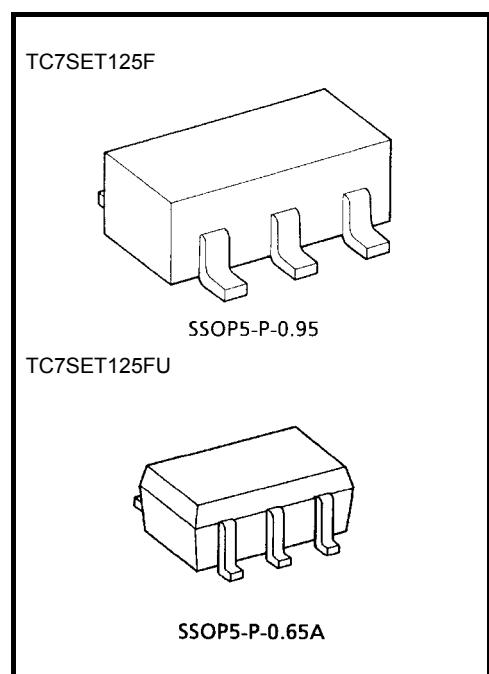


**TC7SET125F, TC7SET125FU**

Bus Buffer

**Features**

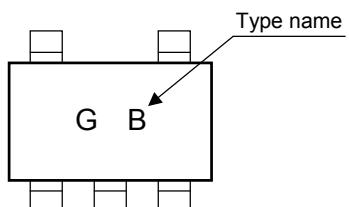
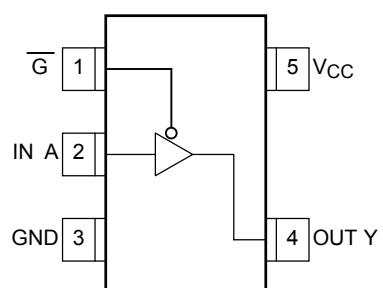
- High speed .....  $t_{pd} = 3.7$  ns (typ.)  
at  $V_{CC} = 5$  V
- Low power dissipation .....  $I_{CC} = 2$   $\mu$ A (max)  
at  $T_a = 25^\circ C$
- Compatible with TTL outputs...  $V_{IL} = 0.8$  V (max.)  
 $V_{IH} = 2.0$  V (min.)
- 5.5V tolerant input.



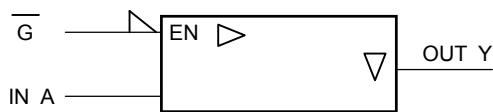
Weight  
 SSOP5-P-0.95 : 0.016 g (typ.)  
 SSOP5-P-0.65A : 0.006 g (typ.)

**Maximum Ratings ( $T_a = 25^\circ C$ )**

Characteristics	Symbol	Rating	Unit
Supply voltage range	$V_{CC}$	-0.5~7.0	V
DC input voltage	$V_{IN}$	-0.5~7.0	V
DC output voltage	$V_{OUT}$	-0.5~ $V_{CC} + 0.5$	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	$T_{stg}$	-65~150	°C
Lead temperature (10 s)	$T_L$	260	°C

**Marking****Pin Assignment (top view)**

## Logic Diagram



## Truth Table

$\overline{G}$	A	Y
H	X	Z
L	L	L
L	H	H

## 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)	Ta = 25°C			Ta = -40~85°C		Unit	
				Min	Typ.	Max	Min	Max		
High-level input voltage	$V_{IH}$	—	4.5~5.5	2.0	—	—	2.0	—	V	
Low-level input voltage	$V_{IL}$	—	4.5~5.5	—	—	0.8	—	0.8	V	
High-level output voltage	$V_{OH}$	$V_{IN} = V_{IH}$ or $V_{IL}$	$I_{OH} = -50 \mu A$	4.5	4.4	4.5	—	4.4	V	
			$I_{OH} = -8 mA$	4.5	3.94	—	—	3.80		
Low-level output voltage	$V_{OL}$	$V_{IN} = V_{IH}$ or $V_{IL}$	$I_{OL} = 50 \mu A$	4.5	—	0.0	0.10	—	V	
			$I_{OL} = 8 mA$	4.5	—	—	0.36	—		
3-state output off-state current	$I_{OZ}$	$V_{IN} = V_{IH}$ or $V_{IL}$ $V_{OUT} = V_{CC}$ or GND		5.5	—	—	$\pm 0.25$	—	$\pm 2.5$	$\mu A$
Input leakage current	$I_{IN}$	$V_{IN} = 5.5 V$ or GND		0~5.5	—	—	$\pm 0.1$	—	$\pm 1.0$	$\mu A$
Quiescent supply current	$I_{CC}$	$V_{IN} = V_{CC}$ or GND		5.5	—	—	2.0	—	20.0	$\mu A$
	$I_{CCT}$	Per Input : $V_{IN} = 3.4 V$ Other Input : $V_{CC}$ or GND		5.5	—	—	1.35	—	1.50	mA

AC Characteristics (input:  $t_r = t_f = 3$  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	$t_{pLH}$ $t_{pHL}$	$5.0 \pm 0.5$	15	—	3.7	6.0	1.0	6.9	ns	
			50	—	6.0	10.4	1.0	11.9		
3-state output enable time	$t_{pZL}$ $t_{pZH}$	$5.0 \pm 0.5$	15	—	3.6	5.6	1.0	6.5	ns	
			50	—	6.0	10.3	1.0	11.9		
3-state output disable time	$t_{pLZ}$ $t_{pHZ}$	$5.0 \pm 0.5$	50	—	7.3	10.0	1.0	11.5	ns	
Input capacitance	C <sub>IN</sub>				—	4	10	—	—	pF
Output capacitance	C <sub>OUT</sub>				—	6	—	—	—	pF
Power dissipation capacitance	C <sub>PD</sub>	(Note)			—	15	—	—	—	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.

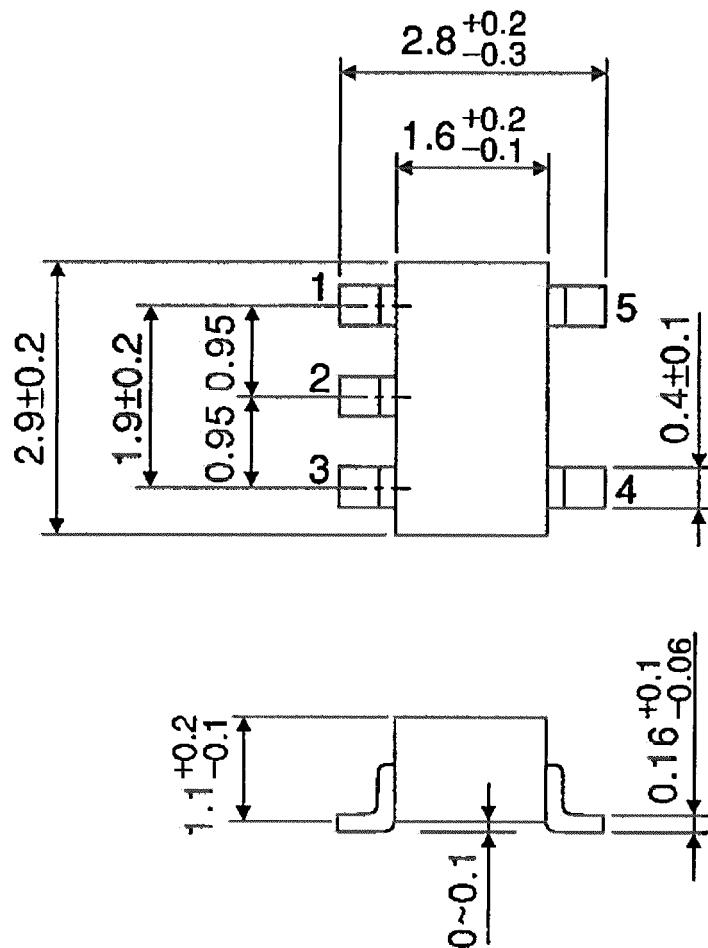
Average operating current can be obtained by the equation:

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

**Package Dimensions**

SSOP5-P-0.95

Unit : mm

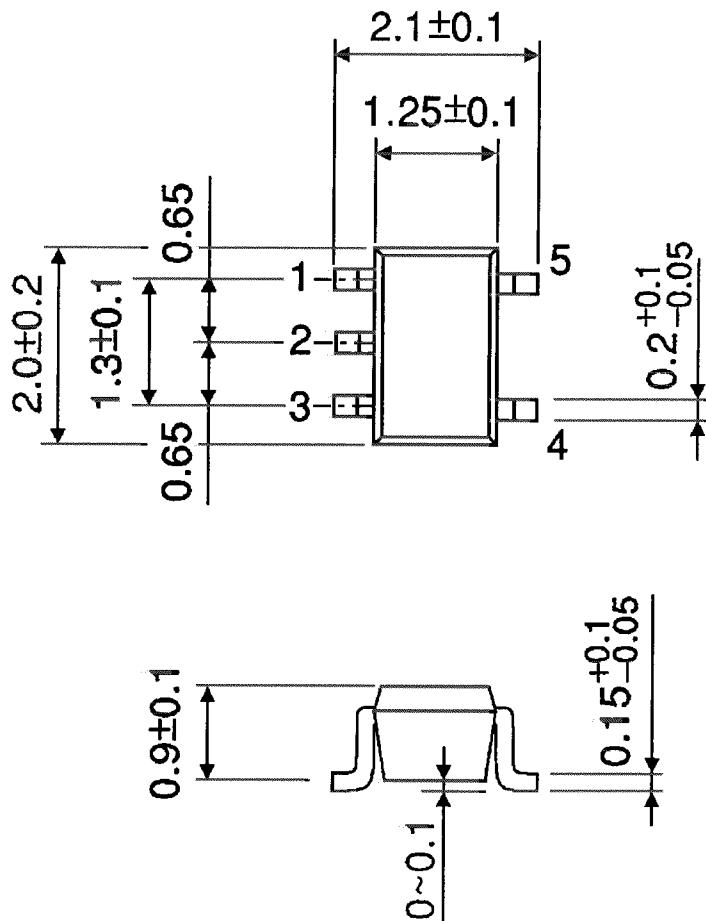


Weight: 0.016 g (typ.)

**Package Dimensions**

SSOP5-P-0.65A

Unit : mm



Weight: 0.006 g (typ.)

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