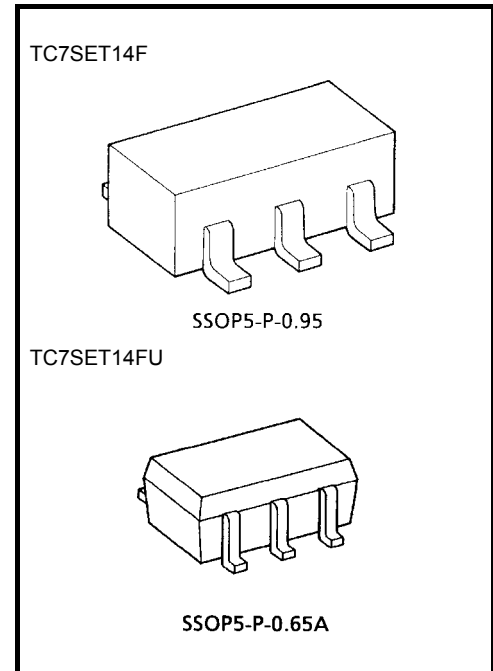


# TC7SET14F, TC7SET14FU

## Schmitt Inverter

### Features

- High speed .....  $t_{pd} = 5.0 \text{ ns (typ.)}$   
at  $V_{CC} = 5 \text{ V}$
- Low power dissipation .....  $I_{CC} = 2 \mu\text{A (max)}$   
at  $T_a = 25^\circ\text{C}$
- Compatible with TTL outputs...  $V_{IL} = 0.8 \text{ V (max.)}$   
 $V_{IH} = 2.0 \text{ V (min.)}$
- 5.5V tolerant input.



Weight

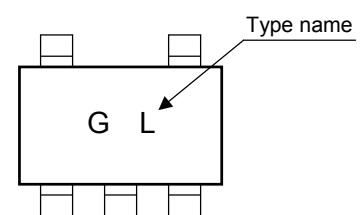
SSOP5-P-0.95 : 0.016 g (typ.)

SSOP5-P-0.65A : 0.006 g (typ.)

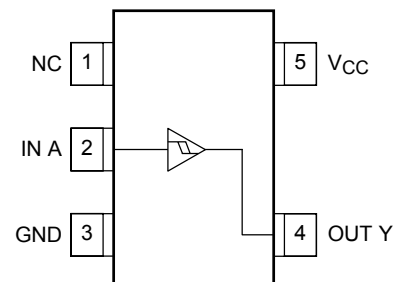
### Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Supply voltage range	$V_{CC}$	$-0.5 \sim 7.0$	V
DC input voltage	$V_{IN}$	$-0.5 \sim 7.0$	V
DC output voltage	$V_{OUT}$	$-0.5 \sim V_{CC} + 0.5$	V
Input diode current	$I_{IK}$	$-20$	mA
Output diode current	$I_{OK}$	$\pm 20$	mA
DC output current	$I_{OUT}$	$\pm 25$	mA
DC $V_{CC}$ /ground current	$I_{CC}$	$\pm 50$	mA
Power dissipation	$P_D$	200	mW
Storage temperature	$T_{stg}$	$-65 \sim 150$	$^\circ\text{C}$
Lead temperature (10 s)	$T_L$	260	$^\circ\text{C}$

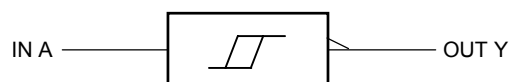
### Marking



### Pin Assignment (top view)



## Logic Diagram



## Truth Table

INPUT	OUTPUT
A	Y
L	H
H	L

## Recommended Operating Conditions

Characteristics	Symbol	Rating	Unit
Supply voltage	$V_{CC}$	4.5~5.5	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	0~20	ns/V

## DC Electrical Characteristics

Characteristics	Symbol	Test Condition	$V_{CC}$ (V)	$T_a = 25^{\circ}\text{C}$			$T_a = -40\sim 85^{\circ}\text{C}$		Unit
				Min	Typ.	Max	Min	Max	
Positive Threshold Voltage	$V_P$	—	4.5	—	—	1.90	—	1.90	V
			5.5	—	—	2.10	—	2.10	
Negative Threshold Voltage	$V_N$	—	4.5	0.50	—	—	0.50	—	
			5.5	0.60	—	—	0.60	—	
Hysteresis Voltage	$V_H$	—	4.5	0.40	—	1.40	0.40	1.40	
			5.5	0.40	—	1.50	0.40	1.50	
High-level output voltage	$V_{OH}$	$V_{IN} = V_{IL}$	$I_{OH} = -50\ \mu\text{A}$	4.5	4.4	4.5	—	4.4	V
			$I_{OH} = -8\ \text{mA}$	4.5	3.94	—	—	3.80	
Low-level output voltage	$V_{OL}$	$V_{IN} = V_{IH}$	$I_{OL} = 50\ \mu\text{A}$	4.5	—	0.0	0.10	—	
			$I_{OL} = 8\ \text{mA}$	4.5	—	—	0.36	0.44	
Input leakage current	$I_{IN}$	$V_{IN} = 5.5\ \text{V or GND}$	0~5.5	—	—	$\pm 0.1$	—	$\pm 1.0$	$\mu\text{A}$
Quiescent supply current	$I_{CC}$	$V_{IN} = V_{CC} \text{ or GND}$	5.5	—	—	2.0	—	20.0	$\mu\text{A}$
	$I_{CCT}$	Per Input : $V_{IN} = 3.4\ \text{V}$ Other Input : $V_{CC} \text{ or GND}$	5.5	—	—	1.35	—	1.50	mA

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

Characteristics	Symbol	Test Condition		Ta = 25°C			Ta = -40~85°C		Unit
		V <sub>CC</sub> (V)	C <sub>L</sub> (pF)	Min	Typ.	Max	Min	Max	
Propagation delay time	t <sub>pLH</sub> t <sub>pHL</sub>	5.0 ± 0.5	15	—	5.0	7.6	1.0	9.0	ns
			50	—	6.5	9.6	1.0	11.0	
Input capacitance	C <sub>IN</sub>			—	4	10	—	10	pF
Power dissipation capacitance	C <sub>PD</sub>	(Note)		—	18	—	—	—	pF

Note: C<sub>PD</sub> is defined as the value of the internal equivalent capacitance which is calculated from the operating current consumption without load.

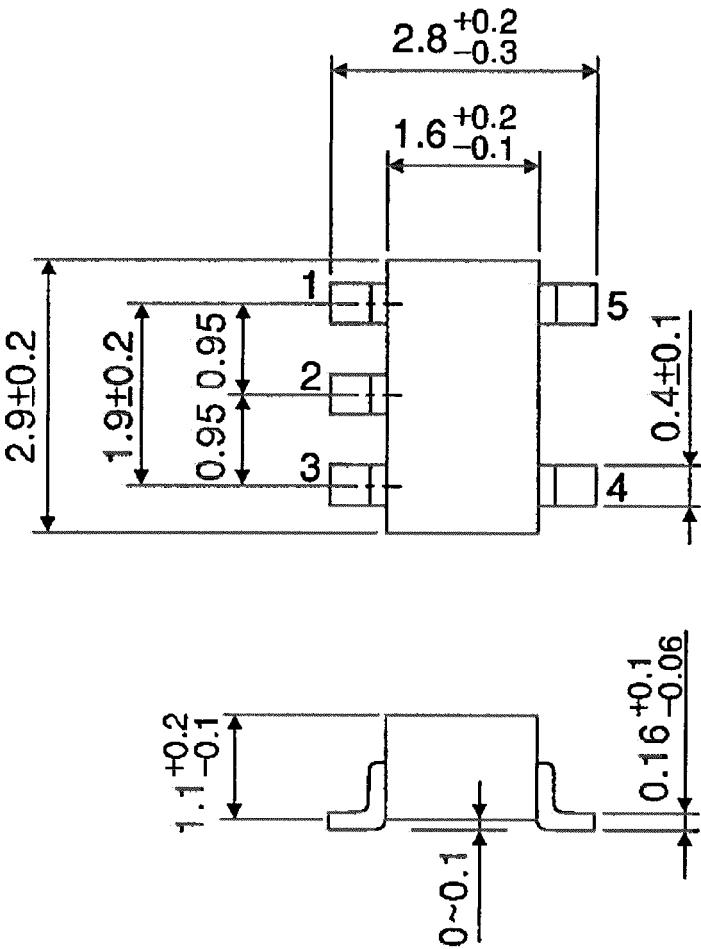
Average operating current can be obtained by the equation:

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

Package Dimensions

SSOP5-P-0.95

Unit : mm

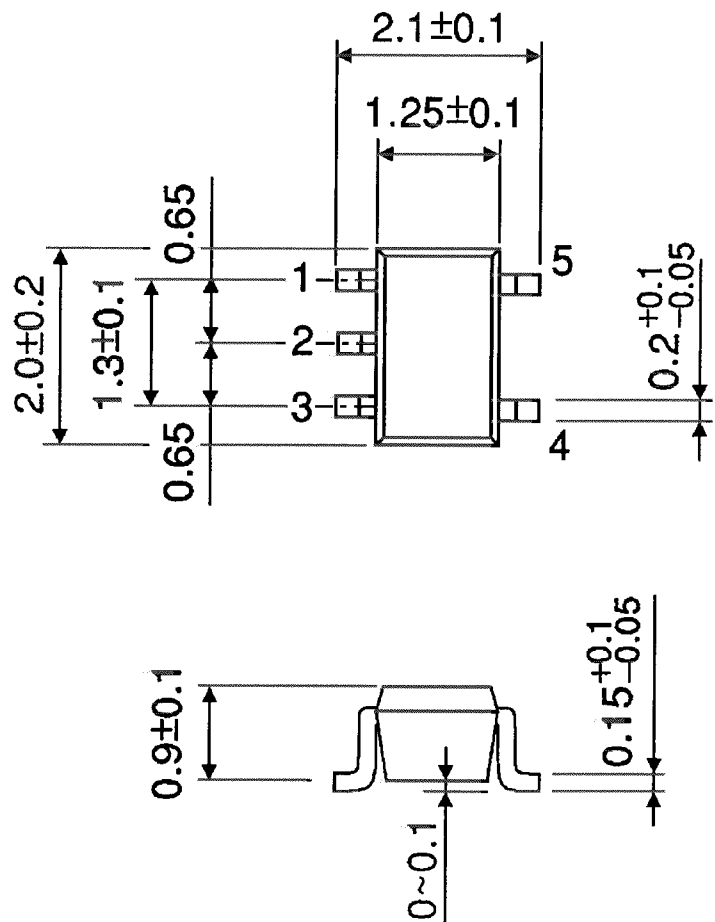


Weight: 0.016 g (typ.)

Package Dimensions

SSOP5-P-0.65A

Unit : mm



Weight: 0.006 g (typ.)

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