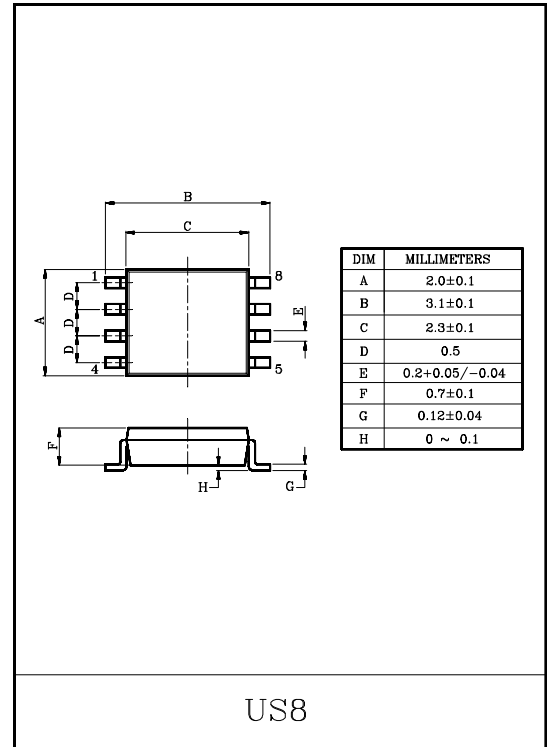


## DUAL BUS BUFFER

The KIC7W125FK is a high speed DUAL BUS BUFFER fabricated with silicon gate C<sup>2</sup>MOS technology. It achieves the high speed operation similar to equivalent LSTTL while maintaining the C<sup>2</sup>MOS low power dissipation. The require 3-state control input  $\bar{G}$  to be set high to place the output into the high impedance. All inputs are equipped with protection circuits against static discharge or transient excess voltage.

## FEATURES

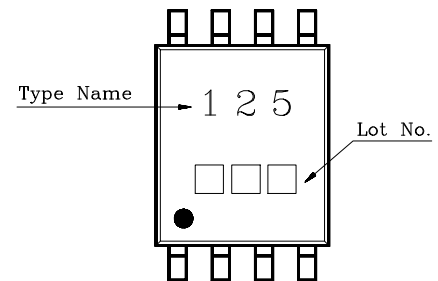
- High Speed :  $t_{pd}=10ns$ (Typ.) at  $V_{CC}=5V$ .
- Low Power Dissipation :  $I_{CC}=2\mu A$ (Max.) at  $T_a=25^\circ C$ .
- High Noise Immunity :  $V_{NIH}=V_{NIL}=28\% V_{CC}(\text{Min.})$ .
- Output Drive Capability : 15 LSTTL Loads.
- Symmetrical Output Impedance :  $|I_{OH}|=I_{OL}=6mA(\text{Min.})$
- Balanced Propagation Delays :  $t_{pLH}\approx t_{pHL}$
- Wide Operating Voltage Range :  $V_{CC(\text{opr})}=2\sim 6V$ .



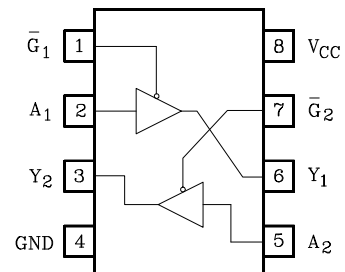
## MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	$V_{CC}$	-0.5~7	V
DC Input Voltage	$V_{IN}$	-0.5~ $V_{CC}+0.5$	V
DC Output Voltage	$V_{OUT}$	-0.5~ $V_{CC}+0.5$	V
Input Diode Current	$I_{IK}$	±20	mA
Output Diode Current	$I_{OK}$	±20	mA
DC Output Current	$I_{OUT}$	±35	mA
DC $V_{CC}$ /Ground Current	$I_{CC}$	±37.5	mA
Power Dissipation	$P_D$	200	mW
Storage Temperature	$T_{stg}$	-65~150	°C
Lead Temperature (10s)	$T_L$	260	°C

## MARKING

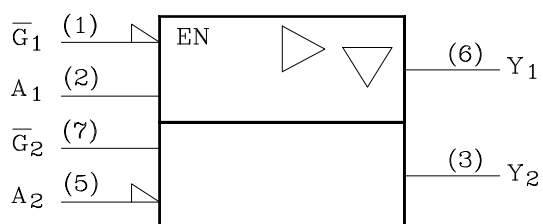


## PIN CONNECTION(TOP VIEW)



# KIC7W125FK

## LOGIC DIAGRAM



## TRUTH TABLE

INPUTS		OUTPUTS
$\bar{G}$	A	Y
H	X	Z
L	L	L
L	H	H

X : Don't Care  
Z : High Impedance

## RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage Range	$V_{CC}$	2~6	V
Input Voltage	$V_{IN}$	0~ $V_{CC}$	V
Output Voltage	$V_{OUT}$	0~ $V_{CC}$	V
Operating Temperature	$T_{opr}$	-40~85	°C
Input Rise and Fall Time	$t_r, t_f$	0~1000 ( $V_{CC}=2.0V$ ) 0~500 ( $V_{CC}=4.5V$ ) 0~400 ( $V_{CC}=6.0V$ )	ns

## DC ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	$V_{CC}$	$T_a=25^\circ C$			$T_a=-40\sim 85^\circ C$		UNIT	
					MIN.	TYP.	MAX.	MIN.	MAX.		
High-Level Input Voltage	$V_{IH}$	-	-	2.0	1.5	-	-	1.5	-	V	
				4.5	3.15	-	-	3.15	-		
				6.0	4.2	-	-	4.2	-		
Low-Level Input Voltage	$V_{IL}$	-	-	2.0	-	-	0.5	-	0.5	V	
				4.5	-	-	1.35	-	1.35		
				6.0	-	-	1.8	-	1.8		
High-Level Output Voltage	$V_{OH}$	-	$V_{IN}=V_{IH}$ or $V_{IL}$	$I_{OH}=-20\mu A$	2.0	1.9	2.0	-	1.9	-	V
					4.5	4.4	4.5	-	4.4	-	
					6.0	5.9	6.0	-	5.9	-	
				$I_{OH}=-6mA$	4.5	4.18	4.31	-	4.13	-	
	6.0	5.68	5.80	-	5.63	-					
Low-Level Output Voltage	$V_{OL}$	-	$V_{IN}=V_{IL}$	$I_{OL}=20\mu A$	2.0	-	0.0	0.1	-	0.1	V
					4.5	-	0.0	0.1	-	0.1	
					6.0	-	0.0	0.1	-	0.1	
				$I_{OL}=6mA$	4.5	-	0.17	0.26	-	0.33	
	6.0	-	0.18	0.26	-	0.33					
3-State Output Off-State Current	$I_{OZ}$	-	$V_{IN}=V_{IH}$ or $V_{IL}$ $V_{OUT}=V_{CC}$ or GND	6.0	-	-	$\pm 0.5$	-	$\pm 5.0$	$\mu A$	
Input Leakage Current	$I_{IN}$	-	$V_{IN}=V_{CC}$ or GND	6.0	-	-	$\pm 0.1$	-	$\pm 1.0$		
Quiescent Supply Current	$I_{CC}$	-	$V_{IN}=V_{CC}$ or GND	6.0	-	-	2.0	-	20.0		

# KIC7W125FK

## AC ELECTRICAL CHARACTERISTICS (Input $t_r=t_f=6\text{ns}$ )

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION			Ta=25°C			Ta=-40~85°C		UNIT
				C <sub>L</sub>	V <sub>CC</sub>	MIN.	TYP.	MAX.	MIN.	MAX.	
Output Transition Time	$t_{TLH}$ $t_{THL}$	-	-	50	2.0	-	20	60	-	75	ns
					4.5	-	6	12	-	15	
					6.0	-	5	10	-	13	
Propagation Delay Time	$t_{pLH}$ $t_{pHL}$	-	-	50	2.0	-	30	90	-	115	
					4.5	-	11	18	-	23	
					6.0	-	10	15	-	20	
				150	2.0	-	42	130	-	165	
					4.5	-	14	26	-	33	
					6.0	-	12	22	-	28	
Output Enable Time	$t_{pZL}$ $t_{pZH}$	-	$R_L=1\text{k}\Omega$	50	2.0	-	30	90	-	115	
					4.5	-	11	18	-	23	
					6.0	-	10	15	-	20	
				150	2.0	-	42	130	-	165	
					4.5	-	14	26	-	33	
					6.0	-	12	22	-	28	
Output Disable Time	$t_{pLZ}$ $t_{pHZ}$	-	$R_L=1\text{k}\Omega$	50	2.0	-	24	100	-	125	
					4.5	-	12	20	-	25	
					6.0	-	10	17	-	21	
Input Capacitance	C <sub>IN</sub>	-	-	-	-	-	5	10	-	10	pF
Output Capacitance	C <sub>OUT</sub>	-	-	-	-	-	10	-	-	-	
Power Dissipation Capacitance	C <sub>PD</sub>	-	(Note 1)	-	-	-	32	-	-	-	

Note 1 : C<sub>PD</sub> is defined as the value of internal equivalent capacitance which is calculated from the operating current consumption without load.

Average operating current can be obtained by the equation

$$: I_{CC(\text{opr})} = C_{PD} \cdot V_{CC} \cdot f_{IN} + I_{CC}/2 \text{ (per gate)}$$