

BILATERAL SWITCH

FEATURES

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

MAXIMUM RATINGS (Ta=25 °C)

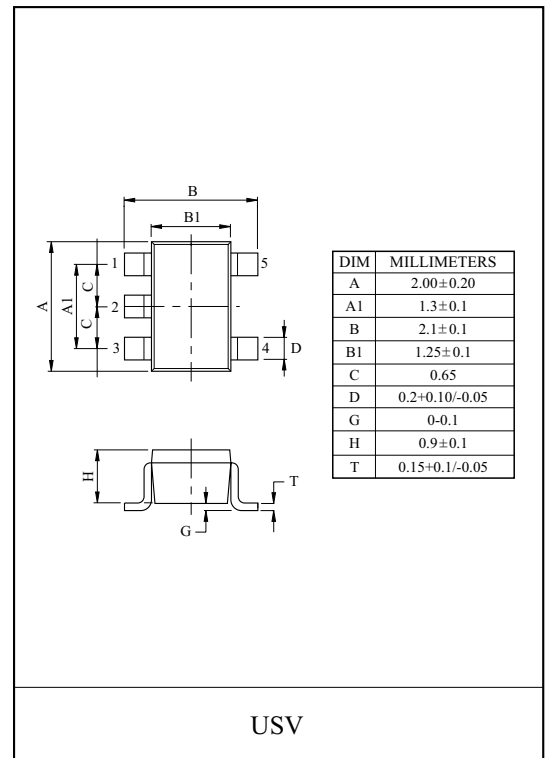
CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V_{CC}	-0.5~7.0	V
Control Input Voltage	V_{IN}	-0.5~7.0	V
Swth I/O Voltage	$V_{I/O}$	-0.5~7.0	V
Control Diode Current	I_{CK}	-50	mA
Output Diode Current	I_{OK}	± 50	mA
DC V_{CC} /Ground Current	I_{CC}	± 100	mA
Power Dissipation	P_D	200	mW
Storage Temperature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

Logic Diagram

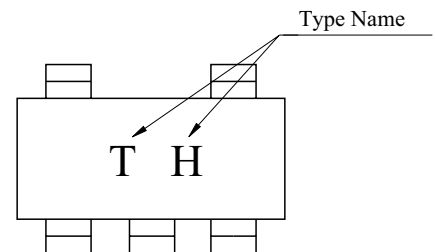


TRUTH TABEL

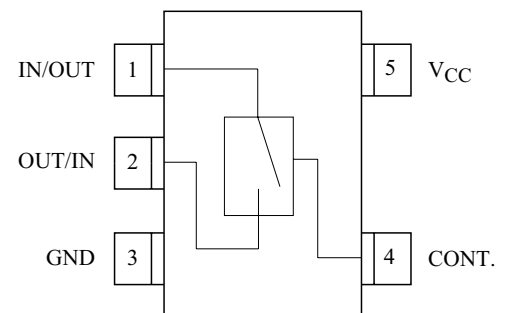
CONTROL	SWITCH FUNCTION
H	ON
L	OFF



MARKING



PIN CONNECTION(TOP VIEW)



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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	°C
Input Rise and Fall Time	t_r, t_f	0 ~ 10 ($V_{CC}=2.3\sim 3.6V$) 0 ~ 5 ($V_{CC}=4.5\sim 5.5V$)	nS/V

ELECTRICAL CHARACTERISTICS

DC Characteristics

CHARACTERISTIC		SYMBOL	TEST CONDITION	Ta=25 °C			Ta=-40~85 °C			UNIT	
				$V_{CC}(V)$	MIN.	TYP.	MAX.	MIN.	TYP. (Note4)		MAX.
Input Voltage	High Level	V_{IH}	-	1.65~1.95	-	-	-	$0.75 \times V_{CC}$	-	-	V
			-	2.3~5.5	-	-	-	$0.7 \times V_{CC}$	-	-	
	Low Level	V_{IL}	-	1.65~1.95	-	-	-	-	-	$0.25 \times V_{CC}$	
			-	2.3~5.5	-	-	-	-	-	$0.3 \times V_{CC}$	
Switch On Resistance (Note 1)	R_{ON}	-	$V_{IN}=0V, I_{IN}=30mA$	4.5	-	-	-	-	3	7	V
			$V_{IN}=2.4V, I_{IN}=15mA$		-	-	-	-	5	12	
			$V_{IN}=4.5V, I_{IN}=30mA$		-	-	-	-	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}	-	$I_A=-30mA, 0 \leq V_{Bn} \leq V_{CC}$	5.0	-	6	-	-	-	-	Ω
			$I_A=-24mA, 0 \leq V_{Bn} \leq V_{CC}$	3.3	-	12	-	-	-	-	
			$I_A=-8mA, 0 \leq V_{Bn} \leq V_{CC}$	2.5	-	28	-	-	-	-	
			$I_A=-4mA, 0 \leq V_{Bn} \leq V_{CC}$	1.8	-	125	-	-	-	-	
Input Leakage Current	I_{IN}	$0 \leq V_{IN} \leq 5.5V$	0~5.5	-	-	-	-	± 0.05	± 1.0	μA	
Power Off Leakage Current	I_{OFF}	$0 \leq A, B \leq V_{CC}$	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 $T_a=25$ °C

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AC Characteristics

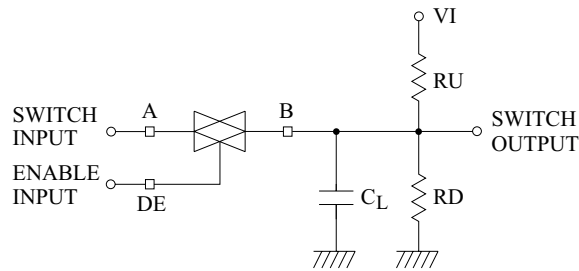
CHARACTERISTIC	SYMBOL	TEST CONDITION	Ta=-40℃~85℃, C _L =50pF, R _U =R _D =500Ω			UNIT	
			V _{CC} (V)	MIN.	TYP.		MAX.
Propagation Delay Bus to Bus (Figures 1,2)	t _{PHL} t _{PLH}	V _{IN} =OPEN	1.65~1.95	-	-	4.3	ns
			2.3~2.7	-	-	1.2	
			3.0~3.6	-	-	0.8	
			4.5~5.5	-	-	0.3	
Output Enable Time (Figures 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 Isolation (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

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AC Loading and Waveforms



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

FIGURE 1. AC Test Circuit

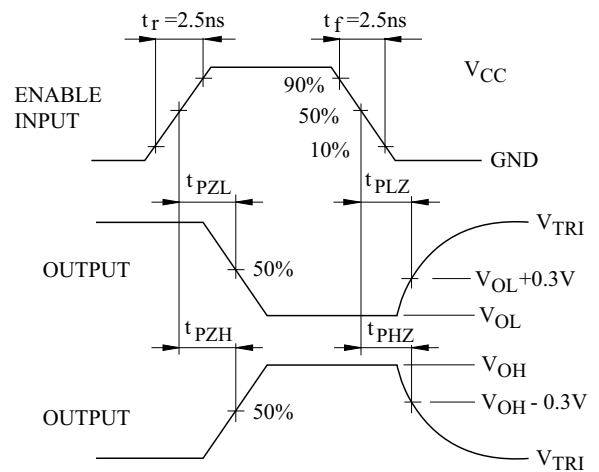
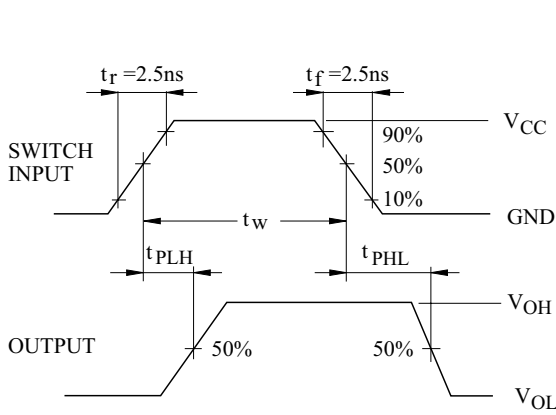


FIGURE 2. AC Waveforms

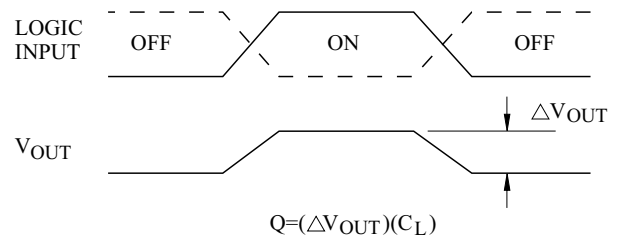
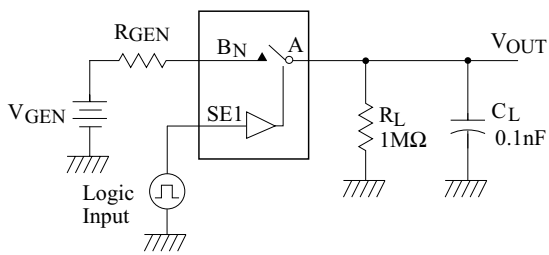


FIGURE 3. Charge Injection Test

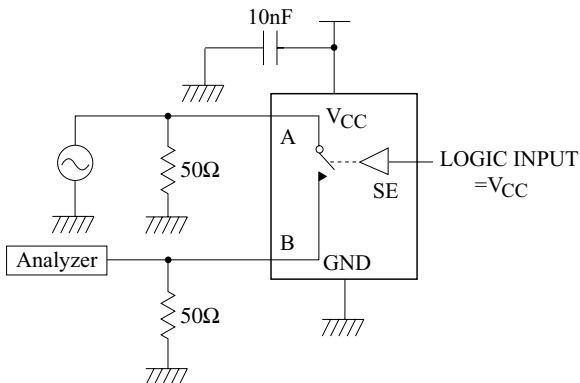


FIGURE 4. Off Isolation

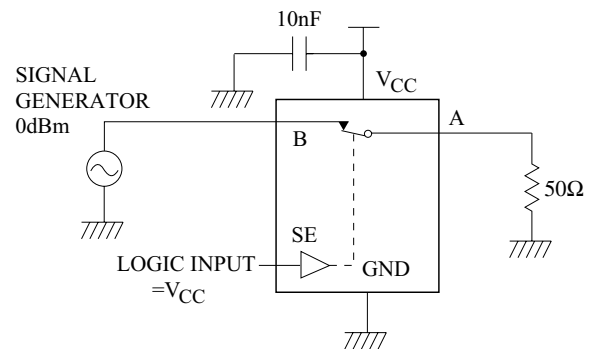


FIGURE 5. Bandwidth