TOSHIBA CMOS Digital Integrated Circuit Silicon Monolithic

TC7SH34FE

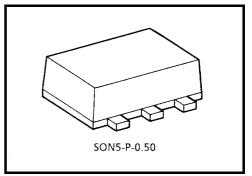
NON-INVERT BUFFER

Features

• Super high speed operation :tpD = 3.8 ns (typ.)

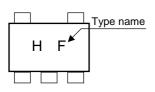
 $@V_{CC} = 5 V$

- Low power dissipation : $I_{CC} = 2 \ \mu A$ (Max.) @ Ta = 25°C
- High noise immunity : $V_{NIH} = V_{NIH}$ = 28% V_{CC} (Min.)
- 5.5V tolerant input.
- Wide operation voltage range : V_{CC} (opr) = 2~5.5 V

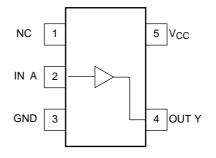


Weight: 0.003 g (typ.)

Marking



Pin Assignment (top view)

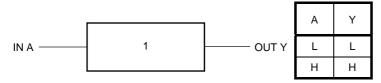


Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage range	V _{CC}	-0.5~7	V
DC input voltage	V _{IN}	-0.5~7	V
DC output voltage	Vout	-0.5~V _{CC} + 0.5	V
Input diode current	lık	-20	mA
Output diode current	I _{ОК}	±20	mA
DC output current	IOUT	±25	mA
DC V _{CC} /ground current	Icc	±50	mA
Power dissipation	PD	150	mW
Storage temperature	T _{stg}	-65~150	°C

<u>TOSHIBA</u>

Logic Diagram



Recommended Operating Conditions

Characteristics	Symbol	Rating	Unit	
Supply voltage	V _{CC}	2~5.5	V	
Input voltage	V _{IN}	0~5.5	V	
Output voltage	V _{OUT}	0~ V _{CC}	V	
Operating temperature	T _{opr}	-40~85	°C	
Input rise and fall time	dt/dv	0~100 (V_{CC} = 3.3 V \pm 0.3 V)	ns/V	
	ui/uv	0~20 (V_{CC} = 5 V \pm 0.5 V)		

Truth Table

Electrical Characteristics

DC Characteristics

Characteristics Symbol Test Circuit						Ta = 25°C			Ta = -40~85°C		Unit
		lest Condition		V _{CC} (V)	Min	Тур.	Max	Min	Max	Unit	
High-level input voltage					2.0	1.5	_	_	1.5	_	V
		—			3.0~5.5	V _{CC} × 0.7	_	_	$V_{CC} \times 0.7$	_	
Low-level input VIL		_		2.0		_	0.5	_	0.5	v	
	—			3.0~5.5	_	_	$V_{CC} \times 0.3$	_	$V_{CC} \times 0.3$		
High-level VOH		VIN = VIH	I _{OH} = -50 μA	2.0	1.9	2.0	_	1.9	_	V	
	_			3.0	2.9	3.0	_	2.9	_		
				4.5	4.4	4.5	_	4.4	_		
			I _{OH} = -4 mA	3.0	2.58			2.48			
			I _{OH} = -8 mA	4.5	3.94	—	_	3.80	_		
Low-level output V _{OL} –		$V_{IN} = V_{IL}$	I _{OL} = 50 μA	2.0		0	0.1	_	0.1		
				3.0		0	0.1		0.1		
	—			4.5		0	0.1		0.1		
			$I_{OL} = 4 \text{ mA}$	3.0			0.36		0.44		
			I _{OL} = 8 mA	4.5			0.36		0.44		
Input leakage current	I _{IN}	_	V _{IN} = 5.5 V or GND		0~5.5	_	_	±0.1		±1.0	μΑ
Quiescent supply current	Icc	_	$V_{IN} = V_{CC} c$	or GND	5.5	_	_	2.0	_	20.0	μΑ

AC Characteristics (input: $t_r = t_f = 3 \text{ ns}$)

Characteristics	Symbol		Test Condition	ו Ta = 2		Ta = 25°C)	Ta = -40~85°C		Unit
			V _{CC} (V)	C _{L (} pF)	Min	Тур.	Max	Min	Max	Unit
Propagation delay time	tplh tphl		3.3 ± 0.3	15		5.0	7.1	1.0	8.5	- ns
				50		7.5	10.6	1.0	12.0	
			5.0 ± 0.5	15		3.8	5.5	1.0	6.5	
				50		5.3	7.5	1.0	8.5	
Input capacitance	C _{IN}					4	10		10	pF
Power dissipation capacitance	C _{PD}	(Note)			_	13	_			pF

Note: C_{PD} is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

Average operating current can be obtained by the equation.

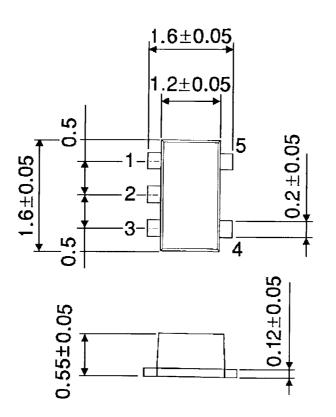
 $I_{CC (opr)} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}$

TOSHIBA

Package Dimensions

SON5-P-0.50

Unit : mm



Weight: 0.003 g (typ.)

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