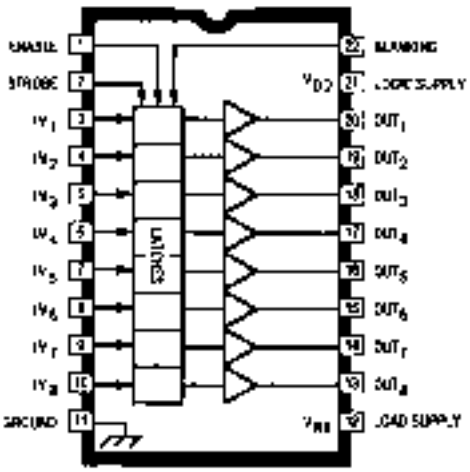
5815

Data Sheet
26183.10A

BiMOS II 8-BIT LATCHED SOURCE DRIVERS

UCN5815A



Dwg. No. A-10,987

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

Output Voltage, V_{OUT} . . . . . **60 V**
Logic Supply Voltage Range,
V_{DD} . . . . . **4.5 V to 15 V**
Load Supply Voltage Range,
V_{BB} . . . . . **5.0 V to 60 V**
Input Voltage Range,
V_{IN} . . . . . **-0.3 V to V_{DD} + 0.3 V**
Continuous Output Current,
I_{OUT} . . . . . **-40 mA**
Package Power Dissipation, P_D
(UCN5815A) . . . . . **2.5 W***
(UCN5815EP) . . . . . **2.27 W***
Operating Temperature Range,
T_A . . . . . **-20°C to +85°C**
Storage Temperature Range,
T_S . . . . . **-55°C to +150°C**

* Derate linearly to 0 W at +150°C.

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

Designed primarily for use with high-voltage vacuum-fluorescent displays, the UCN5815A and UCN5815EP BiMOS II integrated circuits consist of eight NPN Darlington source drivers with output pull-down resistors, a CMOS latch for each driver, and common STROBE, BLANKING, and ENABLE functions.

BiMOS II devices have considerably better data-input rates than the original BiMOS circuits. With a 5 V logic supply, they will typically operate above 5 MHz. With a 12 V supply, significantly higher speeds are obtained. The CMOS inputs cause minimum loading and are compatible with standard CMOS and NMOS logic commonly found in microprocessor designs. TTL circuits may require the use of appropriate pull-up resistors.

The bipolar outputs may be used as segment, dot (matrix), bar, or digit drivers in vacuum-fluorescent displays. All eight outputs can be activated simultaneously at ambient temperatures in excess of 75°C. To simplify printed wiring board layout, output connections are opposite the inputs. A minimum component display subsystem, requiring few or no discrete components, can be assembled using the UCN5815A/EP with the UCN5810AF/EPF/LWF, UCN5812AF/EPF, or UCN5818AF/EPF serial-to-parallel latched drivers.

Suffix 'A' devices are furnished in a standard 22-pin plastic DIP; suffix 'EP' indicates a 28-lead PLCC.

FEATURES

- 4.4 MHz Minimum Date-Input Rate
- High-Voltage Source Outputs
- CMOS, NMOS, TTL Compatible Inputs
- Low-Power CMOS Latches
- Internal Pull-Down Resistors
- Wide Supply-Voltage Range

Always order by complete part number:

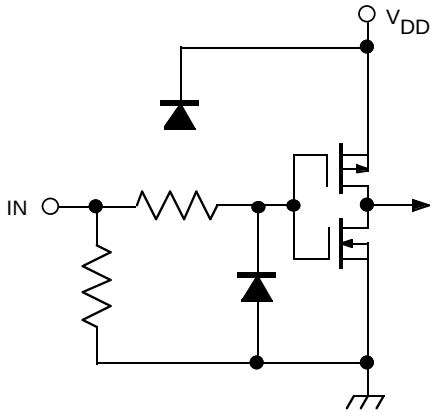
Part Number	Package
UCN5815A	22-Pin DIP
UCN5815EP	28-Lead PLCC

ELECTRICAL CHARACTERISTICS at T_A = +25°C, V_{BB} = 60 V, V_{DD} = 5 V and 12 V (unless otherwise noted).

Characteristic	Symbol	Test Conditions	Limits		
			Min.	Max.	Units
Output OFF Voltage	V_{OUT}		—	1.0	V
Output ON Voltage	V_{OUT}	I_{OUT} = -25 mA, V_{BB} = 60 V	57.5	—	V
Output Pull-Down Current	I_{OUT}	V_{OUT} = V_{BB}	400	850	µA
Output Leakage Current	I_{OUT}	T_A = 70°C	—	-15	µA
Input Voltage	$V_{IN(1)}$	V_{DD} = 5.0 V	3.5	5.3	V
		V_{DD} = 12 V	10.5	12.3	V
	$V_{IN(0)}$		-0.3	+0.8	V
Input Current	$I_{IN(1)}$	V_{DD} = V_{IN} = 5.0 V	—	100	µA
		V_{DD} = V_{IN} = 12 V	—	240	µA
Input Impedance	Z_{IN}	V_{DD} = 5.0 V	50	—	kΩ
Supply Current	I_{BB}	All outputs ON, All outputs open	—	10.5	mA
		All outputs OFF, All outputs open	—	100	µA
	I_{DD}	V_{DD} = 5.0 V, All outputs OFF, All inputs = 0 V	—	100	µA
		V_{DD} = 12 V, All outputs OFF, All inputs = 0 V	—	200	µA
		V_{DD} = 5.0 V, One output ON, All inputs = 0 V	—	1.0	mA
		V_{DD} = 12 V, One output ON, All inputs = 0 V	—	3.0	mA

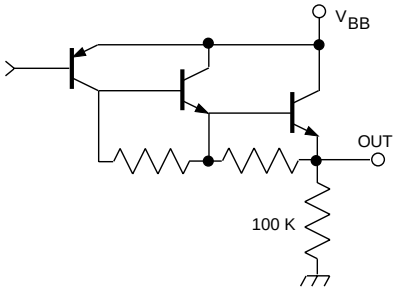
NOTE: Positive (negative) current is defined as going into (coming out of) the specified device pin.

TYPICAL INPUT CIRCUIT



Dwg. No. EP-010-4A

TYPICAL OUTPUT DRIVER



Dwg. No. EP-021-3

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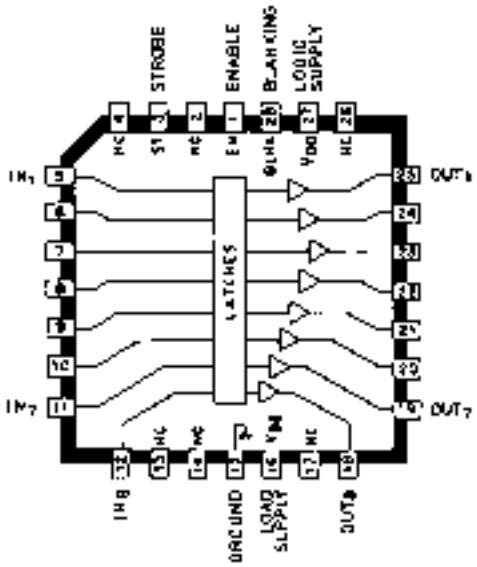
115 Northeast Cutoff, Box 15036
Worcester, Massachusetts 01615-0036 (508) 853-5000

5815
BiMOS II
8-BIT LATCHED SOURCE DRIVERS

UCN5815EP

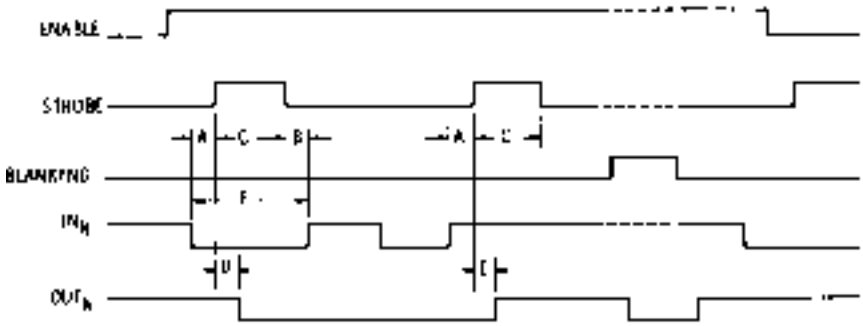


Dwg. No. A-14,357

Information present at an input is transferred to its latch when the STROBE and ENABLE are high. The latches will continue to accept new data as long as both STROBE and ENABLE are held high. With either STROBE or ENABLE in the low state, no information can be loaded into the latches.

When the BLANKING input is high, all of the output buffers are disabled (OFF) without affecting the information stored in the latches. With the BLANKING input low, the outputs are controlled by the state of the latches.

The timing conditions shown above guarantee a 4.4 MHz minimum data input rate with a 5 V supply. Typically, input rates above 5 MHz are permitted. With a 12 V supply, rates in excess of 10 MHz are possible.



Dwg. No. A-10,991

TIMING CONDITIONS

(V_{DD} = 5 V, T_A = +25°C, Logic Levels are V_{DD} and Ground)

A. Minimum Data Active Time Before Strobe Enabled (Data Set-Up Time) . . . . . **50 ns**
B. Minimum Data Active Time After Strobe Disabled (Data Hold Time) . . . . . **50 ns**
C. Minimum Strobe Pulse Width . . . . . **125 ns**
D. Typical Time Between Strobe Activation and Output ON to OFF Transition . . . . . **5.0 µs**
E. Typical Time Between Strobe Activation and Output OFF to ON Transition . . . . . **500 ns**
F. Minimum Data Pulse Width . . . . . **225 ns**

TRUTH TABLE

INPUTS				OUT_N	
IN_N	STROBE	ENABLE	BLANK	T-1	T
0	1	1	0	X	0
1	1	1	0	X	1
X	X	X	1	X	0
X	0	X	0	1	1
X	0	X	0	0	0
X	X	0	0	1	1
X	X	0	0	0	0

X = irrelevant
T-1 = previous output state
T = present output state

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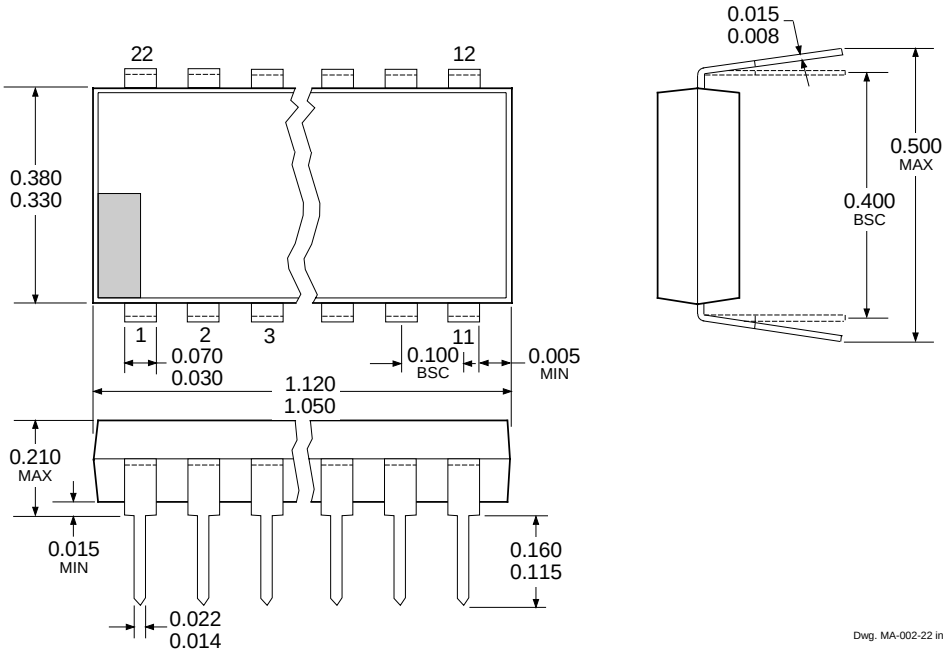
BiMOS II
8-BIT LATCHED SOURCE DRIVERS

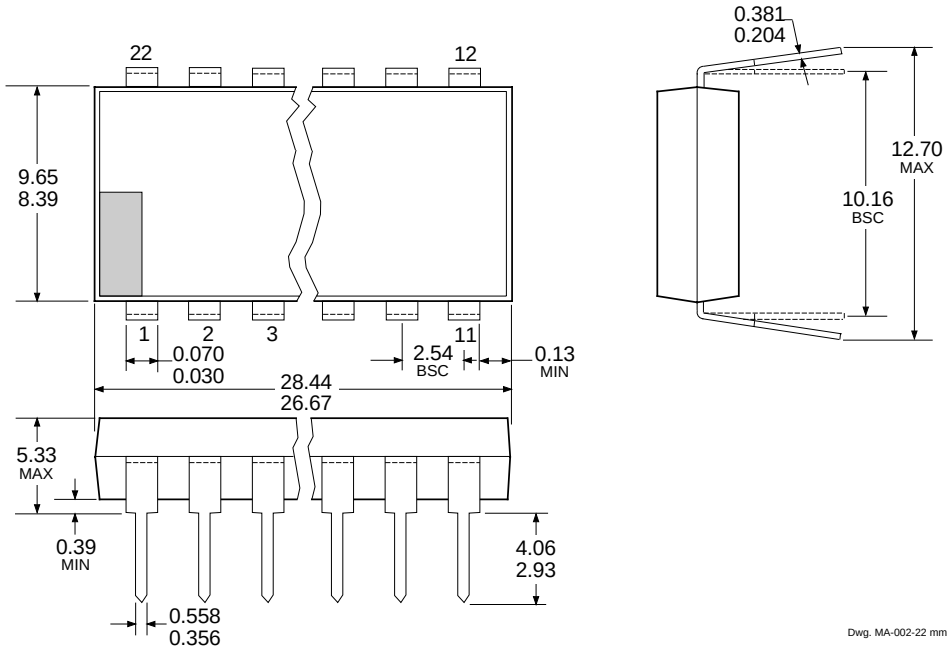
UCN5815A

Dimensions in Inches
(cvontrolling dimensions)



Dwg. MA-002-22 in

Dimensions in Millimeters
(for reference only)



Dwg. MA-002-22 mm

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

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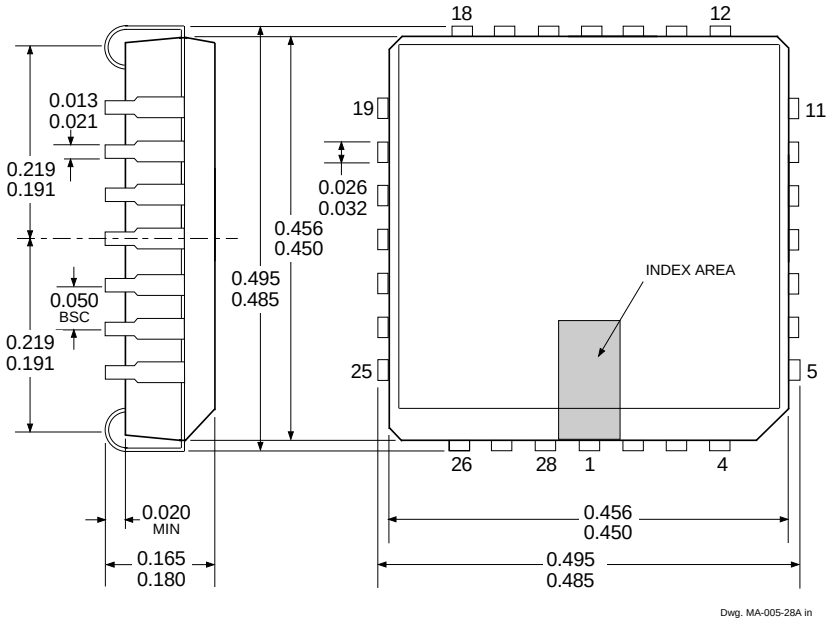
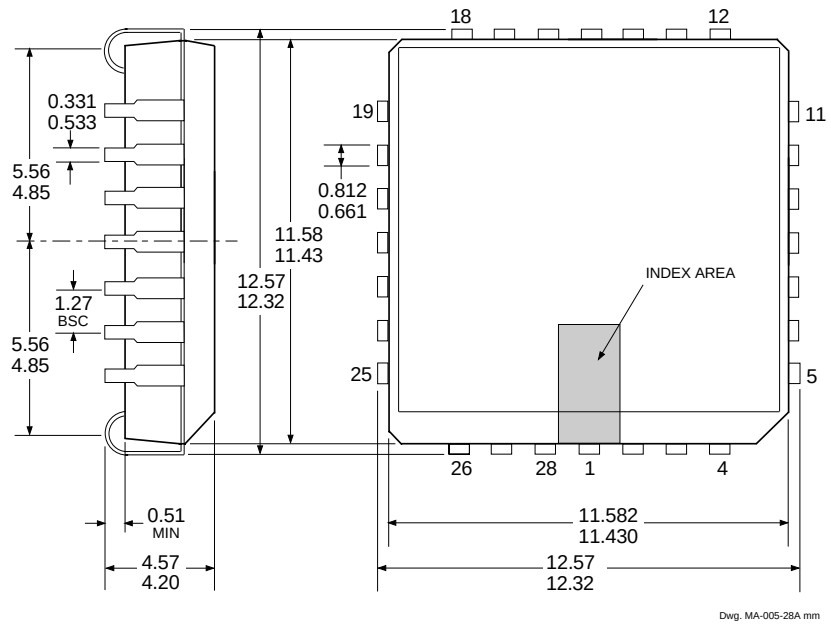
UCN5815EP

Dimensions in Inches
(controlling dimensions



Dwg. MA-005-28A in

Dimensions in Millimeters
(for reference only)



Dwg. MA-005-28A mm

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

5815
BiMOS II
8-BIT LATCHED
SOURCE DRIVERS

BiMOS II (Series 5800) & DABiC IV (Series 6800) INTELLIGENT POWER INTERFACE DRIVERS SELECTION GUIDE

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
9-Bit	1.6 A	50 V	5829
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
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
SPECIAL-PURPOSE FUNCTIONS			
Unipolar Stepper Motor Translator/Driver	1.25 A	50 V‡	5804
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.

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