

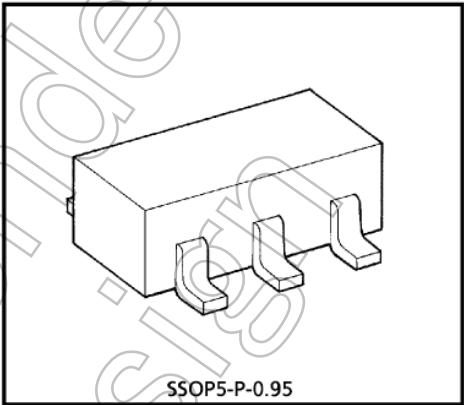
TC4S81F

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.

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	VDD	VSS - 0.5~VSS + 20	V
Input Voltage	VIN	VSS - 0.5~VDD + 0.5	V
Output Voltage	VOUT	VSS - 0.5~VDD + 0.5	V
DC Input Current	IIN	± 10	mA
Power Dissipation	PD	200	mW
Operating Temperature Range	Topr	- 40~85	°C
Storage Temperature Range	Tstg	- 65~150	°C
Lead Temperature (10s)	TL	260	°C

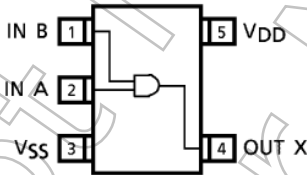


Weight : 0.016g (Typ.)

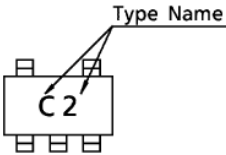
LOGIC DIAGRAM



PIN CONFIGURATION (TOP VIEW)



MARKING



Start of commercial production
1987-02

OPERATING RANGES ($V_{SS} = 0V$)

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} < 1 μA V _{IN} = V _{DD}	5 10 15	4.95 9.95 14.95	— — —	4.95 9.95 14.95	5.00 10.00 15.00	— — —	4.95 9.95 14.95	— — —	V
Low-Level Output Voltage		V _{OL}	I _{OUT} < 1 μA V _{IN} = V _{DD} , V _{SS}	5 10 15	— — —	0.05 0.05 0.05	— — —	0.00 0.00 0.00	0.05 0.05 0.05	— — —	0.05 0.05 0.05	
Output High Current		I _{OH}	V _{OH} = 4.6V V _{OH} = 2.5V V _{OH} = 9.5V V _{IN} = V _{DD}	5 5 10 15	- 0.61 - 2.5 - 1.5 - 4.0	— — — —	- 0.51 - 2.1 - 1.3 - 3.4	- 1.0 - 4.0 - 2.2 - 9.0	— — — —	- 0.42 - 1.7 - 1.1 - 2.8	— — — —	
Output Low Current		I _{OL}	V _{OL} = 0.4V V _{OL} = 0.5V V _{OL} = 1.5V V _{IN} = V _{DD} , V _{SS}	5 10 15	0.61 1.5 4.0	— — —	0.51 1.3 3.4	1.2 3.2 12.0	— — —	0.42 1.1 2.8	— — —	
Input High Voltage		V _{IH}	V _{OUT} = 0.5V, 4.5V V _{OUT} = 1.0V, 9.0V V _{OUT} = 1.5V, 13.5V I _{OUT} < 1 μA	5 10 15	3.5 7.0 11.0	— — —	3.5 7.0 11.0	2.75 5.5 8.25	— — —	3.5 7.0 11.0	— — —	V
Input Low Voltage		V _{IL}	V _{OUT} = 0.5V V _{OUT} = 1.0V V _{OUT} = 1.5V I _{OUT} < 1 μA	5 10 15	— — —	1.5 3.0 4.0	— — —	2.25 4.5 6.75	1.5 3.0 4.0	— — —	1.5 3.0 4.0	
Input Current	H Level	I _{IH}	V _{IH} = 18V	18	—	0.1	—	10 ⁻⁵	0.1	—	1.0	
	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 10 15	— — —	0.25 0.5 1.0	— — —	0.001 0.001 0.002	0.25 0.5 1.0	— — —	7.5 15 30	μA

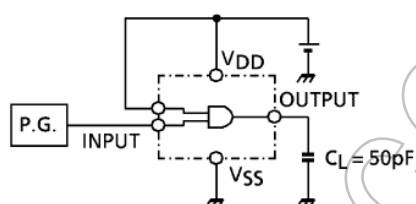
* All valid input combinations.

DYNAMIC ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{SS} = 0\text{V}$, $C_L = 50\text{pF}$)

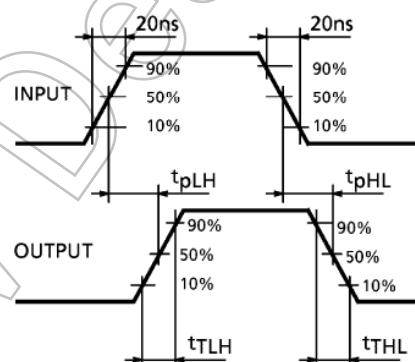
CHARACTERISTIC	SYMBOL	TEST CONDITION	V_{DD} (V)	MIN.	TYP.	MAX.	UNIT
Output Transition Time (Low to High)	t_{TLH}	—	5 10 15	— — —	70 35 30	200 100 80	ns
Output Transition Time (High to Low)	t_{THL}	—	5 10 15	— — —	70 35 30	200 100 80	
Propagation Delay Time	t_{pLH}	—	5 10 15	— — —	65 30 25	200 100 80	ns
Propagation Delay Time	t_{pHL}	—	5 10 15	— — —	65 30 25	200 100 80	
Input Capacitance	C_{IN}	—	—	—	5	7.5	pF

CIRCUIT AND WAVEFORM FOR MEASUREMENT OF DYNAMIC CHARACTERISTICS

TEST CIRCUIT

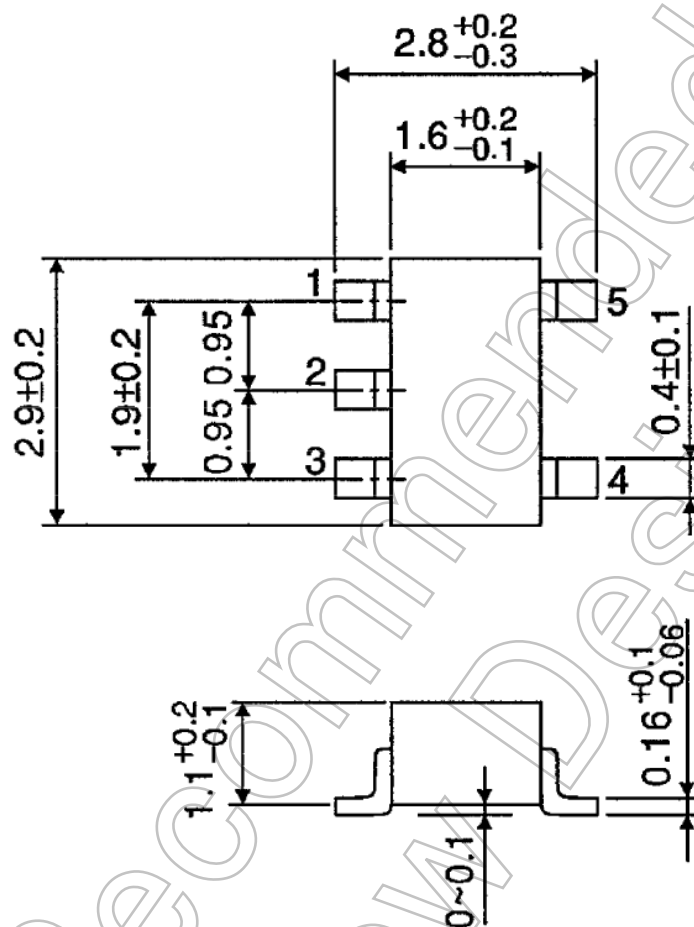


WAVEFORM



PACKAGE DIMENSIONS
SSOP5-P-0.95

Unit : mm



Weight : 0.016g (Typ.)

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