High-Voltage Current-Sink Outputs
- Automotive Capable

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

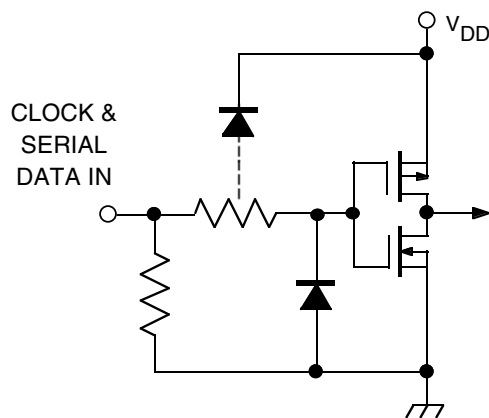


5821 AND 5822 8-BIT SERIAL-INPUT, LATCHED DRIVERS

TYPICAL INPUT CIRCUITS

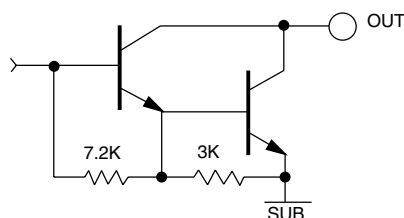


Dwg. EP-010-3



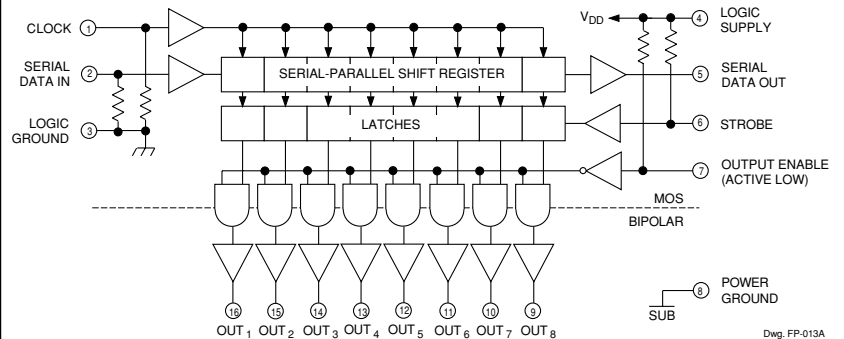
Dwg. EP-010-4A

TYPICAL OUTPUT DRIVER



Dwg. No. A-14,314

FUNCTIONAL BLOCK DIAGRAM



Dwg. FP-013A

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 ($I_{OUT} = 200\text{ mA}$ $V_{DD} = 12\text{ V}$) | UCN5821A Max. Allowable Duty Cycle 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 ($I_{OUT} = 200\text{ mA}$ $V_{DD} = 12\text{ V}$) | UCN5821LW Max. Allowable Duty Cycle 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% |

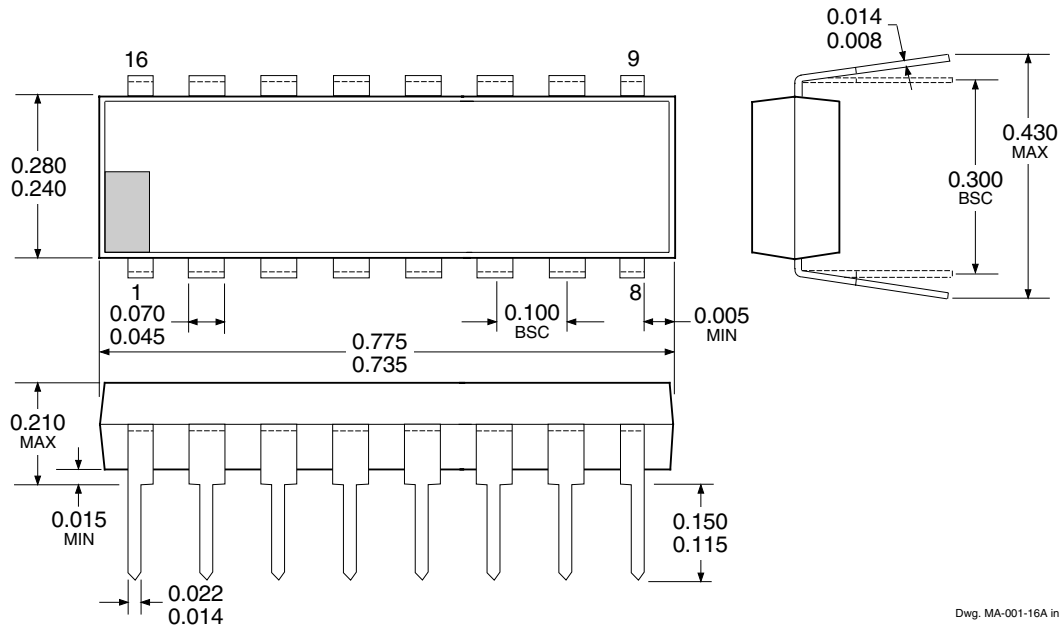
5821 AND 5822
8-BIT SERIAL-INPUT,
LATCHED DRIVERS

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

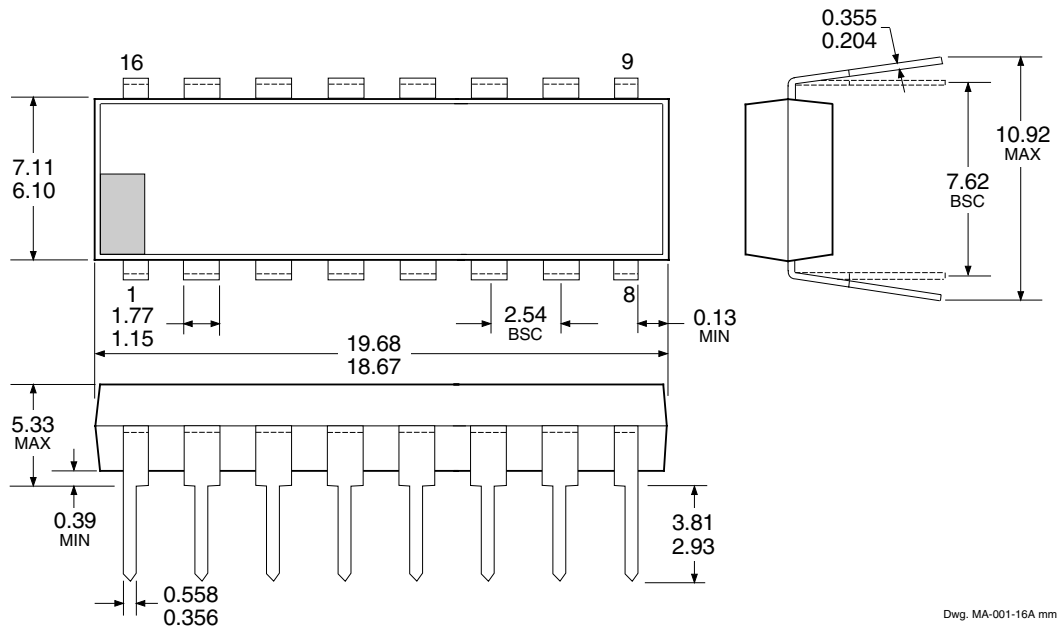
| Characteristic | Symbol | Test Conditions | Limits | | |
|--------------------------------------|---------------|--|--------|------|------------------|
| | | | Min. | Max. | Units |
| Output Leakage Current | I_{CEX} | UCN5821A/LW, $V_{OUT} = 50\text{ V}$ | — | 50 | μA |
| | | UCN5822A/LW, $V_{OUT} = 80\text{ V}$ | — | 50 | μA |
| | | UCN5821A/LW, $V_{OUT} = 50\text{ V}$, $T_A = +70^\circ\text{C}$ | — | 100 | μA |
| | | UCN5822A/LW, $V_{OUT} = 80\text{ V}$, $T_A = +70^\circ\text{C}$ | — | 100 | μA |
| 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 |
| | $V_{IN(1)}$ | $V_{DD} = 12\text{ V}$ | 10.5 | — | V |
| | | $V_{DD} = 5.0\text{ V}$ | 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 AND 5822 8-BIT SERIAL-INPUT, LATCHED DRIVERS

UCN5821A and UCN5822A Dimensions in Inches (controlling dimensions)



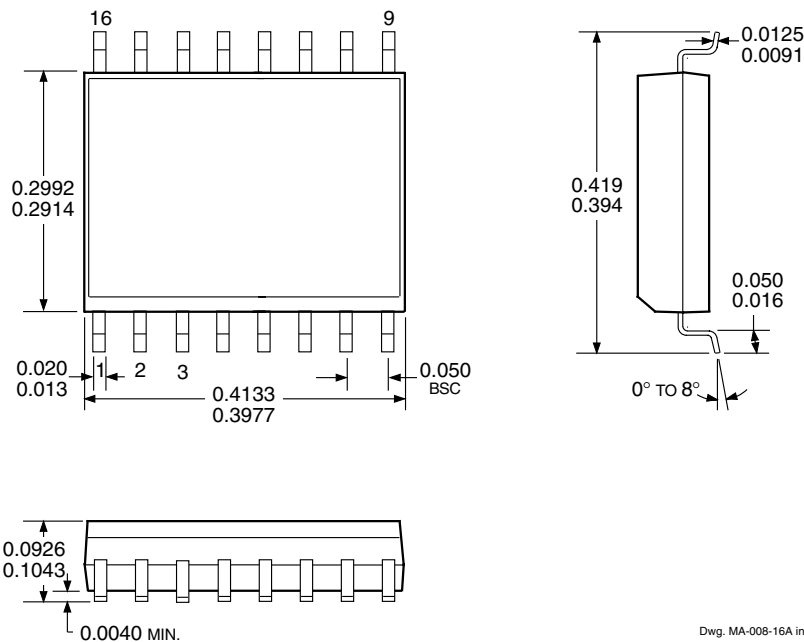
Dimensions in Millimeters (for reference only)



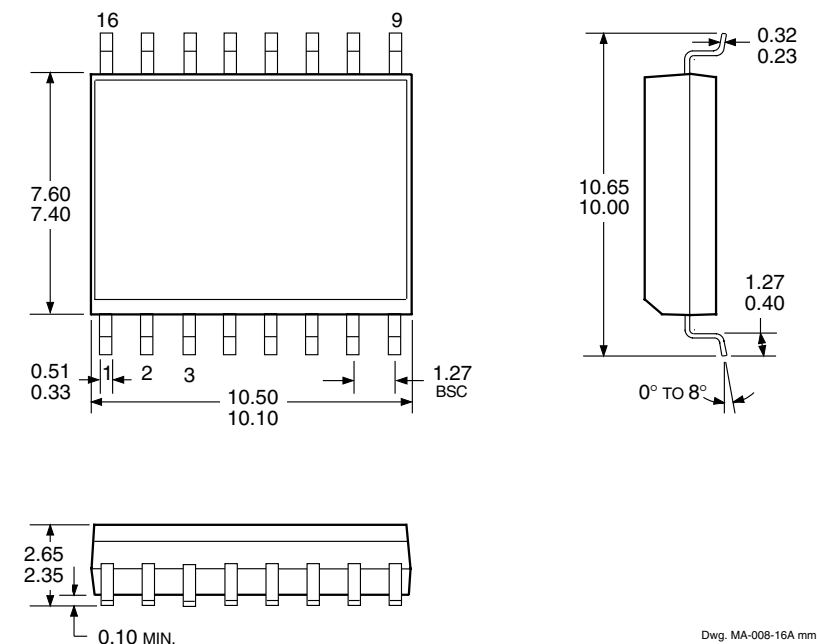
- NOTES: 1. Lead thickness is measured at seating plane or below.
2. Lead spacing tolerance is non-cumulative.
3. Exact body and lead configuration at vendor's option within limits shown.

5821 AND 5822
8-BIT SERIAL-INPUT,
LATCHED DRIVERS

UCN5821LW and UCN5822LW
Dimensions in Inches
 (for reference only)



Dimensions in Millimeters
 (controlling dimensions)



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

5821 AND 5822
8-BIT SERIAL-INPUT,
LATCHED DRIVERS

The products described here are manufactured under one or more U.S. patents or U.S. patents pending.

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5821 AND 5822
8-BIT SERIAL-INPUT,
LATCHED DRIVERS

POWER
INTERFACE DRIVERS

| Function | Output Ratings* | | Part Number† |
|--|-----------------|-------|--------------------|
| SERIAL-INPUT LATCHED DRIVERS | | | |
| 8-Bit (saturated drivers) | -120 mA | 50 V‡ | 5895 |
| 8-Bit | 350 mA | 50 V | 5821 |
| 8-Bit | 350 mA | 80 V | 5822 |
| 8-Bit | 350 mA | 50 V‡ | 5841 |
| 8-Bit | 350 mA | 80 V‡ | 5842 |
| 8-Bit (constant-current LED driver) | 75 mA | 17 V | 6275 |
| 8-Bit (DMOS drivers) | 250 mA | 50 V | 6595 |
| 8-Bit (DMOS drivers) | 350 mA | 50 V‡ | 6A595 |
| 8-Bit (DMOS drivers) | 100 mA | 50 V | 6B595 |
| 10-Bit (active pull-downs) | -25 mA | 60 V | 5810-F and 6809/10 |
| 12-Bit (active pull-downs) | -25 mA | 60 V | 5811 and 6811 |
| 16-Bit (constant-current LED driver) | 75 mA | 17 V | 6276 |
| 20-Bit (active pull-downs) | -25 mA | 60 V | 5812-F and 6812 |
| 32-Bit (active pull-downs) | -25 mA | 60 V | 5818-F and 6818 |
| 32-Bit | 100 mA | 30 V | 5833 |
| 32-Bit (saturated drivers) | 100 mA | 40 V | 5832 |
| PARALLEL-INPUT LATCHED DRIVERS | | | |
| 4-Bit | 350 mA | 50 V‡ | 5800 |
| 8-Bit | -25 mA | 60 V | 5815 |
| 8-Bit | 350 mA | 50 V‡ | 5801 |
| 8-Bit (DMOS drivers) | 100 mA | 50 V | 6B273 |
| 8-Bit (DMOS drivers) | 250 mA | 50 V | 6273 |
| SPECIAL-PURPOSE DEVICES | | | |
| Unipolar Stepper Motor Translator/Driver | 1.25 A | 50 V‡ | 5804 |
| Addressable 8-Bit Decoder/DMOS Driver | 250 mA | 50 V | 6259 |
| Addressable 8-Bit Decoder/DMOS Driver | 350 mA | 50 V‡ | 6A259 |
| Addressable 8-Bit Decoder/DMOS Driver | 100 mA | 50 V | 6B259 |
| Addressable 28-Line Decoder/Driver | 450 mA | 30 V | 6817 |

* Current is maximum specified test condition, voltage is maximum rating. See specification for sustaining voltage limits. Negative current is defined as coming out of (sourcing) the output.

† Complete part number includes additional characters to indicate operating temperature range and package style.

‡ Internal transient-suppression diodes included for inductive-load protection.