

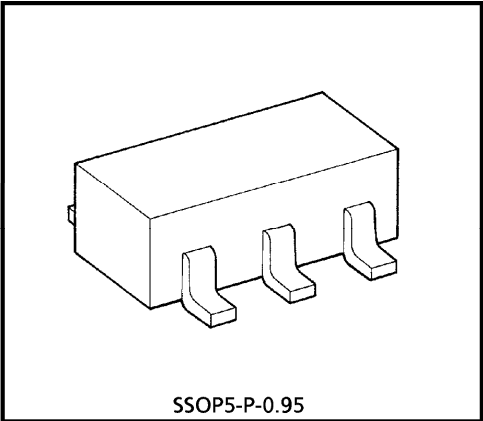
TC4S81F

2 INPUT AND GATE

The TC4S81F is 2-input positive logic AND gates.
Gate output with inverter buffer improve the input-output characteristics and even if the load capacitance increases, it can be stopped the change of propagation time.

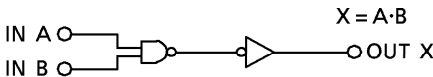
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V _{DD}	V _{SS} – 0.5~V _{SS} + 20	V
Input Voltage	V _{IN}	V _{SS} – 0.5~V _{DD} + 0.5	V
Output Voltage	V _{OUT}	V _{SS} – 0.5~V _{DD} + 0.5	V
DC Input Current	I _{IN}	± 10	mA
Power Dissipation	P _D	200	mW
Operating Temperature Range	T _{opr}	– 40~85	°C
Storage Temperature Range	T _{stg}	– 65~150	°C
Lead Temperature (10s)	T _L	260	°C

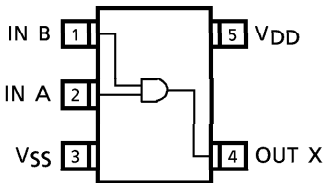


Weight : 0.016g (Typ.)

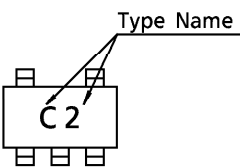
LOGIC DIAGRAM



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-BOL	TEST CONDITION	V _{DD} (V)	- 40°C		25°C			85°C		UNIT
					MIN.	MAX.	MIN.	TYP.	MAX.	MIN.	MAX.	
High-Level Output Voltage		V _{OH}	I _{OUT} < 1μA V _{IN} = V _{DD}	5	4.95	—	4.95	5.00	—	4.95	—	V
				10	9.95	—	9.95	10.00	—	9.95	—	
				15	14.95	—	14.95	15.00	—	14.95	—	
Low-Level Output Voltage		V _{OL}	I _{OUT} < 1μA V _{IN} = V _{DD} , V _{SS}	5	—	0.05	—	0.00	0.05	—	0.05	V
				10	—	0.05	—	0.00	0.05	—	0.05	
				15	—	0.05	—	0.00	0.05	—	0.05	
Output High Current		I _{OH}	V _{OH} = 4.6V	5	- 0.61	—	- 0.51	- 1.0	—	- 0.42	—	mA
			V _{OH} = 2.5V	5	- 2.5	—	- 2.1	- 4.0	—	- 1.7	—	
			V _{OH} = 9.5V	10	- 1.5	—	- 1.3	- 2.2	—	- 1.1	—	
			V _{IN} = V _{DD}	15	- 4.0	—	- 3.4	- 9.0	—	- 2.8	—	
Output Low Current		I _{OL}	V _{OL} = 0.4V	5	0.61	—	0.51	1.2	—	0.42	—	mA
			V _{OL} = 0.5V	10	1.5	—	1.3	3.2	—	1.1	—	
			V _{OL} = 1.5V	15	4.0	—	3.4	12.0	—	2.8	—	
			V _{IN} = V _{DD} , V _{SS}									
Input High Voltage		V _{IH}	V _{OUT} = 0.5V, 4.5V	5	3.5	—	3.5	2.75	—	3.5	—	V
			V _{OUT} = 1.0V, 9.0V	10	7.0	—	7.0	5.5	—	7.0	—	
			V _{OUT} = 1.5V, 13.5V	15	11.0	—	11.0	8.25	—	11.0	—	
			I _{OUT} < 1μA									
Input Low Voltage		V _{IL}	V _{OUT} = 0.5V	5	—	1.5	—	2.25	1.5	—	1.5	V
			V _{OUT} = 1.0V	10	—	3.0	—	4.5	3.0	—	3.0	
			V _{OUT} = 1.5V	15	—	4.0	—	6.75	4.0	—	4.0	
			I _{OUT} < 1μA									
Input Current	H Level	I _{IH}	V _{IH} = 18V	18	—	0.1	—	10 ⁻⁵	0.1	—	1.0	μA
	L Level	I _{IL}	V _{IL} = 0V	18	—	- 0.1	—	- 10 ⁻⁵	- 0.1	—	- 1.0	
Quiescent Device Current		I _{DD}	V _{IN} = V _{SS} , V _{DD} *	5	—	0.25	—	0.001	0.25	—	7.5	μA
				10	—	0.5	—	0.001	0.5	—	15	
				15	—	1.0	—	0.002	1.0	—	30	

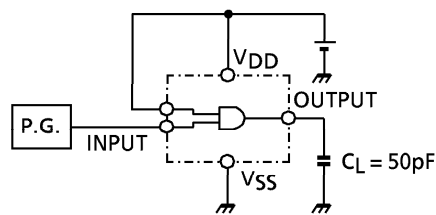
* All valid input combinations.

DYNAMIC ELECTRICAL CHARACTERISTICS (Ta = 25°C, VSS = 0V, CL = 50pF)

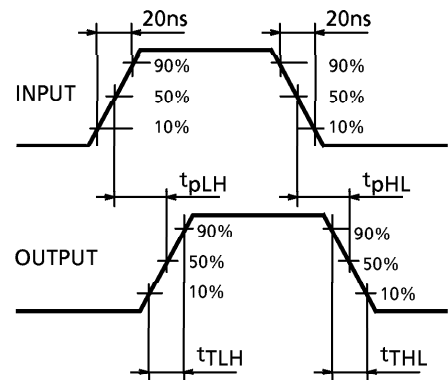
CHARACTERISTIC	SYMBOL	TEST CONDITION	VDD (V)	MIN.	TYP.	MAX.	UNIT
Output Transition Time (Low to High)	tTLH	—	5	—	70	200	ns
			10	—	35	100	
			15	—	30	80	
Output Transition Time (High to Low)	tTHL	—	5	—	70	200	ns
			10	—	35	100	
			15	—	30	80	
Propagation Delay Time	tPLH	—	5	—	65	200	ns
			10	—	30	100	
			15	—	25	80	
Propagation Delay Time	tPHL	—	5	—	65	200	ns
			10	—	30	100	
			15	—	25	80	
Input Capacitance	CIN	—		—	5	7.5	pF

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

TEST CIRCUIT

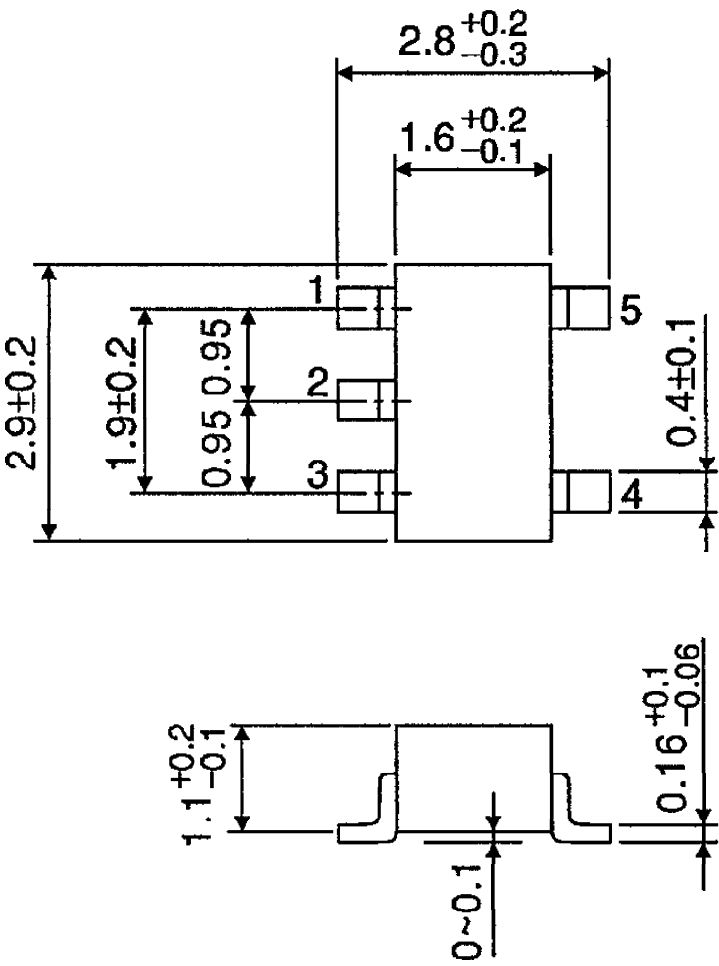


WAVEFORM



PACKAGE DIMENSIONS
SSOP5-P-0.95

Unit : mm



Weight : 0.016g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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