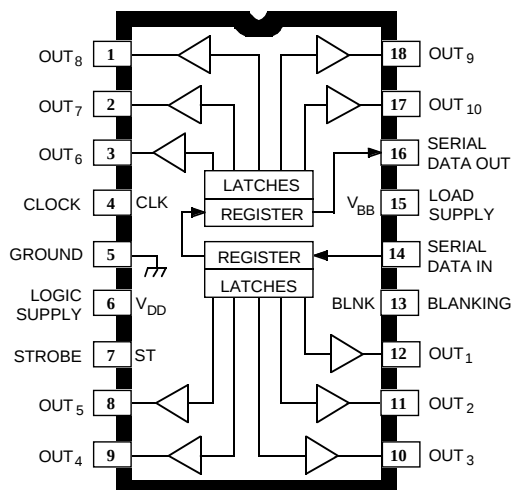


UCN5810AF



Dwg. PP-029

at $T_A = 25^\circ\text{C}$

T_S -55°C to +150°C

Note that the UCN5810AF (dual in-line package) and UCN5810LWF (small-outline IC package) are electrically identical and share a common terminal number assignment.

The UCN5810AF is furnished in an 18-pin dual in-line plastic package. The UCN5810LWF is furnished in a wide-body, small-outline plastic package (SOIC) with gull-wing leads. Copper lead frames, reduced supply current requirements, and lower output saturation voltages allow all devices to source 25 mA from all outputs continuously, over the entire operating temperature range. All devices are also available for operation between -40°C and +85°C. To order, change the prefix from 'UCN' to 'UCQ'.

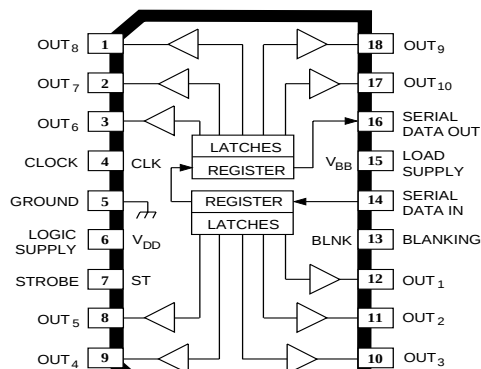
- Active DMOS Pull-Downs

Always order by complete part number, e.g., **UCN5810AF**.

5810-F

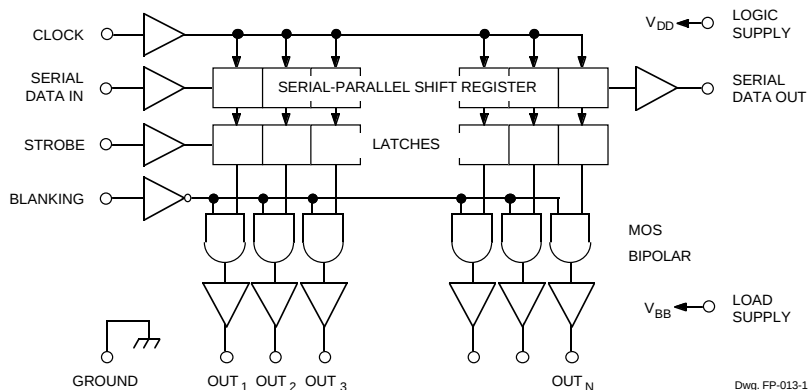
10-BIT SERIAL-INPUT, LATCHED SOURCE DRIVERS WITH ACTIVE-DMOS PULL-DOWNS

UCN5810LWF



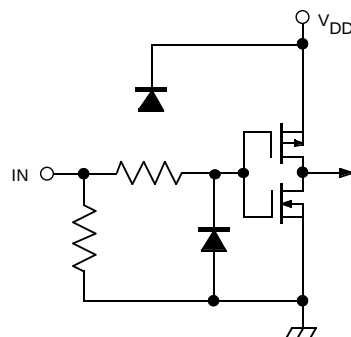
Dwg. PP-029-1

FUNCTIONAL BLOCK DIAGRAM



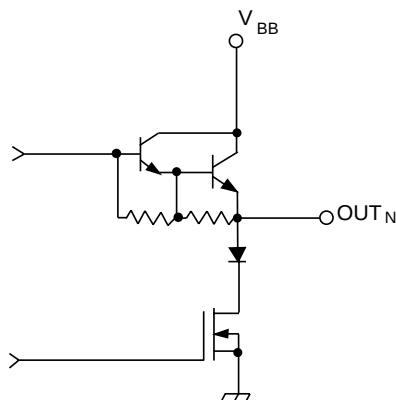
Dwg. FP-013-1

TYPICAL INPUT CIRCUIT

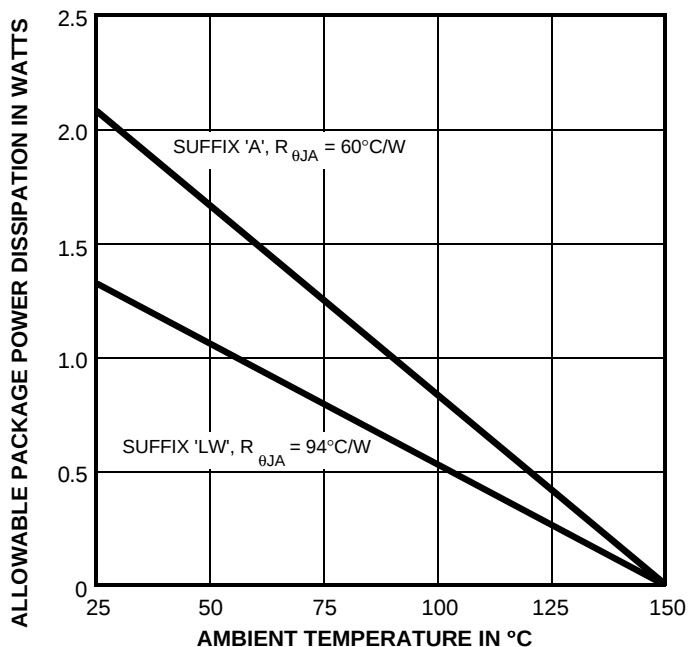


Dwg. EP-010-4A

TYPICAL OUTPUT DRIVER



Dwg. No. A-14,219



Dwg. GP-018C

5810-F
10-BIT SERIAL-INPUT,
LATCHED SOURCE DRIVERS
WITH ACTIVE-DMOS PULL-DOWNS

ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$, $V_{BB} = 60\text{ V}$ unless otherwise noted.

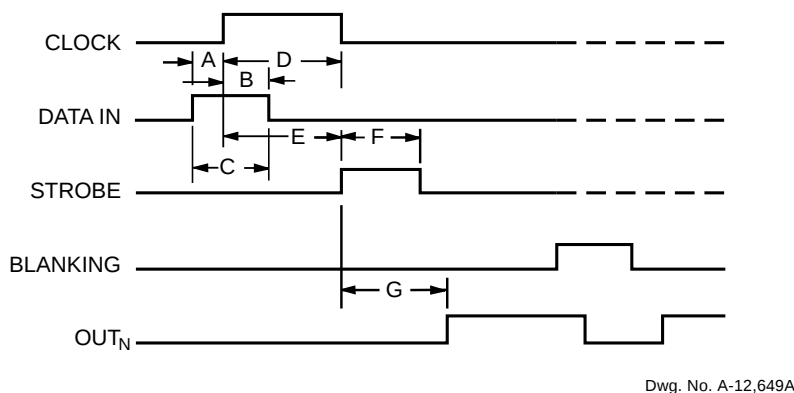
Characteristic	Symbol	Test Conditions	Limits @ $V_{DD} = 5\text{ V}$			Limits @ $V_{DD} = 12\text{ V}$			Units
			Min.	Typ.	Max.	Min.	Typ.	Max.	
Output Leakage Current	I_{CEX}	$V_{OUT} = 0\text{ V}$, $T_A = +70^\circ\text{C}$	—	-5.0	-15	—	-5.0	-15	μA
Output Voltage	$V_{OUT(1)}$	$I_{OUT} = -25\text{ mA}$	58	58.5	—	58	58.5	—	V
	$V_{OUT(0)}$	$I_{OUT} = 1\text{ mA}$	—	1.0	1.5	—	—	—	V
		$I_{OUT} = 2\text{ mA}$	—	—	—	—	1.0	1.5	V
Output Pull-Down Current	$I_{OUT(0)}$	$V_{OUT} = 5\text{ V to }V_{BB}$	2.0	3.5	—	—	—	—	mA
		$V_{OUT} = 20\text{ V to }V_{BB}$	—	—	—	8.0	13	—	mA
Input Voltage	$V_{IN(1)}$		3.5	—	5.3	10.5	—	12.3	V
	$V_{IN(0)}$		-0.3	—	+0.8	-0.3	—	+0.8	V
Input Current	$I_{IN(1)}$	$V_{IN} = V_{DD}$	—	—	100	—	—	240	μA
	$I_{IN(0)}$	$V_{IN} = 0.8\text{ V}$	—	-0.05	-0.5	—	-0.1	-1.0	μA
Serial Data Output Voltage	$V_{OUT(1)}$	$I_{OUT} = -200\text{ }\mu\text{A}$	4.5	4.7	—	11.7	11.8	—	V
	$V_{OUT(0)}$	$I_{OUT} = 200\text{ }\mu\text{A}$	—	200	250	—	100	200	mV
Maximum Clock Frequency	f_{clk}		3.3*	—	—	—	—	—	MHz
Supply Current	$I_{DD(1)}$	All Outputs High	—	100	300	—	200	500	μA
	$I_{DD(0)}$	All Outputs Low	—	100	300	—	200	500	μA
	$I_{BB(1)}$	Outputs High, No Load	—	0.7	2.0	—	0.7	2.0	mA
	$I_{BB(0)}$	Outputs Low	—	10	100	—	10	100	μA
Blanking to Output Delay	t_{PHL}	$C_L = 30\text{ pF}$, 50% to 50%	—	2000	—	—	1000	—	ns
	t_{PLH}	$C_L = 30\text{ pF}$, 50% to 50%	—	1000	—	—	850	—	ns
Output Fall Time	t_f	$C_L = 30\text{ pF}$, 90% to 10%	—	1450	—	—	650	—	ns
Output Rise Time	t_r	$C_L = 30\text{ pF}$, 10% to 90%	—	650	—	—	700	—	ns

Negative current is defined as coming out of (sourcing) the specified device pin.

* Operation at a clock frequency greater than the specified minimum value is possible but not warranted.

5810-F

10-BIT SERIAL-INPUT, LATCHED SOURCE DRIVERS WITH ACTIVE-DMOS PULL-DOWNS



TIMING REQUIREMENTS

($T_A = +25^\circ\text{C}$, $V_{DD} = 5\text{ V}$, Logic Levels are V_{DD} and Ground)

- A. Minimum Data Active Time Before Clock Pulse (Data Set-Up Time) **75 ns**
- B. Minimum Data Active Time After Clock Pulse (Data Hold Time) **75 ns**
- C. Minimum Data Pulse Width **150 ns**
- D. Minimum Clock Pulse Width **150 ns**
- E. Minimum Time Between Clock Activation and Strobe **300 ns**
- F. Minimum Strobe Pulse Width **100 ns**
- G. Typical Time Between Strobe Activation and Output Transition **500 ns**

Timing is representative of a 3.3 MHz clock. Higher speeds may be attainable with increased supply voltage; operation at high temperatures will reduce the specified maximum clock frequency.

Serial Data present at the input is transferred to the shift register on the logic "0" to logic "1" transition of the CLOCK input pulse. On succeeding CLOCK pulses, the registers shift data information towards the SERIAL DATA OUTPUT. The SERIAL DATA must appear at the input prior to the rising edge of the CLOCK input waveform.

Information present at any register is transferred to the respective latch when the STROBE is high (serial-to-parallel conversion). The latches will continue to accept new data as long as the STROBE is held high. Applications where the latches are bypassed (STROBE tied high) will require that the BLANKING input be high during serial data entry.

When the BLANKING input is high, the output source drivers are disabled (OFF); the DMOS sink drivers are ON. The information stored in the latches is not affected by the BLANKING input. With the BLANKING input low, the outputs are controlled by the state of their respective latches.

TRUTH TABLE

Serial Data Input	Clock Input	Shift Register Contents						Serial Data Output	Strobe Input	Latch Contents						Blanking	Output Contents					
		I ₁	I ₂	I ₃	...	I _{N-1}	I _N			L ₁	L ₂	L ₃	...	L _{N-1}	L _N		O ₁	O ₂	O ₃	...	O _{N-1}	O _N
H	┐	H	R ₁	R ₂	...	R _{N-2}	R _{N-1}	R _{N-1}														
L	┐	L	R ₁	R ₂	...	R _{N-2}	R _{N-1}	R _{N-1}														
X	┐	R ₁	R ₂	R ₃	...	R _{N-1}	R _N	R _N														
		X	X	X	...	X	X	X	L	R ₁	R ₂	R ₃	...	R _{N-1}	R _N							
		P ₁	P ₂	P ₃	...	P _{N-1}	P _N	P _N	H	P ₁	P ₂	P ₃	...	P _{N-1}	P _N	L						
										X	X	X	...	X	X	H						
																	L	L	L	...	L	L

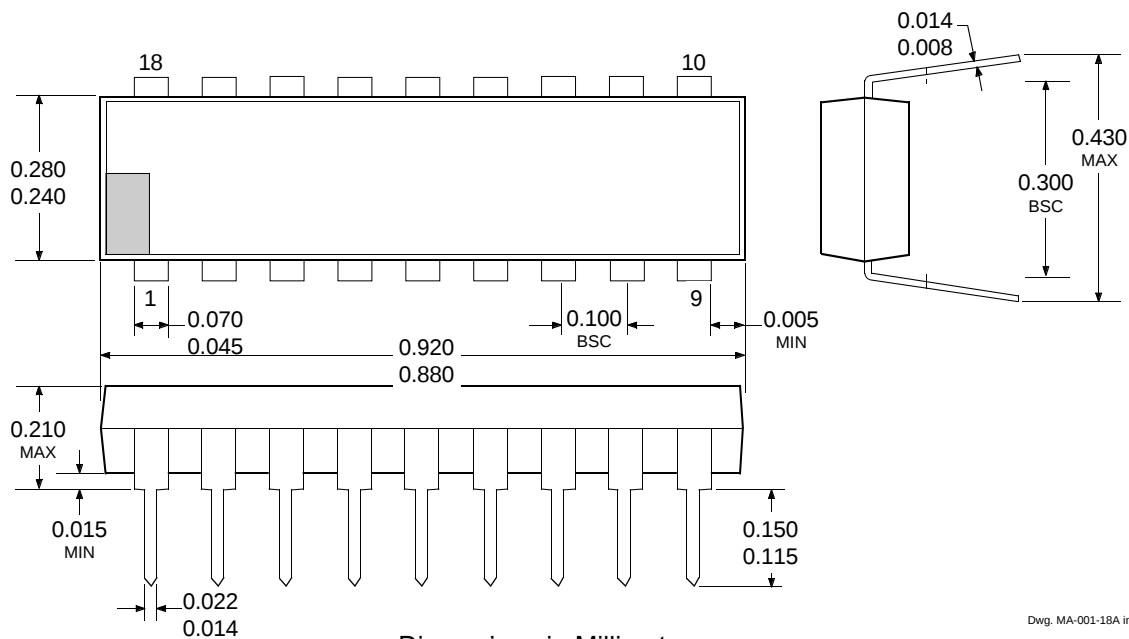
L = Low Logic Level H = High Logic Level X = Irrelevant P = Present State R = Previous State

5810-F

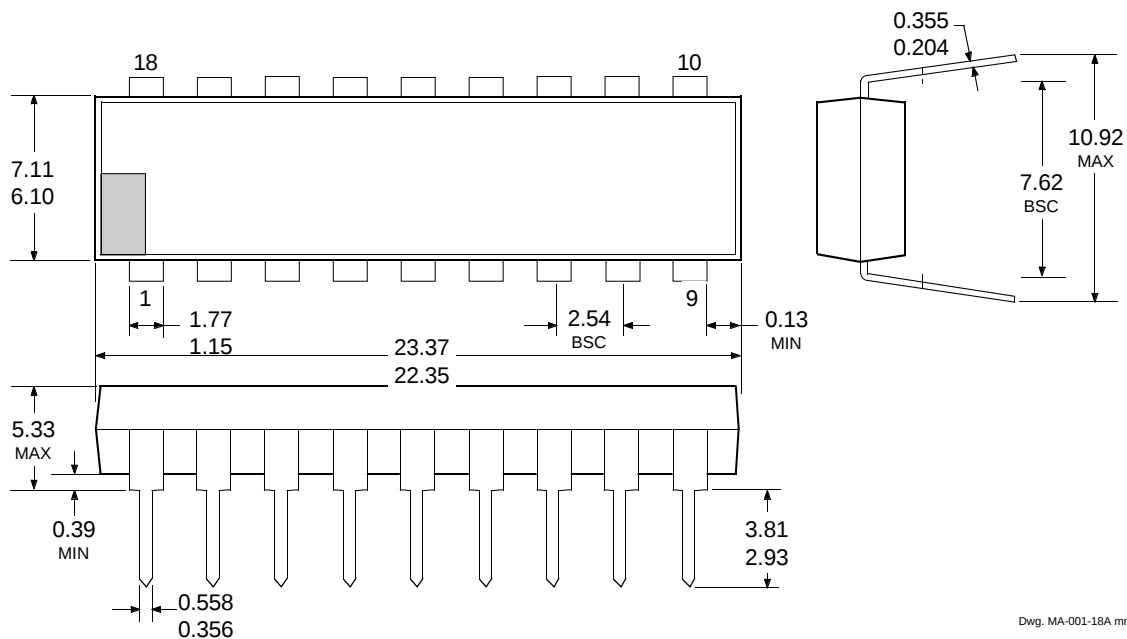
10-BIT SERIAL-INPUT, LATCHED SOURCE DRIVERS WITH ACTIVE-DMOS PULL-DOWNS

UCN5810AF

Dimensions in Inches
(controlling dimensions)



Dimensions in Millimeters
(for reference only)



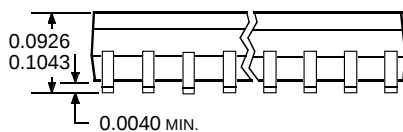
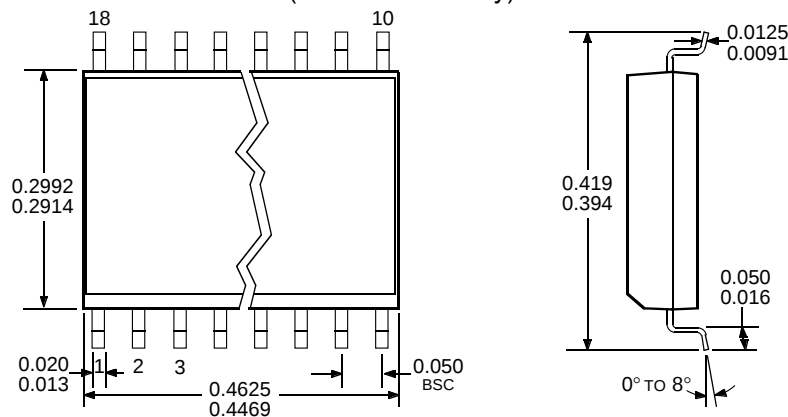
- NOTES:
1. Exact body and lead configuration at vendor's option within limits shown.
 2. Lead spacing tolerance is non-cumulative.
 3. Lead thickness is measured at seating plane or below.
 4. Supplied in standard sticks/tubes of 21 devices.

5810-F

10-BIT SERIAL-INPUT, LATCHED SOURCE DRIVERS WITH ACTIVE-DMOS PULL-DOWNS

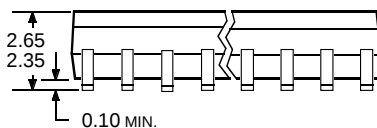
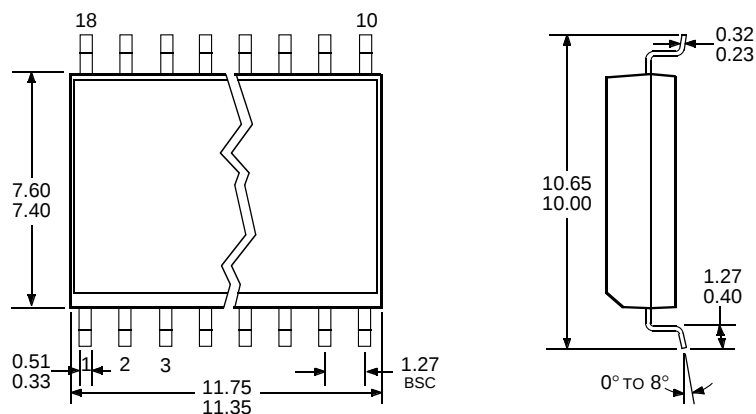
UCN5810LWF

Dimensions in Inches
(for reference only)



Dwg. MA-008-18A in

Dimensions in Millimeters
(controlling dimensions)



Dwg. MA-008-18A mm

- NOTES: 1. Exact body and lead configuration at vendor's option within limits shown.
2. Lead spacing tolerance is non-cumulative.
3. Supplied in standard sticks/tubes of 41 devices or add "TR" to part number for tape and reel.

5810-F
10-BIT SERIAL-INPUT,
LATCHED SOURCE DRIVERS
WITH ACTIVE-DMOS PULL-DOWNS

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