1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

PECL Power Supply Voltage (V_{CC}) (Note 1)……+8V
NECL Power Supply Voltage (V_{EE}) (Note 2)……-8V
PECL Mode Input Voltage (V_{IN}) (Note 3)…… +6V
NECL Mode Input Voltage (V_{IN}) (Note 4)…… -6V
Continuous Output Currrent (I_{OUT})……50mA
Surge Output Currrent (I_{OUT})……100mA

† **Notice:** Stresses above those listed under “Absolute Maximum ratings” may cause permanent damage to the device. Exposure to maximum rating conditions for extended periods may affect device reliability.

Note 1: V_{EE} = 0V

2: V_{CC} = 0V

3: V_{EE} = 0V, $V_{IN} \leq V_{CC}$

4: V_{CC} = 0V, $V_{IN} \geq V_{EE}$

TABLE 1-1: DC ELECTRICAL CHARACTERISTICS

Electrical Characteristics PECL: V_{CC} = 3.0V to 3.8V; V_{EE} = 0V; T_A = -40°C to 85°C, unless otherwise stated (Note 1)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Power Supply Voltage	V_{CC}	3.0	3.3	3.8	V	
Power Supply Current	I_{EE}	—	27	33	mA	T_A = -40°C to +25°C
		—	31	37		T_A = +85°C
Output High Voltage (Note 2)	V_{OH}	V_{CC} – 1.085	V_{CC} – 1.005	V_{CC} – 0.88	V	T_A = -40°C
		V_{CC} – 1.025	V_{CC} – 0.955	V_{CC} – 0.88		T_A = 0°C to 85°C
Output Low Voltage (Note 2)	V_{OL}	V_{CC} – 1.830	V_{CC} – 1.695	V_{CC} – 1.555	V	T_A = -40°C
		V_{CC} – 1.810	V_{CC} – 1.705	V_{CC} – 1.620		T_A = 0°C to 85°C
Input High Voltage (Single Ended)	V_{IH}	V_{CC} – 1.165	—	V_{CC} – 0.880	V	
Input Low Voltage (Single Ended)	V_{IL}	V_{CC} – 1.810	—	V_{CC} – 1.475	V	
Output Reference Voltage	V_{BB}	V_{CC} – 1.38	—	V_{CC} – 1.26	V	
Input High Current	I_{IH}	—	—	150	µA	
Input Low Current	I_{IL}	0.5	—	—	µA	V_{IN} = V_{IL} (Min)

Note 1: Devices are designed to meet the DC specifications shown in the above table after thermal equilibration has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500lfpm is maintained.

2: Outputs are terminated through a 50 Ω resistor to V_{CC} – 2.0V.

TABLE 1-2: DC ELECTRICAL CHARACTERISTICS

Electrical Characteristics NECL: V_{EE} = -3.8V to -3.0V; V_{CC} = 0V; T_A = -40°C to 85°C, unless otherwise stated (Note 1)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Power Supply Voltage	V_{EE}	-3.8	-3.3	-3	V	
Power Supply Current	I_{EE}	—	27	33	mA	T_A = -40°C to +25°C
		—	31	37		T_A = +85°C
Output High Voltage (Note 2)	V_{OH}	-1.085	-1.005	-0.88	V	T_A = -40°C
		-1.025	-0.955	-0.88		T_A = 0°C to 85°C
Output Low Voltage (Note 2)	V_{OL}	-1.830	-1.695	-1.555	V	T_A = -40°C
		-1.810	-1.705	-1.620		T_A = 0°C to 85°C
Input High Voltage (Single Ended)	V_{IH}	-1.165	—	-0.880	V	
Input Low Voltage (Single Ended)	V_{IL}	-1.810	—	-1.475	V	
Output Reference Voltage	V_{BB}	-1.380	—	-1.260	V	
Input High Current	I_{IH}	—	—	150	µA	
Input Low Current	I_{IL}	0.5	—	—	µA	V_{IN} = V_{IL} (Min)

Note 1: Devices are designed to meet the DC specifications shown in the above table after thermal equilibration has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500lfpm is maintained.

2: Outputs are terminated through a 50 Ω resistor to V_{CC} – 2.0V.

TABLE 1-3: AC ELECTRICAL CHARACTERISTICS(1)

Electrical Characteristics: V_{CC} = 3.0V to 3.8V; V_{EE} = 0V or V_{EE} = -3.8V to -3.0V; V_{CC} = 0V; T_A = -40°C to 85°C, unless otherwise stated

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Maximum Toggle Frequency	f_{MAX}	3.8	4.2	—	GHz	
Prop. Delay CLK to Q	t_{PD}	490	630	770	ps	T_A = -40°C
		540	630	720	ps	T_A = 0°C
		550	640	730	ps	T_A = +25°C
		590	670	760	ps	T_A = +85°C
Propagation Delay RESET to Q	t_{PD}	310	460	610	ps	T_A = -40°C
		360	460	560	ps	T_A = 0°C to +25°C
		380	480	580	ps	T_A = +85°C
Input Swing (Note 1)	V_{PP}	100	—	1000	mV	
Output Rise/Fall Time Q (20% to 80%)	t_r/t_f	100	225	350	ps	

Note 1: Input swing for which AC parameters are ensured.

TEMPERATURE SPECIFICATIONS

Parameters	Sym.	Min.	Typ.	Max.	Units	Conditions
Temperature Ranges						
Operating Temperature Range	T_A	–40	—	+85	°C	—
Storage Temperature	T_S	–65	—	+150	°C	—
Lead Temperature	T_{LEAD}	—	—	+260	°C	Soldering, 20 sec.

2.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in Table 2-1.

TABLE 2-1: PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1	Reset	Asynchronous Reset
2, 3	CLK, /CLK	Clock Inputs
4	V_{BB}	Reference Voltage Output
5	V_{EE}	Negative Power Supply
6, 7	Q, /Q	Data Outputs
8	V_{CC}	Positive Power Supply

3.0 PACKAGING INFORMATION

3.1 Package Marking Information

8-Lead SOIC*

Example

Legend:	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).

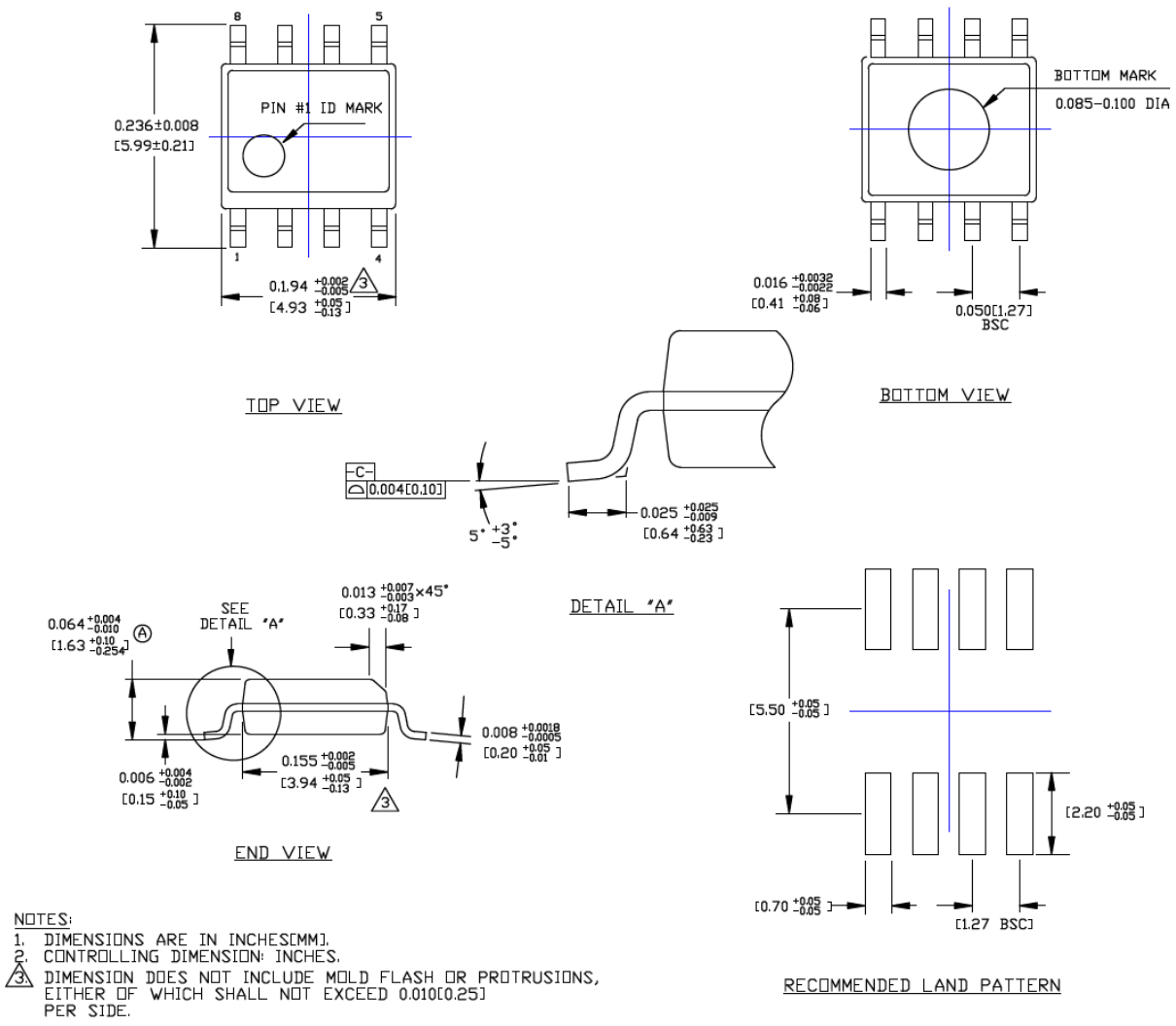
Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.

Underbar (_) and/or Overbar (¯) symbol may not be to scale.

8-Lead SOIC Package Outline and Recommended Land Pattern

TITLE
8 LEAD SOICN PACKAGE OUTLINE & RECOMMENDED LAND PATTERN

DRAWING #	SOICN-8LD-PL-1	UNIT	INCH [MM]



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 0.010[0.25] PER SIDE.

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

PRODUCT IDENTIFICATION SYSTEM

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

PART NO.	X	X	-XX
Device	Package	Temperature Range	Special Processing

	3.3V ÷ 4 Divider		
Device:	SY100EL33L		
Package	Z	=	8-Lead SOIC
Temperature Range:	G	=	–40°C to +85°C (Pb-Free NiPdAu)
Special Processing:	<blank>	=	95/Tube
	TR	=	1,000/Reel

Note 1: Contact factory for die availability. Dice are ensured at T_A = 25°C, DC Electricals only.

2: Tape and Reel.

3: Pb-Free package is recommended for new designs.

Examples:

a) SY100EL33LZG(3) — 8-Lead SOIC (Z8-1) package, –40°C to +85°C Industrial Temp. (Pb-Free NiPdAu), 95/Tube

b) SY100EL33LZG-TR(2,3) — 8-Lead SOIC (Z8-1) package, –40°C to +85°C Industrial Temp. (Pb-Free NiPdAu), 1,000/Reel

Note: 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.

APPENDIX A: REVISION HISTORY

Revision A (September 2018)

- Converted Micrel document SY100EL33L to Microchip data sheet DS20006076A.
- Minor text changes throughout.
- Removed all reference to the EOL SY10EL33 and SY100EL33 versions.

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
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