

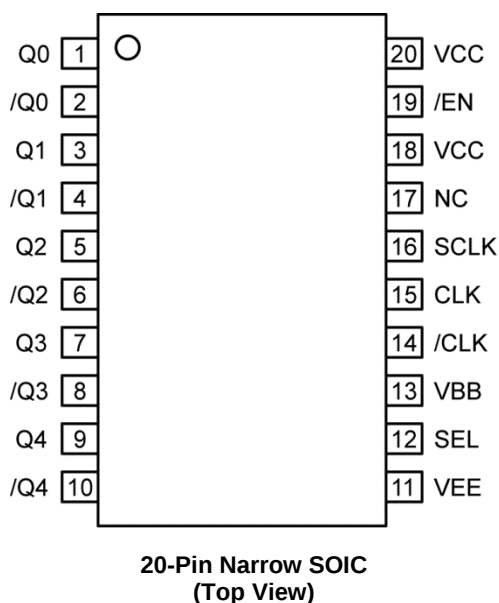
Ordering Information⁽¹⁾

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100EL14VZG	Z20-1	Industrial	SY100EL14VZG with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL14VZG TR ⁽²⁾	Z20-1	Industrial	SY100EL14VZG with Pb-Free bar-line indicator	Pb-Free NiPdAu

Note:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25^\circ\text{C}$, DC electricals only.
2. Tape and Reel.

Pin Configuration



Pin Description

Pin	Function
CLK	Differential clock inputs
SCLK	Scan clock input
/EN	Synchronous enable
SEL	Clock select input
VBB	Reference output
Q0 – Q4	Differential clock outputs

Truth Table

CLK	SCLK	SEL	/EN	Q
L	X	L	L	L
H	X	L	L	H
X	L	H	L	L
X	H	H	L	H
X	X	X	H	L ⁽³⁾

Note:

3. On next negative transition of CLK or SCLK

Absolute Maximum Ratings⁽⁴⁾**Input Voltage (V_{IN})⁽⁶⁾** $(V_{CC} = 0V, V_{IN}$ not more positive than V_{CC}) .. -6V to +0V $(V_{EE} = 0V, V_{IN}$ not more positive than V_{CC})... +0V to +6V**Operating Range (V_{EE})⁽⁷⁾** -5.7V to -3.0V**Output Current (I_{OUT})** Continuous.....50mA

Surge.....100mA

Lead Temperature (soldering, 20s)..... 260°C**Storage Temperature (T_s)** -65 to +150°C**ESD Rating⁽⁸⁾** >1.5kV**Operating Ratings⁽⁵⁾****Supply Voltage (V_{CC})** PECL Operation 3.0V to 5.5V (V_{EE}) ECL Operation -3.0V to -5.5V**Ambient Temperature (T_A)** -40°C to +85°C**Junction Thermal Resistance**SOIC (θ_{JA}) 58°C/W**DC Electrical Characteristics⁽⁹⁾** $V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$; $V_{CC} = \text{GND}$, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$, unless otherwise stated.Outputs are terminated through a 50Ω resistor to $V_{CC}-2.0V$.

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
V_{OH}	Output High Voltage ⁽¹⁰⁾	$T_A = -40^\circ\text{C}$	$V_{CC} - 1.085$	$V_{CC} - 1.005$	$V_{CC} - 0.880$	V
		$T_A = 0^\circ\text{C}$ to $+85^\circ\text{C}$	$V_{CC} - 1.025$	$V_{CC} - 0.955$	$V_{CC} - 0.880$	V
V_{OL}	Output Low Voltage ⁽¹⁰⁾	$T_A = -40^\circ\text{C}$	$V_{CC} - 1.830$	$V_{CC} - 1.695$	$V_{CC} - 1.555$	V
		$T_A = 0^\circ\text{C}$ to $+85^\circ\text{C}$	$V_{CC} - 1.810$	$V_{CC} - 1.705$	$V_{CC} - 1.620$	V
V_{OHA}	Output High Voltage ⁽¹⁰⁾	$T_A = -40^\circ\text{C}$	$V_{CC} - 1.095$			V
		$T_A = 0^\circ\text{C}$ to $+85^\circ\text{C}$	$V_{CC} - 1.035$			V
V_{OLA}	Output Low Voltage ⁽¹⁰⁾	$T_A = -40^\circ\text{C}$			$V_{CC} - 1.555$	V
		$T_A = 0^\circ\text{C}$ to $+85^\circ\text{C}$			$V_{CC} - 1.610$	V
V_{IH}	Input High Voltage		$V_{CC} - 1.165$		$V_{CC} - 0.880$	V
V_{IL}	Input Low Voltage		$V_{CC} - 1.810$		$V_{CC} - 1.475$	V
I_{IL}	Input Low Current ⁽¹¹⁾	Input LOW Current /CLK	0.5 -300			μA
I_{IH}	Input High Current				150	μA
I_{EE}	Power Supply Current	$T_A = -40^\circ\text{C}$ to $+25^\circ\text{C}$		32	40	mA
		$T_A = +85^\circ\text{C}$		34	42	
V_{BB}	Output Reference Voltage		$V_{CC} - 1.380$		$V_{CC} - 1.260$	V

Notes:

- Exceeding the absolute maximum ratings may damage the device.
- The device is not guaranteed to function outside its operating ratings.
- In PECL mode operation, $V_{IN}(\text{max}) = V_{CC}$.
- Parametric values specified at 100EL14V series: -3.0V to -5.5V.
- Devices are ESD sensitive. Handling precautions are recommended. Human body model, 1.5kΩ in series with 100pF.
- Specification for packaged product only
- $V_{IN} = V_{IH}(\text{max})$ or $V_{IL}(\text{min})$.
- $V_{IN} = V_{IL}(\text{max})$.

AC Electrical Characteristics

$V_{EE} = V_{EE}(\text{min})$ to $V_{EE}(\text{max})$; $V_{CC} = \text{GND}$, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$, unless otherwise stated.

Symbol	Parameter	Condition	Min.	Typ.	Max.	Units
t_{PLH} t_{PHL}	Propagation Delay CLK to Q (Diff)	$T_A = -40^\circ\text{C}$	520		720	ps
		$T_A = 0^\circ\text{C}$	550		750	ps
		$T_A = +25^\circ\text{C}$	580	680	780	ps
		$T_A = +85^\circ\text{C}$	630		830	ps
	Propagation Delay CLK to Q (SE)	$T_A = -40^\circ\text{C}$	470		770	ps
		$T_A = 0^\circ\text{C}$	500		800	ps
		$T_A = +25^\circ\text{C}$	530	680	830	ps
		$T_A = +85^\circ\text{C}$	580		880	ps
	Propagation Delay SCLK to Q	$T_A = -40^\circ\text{C}$	470		770	ps
		$T_A = 0^\circ\text{C}$	500		800	ps
		$T_A = +25^\circ\text{C}$	530	680	830	ps
		$T_A = +85^\circ\text{C}$	580		880	ps
t_{skew}	Part-to-Part Skew ⁽¹²⁾				200	ps
	Within-Device Skew				50	ps
t_S	Setup Time /EN		150			ps
t_H	Hold Time /EN		200			ps
V_{PP}	Minimum Input Swing, CLK		150			mV
V_{CMR}	Common Mode Range ⁽¹³⁾	$V_{PP} < 500\text{mV}$	$T_A = -40^\circ\text{C}$	$V_{CC} - 2.000$	$V_{CC} - 0.400$	V
			$T_A = 0^\circ\text{C}$ to $+85^\circ\text{C}$	$V_{CC} - 2.100$	$V_{CC} - 0.400$	
		$V_{PP} \geq 500\text{mV}$	$T_A = -40^\circ\text{C}$	$V_{CC} - 1.800$	$V_{CC} - 0.400$	V
			$T_A = 0^\circ\text{C}$ to $+85^\circ\text{C}$	$V_{CC} - 1.900$	$V_{CC} - 0.400$	
t_r/t_f	Output Rise/Fall Time Q (20% - 80%)	$T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ Typical value at $T_A = +25^\circ\text{C}$	230	360	500	ps
t_{JITTER}	Additive Jitter	Carrier = 622MHz Integration Range: 12kHz to 20MHz		70		f_{RMS}
		Carrier = 156.25MHz Integration Range: 12kHz to 20MHz		155		

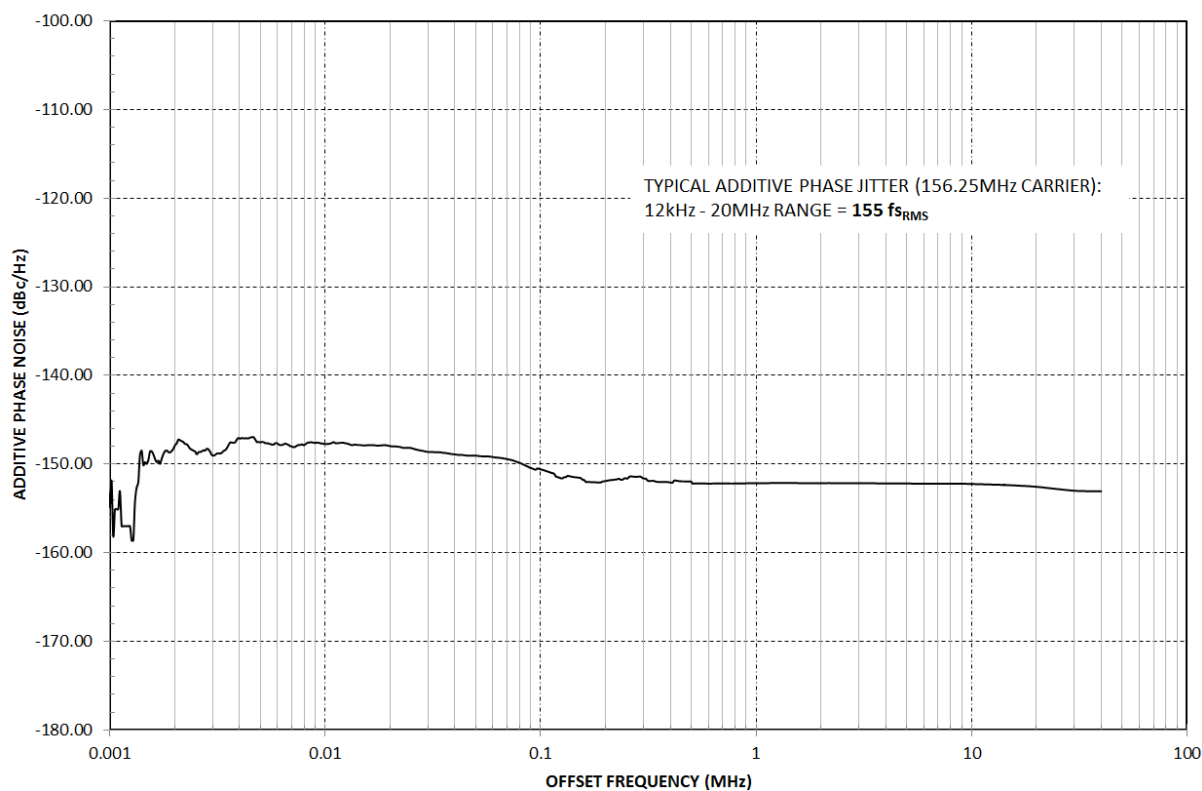
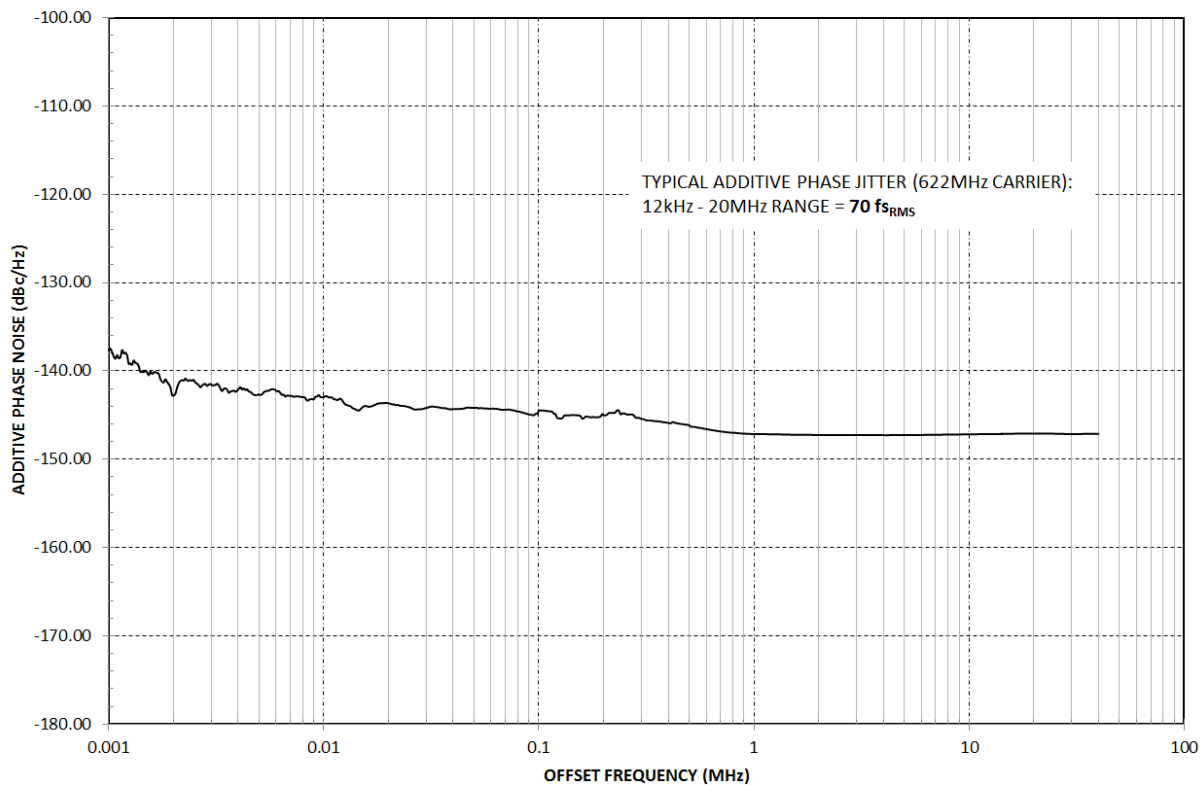
Notes:

12. Skews are specified for identical LOW-to-HIGH or HIGH-to-LOW transitions.

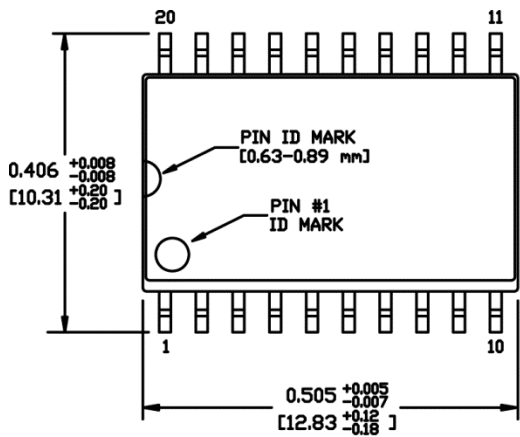
13. The V_{CMR} range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between $V_{PP}(\text{min})$ and 1V. The lower end of the V_{CMR} range varies 1:1 with V_{EE} . The numbers in the specification table assume a nominal V_{EE} of 3.3V. For PECL operation, the $V_{CMR}(\text{min})$ will be fixed at $3.3\text{V} - |V_{CMR}(\text{min})|$.

Additive Phase Noise

$V_{CC} = +5V$, $T_A = 25^\circ$.

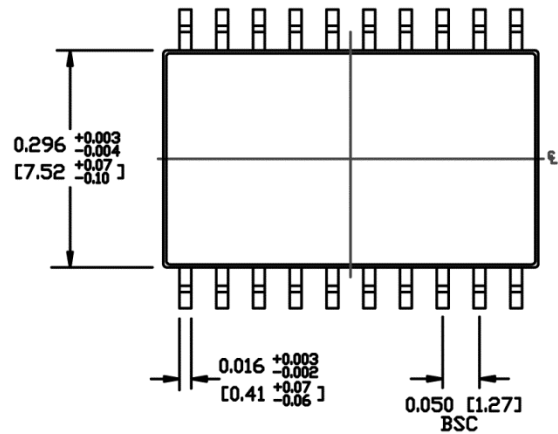


Package Information⁽¹⁴⁾



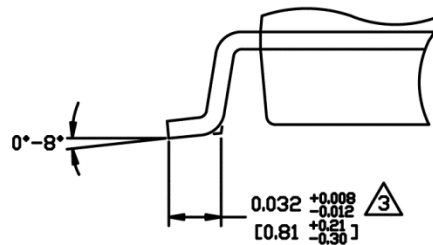
TOP VIEW

NOTE 1, 2

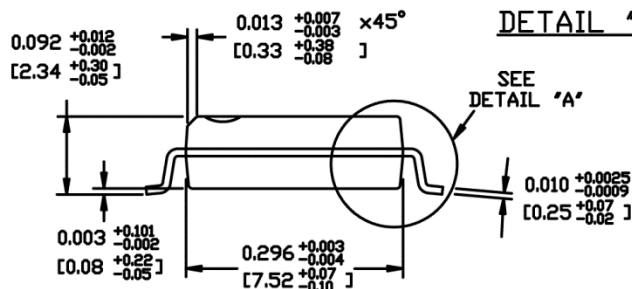


BOTTOM VIEW

NOTE 1, 2

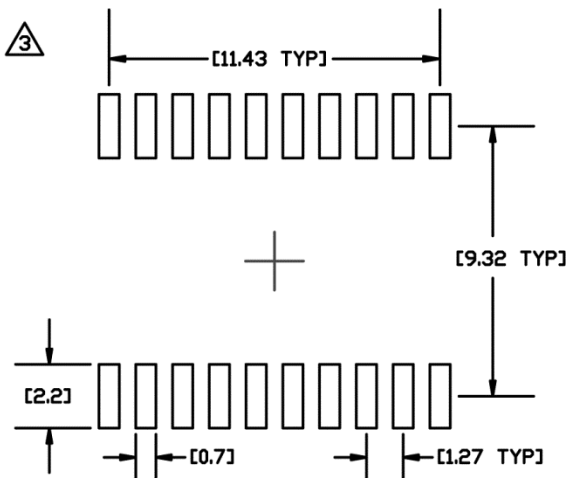


DETAIL "A"



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.

20-Pin Narrow SOIC (Z20-1)

Note:

14. Package information is correct as of the publication date. For updates and most current information, go to www.micrel.com.

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA
TEL +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB <http://www.micrel.com>

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