TOSHIBA CMOS DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

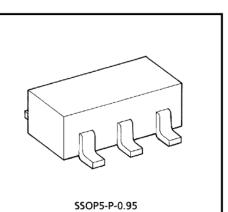
T C 4 S 7 1 F

2 INPUT OR GATE

The TC4S71F is 2-input positive logic OR gates. Gate output with inverter buffer improve the inputoutput characteristics and even if the load capacitance increases, it can be stopped the change of propagation time.

MAXIMUM RATINGS (Ta = 25°C)

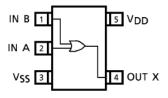
CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V _{DD}	V _{SS} – 0.5~V _{SS} + 20	V
Input Voltage	VIN	$V_{SS} - 0.5 \sim V_{DD} + 0.5$	V
Output Voltage	Vout	$V_{SS} - 0.5 \sim V_{DD} + 0.5$	V
DC Input Current	IIN	± 10	mA
Power Dissipation	PD	200	mW
Operating Temperature Range	T _{opr}	- 40~85	°C
Storage Temperature Range	T _{stg}	- 65~150	°C
Lead Temperature (10s)	ТL	260	°C



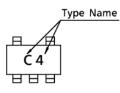
Weight : 0.016g (Typ.)

LOGIC DIAGRAM

PIN CONFIGURATION (TOP VIEW)



MARKING



RECOMMENDED OPERATING CONDITIONS ($V_{SS} = 0V$)

CHARACTERISTIC	SYMBOL		MIN.	TYP.	MAX.	UNIT
DC Supply Voltage	V _{DD}	—	3	_	18	V
Input Voltage	V _{IN}	_	0	—	V _{DD}	V

STATIC ELECTRICAL CHARACTERISTICS ($V_{SS} = 0V$)

CHARACTERISTIC SYM-		TEST CONDITION	V _{DD}	– 40°C		25°C			85	UNIT	
CHARACTERISTIC	BOL	TEST CONDITION	(V)	MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High-Level		l _{OUT} <1μΑ	5	4.95		4.95	5.00	—	4.95	Ι	
Output Voltage	∨он	$V_{IN} = V_{SS}, V_{DD}$	10	9.95		9.95	10.00	1	9.95		
output voltage			15	14.95		14.95			14.95		v
Low-Level		 Ι _{ΟUT} <1μΑ	5	-	0.05	-	0.00	1	—	0.05	
Output Voltage	VOL	$V_{IN} = V_{SS}$	10	-	0.05	—	0.00		—	0.05	
- alpar rollage		-111 33	15	_	0.05	—	0.00			0.05	
		V _{OH} = 4.6V	5	- 0.61	—	- 0.51	- 1.0	1	- 0.42		
Output High	юн	V _{OH} = 2.5V	5	- 2.5	—	- 2.1	- 4.0	1	- 1.7		
Current		V _{OH} = 9.5V	10	- 1.5	—	- 1.3	- 2.2	1	- 1.1	—	
		V _{IN} = V _{DD} , V _{SS}	15	- 4.0	—	- 3.4	- 9.0	—	- 2.8	—	
		V _{OL} = 0.4V	5	0.61		0.51	1.2	—	0.42	—	mΑ
Output Low		V _{OL} = 0.5V	10	1.5	—	1.3	3.2	—	1.1	—	
Current	IOL	V _{OL} = 1.5V	15	4.0	—	3.4	12.0	—	2.8	—	
		$V_{IN} = V_{SS}$									
		V _{OUT} = 4.5V	5	3.5	_	3.5	2.75	—	3.5	—	
Innut High Voltage	V	V _{OUT} = 9.0V	10	7.0	—	7.0	5.5	—	7.0	—	
Input High Voltage	VIH	V _{OUT} = 13.5V	15	11.0	—	11.0	8.25	—	11.0	—	
		I _{OUT} <1μΑ									
		V _{OUT} = 4.5V, 0.5V	5	—	1.5	—	2.25	1.5	—	1.5	V
Input Low Voltage VIL	N	V _{OUT} = 9.0V, 1.0V	10	—	3.0	—	4.5	3.0	_	3.0	
	^v IL	V _{OUT} = 13.5V, 1.5V	15	—	4.0	—	6.75	4.0	—	4.0	
		l _{OUT} <1μΑ]								
Input H Level	ЧH	V _{IH} = 18V	18	—	0.1	—	10-5	0.1	—	1.0	
Current L Level	ΙL	V _{IL} = 0V	18	_	- 0.1	-	- 10-5	- 0.1	—	- 1.0	μA
Quiescent			5	_	0.25	—	0.001	0.25	—	7.5	
Device Current	IDD	$V_{IN} = V_{SS}, V_{DD}$	10	—	0.5	—	0.001	0.5	—	15	μA
			15		1.0	—	0.002	1.0		30	

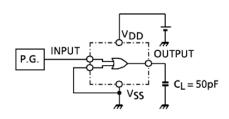
* All valid input combinations.

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CHARACTERISTIC	SYMBOL	TEST CONDITION	V _{DD} (V)	MIN.	TYP.	MAX.	UNIT
Output Transition Time			5	_	70	200	
(Low to High)	ttlh	—	10	—	35	100	
			15	—	30	80	
Output Transition Time			5	_	70	200	ns
Output Transition Time (High to Low)	ţтнг	_	10	—	35	100	
			15	—	30	80	
	t _{pLH}		5	_	65	200	
Propagation Delay Time		_	10	—	30	100	
			15	_	25	80	
Propagation Delay Time	t _{pHL}		5	_	65	200	ns
		_	10	_	30	100	
			15	_	25	80	
Input Capacitance	CIN	_		_	5	7.5	рF

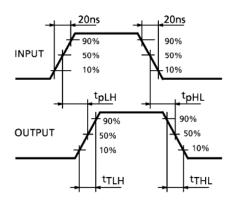
DYNAMIC ELECTRICAL CHARACTERISTICS (Ta = 25° C, V_{SS} = 0V, C_L = 50pF)

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

TEST CIRCUIT

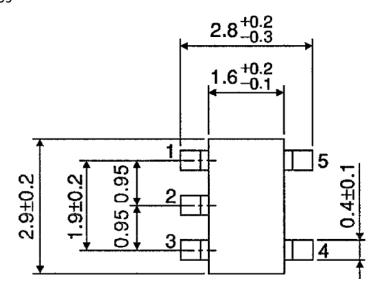


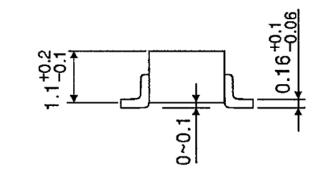




PACKAGE DIMENSIONS SSOP5-P-0.95

Unit : mm





Weight : 0.016g (Typ.)

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