

DIFFERENTIAL CLOCK D FLIP-FLOP

FEATURES

- 475ps propagation delay
- 2.8GHz toggle frequency
- Internal 75KΩ input pull-down resistors
- Available in 8-pin SOIC package

DESCRIPTION

The SY10/100EL51 are differential clock D flip-flops with reset. These devices are functionally similar to the E151 devices, with higher performance capabilities. With propagation delays and output transition times significantly faster than the E151, the EL51 is ideally suited for those applications which require the ultimate in AC performance.

The reset input is an asynchronous, level triggered signal. Data enters the master portion of the flip-flop when the clock is LOW and is transferred to the slave, and thus the outputs, upon a positive transition of the clock. The differential clock inputs of the EL51 allow the device to be used as a negative edge triggered flip-flop.

The differential input employs clamp circuitry to maintain stability under open input (pulled down to VEE) conditions.

PIN NAMES

Pin	Function
R	Reset Input
D	Data Input
CLK	Clock Input
Q	Data Output

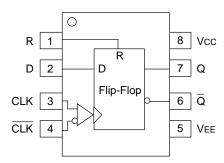
TRUTH TABLE⁽¹⁾

D	R	CLK	Q
L	L	Z	L
Н	L	Z	Н
Х	Н	х	L

NOTE:

1. Z = LOW-to-HIGH transition.

PACKAGE/ORDERING INFORMATION



8-Pin SOIC (Z8-1)

Ordering Information ⁽¹⁾												
Part Number	Package Type	Operating Range	Package Marking	Lead Finish								
SY10EL51ZC	Z8-1	Commercial	HEL51	Sn-Pb								
SY10EL51ZCTR ⁽²⁾	Z8-1	Commercial	HEL51	Sn-Pb								
SY100EL51ZC	Z8-1	Commercial	XEL51	Sn-Pb								
SY100EL51ZCTR ⁽²⁾	Z8-1	Commercial	XEL51	Sn-Pb								
SY10EL51ZI	Z8-1	Industrial	HEL51	Sn-Pb								
SY10EL51ZITR ⁽²⁾	Z8-1	Industrial	HEL51	Sn-Pb								
SY100EL51ZI	Z8-1	Industrial	XEL51	Sn-Pb								
SY100EL51ZITR ⁽²⁾	Z8-1	Industrial	XEL51	Sn-Pb								
SY10EL51ZG ⁽³⁾	Z8-1	Industrial	HEL51 with Pb-Free bar-line indicator	Pb-Free NiPdAu								
SY10EL51ZGTR ^(2, 3)	Z8-1	Industrial	HEL51 with Pb-Free bar-line indicator	Pb-Free NiPdAu								
SY100EL51ZG ⁽³⁾	Z8-1	Industrial	XEL51 with Pb-Free bar-line indicator	Pb-Free NiPdAu								
SY100EL51ZGTR ^(2, 3)	Z8-1	Industrial	XEL51 with Pb-Free bar-line indicator	Pb-Free NiPdAu								

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25^{\circ}C$, DC Electricals only.

2. Tape and Reel.

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

DC ELECTRICAL CHARACTERISTICS

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													mA
	10EL	—	24	29	19	24	29	19	24	29	19	24	29	
	100EL	—	24	29	19	24	29	19	24	29	24	30	36	
Vee	Power Supply Voltage													V
	10EL	-4.75	-5.2	-5.5	-4.75	-5.2	-5.5	-4.75	-5.2	-5.5	-4.75	-5.2	-5.5	
	100EL	-4.20	-4.5	-5.5	-4.20	-4.5	-5.5	-4.20	-4.5	-5.5	-4.20	-4.5	-5.5	
Ін	Input HIGH Current		_	150	_	_	150	_		150	_		150	μA

AC ELECTRICAL CHARACTERISTICS

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

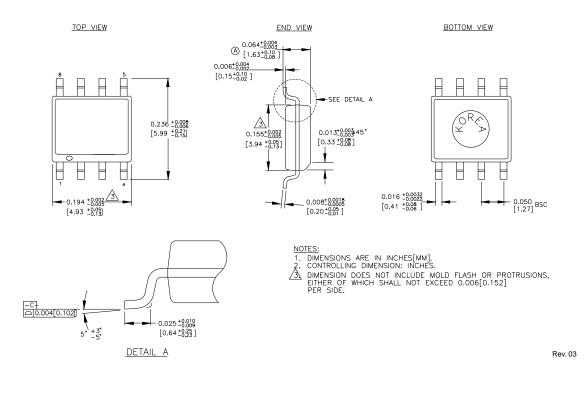
	$TA = -40^{\circ}C$		°C	TA = 0°C			TA = +25°C			TA = +85°C				
Symbol	Parameter	Min.	Тур.	Max.	Unit									
fmax	Maximum Toggle Frequency	1.8	2.8	—	2.2	2.8	—	2.2	2.8	—	2.2	2.8	_	GHz
tpd	Propagation Delay to Output CLK R	325 305	465 455	605 605	375 355	465 455	555 555	385 355	475 465	565 565	440 410	530 510	620 620	ps
ts	Set-up Time	150	0		150	0	_	150	0	—	150	0	_	ps
tн	Hold Time	250	100		250	100	_	250	100	_	250	100	_	ps
trr	Reset Recovery	400	200	_	400	200	_	400	200	_	400	200	—	ps
tPW	Minimum Pulse Width CLK, Reset	400	_	—	400	—	—	400	—	—	400	—	-	ps
Vpp	Minimum Input Swing ⁽¹⁾	150		—	150	—	—	150	—	—	150	—	-	mV
VCMR	Common Mode Range ⁽²⁾	(2)	_	-0.4	(2)	—	-0.4	(2)	—	-0.4	(2)	—	-0.4	V
tr tf	Output Rise/Fall Times Q (20% to 80%)	100	225	350	100	225	350	100	225	350	100	225	350	ps

NOTES:

1. Minimum input swing for which AC parameters are guaranteed.

2. 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 is dependent on VEE and is equal to VEE + 3.0V.

8-PIN SOIC .150" WIDE (Z8-1)



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