



**5V/3.3V
4-INPUT OR/NOR**

**PRELIMINARY
SY10EP01V**

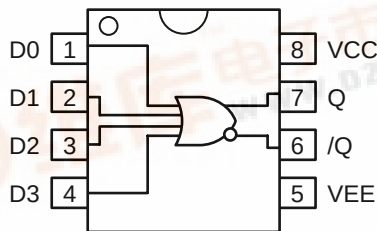
FEATURES

- 3.3V and 5V power supply options
- 230ps typical propagation delay
- High bandwidth to 3GHz
- 75k Ω internal input pulldown resistors
- Q output will default LOW with inputs open
- Available in 8-pin MSOP and SOIC packages

DESCRIPTION

The SY10EP01V is a 4-input OR/NOR gate. The device is functionally equivalent to the EL01 device, E101 (a quad version). The SY10EP01V is ideal for applications requiring the fastest AC performance available.

PIN CONFIGURATION/BLOCK DIAGRAM



Available in 8-Pin SOIC and MSOP Packages

PIN NAMES

Pin	Function
D ₀ –D ₃	ECL Data Inputs
Q, /Q	ECL Data Outputs

TRUTH TABLE

D ₀	D ₁	D ₂	D ₃	Q	/Q
L	L	L	L	L	H
H	X	X	X	H	L
X	H	X	X	H	L
X	X	H	X	H	L
X	X	X	H	H	L
H	H	H	H	H	L

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Rating	Value	Unit
V_{CC}	Power Supply Voltage ($V_{EE} = 0$)	-6.0 to 0	Vdc
V_{EE}	Power Supply Voltage ($V_{CC} = 0$)	+6.0 to 0	Vdc
V_I	Input Voltage ($V_{CC} = 0V$)	-6.0 to 0	Vdc
V_O	Output Voltage ($V_{EE} = 0V$)	+6.0 to 0	Vdc
I_{OUT}	Output Current -Continuous -Surge	50 100	mA
T_A	Operating Temperature Range	-40 to +85	°C
T_{store}	Storage Temperature Range	-65 to +150	°C

NOTE:

1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS⁽¹⁾

$V_{CC} = 0V$; $V_{EE} = -5.5V$ to $-3.0V$ or $V_{CC} = +3.3V \pm 10\%$; $V_{EE} = 0V$ or $V_{CC} = +5.0V \pm 10\%$, $V_{EE} = 0V$ ⁽⁴⁾

Symbol	Parameter	$T_A = -40^\circ C$		$T_A = +25^\circ C$			$T_A = +85^\circ C$		Unit
		Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
I_{EE}	Power Supply Current ⁽²⁾	—	31	—	20	31	—	31	mA
V_{OH}	Output HIGH Voltage ⁽³⁾	$V_{CC} - 1135$	$V_{CC} - 885$	$V_{CC} - 1070$	$V_{CC} - 945$	$V_{CC} - 820$	$V_{CC} - 1010$	$V_{CC} - 760$	mV
V_{OL}	Output LOW Voltage ⁽³⁾	$V_{CC} - 1935$	$V_{CC} - 1685$	$V_{CC} - 1870$	$V_{CC} - 1745$	$V_{CC} - 1620$	$V_{CC} - 1810$	$V_{CC} - 1560$	mV
V_{IH}	Input HIGH Voltage	$V_{CC} - 1210$	$V_{CC} - 885$	$V_{CC} - 1145$	—	$V_{CC} - 820$	$V_{CC} - 1085$	$V_{CC} - 760$	mV
V_{IL}	Input LOW Voltage	$V_{CC} - 1935$	$V_{CC} - 1610$	$V_{CC} - 1870$	—	$V_{CC} - 1545$	$V_{CC} - 1810$	$V_{CC} - 1485$	mV
I_{IH}	Input HIGH Current	—	150	—	—	150	—	150	μA
I_{IL}	Input LOW Current	0.5	—	0.5	—	—	0.5	—	μA

NOTES:

1. 10EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and traverse airflow greater than 500lfpm is maintained.
2. $V_{CC} = 0V$, $V_{EE} = -3.3V$, all other pins floating.
3. All load with 50Ω to $V_{CC} - 2.0V$.
4. Input and output parameters vary 1:1 with V_{CC} .

AC ELECTRICAL CHARACTERISTICS

$V_{CC} = 0V$; $V_{EE} = -5.5V$ to $-3.0V$ or $V_{CC} = +3.3V \pm 10\%$; $V_{EE} = 0V$ or $V_{CC} = +5.0V \pm 10\%$, $V_{EE} = 0V$

Symbol	Parameter	$T_A = -40^\circ C$		$T_A = +25^\circ C$			$T_A = +85^\circ C$		Unit
		Min.	Max.	Min.	Typ.	Max.	Min.	Max.	
f_{MAX}	Maximum Toggle Frequency ⁽¹⁾	—	—	—	3	—	—	—	GHz
t_{PLH} t_{PHL}	Propagation Delay to Output Differential $D \rightarrow Q, /Q$	100	300	150	200	250	200	300	ps
t_{SKEW}	Device Skew ⁽²⁾	—	—	—	5.0	20	—	20	ps
t_r t_f	Output Rise/Fall Times (20% to 80%) Q	60	180	60	110	180	70	180	ps

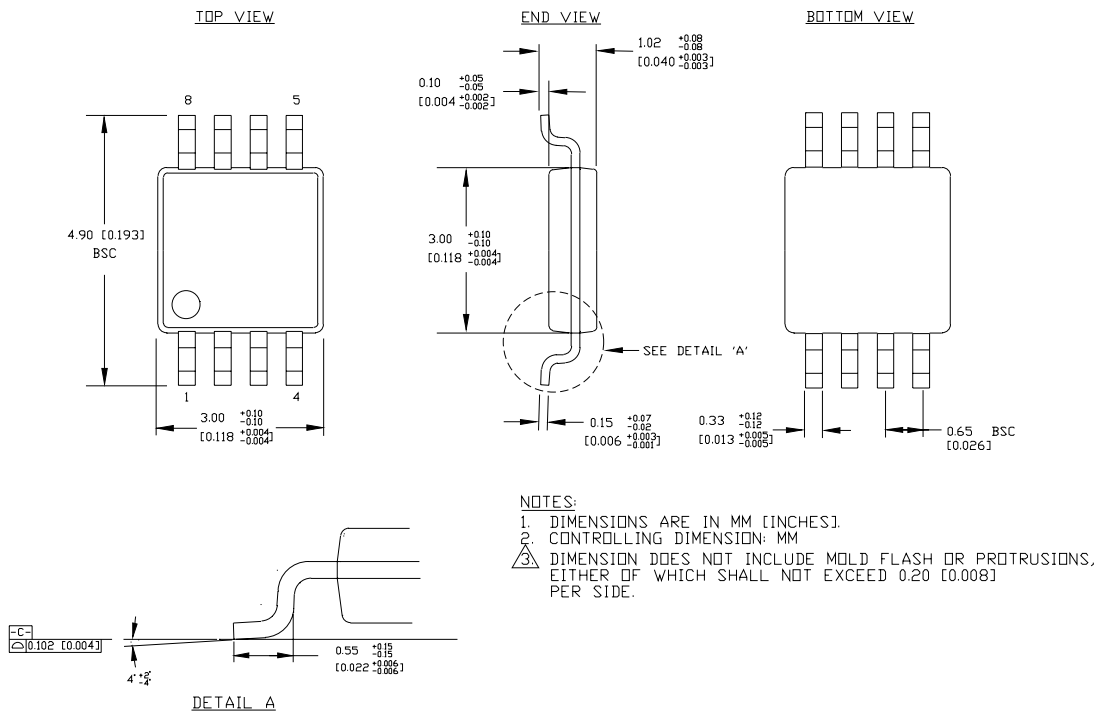
NOTES:

- f_{MAX} guaranteed for functionality only.
- Skew difference between all inputs to output. Parameter not tested.

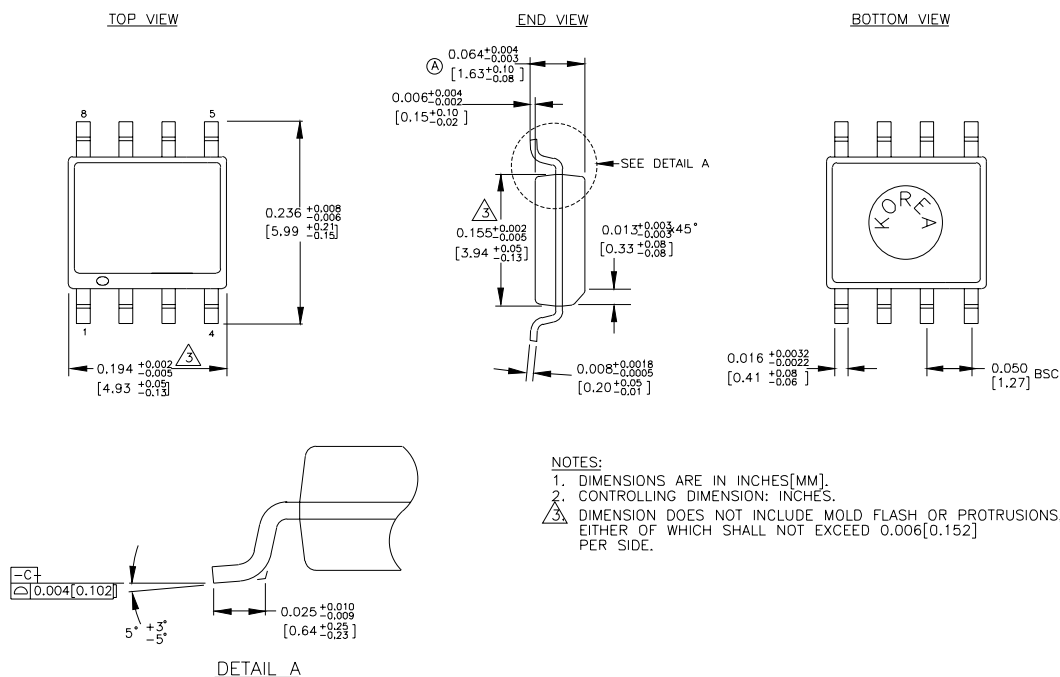
PRODUCT ORDERING INFORMATION

Ordering Code	Package Type	Operating Range
SY10EP01VZC	Z8-1	Commercial
SY10EP01VZCTR	Z8-1	Commercial
SY10EP01VKC	K8-1	Commercial
SY10EP01VKCTR	K8-1	Commercial

8 LEAD MSOP (K8-1)



8 LEAD PLASTIC SOIC (Z8-1)



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