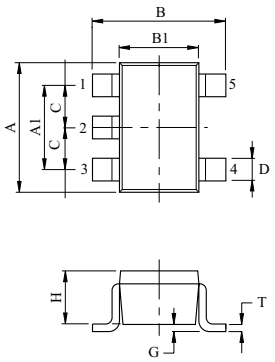
KIC7SZ66FU

SILICON MONOLITHIC CMOS DIGITAL INTEGRATED CIRCUIT

BILATERAL SWITCH

FEATURES

- 250MHz-3dB bandwidth.
- Super High Speed t_{PD}=2.7nS(Typ.) at V_{CC}=5V.
- On Resistance R_{OH}=3 Ω(Typ.) at V_{CC}=4.5V
  (V_{IN}=0V, I_{IN}=30mA.)
- Wide Operating Voltage Range : $V_{CC(opr)}$=1.65~5.5V.
- T.H.D : THD=0.11%(Typ.) at V_{CC}=5V.



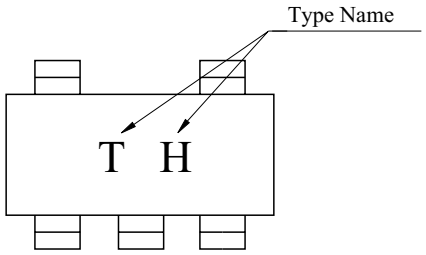
DIM	MILLIMETERS
A	2.00±0.20
A1	1.3±0.1
B	2.1±0.1
B1	1.25±0.1
C	0.65
D	0.2+0.10/-0.05
G	0-0.1
H	0.9±0.1
T	0.15+0.1/-0.05

USV

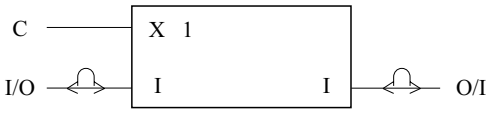
MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V_{CC}	-0.5~7.0	V
Control Input Voltage	V_{IN}	-0.5~7.0	V
Swith I/O Voltage	$V_{I/O}$	-0.5~7.0	V
Control Diode Current	I_{CK}	-50	mA
Output Diode Current	I_{OK}	±50	mA
DC V_{CC}/Ground Current	I_{CC}	±100	mA
Power Dissipation	P_D	200	mW
Storage Temperature Range	T_{stg}	-65 ~150	℃
Lead Temperature (10s)	T_L	260	℃

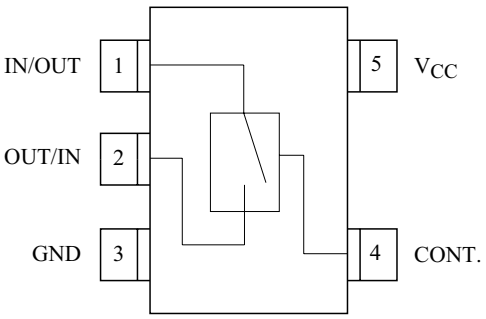
MARKING



Logic Diagram



PIN CONNECTION(TOP VIEW)



TRUTH TABEL

CONTROL	SWITCH FUNCTION
H	ON
L	OFF

RECOMMENDED OPERATING CONDIITIONS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	1.65 ~ 5.5	V
Control Input Voltage	V_{IN}	0 ~ 5.5	V
Switch I/O Voltage	$V_{I/O}$	0 ~ V_{CC}	V
Operating Temperature	T_{opr}	-40 ~ 85	℃
Input Rise and Fall Time	t_r, t_f	0 ~ 10 (V_{CC}=2.3~3.6V) 0 ~ 5 (V_{CC}=4.5~5.5V)	nS/V

ELECTRICAL CHARACTERISTICS

DC Characteristics

CHARACTERISTIC		SYMBOL	TEST CONDITION		Ta=25℃			Ta=-40~85 ℃			UNIT
				V_{CC}(V)	MIN.	TYP.	MAX.	MIN.	TYP. (Note4)	MAX.	
Input Voltage	High Level	V_{IH}	-	1.65~1.95	-	-	-	0.75 × V_{CC}	-	-	V
				2.3~5.5	-	-	-	0.7 × V_{CC}	-	-	
	Low Level	V_{IL}	-	1.65~1.95	-	-	-	-	-	0.25 × V_{CC}	
				2.3~5.5	-	-	-	-	-	0.3 × V_{CC}	
Switch On Resistance (Note 1)		R_{ON}	V_{IN}=0V, I_{IN}=30mA	4.5	-	-	-	-	3	7	μA
			V_{IN}=2.4V, I_{IN}=15mA		-	-	-	-	5	12	V
			V_{IN}=4.5V, I_{IN}=30mA		-	-	-	-	7	15	
			V_{IN}=0V, I_{IN}=24mA	3.0	-	-	-	-	4	9	
			V_{IN}=3V, I_{IN}=24mA		-	-	-	-	10	20	
			V_{IN}=0V, I_{IN}=8mA	2.3	-	-	-	-	5	12	
			V_{IN}=2.3V, I_{IN}=8mA		-	-	-	-	13	30	
			V_{IN}=0V, I_{IN}=4mA	1.8	-	-	-	-	7	28	
			V_{IN}=1.8V, I_{IN}=4mA		-	-	-	-	25	60	
On Resistance Flatness (Note 1) (Note 2) (Note 3)		R_{flat}	I_A=-30mA, 0 ≤ V_{Bn} ≤ V_{CC}	5.0	-	6	-	-	-	-	Ω
			I_A=-24mA, 0 ≤ V_{Bn} ≤ V_{CC}	3.3	-	12	-	-	-	-	
			I_A=-8mA, 0 ≤ V_{Bn} ≤ V_{CC}	2.5	-	28	-	-	-	-	
			I_A=-4mA, 0 ≤ V_{Bn} ≤ V_{CC}	1.8	-	125	-	-	-	-	
Input Leakage Current		I_{IN}	0 ≤ V_{IN} ≤=5.5V	0~5.5	-	-	-	-	±0.05	±1.0	μA
Power Off Leakage Current		I_{OFF}	0 ≤ A,B ≤= V_{CC}	1.65~5.5	-	-	-	-	±0.05	±10.0	μA
Quiescent Supply Current		I_{CC}	V_{IN}=V_{CC} or GND I_{OUT}=0	1.65~5.5	-	-	-	-	0.05	10	μA

Note1 : Measured by the voltage drop between A and B pins at the indicated current through the switch. On Resistance is determined by the lower of the voltages on the two (A or B) pins.

Note2 : Parameter is characterized but not tested in production.

Note3 : Flatness is defined as the difference between the maximum and minimum value of On Resistance over the specified range of conditions.

Note4 : All typical values are at the specified V_{CC}, and Ta=25 ℃

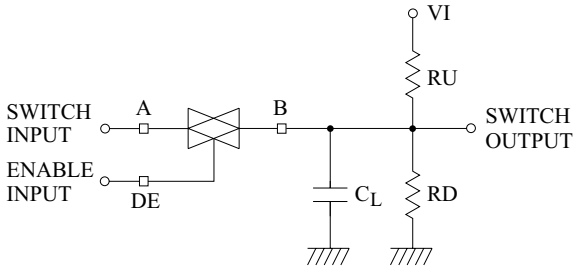
AC Characteristics

CHARACTERISTIC	SYMBOL	TEST CONDITION		Ta=-40℃~85℃, C_L=50pF, R_U=R_D=500Ω			UNIT
			V_{CC}(V)	MIN.	TYP.	MAX.	
Propagation Delay Bus to Bus (Figures 1,2)	t_{PHL} t_{PLH}	V_{IN}=OPEN	1.65~1.95	-	-	4.3	ns
			2.3~2.7	-	-	1.2	
			3.0~3.6	-	-	0.8	
			4.5~5.5	-	-	0.3	
Output Enable Time (Figures 1,2)	t_{PZL} t_{PZH}	V_{IN}=2 ×V_{CC} for t_{PZL} V_{IN}=0V for t_{PZH}	1.65~1.95	1.5	7.0	14.2	ns
			2.3~2.7	1.5	3.3	7.0	
			3.0~3.6	1.5	2.4	5.5	
			4.5~5.5	1.5	2.0	4.5	
Output Disable Time (Figures 1,2)	t_{PLZ} t_{PHZ}	V_{IN}=2 ×V_{CC} for t_{PLZ} V_{IN}=0V for t_{PHZ}	1.65~1.95	1.5	9.2	18.2	ns
			2.3~2.7	1.5	5.3	9.0	
			3.0~3.6	1.5	4.0	7.0	
			4.5~5.5	1.5	2.7	5.0	
Charge Injection (Figures 3)	Q	C_L=0.1nF, V_{GEN}=0V, R_{GEN}=0Ω, f=1MHz	1.65~5.5	-	0.05	-	pC
Off lsolation (Figures 4)	OIRR	R_L=50Ω, C_L=5pF, f=10MHz	1.65~5.5	-	-50	-	dB
-3dB Bandwidth (Figures 5)	BW	R_L=50Ω	1.65~5.5	-	>250	-	MHz
Total Harmonic Distortion	THD	R_L=600Ω, 0.5V_{P-P} f=600Hz~20kHz	5	-	0.011	-	%

Capacitance

Symbol	Parameter	Typ.	Max.	Units	Conditions
C_{IN}	Control Pin Input Capacitance	2		pF	V_{CC}=0V
$C_{I/O}$	Input/Output Capacitance	6		pF	V_{CC}=5.0V

AC Loading and Waveforms



Input driven by 50Ω source terminated in 50Ω
C_L includes load and stray capacitance.
Input PRR=1.0MHz ; t_w =500ns

FIGURE 1. AC Test Circuit

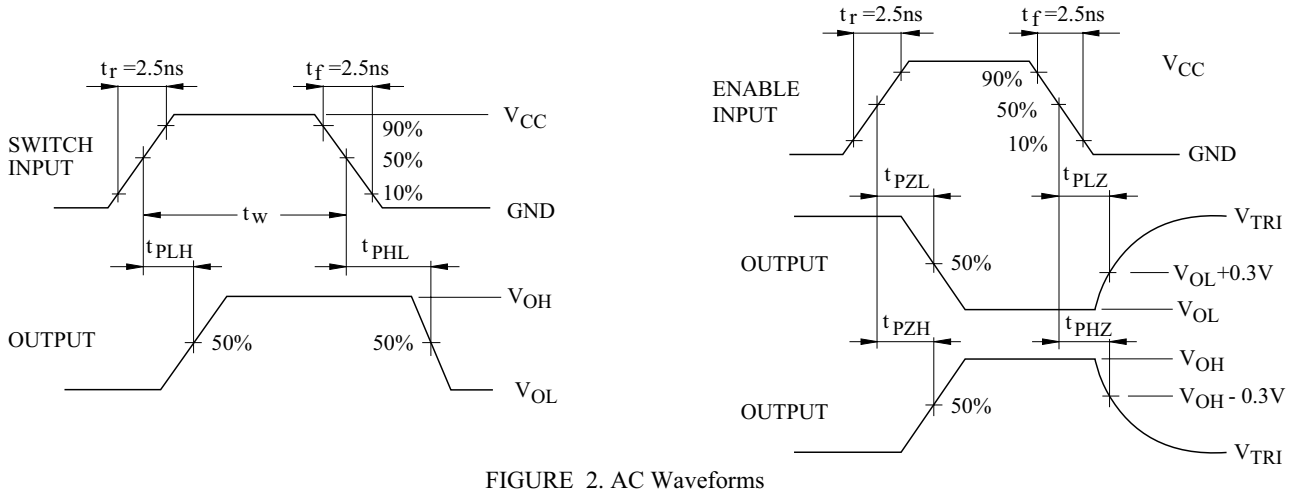


FIGURE 2. AC Waveforms

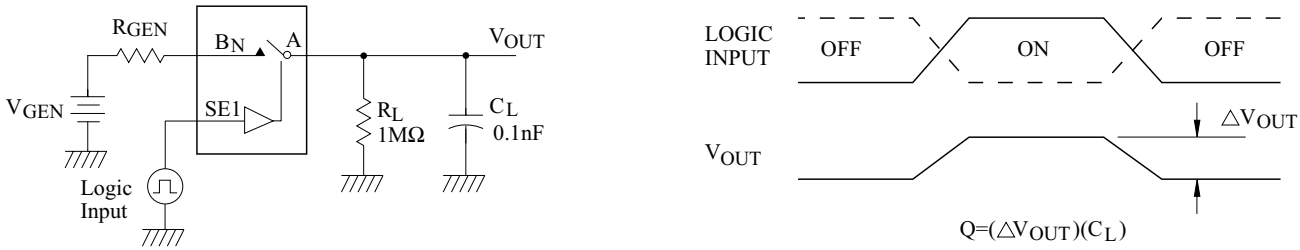


FIGURE 3. Charge Injection Test

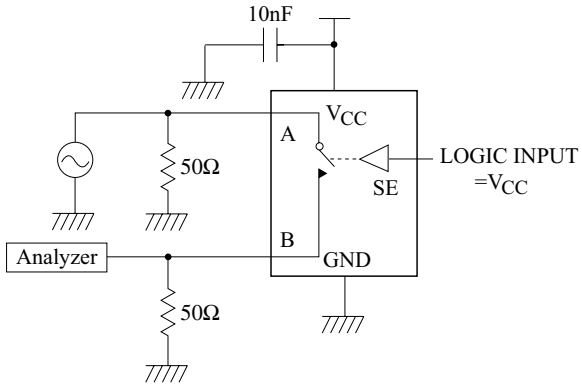


FIGURE 4. Off lsolation

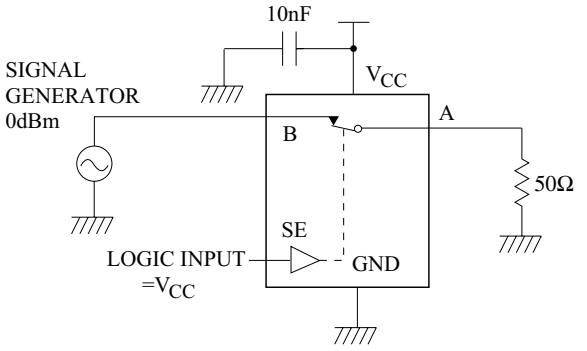


FIGURE 5. Bandwidth