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 Current (I_{OUT}) ..... 50 mA
Surge Output Current (I_{OUT}) ..... 100 mA

† 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, $V_{IN} \le V_{CC}$.
4: V_{CC} = 0V, $V_{IN} \ge V_{EE}$.

PECL DC ELECTRICAL CHARACTERISTICS

Electrical Characteristics PECL: V_{CC} = 3.0V to 5.5V; V_{EE} = 0V; T_A = –40°C to +85°C, unless otherwise stated. **(Note 1)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Power Supply Current	I_{EE}	—	25	30	mA	T_A = –40°C to +25°C
		—	29	35		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
Output Reference Voltage	V_{BB}	V_{CC} – 1.38	—	V_{CC} – 1.26	V	—
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	—
Common Mode Range **(Note 3)**	V_{IHCMR}	2.0	—	V_{CC} – 0.4	V	T_A = –40°C
		1.9	—	V_{CC} – 0.4		T_A = 0°C to +85°C
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 500 lfpm is maintained.
2: Outputs are terminated through a 50Ω resistor to V_{CC} – 2.0V.
3: The CMR range is referenced to the most positive side of the differential input voltage. Normal operation is obtained if the high level falls within the specified range and the peak-to-peak voltage lies between 150 mV and 1V.

NECL DC ELECTRICAL CHARACTERISTICS

Electrical Characteristics NECL: V_{EE} = –5.5V to –3.0V; V_{CC} = 0V; T_A = –40°C to +85°C, unless otherwise stated. **(Note 1)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Power Supply Current	I_{EE}	—	25	30	mA	T_A = –40°C to +25°C
		—	29	35		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
Output Reference Voltage	V_{BB}	–1.380	—	–1.260	V	—
Input High Voltage (Single-Ended)	V_{IH}	–1.165	—	–0.880	V	—
Input Low Voltage (Single-Ended)	V_{IL}	–1.810	—	–1.475	V	—
Common Mode Range **(Note 3)**	V_{IHCMR}	V_{EE} + 2.0	—	–0.4	V	T_A = –40°C
		V_{EE} + 1.9	—	–0.4		T_A = 0°C to +85°C
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 500 lfpm is maintained.

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

3: The CMR range is referenced to the most positive side of the differential input voltage. Normal operation is obtained if the high level falls within the specified range and the peak-to-peak voltage lies between 150 mV and 1V.

AC ELECTRICAL CHARACTERISTICS

Electrical Characteristics: V_{CC} = 3.0V to 5.5V; V_{EE} = 0V or V_{EE} = –5.5V to –3.0V; V_{CC} = 0V; R_L = 50Ω to V_{CC} – 2V; T_A = –40°C to +85°C, unless otherwise stated.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Maximum Toggle Frequency	f_{MAX}	2.2	3.0	—	GHz	T_A = –40°C
		2.6	3.0	—		T_A = 0°C to +85°C
Propagation Delay CLK to Q	t_{PD}	360	500	640	ps	T_A = –40°C
		410	500	590		T_A = 0°C
		420	510	600		T_A = +25°C
		450	540	630		T_A = +85°C
Propagation Delay RESET to Q	t_{PD}	390	540	690	ps	T_A = –40°C
		440	540	640		T_A = 0°C to +25°C
		450	550	650		T_A = +85°C
Random Clock Jitter (RMS)	t_{JITTER}	—	2.0	—	ps	—
Input Swing **(Note 1)**	V_{PP}	150	—	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
Operating Temperature Range	T_A	–40	—	+85	°C	—
Storage Temperature Range	T_S	–65	—	+150	°C	—
Lead Temperature	T_{LEAD}	—	—	+260	°C	Soldering, 20s

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	VBB	Reference Voltage Output.
5	VEE	Negative Power Supply.
6, 7	/Q, Q	Data Output.
8	VCC	Positive Power Supply.

3.0 PACKAGING INFORMATION

3.1 Package Marking Information

8-Lead SOIC*

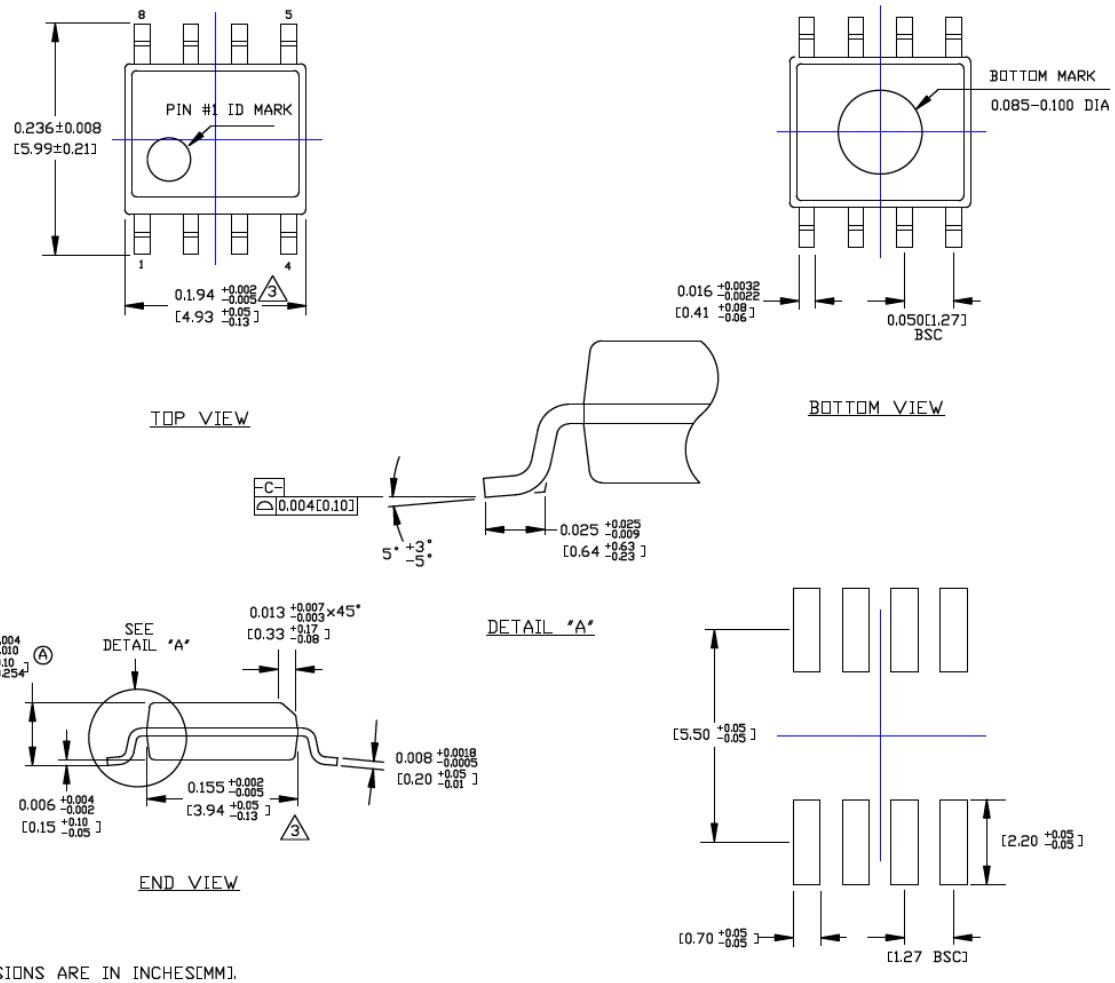
Example

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.

NOTES:

APPENDIX A: REVISION HISTORY

Revision A (October 2018)

- Converted Micrel document SY100EL32V to Microchip data sheet DS20006083A.
- Minor text changes throughout.
- Removed all reference to the EOL SY10EL32V version.

Revision B (August 2019)

- Updated minimum values for Common Mode Range voltage in PECL DC Electrical Characteristics table and NECL DC Electrical Characteristics table.
- Minor stylistic updates to align data sheet with current style.
- Correct the description of the part in all relevant places to reflect ÷2.

NOTES:

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	X	-XX
Device	Supply Voltage	Package	Temperature Range	Special Processing

Device:	SY100EL32:	5V/3.3V ECL ÷2 Divider	
Supply Voltage Range:	V	=	3.3V/5V
Package:	Z	=	8-Lead SOIC (Pb-free NiPdAu)
Temperature Range:	G	=	–40°C to +85°C
Special Processing:	<blank>	=	95/Tube
	TR	=	1,000/Reel

Examples:

a) SY100EL32VZG: SY100EL32V, 8-Lead SOIC (Pb-free NiPdAu), –40°C to +85°C, 95/Tube

b) SY100EL32VZG-TR: SY100EL32V, 8-Lead SOIC (Pb-free NiPdAu), –40°C to +85°C, 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.

NOTES:

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