

(÷1, ÷2, ÷4) OR (÷2, ÷4, ÷8) CLOCK GENERATION CHIP

Precision Edge[®] SY100S834 SY100S834L

FEATURES

- 3.3V and 5V power supply options
- 50ps output-to-output skew
- Synchronous enable/disable
- Master Reset for synchronization
- Internal 75K Ω input pull-down resistors
- Available in 16-pin SOIC package

TRUTH TABLE

CLK	EN	MR	Function				
Z	L	L	Divide				
ZZ	Н	L	Hold Q ₀ – ₂				
Х	Х	Н	Reset Q0-2				

Notes:

Z = LOW-to-HIGH transition

ZZ = HIGH-to-LOW transition

FSEL	Q ₀ Outputs	Q1 Outputs	Q2 Outputs				
L	Divide by 2	Divide by 4	Divide by 8				
Н	Divide by 1	Divide by 2	Divide by 4				

PIN NAMES

Pin	Function		
CLK	Differential Clock Inputs		
FSEL	Function Select		
ĒN	Synchronous Enable		
MR	Master Reset		
VBB	Reference Output		
Q ₀	Differential ÷1 or ÷2 Outputs		
Q1	Differential ÷2 or ÷4 Outputs		
Q2	Differential ÷4 or ÷8 Outputs		



Precision Edge®

DESCRIPTION

The SY100S834/L is low skew $(\div 1, \div 2, \div 4)$ or $(\div 2, \div 4, \div 8)$ clock generation chip designed explicitly for low skew clock generation applications. The internal dividers are synchronous to each other, therefore, the common output edges are all precisely aligned. The devices can be driven by either a differential or single-ended ECL or, if positive power supplies are used, PECL input signal. In addition, by using the VBB output, a sinusoidal source can be AC-coupled into the device. If a single-ended input is to be used, the VBB output should be connected to the $\overline{\text{CLK}}$ input and bypassed to ground via a $0.01\mu\text{F}$ capacitor. The VBB output is designed to act as the switching reference for the input of the SY100S834/L under single-ended input conditions. As a result, this pin can only source/sink up to 0.5mA of current.

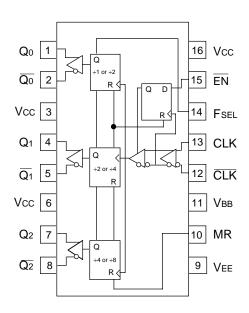
The Function Select (FSEL) input is used to determine what clock generation chip function is. When FSEL input is LOW, SY100S834/L functions as a divide by 2, by 4 and by 8 clock generation chip. However, if FSEL input is HIGH, it functions as a divide by 1, by 2 and by 4 clock generation chip. This latter feature will increase the clock frequency by two folds.

The common enable (EN) is synchronous so that the internal dividers will only be enabled/disabled when the internal clock is already in the LOW state. This avoids any chance of generating a runt clock pulse on the internal clock when the device is enabled/disabled as can happen with an asynchronous control. An internal runt pulse could lead to losing synchronization between the internal divider stages. The internal enable flip-flop is clocked on the falling edge of the input clock, therefore, all associated specification limits are referenced to the negative edge of the clock input.

Upon start-up, the internal flip-flops will attain a random state; the master reset (MR) input allows for the synchronization of the internal dividers, as well as for multiple SY100S834/Ls in a system.

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PACKAGE/ORDERING INFORMATION



16-Pin SOIC (Z16-2)

Ordering Information

Part Number	Package Type	Operating Range	Package Marking	Lead Finish	
SY100S834ZC	Z16-2	Commercial	SY100S834ZC	Sn-Pb	
SY100S834ZCTR ⁽¹⁾	Z16-2	Commercial	SY100S834ZC	Sn-Pb	
SY100S834LZC	Z16-2	Commercial	SY100S834LZC	Sn-Pb	
SY100S834LZCTR ⁽¹⁾	Z16-2	Commercial	SY100S834LZC	Sn-Pb	
SY100S834ZI	Z16-2	Industrial	SY100S834ZI	Sn-Pb	
SY100S834ZITR ⁽¹⁾	Z16-2	Industrial	SY100S834ZI	Sn-Pb	
SY100S834LZI	Z16-2	Industrial	SY100S834LZI	Sn-Pb	
SY100S834LZITR ⁽¹⁾	Z16-2	Industrial	SY100S834LZI	Sn-Pb	
SY100S834ZG ⁽²⁾	Z16-2	Industrial	SY100S834ZG with Pb-Free bar-line indicator	NiPdAu Pb-Free	
SY100S834ZGTR ^(1, 2)	Z16-2	Industrial	SY100S834ZG with Pb-Free bar-line indicator	NiPdAu Pb-Free	
SY100S834LZG ⁽²⁾	Z16-2	Industrial	SY100S834LZG with Pb-Free bar-line indicator	NiPdAu Pb-Free	
SY100S834LZGTR ^(1, 2)	Z16-2	Industrial	SY100S834LZG with Pb-Free bar-line indicator	NiPdAu Pb-Free	

Notes:

- 1. Tape and Reel.
- 2. Pb-Free package is recommended for new designs.

DC ELECTRICAL CHARACTERISTICS(1)

VEE = VEE (Min.) to VEE (Max.); VCC = GND

		TA = -40°C			TA = 0°C			TA = +25°C			TA = +85°C			
Symbol	Parameter	Min.	Тур.	Max.	Min.	Тур.	Max.	Min.	Тур.	Max.	Min.	Тур.	Max.	Unit
IEE	Power Supply Current		_	49	_	_	49	_	_	49	_	_	54	mA
Vвв	Output Reference Voltage	-1.38	_	-1.26	-1.38	_	-1.26	-1.38	_	-1.26	-1.38	_	-1.26	V
Iн	Input HIGH Current		1	150		_	150	_		150	-		150	μΑ

Note:

Parametric values specified at: 5 volt Power Supply Range 100S834 Series: -4.2V to -5.5V.
 3 volt Power Supply Range 100S834L Series: -3.0V to -3.8V.

AC ELECTRICAL CHARACTERISTICS(1)

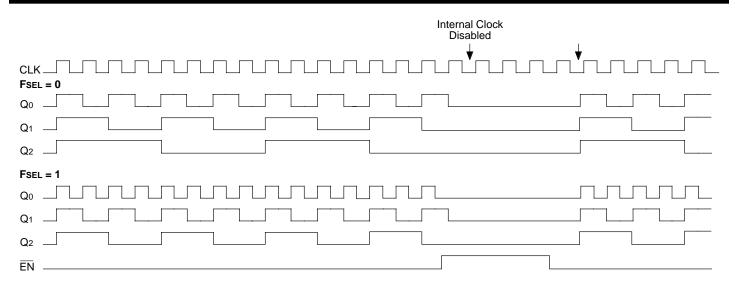
VEE = VEE (Min.) to VEE (Max.); VCC = GND

		TA = -40°C		TA = 0°C			TA = +25°C			TA = +85°C				
Symbol	Parameter	Min.	Тур.	Max.	Unit									
tPLH tPHL	Propagation Delay CLK to Output MR	960 650	1100 800	1200 1010	ps									
tskew	Within-Device Skew ⁽²⁾	_	_	50	_	_	50	_	_	50	_	_	50	ps
ts	Set-up Time EN	400	_	_	400	_	_	400	_	_	400	_	_	ps
tH	Hold Time EN	200	_	_	200	_	_	200	_	_	200	_	_	ps
VPP	Minimum Input Swing	250	_	_	250	_	_	250	_	_	250	_	_	mV
VCMR	Common Mode Range ⁽³⁾ CLK	-1.3	_	-0.4	-1.4	_	-0.4	-1.4	_	-0.4	-1.4	_	-0.4	V
tr tf	Output Rise/Fall Times Q (20% – 80%)	275	400	525	275	400	525	275	400	525	275	400	525	ps

Notes:

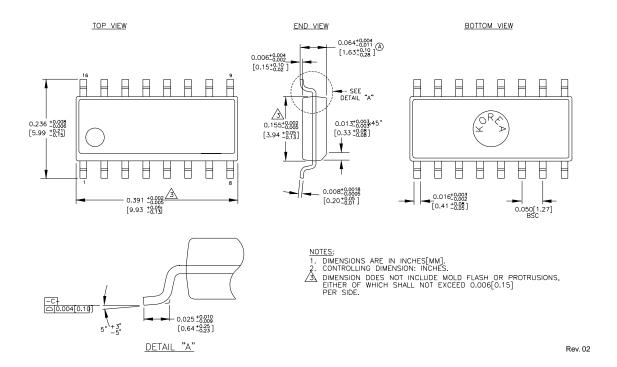
- Parametric values specified at: 5 volt Power Supply Range 100S834 Series: -4.2V to -5.5V.
 3 volt Power Supply Range 100S834L Series: -3.0V to -3.8V.
- 2. Within-Device Skew is specified for identical transition.
- 3. The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between VPP min. and 1V. The lower end of the CMR range varies 1:1 with VEE. The numbers in the spec table assume a nominal VEE = -3.3V. Note for PECL operation, the VCMR (min) will be fixed at 3.3V IVCMR (min)I.

TIMING DIAGRAM



The $\overline{\text{EN}}$ signal will freeze the internal clocks to the flip-flops on the first falling edge of CLK after its assertion. The internal dividers will maintain their state during the internal clock freeze and will return to clocking once the internal clocks are unfrozen. The outputs will transition to their next states in the same manner, time and relationship as they would have had the $\overline{\text{EN}}$ signal not been asserted.

16-PIN SOIC .150" WIDE (Z16-2)



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