



Product Change Notification - SYST-04NMLU519

Date:

08 Apr 2019

Product Category:

USB Hubs

Affected CPNs:**Notification subject:**

ERRATA - USB251xB/xBi Family Silicon Errata

Notification text:

SYST-04NMLU519

Microchip has released a new DeviceDoc for the USB251xB/xBi Family Silicon Errata of devices. If you are using one of these devices please read the document located at [USB251xB/xBi Family Silicon Errata](#).

Notification Status: Final**Description of Change:**

- 1) Added new errata module “Detach detection failure”.
- 2) Updated layout to standard Microchip format.

Impacts to Data Sheet: None**Reason for Change:** To Improve Productivity**Change Implementation Status:** Complete**Date Document Changes Effective:** 8 Apr 2019

NOTE: Please be advised that this is a change to the document only the product has not been changed.

Markings to Distinguish Revised from Unrevised Devices: N/A**Attachment(s):**

[USB251xB/xBi Family Silicon Errata](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

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If you wish to [change your PCN profile, including opt out](#), please go to the [PCN home page](#) select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

Affected Catalog Part Numbers (CPN)

USB2512B-AEZG
USB2512B-AEZG-BYC
USB2512B-AEZG-TR
USB2512B-I/M2
USB2512B/M2
USB2512BI-AEZG
USB2512BI-AEZG-TR
USB2512BT-I/M2
USB2512BT/M2
USB2513B-AEZC
USB2513B-AEZC-TR
USB2513B-AEZG
USB2513B-AEZG-TR
USB2513B-AEZG-TR-CD0
USB2513B-I/M2
USB2513B/M2
USB2513BI-AEZG
USB2513BI-AEZG-TR
USB2513BT-I/M2
USB2513BT/M2
USB2514B-AEZC
USB2514B-AEZC-TR
USB2514B-AEZG
USB2514B-AEZG-TR
USB2514B-I/M2
USB2514B/M2
USB2514BI-AEZG
USB2514BI-AEZG-TR
USB2514BT-I/M2
USB2514BT/M2

4/8-Bit Parallel-Input Latched Drivers

Features

- 4.4 MHz Minimum Data Input Rate
- High-Voltage, High-Current Sink Outputs
- Output Transient Protection
- CMOS, PMOS, NMOS, and TTL Compatible Inputs
- Internal Pull-Down Resistors
- Low-Power CMOS Latches

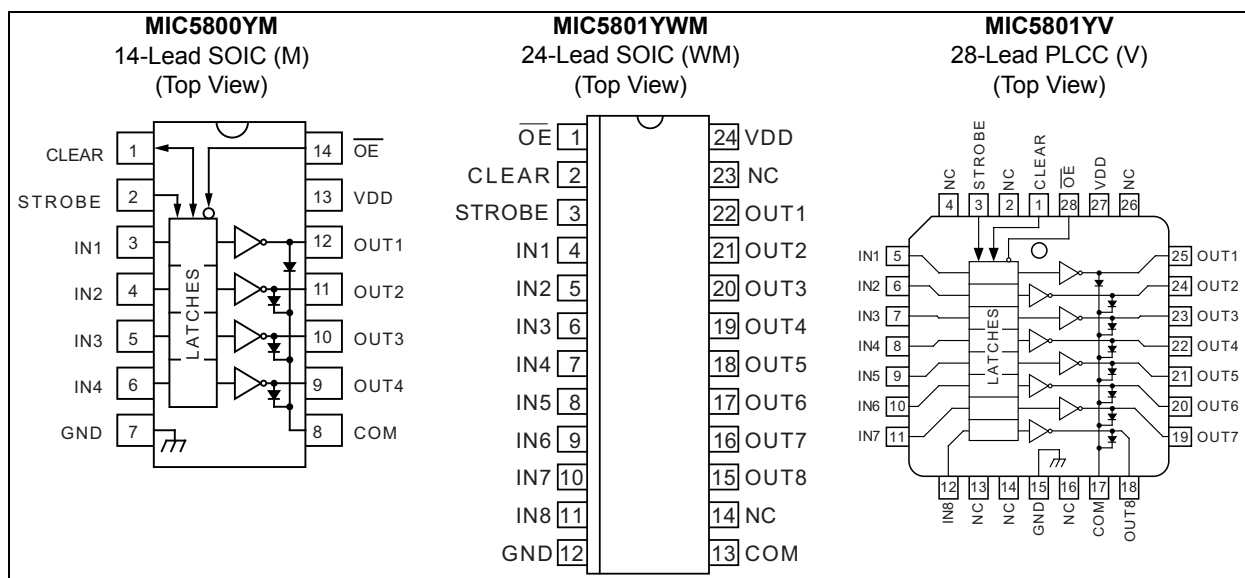
General Description

The MIC5800 and MIC5801 latched drivers are high-voltage, high-current integrated circuits comprised of four or eight CMOS data latches, a bipolar Darlington transistor driver for each latch, and CMOS control circuitry for the common CLEAR, STROBE, and OUTPUT ENABLE functions.

The bipolar/MOS combination provides an extremely low-power latch with maximum interface flexibility. MIC5800 contains four latched drivers; MIC5801 contains eight latched drivers.

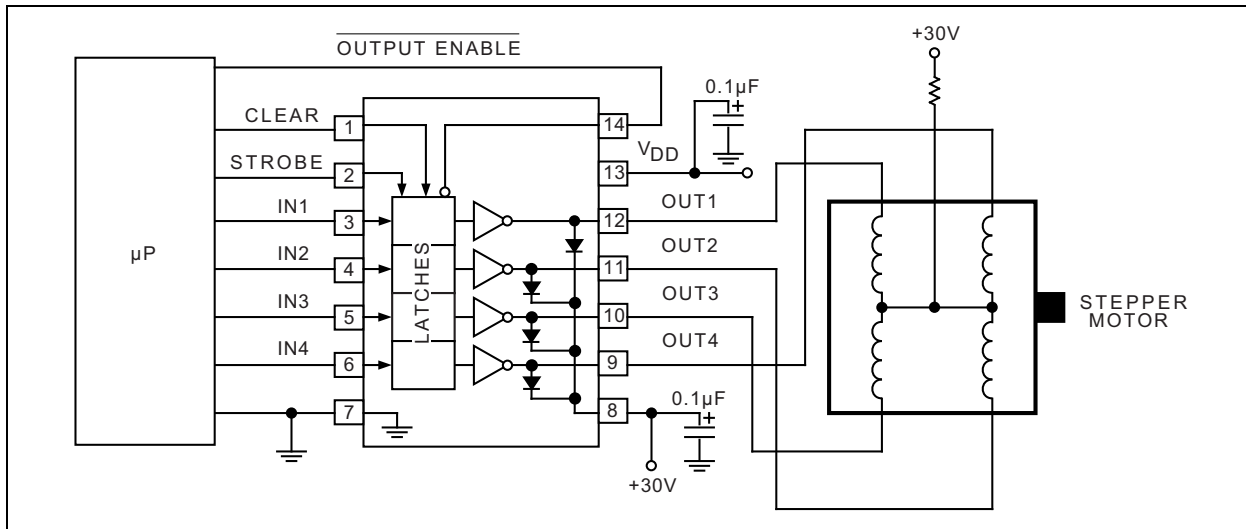
Data input rates are greatly improved in these devices. With a 5V supply, they will typically operate at better than 5 MHz. With a 12V supply, significantly higher speeds are obtained. The CMOS inputs are compatible with standard CMOS, PMOS, and NMOS circuits. TTL or DTL circuits may require the use of appropriate pull-up resistors. The bipolar outputs are suitable for use with relays, solenoids, stepping motors, LED or incandescent displays, and other high-power loads. Both units have open-collector outputs and integral diodes for inductive load transient suppression. The output transistors are capable of sinking 500 mA and will sustain at least 50V in the OFF state. Because of limitations on package power dissipation, the simultaneous operation of all drivers at maximum rated current can only be accomplished by a reduction in duty cycle. Outputs may be connected in parallel for higher load current capability.

Package Types

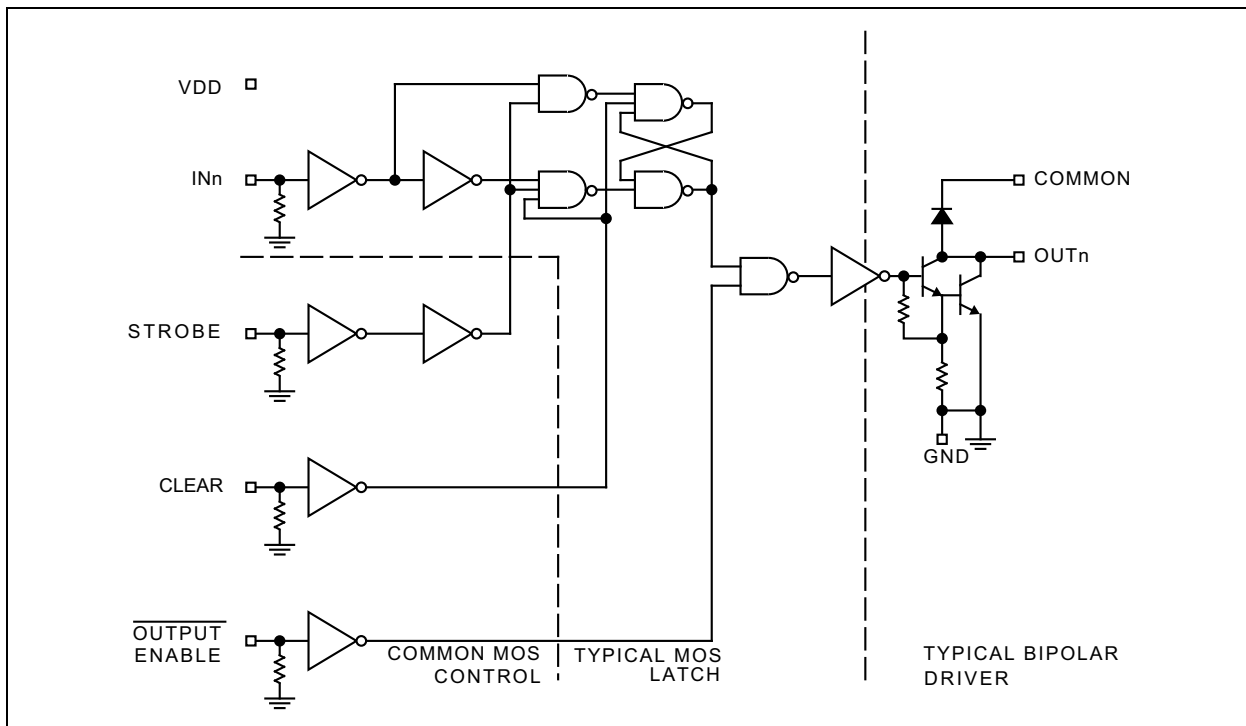


MIC5800/1

Typical Application Circuit



Functional Block Diagram



1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

Output Voltage (V_{CE})	+50V
Supply Voltage (V_{DD})	+15V
Input Voltage Range (V_{IN})	-0.3V to $V_{DD} + 0.3V$
Continuous Collector Current (I_C)	500 mA
ESD Rating (Note 1)	ESD Sensitive

Operating Ratings ††

Package Power Dissipation (P_D)	
MIC5800 SOIC	1.0W
Derate above $T_A = +25^\circ C$	8.5 mW/ $^\circ C$
MIC5801 PLCC	2.25W
Derate above $T_A = +25^\circ C$	18.2 mW/ $^\circ C$
MIC5801 Wide SOIC	1.4W
Derate above $T_A = +25^\circ C$	11 mW/ $^\circ C$

† Notice: Exceeding the absolute maximum ratings may damage the device.

†† Notice: The device is not guaranteed to function outside its operating ratings.

Note 1: Microchip CMOS devices have input-static protection, but are susceptible to damage when exposed to extremely high static electrical charges.

ELECTRICAL CHARACTERISTICS

Electrical Characteristics: $V_{DD} = 5V$, $T_A = +25^\circ C$, $V_A \leq +85^\circ C$ unless otherwise noted. Note 1						
Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Output Leakage Current	I_{CEX}	—	—	50	μA	$V_{CE} = 50V$, $T_A = +25^\circ C$
		—	—	100		$V_{CE} = 50V$, $T_A = +70^\circ C$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	—	0.9	1.1	V	$I_C = 100$ mA
		—	1.1	1.3		$I_C = 200$ mA
		—	1.3	1.6		$I_C = 350$ mA, $V_{DD} = 7.0V$
Input Voltage (Low)	$V_{IN(0)}$	—	—	1.0	V	—
Input Voltage (High)	$V_{IN(1)}$	10.5	—	—	V	$V_{DD} = 12V$
		8.5	—	—		$V_{DD} = 10V$
		3.5	—	—		$V_{DD} = 5V$, Note 2
Input Resistance	R_{IN}	50	200	—	k Ω	$V_{DD} = 12V$
		50	300	—		$V_{DD} = 10V$
		50	600	—		$V_{DD} = 5V$
Supply Current ON (Each Stage)	$I_{DD(ON)}$	—	1.0	2.0	mA	$V_{DD} = 12V$, Outputs Open
		—	0.9	1.7		$V_{DD} = 10V$, Outputs Open
		—	0.7	1.0		$V_{DD} = 5V$, Outputs Open
Supply Current OFF (Total)	$I_{DD(OFF)}$	—	—	200	μA	$V_{DD} = 12V$, Outputs Open, Inputs = 0V
		—	50	100		$V_{DD} = 5V$, Outputs Open, Inputs = 0V

Note 1: Specification for packaged product only.

2: Operation of these devices with standard TTL or DTL may require the use of appropriate pull-up resistors to ensure a minimum logic "1".

MIC5800/1

ELECTRICAL CHARACTERISTICS (CONTINUED)

Electrical Characteristics: $V_{DD} = 5V$, $T_A = +25^\circ C$, $V_A \leq +85^\circ C$ unless otherwise noted. Note 1						
Parameter	Sym.	Min.	Typ.	Max.	Units	Conditions
Clamp Diode Leakage Current	I_R	—	—	50	μA	$V_R = 50V$, $T_A = +25^\circ C$
		—	—	100		$V_R = 50V$, $T_A = +70^\circ C$
Clamp Diode Forward Voltage	V_F	—	1.7	2.0	V	$I_F = 350\text{ mA}$

Note 1: Specification for packaged product only.

2: Operation of these devices with standard TTL or DTL may require the use of appropriate pull-up resistors to ensure a minimum logic "1".

TRUTH TABLE

IN_N	Strobe	Clear	/OE	OUT_N	
				$t - 1$	t
0	1	0	0	X	OFF
1	1	0	0	X	ON
X	X	1	X	X	OFF
X	X	X	1	X	OFF
X	0	0	0	ON	ON
X	0	0	0	OFF	OFF

Legend: X = Irrelevant; $t - 1$ = Previous output state; t = Present output state.

Information present at an input is transferred to its latch when the STROBE is high. A high CLEAR input will set all latches to the output OFF condition regardless of the data or STROBE input levels. A high /OE will set all outputs to the off condition, regardless of any other input conditions. When the /OE is low, the outputs depend on the state of their respective latches.

TEMPERATURE SPECIFICATIONS

Parameters	Sym.	Min.	Typ.	Max.	Units	Conditions
Temperature Ranges						
Storage Temperature Range	T_S	-65	—	+125	$^\circ C$	—
Operating Temperature Range	T_A	-40	—	+85	$^\circ C$	—

Note 1: The maximum allowable power dissipation is a function of ambient temperature, the maximum allowable junction temperature and the thermal resistance from junction to air (i.e., T_A , T_J , θ_{JA}). Exceeding the maximum allowable power dissipation will cause the device operating junction temperature to exceed the maximum +125 $^\circ C$ rating. Sustained junction temperatures above +125 $^\circ C$ can impact the device reliability.

2.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in [Table 2-1](#) and [Table 2-2](#).

TABLE 2-1: MIC5800 PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1	CLEAR	Resets all latches and turns all outputs OFF (open).
2	STROBE	Input strobe pin. Loads output latches when high.
3, 4, 5, 6	IN _N	Parallel inputs, 1 through 4.
7	GND	Logic and Output Ground pin.
8	COM	Transient suppression diode common cathode pin.
9, 10, 11, 12	OUT _N	Parallel outputs, 4 through 1.
13	VDD	Logic Supply Voltage.
14	/OE	Output Enable. When low, outputs are active. When high, outputs are inactive and device is reset from a fault condition. An undervoltage condition emulates a high OE input.

TABLE 2-2: MIC5801 PIN FUNCTION TABLE

Pin Number SOIC	Pin Number PLCC	Pin Name	Description
1	28	/OE	Output Enable. When low, outputs are active. When high, outputs are inactive and device is reset from a fault condition. An undervoltage condition emulates a high OE input.
2	1	CLEAR	Resets all latches and turns all outputs OFF (open).
3	3	STROBE	Input strobe pin. Loads output latches when high.
4, 5, 6, 7, 8, 9, 10, 11	5, 6, 7, 8, 9, 10, 11, 12	IN _N	Parallel inputs, 1 through 8.
12	15	GND	Logic and Output Ground pin.
13	17	COM	Transient suppression diode common cathode pin.
14, 23	2, 4, 13, 14, 16, 26	NC	No Connection. Leave floating.
15, 16, 17, 18, 19, 20, 21, 22	18, 19, 20, 21, 22, 23, 24, 25	OUT _N	Parallel outputs, 8 through 1.
24	27	VDD	Logic Supply Voltage.

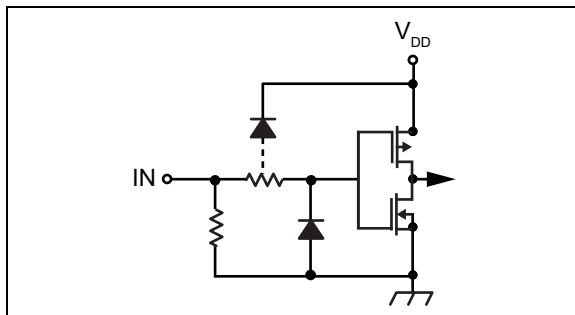


FIGURE 2-1: Typical Input.

MIC5800/1

3.0 TIMING

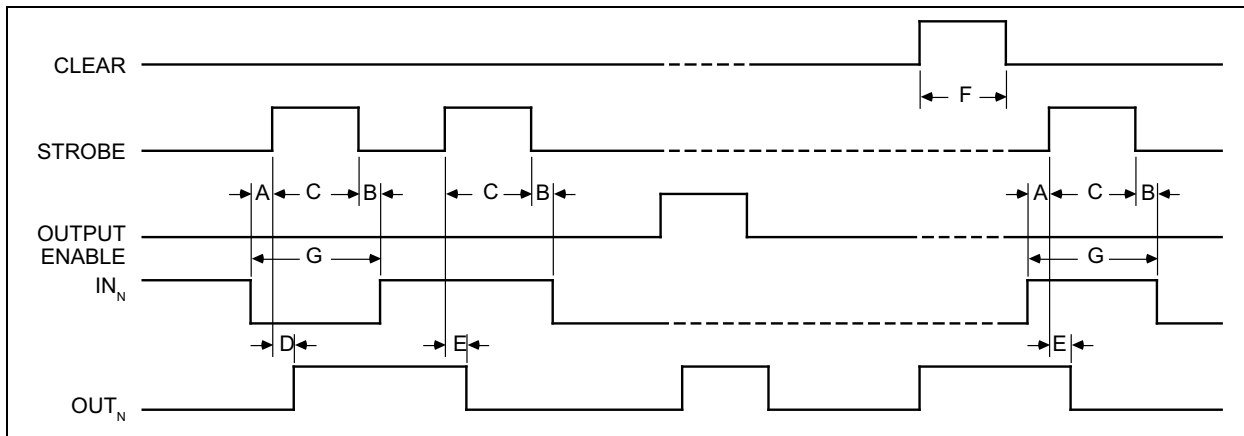


FIGURE 3-1: Timing Diagram.

TABLE 3-1: TIMING CONDITIONS

Characteristics: $T_A = +25^\circ\text{C}$; Logic levels are V_{DD} and Ground; $V_{DD} = 5\text{V}$.

Condition	Min.	Typ.	Max.
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	—	500 ns	—
E. Typical time between strobe activation and output off to on transition	—	500 ns	—
F. Minimum clear pulse width	300 ns	—	—
G. Minimum data pulse width	225 ns	—	—

4.0 TYPICAL APPLICATIONS

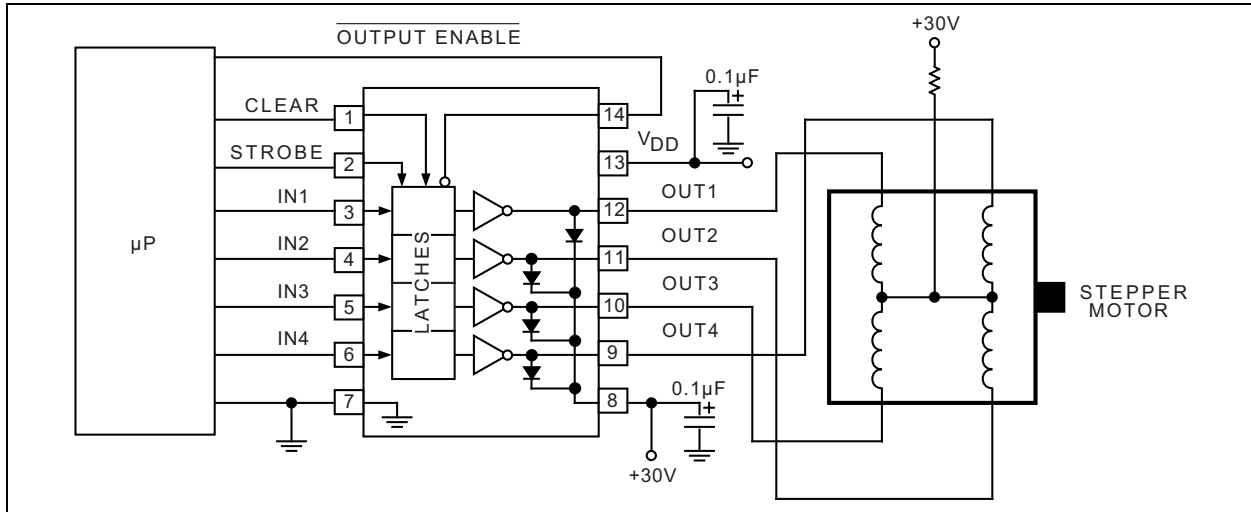


FIGURE 4-1: MIC5800 Unipolar Stepper-Motor Drive.

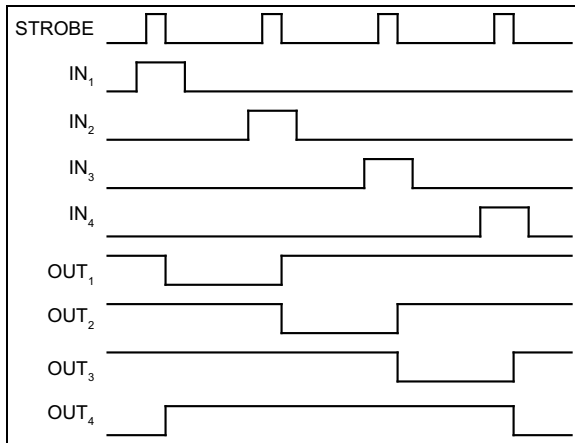


FIGURE 4-2: Unipolar Wave Drive.

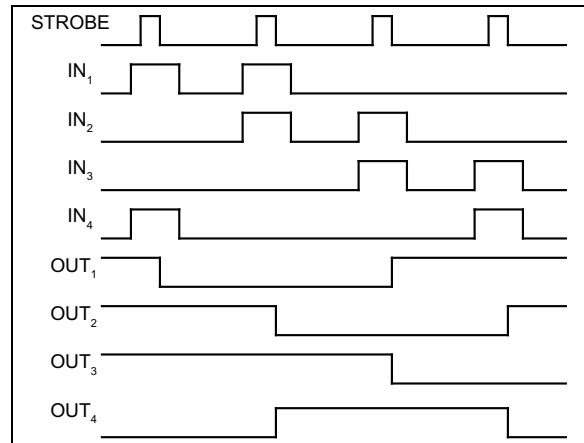


FIGURE 4-3: Unipolar 2-Phase Drive.

MIC5800/1

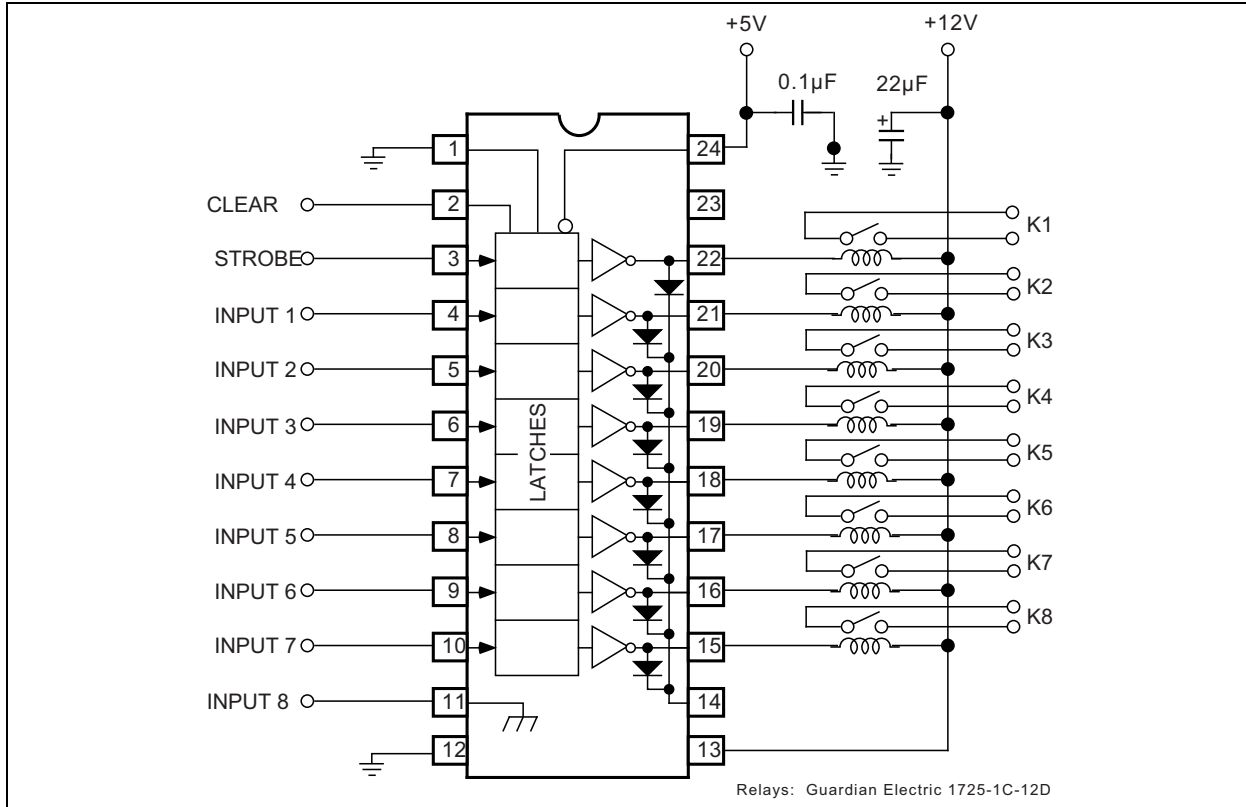


FIGURE 4-4: MIC5801 Relay Driver.

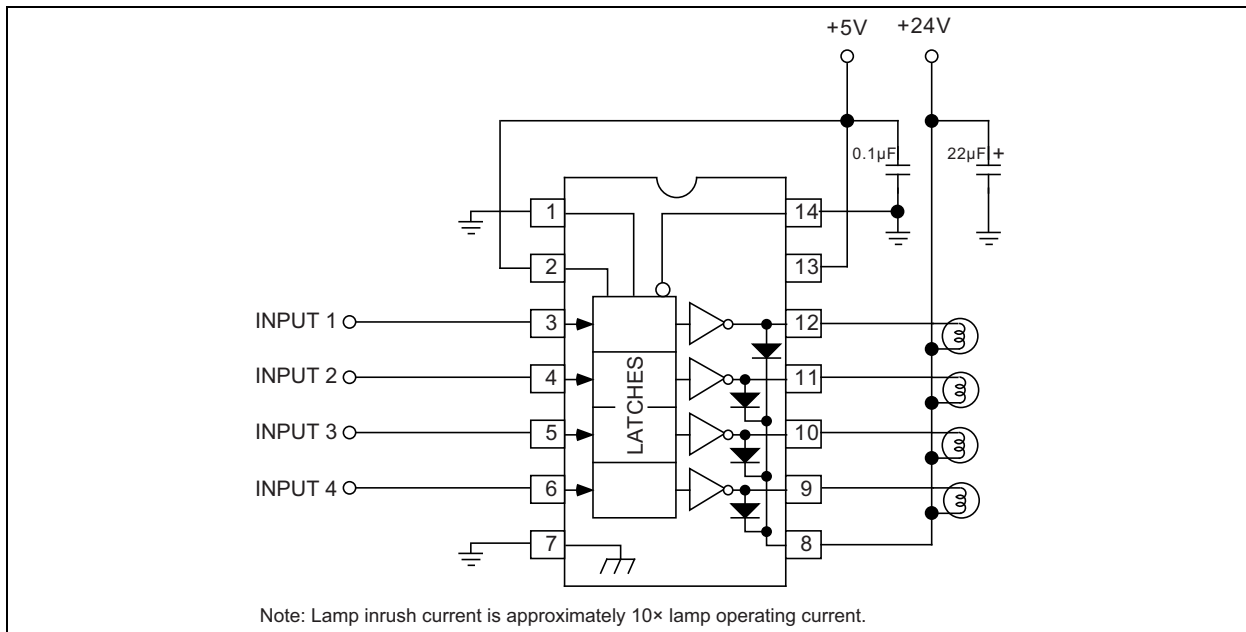
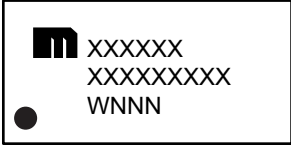

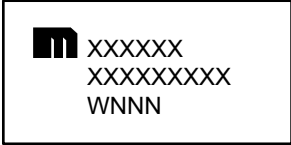

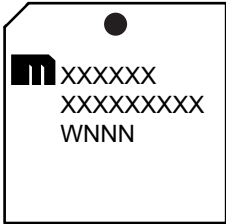
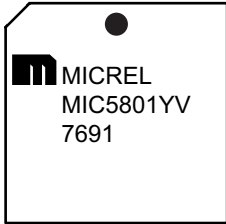
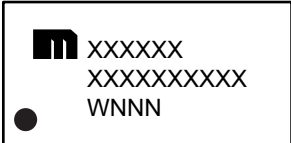



FIGURE 4-5: MIC5800 Incandescent/Halogen Lamp Driver.

5.0 PACKAGING INFORMATION

5.1 Package Marking Information

14-Lead SOIC*	Example
	
14-Lead PDIP*	Example
	
28-Lead PLCC*	Example
	
24-Lead SOICW*	Example
	

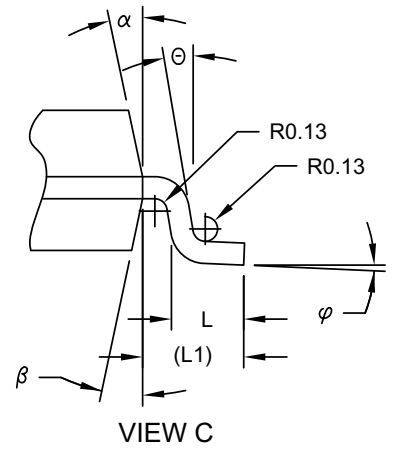
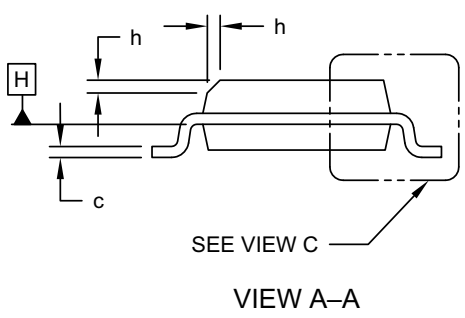
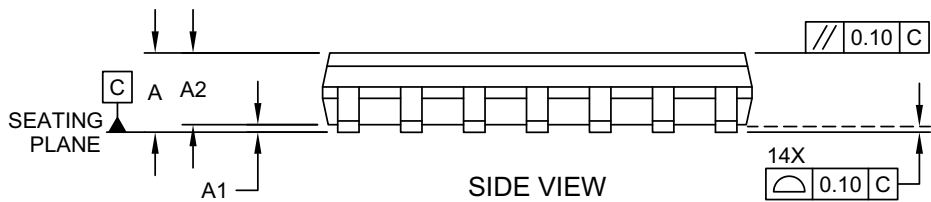
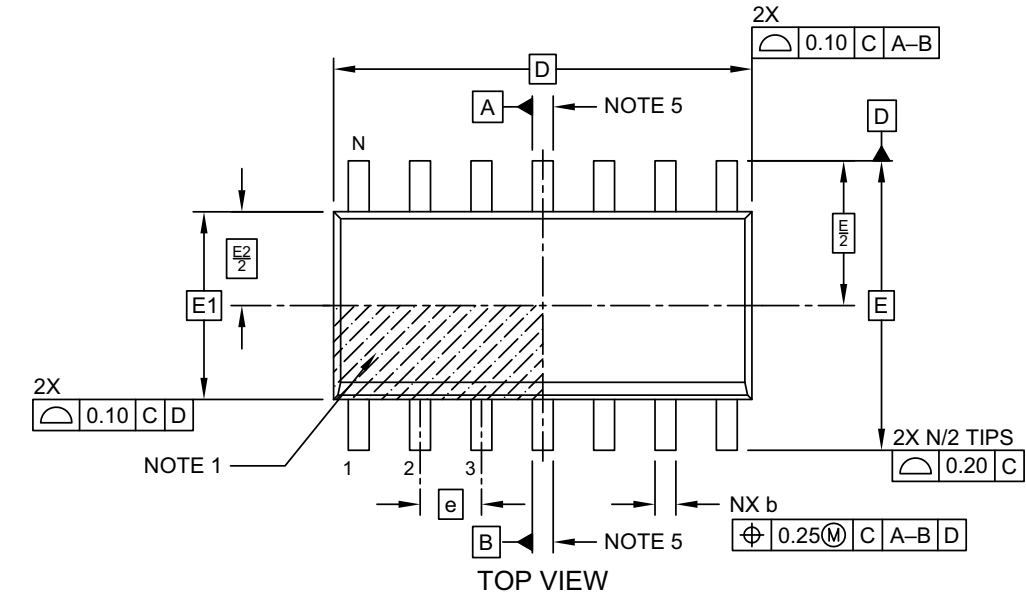
<p>Legend:</p> <ul style="list-style-type: none"> XX...X Product code or customer-specific information Y Year code (last digit of calendar year) YY Year code (last 2 digits of calendar year) WW Week code (week of January 1 is week '01') NNN Alphanumeric traceability code (e3) Pb-free JEDEC® designator for Matte Tin (Sn) * This package is Pb-free. The Pb-free JEDEC designator (e3) can be found on the outer packaging for this package. •, ▲, ▼ Pin one index is identified by a dot, delta up, or delta down (triangle mark). 	
<p>Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.</p> <p>Underbar (_) and/or Overbar (¯) symbol may not be to scale.</p>	

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14-Lead Plastic Small Outline SOIC Package Outline and Recommended Land Pattern

14-Lead Plastic Small Outline (D3X, UEB, M5B, UEB) - Narrow, 3.90 mm Body [SOIC] Atmel Legacy Global Package Code SVQ

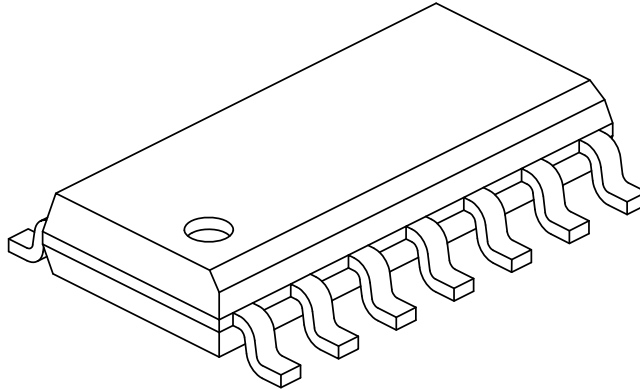
Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Microchip Technology Drawing No. C04-065-D3X Rev D

14-Lead Plastic Small Outline (D3X, UEB, M5B, UEB) - Narrow, 3.90 mm Body [SOIC] Atmel Legacy Global Package Code SVQ

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Pins	N	14		
Pitch	e	1.27 BSC		
Overall Height	A	-	-	1.75
Molded Package Thickness	A2	1.25	-	-
Standoff §	A1	0.10	-	0.25
Overall Width	E	6.00 BSC		
Molded Package Width	E1	3.90 BSC		
Overall Length	D	8.65 BSC		
Chamfer (Optional)	h	0.25	-	0.50
Foot Length	L	0.40	-	1.27
Footprint	L1	1.04 REF		
Lead Angle	Θ	0°	-	-
Foot Angle	φ	0°	-	8°
Lead Thickness	c	0.10	-	0.25
Lead Width	b	0.31	-	0.51
Mold Draft Angle Top	α	5°	-	15°
Mold Draft Angle Bottom	β	5°	-	15°

Notes:

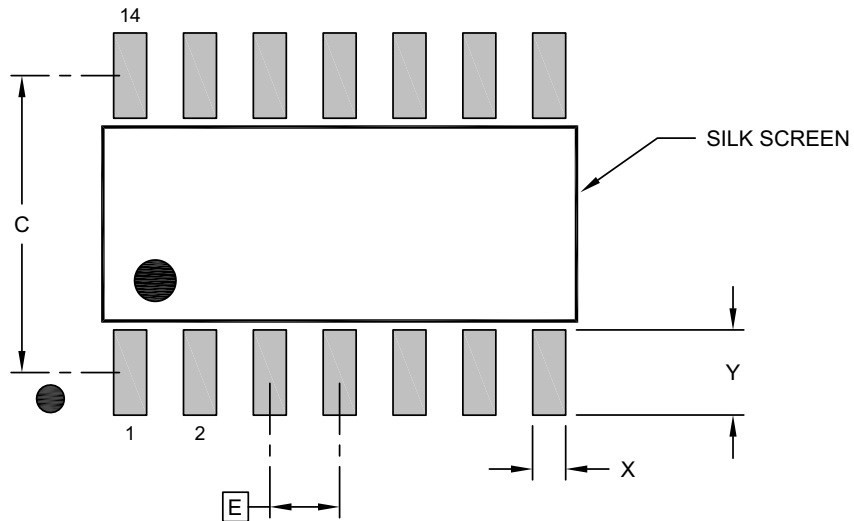
- Pin 1 visual index feature may vary, but must be located within the hatched area.
- § Significant Characteristic
- Dimension D does not include mold flash, protrusions or gate burrs, which shall not exceed 0.15 mm per end. Dimension E1 does not include interlead flash or protrusion, which shall not exceed 0.25 mm per side.
- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.
REF: Reference Dimension, usually without tolerance, for information purposes only.
- Datums A & B to be determined at Datum H.

Microchip Technology Drawing No. C04-065-D3X Rev D Sheet 2 of 2

MIC5800/1

14-Lead Plastic Small Outline (D3X, UEB, M5B, UEB) - Narrow, 3.90 mm Body [SOIC] Atmel Legacy Global Package Code SVQ

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E		1.27 BSC	
Contact Pad Spacing	C		5.40	
Contact Pad Width (X14)	X			0.60
Contact Pad Length (X14)	Y			1.55

Notes:

- Dimensioning and tolerancing per ASME Y14.5M
BSC: Basic Dimension. Theoretically exact value shown without tolerances.

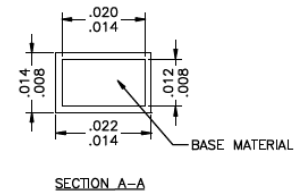
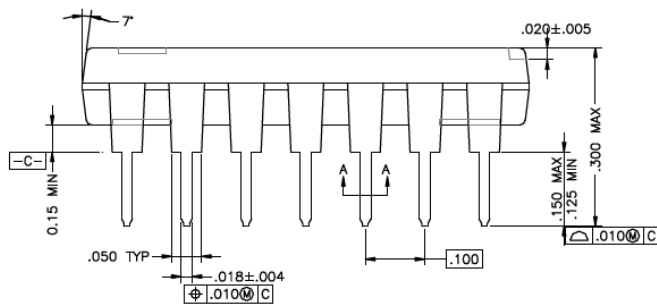
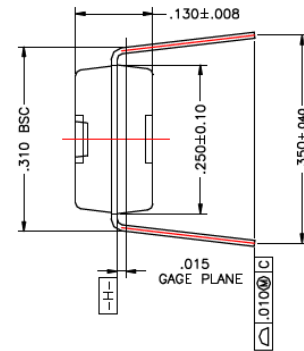
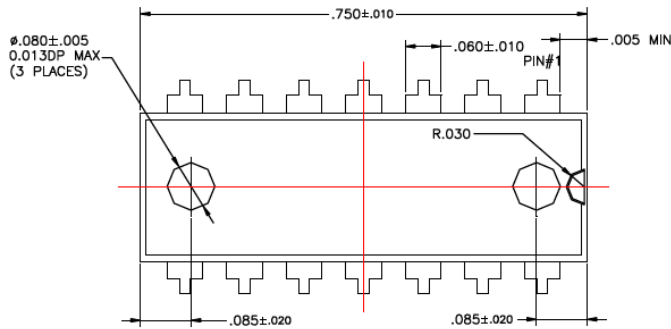
Microchip Technology Drawing No. C04-2065-D3X Rev D

14-Lead PDIP Package Outline and Recommended Land Pattern

TITLE

14 LEAD PDIP PACKAGE OUTLINE & RECOMMENDED LAND PATTERN

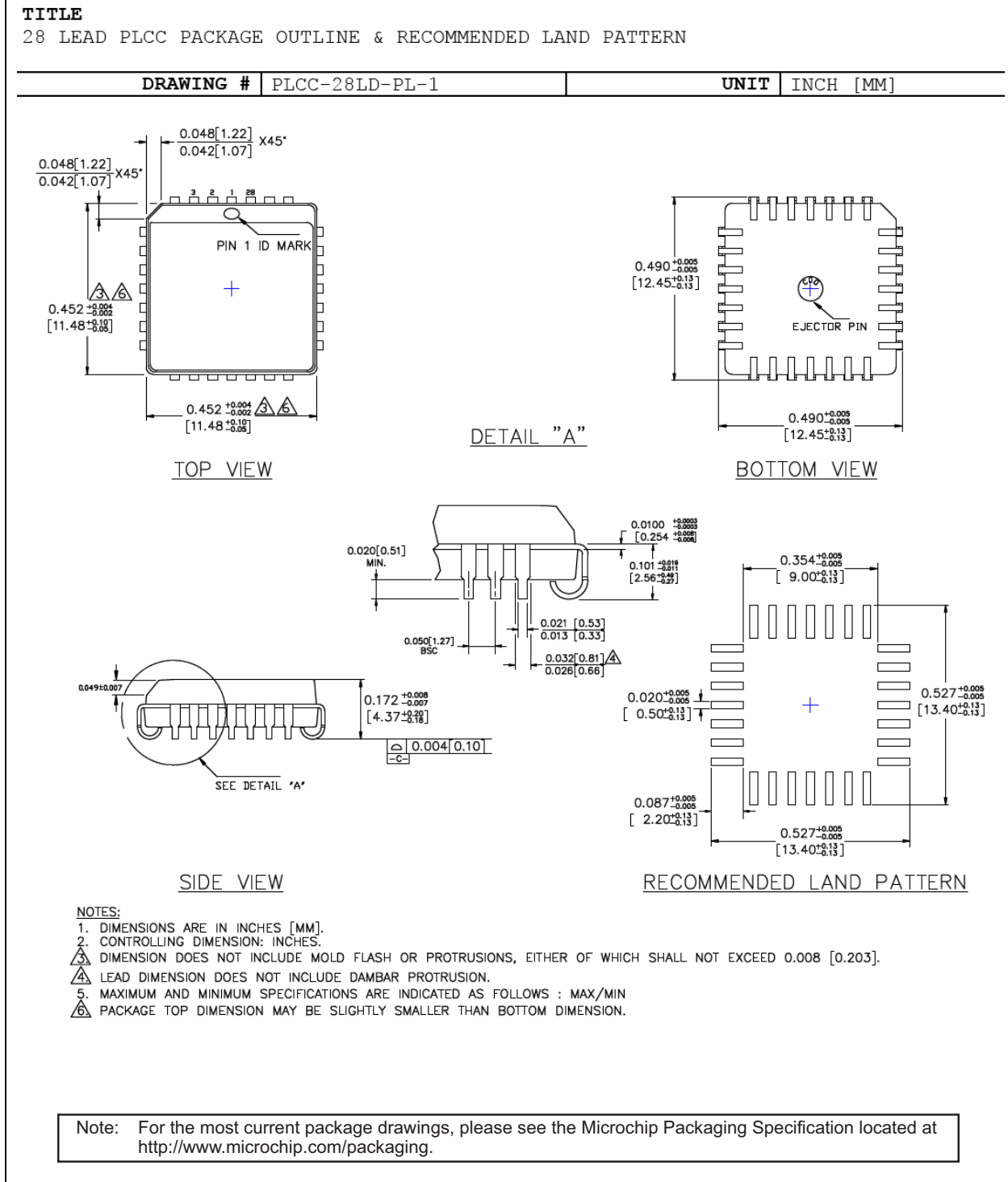
DRAWING #	PDIP-14LD-PL-1	UNIT	INCH
LEAD FRAME	Copper	LEAD FINISH	Matte Tin



Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>.

MIC5800/1

28-Lead PLCC Package Outline and Recommended Land Pattern

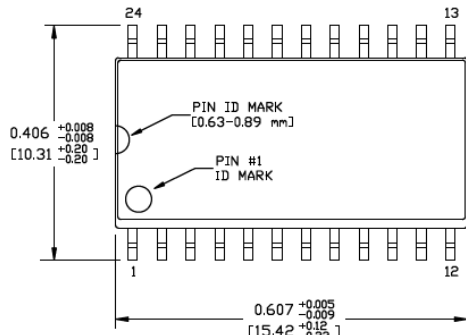


24-Lead SOICW Package Outline and Recommended Land Pattern

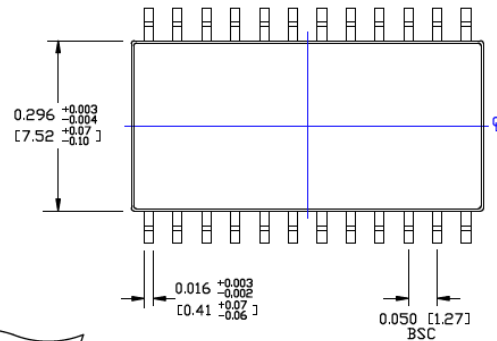
TITLE

24 LEAD SOICW PACKAGE OUTLINE & RECOMMENDED LAND PATTERN

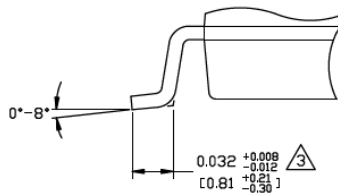
DRAWING #	SOICW-24LD-PL-1	UNIT	INCH [MM]
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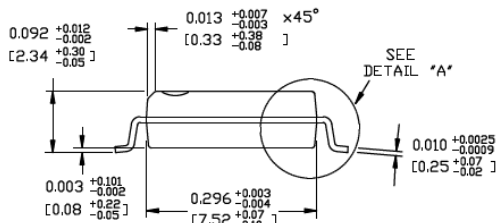
TOP VIEW
NOTE - 1, 2



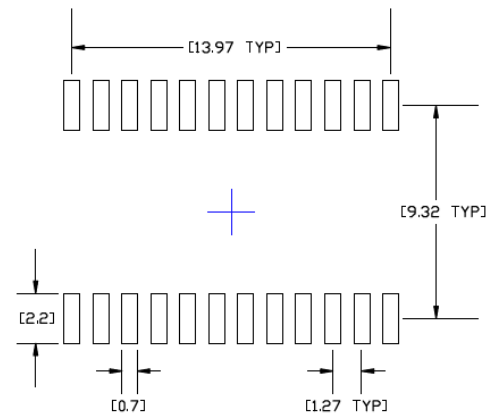
BOTTOM VIEW
NOTE - 1, 2



DETAIL "A"



END VIEW
NOTE - 1, 2, 3



RECOMMENDED LAND PATTERN

NOTES:

1. DIMENSIONS ARE IN INCHES[MM].
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.006[0.15] PER SIDE.

Note: For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>.

MIC5800/1

NOTES:

APPENDIX A: REVISION HISTORY

Revision A (April 2019)

- Converted Micrel document MIC5800/1 to Microchip data sheet template DS20006184A.
- Minor grammatical text changes throughout.

MIC5800/1

NOTES:

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

Device	<u>X</u>	<u>XX</u>	<u>-XX</u>	
Part No.	Junction Temp. Range	Package	Media Type	
Device:	MIC5800:	4-Bit Parallel-Input, High-Voltage, High-Current Latched Driver		
	MIC5801:	8-Bit Parallel-Input, High-Voltage, High-Current Latched Driver		
Junction Temperature Range:	Y =	-40°C to +85°C, Industrial		
Package:	M =	14-Lead SOIC (MIC5800)		
	N =	14-Lead PDIP (MIC5800)		
	V =	28-Lead PLCC (MIC5801)		
	WM =	24-Lead Wide SOIC (MIC5801)		
Media Type:	<blank>=	54/Tube (M, MIC5800)		
	<blank>=	25/Tube (N, MIC5800)		
	<blank>=	38/Tube (V, MIC5801)		
	<blank>=	31/Tube (WM, MIC5801)		
	TR =	750/Reel (V, MIC5801)		
	TR =	1,000/Reel (WM, MIC5801)		
	TR =	2,500/Reel (M, MIC5800)		
				Examples:
				a) MIC5800YM: MIC5800, -40°C to +85°C Temperature Range, 14-Lead SOIC, 54/Tube
				b) MIC5800YM-TR: MIC5800, -40°C to +85°C Temperature Range, 14-Lead SOIC, 2,500/Reel
				c) MIC5800YN: MIC5800, -40°C to +85°C Temperature Range, 14-Lead PDIP, 25/Tube
				d) MIC5801YV: MIC5801, -40°C to +85°C Temperature Range, 28-Lead PLCC, 38/Tube
				e) MIC5801YV-TR: MIC5801, -40°C to +85°C Temperature Range, 28-Lead PLCC, 750/Reel
				f) MIC5801YWM: MIC5801, -40°C to +85°C Temperature Range, 24-Lead Wide SOIC, 31/Tube
				g) MIC5801YWM-TR: MIC5801, -40°C to +85°C Temperature Range, 24-Lead Wide SOIC, 1,000/Reel
				Note 1: Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.

MIC5800/1

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USB251xB/xBi

USB251xB/xBi Family Silicon Errata

The USB251xB/xBi family devices that you have received conform functionally to the current Device Data Sheet (DS00001692A), except for the anomalies described in this document.

The silicon issues discussed in the following pages are for silicon revisions with the Device and Revision IDs listed in [Table 1](#). The silicon issues are summarized in [Table 2](#).

Note: This document summarizes all silicon errata issues of the current silicon revision (**A2**).

The Engineering Device ID values for USB251xB/xBi silicon revision A2 is shown in [Table 1](#).

TABLE 1: SILICON DEVREV VALUES

Part Number	Engineer Device ID of A2
USB2512B-AEZC	A2P10
USB2512Bi-AEZC	A2P10
USB2512B/M2	A2P10
USB2512BT/M2	A2P10
USB2512B-I/M2	A2P10
USB2512BT-I/M2	A2P10
USB2513B-AEZC	A2P10
USB2513Bi-AEZC	A2P10
USB2513B/M2	A2P10
USB2513BT/M2	A2P10
USB2513B-I/M2	A2P10
USB2513BT-I/M2	A2P10
USB2514B-AEZG	A2P10
USB2514Bi-AEZG	A2P10
USB2514B/M2	A2P10
USB2514BT/M2	A2P10
USB2514B-I/M2	A2P10
USB2514BT-I/M2	A2P10

TABLE 2: SILICON ISSUE SUMMARY

Item Number	Silicon Issue Summary	Affected Silicon Revisions
1	bcdDevice field (DID) has invalid characters	A2
2	Selective Suspend command is ignored by the hub	A2
3	Glitch on DP (and SD/SCL) during power-up	A2
4	Detach detection failure	A2

USB251xB/xBi

Silicon Errata Issues

Module 1: bcdDevice field (DID) has invalid characters

DESCRIPTION

According to the USB2.0 specification, the bcdDevice field is specified to be binary-coded-decimal, which means only decimal characters are allowed. The hexadecimal digits A-F are not allowed.

END USER IMPLICATIONS

The presence of non-BCD characters will cause failures in some Command Verifier (CV) and Windows Hardware Certification tests, such as:

- USB (USBDEX) Verifier Test
- USB Device Connection S3 + S4
- USB Driver Level Re-Enumeration Test
- USB Enumeration Stress
- USB Serial Number

No end user functional impact.

Work around

This bcdDevice field can be changed through the configuration options by programming EEPROM via SMBus or I²C interface. Also, a Microsoft Contingency number 323 can be used to waive five mentioned tests above in the Windows Hardware Certification test suite.

PLAN

This erratum will not be corrected in a future revision.

Module 2: Selective Suspend command is ignored by the hub

DESCRIPTION

If a SET_FEATURE (PORT_SUSPEND) command is sent right after the SOF command (microframe 0), the hub will not disable the port.

END USER IMPLICATIONS

The port will not suspend when a command is sent by the host. This will cause more current draw than if the port was suspended (~10mA).

Work around

It is recommended to use the Global Suspend function to put the entire hub into suspend to conserve power.

PLAN

This erratum will not be corrected in a future revision.

Module 3: Glitch on DP (and SD/SCL) during power-up

DESCRIPTION

When the Hub is powering up, the DP pin is asserted before other internal logic has started. When the internal logic does start, it can cause a low pulse on the SMBus and DP pins.

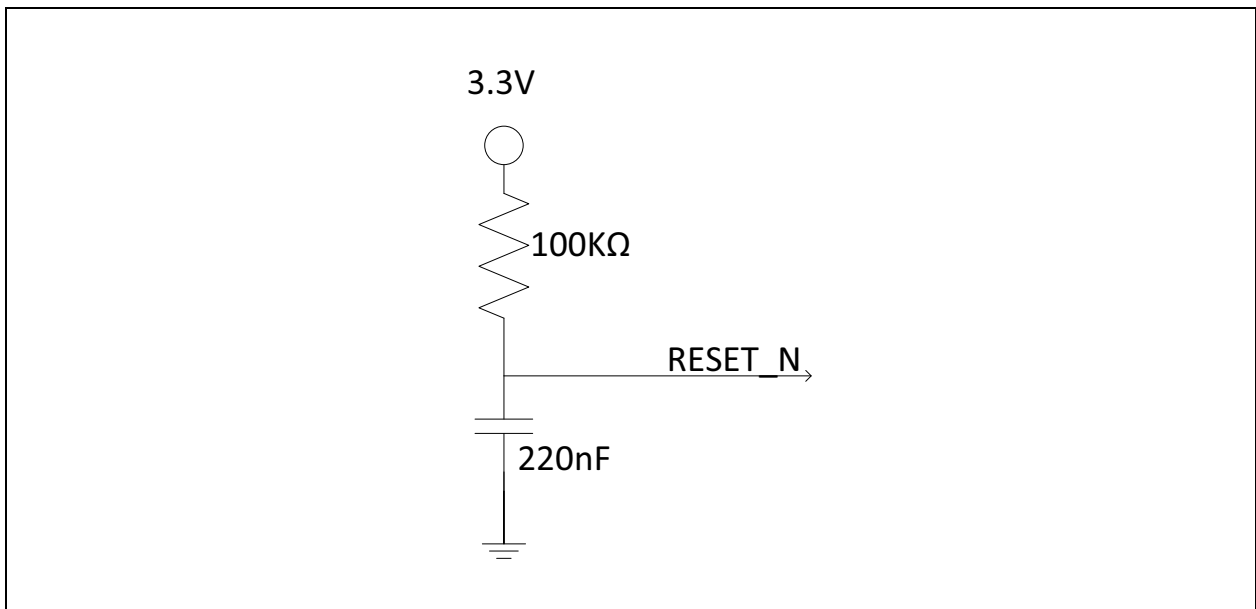
END USER IMPLICATIONS

The USB protocol can handle a glitch on DP, so no user impact on the USB lines. The SMBus glitch can impact the state machine of the SMBus Controller.

Work around

Keep the RESET_N pin low during POR to remove this glitch. Control RESET_N through a digital controller or an RC circuit by connecting a 100K Ω pull-up resistor to 3.3V and a 220nF capacitor to ground. See RC circuit diagram below.

FIGURE 1: RC CIRCUIT DIAGRAM



PLAN

This erratum will not be corrected in a future revision.

USB251xB/xBi

Module 4: Detach detection failure

DESCRIPTION

When a Full-Speed/Low-Speed device detaches and quickly re-attaches, such as when issued a reset command over USB or other sideband control signal, there is a chance that the USB hub will not recognize the device detach and communicate the device detach event to the USB host. This may result in a failure to establish a connection with the device after the device is re-attached.

The hub requires 100us of uninterrupted SE0 line state (both D+ and D- lines below $V_{IL}(\min)$) before a device detach is detected.

END USER IMPLICATIONS

This issue does not typically apply to a physical detach, as a physical device detach and re-attach typically involves much longer time scales.

This issue may be encountered when a device performs a self detach and re-attach as a result of some special command over USB or a reset due to some stimulus within the device's system (such as a button reset).

Work around

There are two possible work arounds:

1. Ensure that the hub port detects an SE0 line state for $> 100\mu\text{s}$ before re-attaching the device.
 - a) The device must remove its D+ or D- pull-up resistor to ensure SE0 line state is achieved.
 - b) There must be at least one $100\mu\text{s}$ gap in between packets while the device is in the detached state.
2. If the device is being commanded to detach and re-attach from USB host command (such as when instructing a device to re-enumerate in a different mode of operation), issue a Port Reset command to the hub for the respective port immediately after the detach command is issued to ensure that the device can be properly detected when it re-attaches.

PLAN

This erratum will not be corrected in a future revision.

APPENDIX A: DOCUMENT REVISION HISTORY

TABLE A-1: REVISION HISTORY

Revision Level & Date	Section/Figure/Entry	Correction
DS80000627D (03-19-19)	Module 4	Added new errata module " Detach detection failure ".
	All	Updated layout to standard Microchip format.
DS80000627C (09-15-15)	Table 1	Added additional device part numbers to table for SQFN package. No new errata added.
DS80000627B (11-07-14)		Initial release.

USB251xB/xBi

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