

Introduction to Toshiba One-Gate Logic (L-MOS)

We are a pioneer of one-gate logic (L-MOS) products, which commercialized one-gate logic for the first time in the world(*). We will continue to expand our lineup for small, thin, and low-voltage operation products.

(*) Based on our survey (as of Sep 13,2021)

•What is One-Gate Logic?

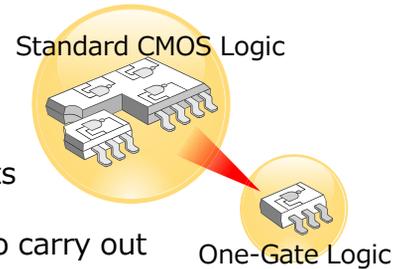
One-gate logic is a product which 1 to 3 gates of standard logic ICs are mounted in a small package.

•Advantages of One-Gate Logic

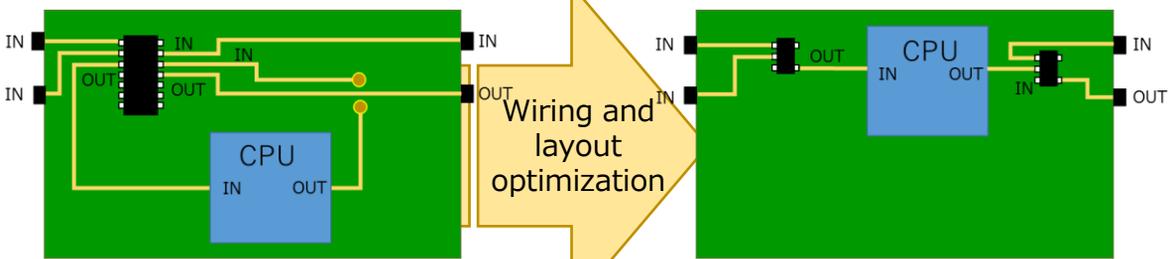
One-gate logic can be used as follows, by taking advantage of its small and single function.

- When circuit correction of the board is required, it is possible to carry out correction easily with space saving.
- Buffering and waveform shaping of signals can be performed in a space-saving manner.
- The layout can be optimized by distributing the one-gate logic.

Refer to the following.



One-gate logic distributed layout example



Ex. using two circuits in CMOS logic

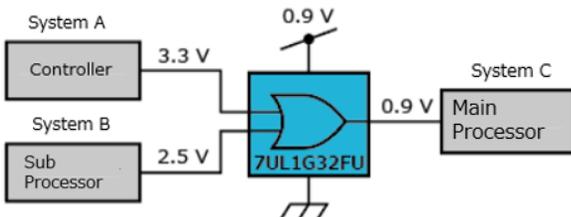
Ex. using one-gate logic 2 products

•Lineup of one-gate logic

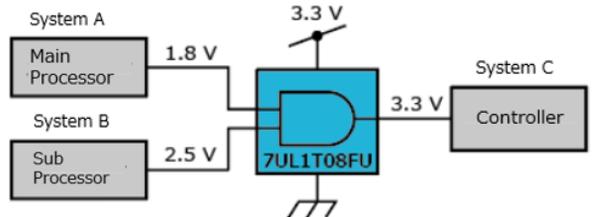
In addition to the current 5V and 3V lineups, we will expand a lineup of super low-voltage series that supports future low-voltage operation.

In particular, the use of 7UL Series operable at a low voltage, can achieve the signal level changes and the logical conversion between different voltage systems a single product.

Ex. Level down + logical conversion using 7UL1G series.



Ex. Level up + logical conversion using 7UL1T series.



We realize the function by taking advantage of the features of the product.

•Deployment of lead-less packages

One Gate Logic's 7UL series has a new package XSON6.

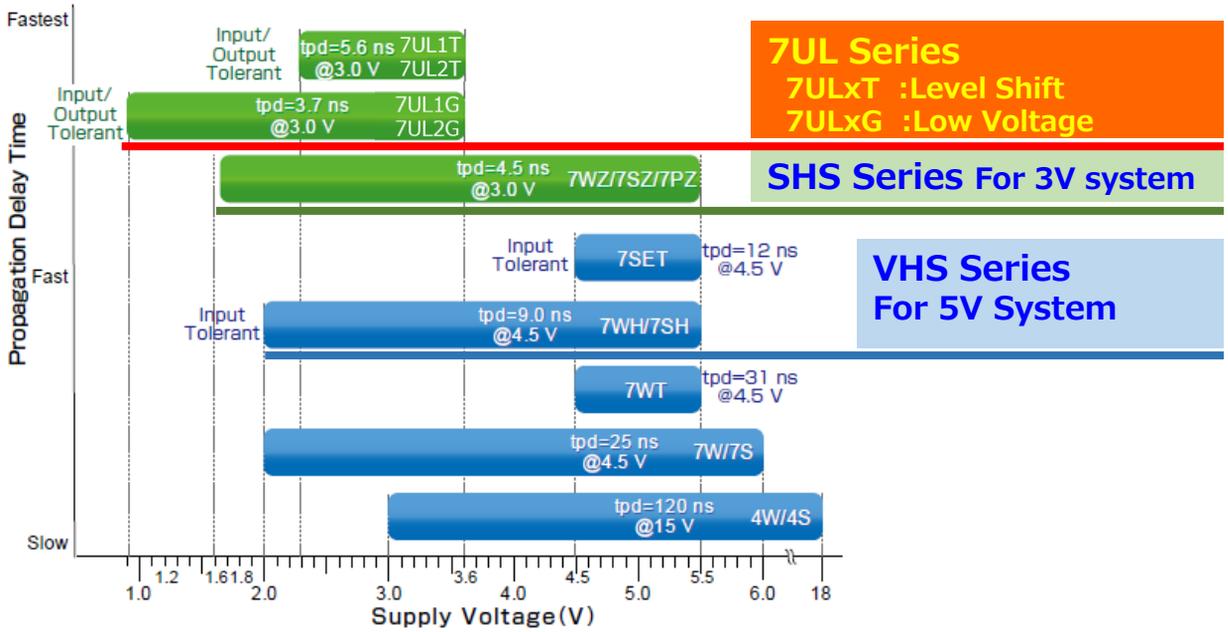
XSON6 Package



1.45x1.0mm

We are expanding the lineup that supports an operating temperature of [125 deg C](#) according to the customer's usage environment.

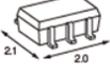
•One-Gate Logic(L-MOS) Line-up



• One-Gate Logic(L-MOS) Recommended product summary

Features	Series	Product family	Supply voltage (V)	Tpd (ns)	Output Current (mA)	Input torerant (V)	Output powerdown protection (V)	Package	Buy Online
Low voltage system	7UL (LVP)	7UL1G	0.9 to 3.6	2.5 (@3.0V)	±8.0 (@3.0V)	0 to 3.6	0 to 3.6	fSV,USV, XSON6	Buy Online
		7UL2G						US8	Buy Online
		7UL3G						US8	Buy Online
		7UL1T	2.3 to 3.6	3.6 (@3.0V)	±8.0 (@3.0V)	0 to 3.6	0 to 3.6	fSV,USV, XSON6	Buy Online
		7UL2T						US8	Buy Online
		7UL3T						US8	Buy Online
3V system	SHS	TC7SZ	1.65 to 5.5	4.5 (@3.0V)	±24 (@3.0V)	0 to 5.5	0 to 5.5	USV,SMV, ESV, fSV	Buy Online
		TC7PZ						US6	Buy Online
		TC7WZ						US8,SM8	Buy Online
5V system	VHS (Very High Speed)	TC7SH	2 to 5.5	9 (@4.5V)	±8.0 (@4.5V)	0 to 5.5	—	USV,SMV	Buy Online
		TC7WH						SM8, US8	Buy Online
		TC7SET	4.5 to 5.5	12 (@4.5V)	USV,SMV	Buy Online			

Package line-up

Type	Surface Mount			
Pin Pitch	0.35mm	0.5mm	0.65mm	0.95mm
5pin				
	fSV(SOT-953)	ESV(SOT-553)	USV(SOT-353)	SMV(SOT-25)
6pin				
		XSON6	US6(SOT-363)	
8pin				
		US8(SOT-765)	SM8(SOT-505)	
Code	FS	5pin:FE 6pin:NX 8pin:FK	FU	F

Please also refer to the following documents for related explanations.

● To perform a parametric search of Logic ICs :

- CMOS logic ICs [Click](#)
- One-Gate logic ICs [Click](#)
- Bus Switches [Click](#)

● Application notes [Click](#)

● FAQs of Logic ICs [Click](#)

● Stock Check & Purchase [Click](#)

● Cross Reference Search page [Click](#)

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