275ps propagation delay

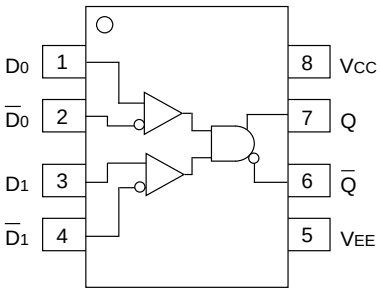
- **High bandwidth output transitions**
- **Internal 75KΩ input pull-down resistors**
- **Available in 8-pin SOIC package**

The SY10/100EL05 are 2-input differential AND/NAND gates. These devices are functionally equivalent to the E404 devices, with higher performance capabilities. With propagation delays and output transition times significantly faster than the E404, the EL05 is ideally suited for those applications which require the ultimate in AC performance.

Because a negative 2-input NAND is equivalent to a 2-input OR function with inverted inputs, the differential inputs and outputs of the device allows the EL05 to also be used as a 2-input differential OR/NOR gate.

The differential inputs employ clamp circuitry so that, under open conditions (pulled down to V_{EE}), the input to the AND gate will be HIGH. In this way, if one set of inputs is open, the gate will remain active to the other input.

Pin	Function
D_0, D_1	Data Inputs
Q	Data Outputs



8-Pin SOIC (Z8-1)

(1)

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10EL05ZC	Z8-1	Commercial	HEL05	Sn-Pb
SY10EL05ZCTR[2]	Z8-1	Commercial	HEL05	Sn-Pb
SY100EL05ZC	Z8-1	Commercial	XEL05	Sn-Pb
SY100EL05ZCTR[2]	Z8-1	Commercial	XEL05	Sn-Pb
SY10EL05ZI	Z8-1	Industrial	HEL05	Sn-Pb
SY10EL05ZITR[2]	Z8-1	Industrial	HEL05	Sn-Pb
SY100EL05ZI	Z8-1	Industrial	XEL05	Sn-Pb
SY100EL05ZITR[2]	Z8-1	Industrial	XEL05	Sn-Pb
SY10EL05ZG[3]	Z8-1	Industrial	HEL05 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10EL05ZGTR[2, 3]	Z8-1	Industrial	HEL05 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL05ZG[3]	Z8-1	Industrial	XEL05 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL05ZGTR[2, 3]	Z8-1	Industrial	XEL05 with Pb-Free bar-line indicator	Pb-Free NiPdAu

Notes:

1. Contact factory for die availability. Dice are guaranteed at $T_A = 25°C$, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

10EL

V_{EE} = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = GND

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{EE}	Power Supply Current													mA
	10EL	—	18	22	14	18	22	14	18	22	14	18	22	
	100EL	—	18	22	14	18	22	14	18	22	16	21	25	
V_{EE}	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	
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA

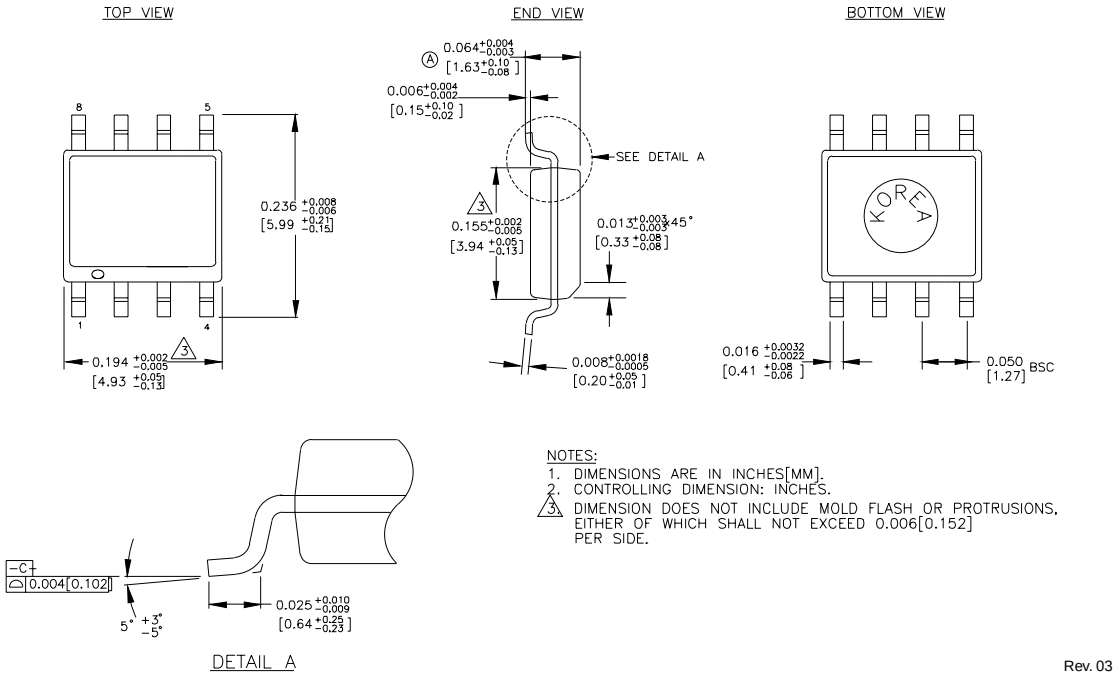
100EL

EE = V_{EE} (Min.) to V_{EE} (Max.); V_{CC} = GND

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t_{PD}	Propagation Delay to Output D	135	260	440	185	275	390	185	275	390	215	305	420	ps
V_{PP}	Minimum Input Swing[1]	150	—	—	150	—	—	150	—	—	150	—	—	mV
V_{CMR}	Common Mode Range[2]	(2)	—	–0.4	(2)	—	–0.4	(2)	—	–0.4	(2)	—	–0.4	V
t_r t_f	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. The device has a DC gain of ≈40.
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 V_{PP} min. and 1V. The lower end of the CMR range is dependent on V_{EE} and is equal to V_{EE} + 3.0V.



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[0.152] PER SIDE.

Rev. 03

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