Quad 2-input / 2-output analog switch
BU9761FS

The BU9761FS are analog switches with four circuits each, two for input and two for output. Depending on the status of the SELECT pin, the two input signals can be switched to either of two output pins. In addition, the EN pin can be used to set the output status to high impedance.

●Applications

Videos, movies, TVs, mini-component sets, radio cassette players, audio equipment, personal computers

●Features

1) Ultra-compact slim package. (SSOP-A20)
2) Low current dissipation. (I_Q = 1μA Max.)
3) Equipped with Output Enable terminal.
4) Low switching ON resistance. (R_{ON} = 130Ω)
5) Low dispersion in switching ON resistance for the various channels. (ΔRON = 25Ω Max.)

●Absolute maximum ratings (Ta = 25°C)

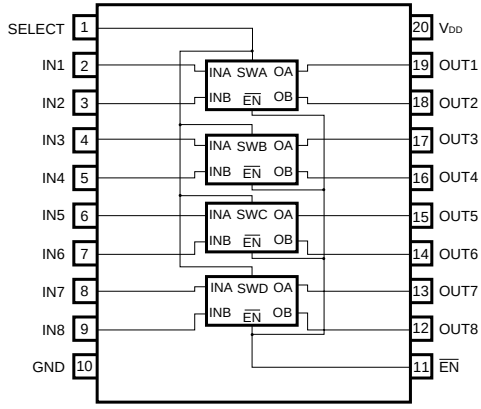
Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	– 0.3 ~ + 7.0	V
Power dissipation	Pd	600*1	mW
Operating temperature	Topr	– 25 ~ + 75	°C
Storage temperature	Tstg	– 50 ~ + 150	°C

*1 Reduced by 4.8mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V_{DD}	4.0	5.0	6.0	V

●Block diagram



(Top View)

●Pin truth table

• $\overline{EN}$

$\overline{EN}$	H	L
OUT1 ~ 8	High-Z	Output Enable

• SELECT

H		L	
Input	Output	Input	Output
INA	OB	INA	OA
INB	OA	INB	OB

●DC characteristics (unless otherwise noted, Ta = 25°C, V_{DD} = 5 V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement circuit
Input high-level voltage	V_{IH}	3.5	—	—	V	R_L = 10kΩ	Fig.1
Input low-level voltage	V_{IL}	—	—	1.5	V	R_L = 10kΩ	Fig.1
Input high-level current	I_{IH}	—	—	0.3	µA	R_L = 10kΩ	Fig.1
Input low-level current	I_{IL}	—	—	0.3	µA	R_L = 10kΩ	Fig.1
ON resistance	R_{ON}	—	135	150	Ω	V_{IN} = V_{DD} / 2, R_L = 1kΩ	Fig.2
ON resistance deflexion	ΔR_{ON}	—	12	25	Ω	V_{IN} = V_{DD} / 2, R_L = 1kΩ	Fig.2
OFF-channel leakage current	Ioff	—	—	0.3 – 0.3	µA	V_{IN} = 5V, V_{OUT} = 0V V_{IN} = 0V, V_{OUT} = 5V	Fig.3
Quiescent current	I_Q	—	—	1.0	µA	V_{IN} = GND	—

●AC characteristics (unless otherwise noted, Ta = 25°C, V_{DD} = 5V, C_L = 50 pF, R_L = 10kΩ)

Parameter	Symbol	Min.	Typ.	Max.	Unit	V_{DD} (V)	Conditions	Measurement circuit
Propagation delay time IN to OUT	t_{PLH1}	—	40	—	ns	5	Output "L"→Output "H" Output "H"→Output "L"	Fig.4
	t_{PHL1}	—	40	—	ns	5		
Propagation delay time SELECT to OUT	t_{PLH2}	—	50	—	ns	5	Output "L"→Output "H" Output "H"→Output "L"	Fig.5
	t_{PHL2}	—	40	—	ns	5		
Output Enable time	t_{PHZ}	—	200	—	ns	5	Output "H"→Output "High Z" Output "L"→Output "High Z"	Fig.6 Fig.7
	t_{PLZ}	—	200	—	ns	5		
Output Disable time	t_{PZH}	—	50	—	ns	5	Output "High Z"→Output "H" Output "High Z"→Output "L"	Fig.6 Fig.7
	t_{PZL}	—	50	—	ns	5		
Input capacitance (control input)	C_C	—	35	—	pF	5	f = 1MHz	—
Input capacitance (switch input)	C_S	—	65	—	pF	5	f = 1MHz	—
Sine wave distortion (T.H.D.)	D	—	0.06	—	%	5	V_{IN} = 2.5V_{P-P}, f = 1kHz	Fig.8
Max. propagation frequency	$f_{Max.}$	—	1.15	—	MHz	5	V_{IN} = 2.5V_{P-P}	Fig.8
Feedthrough attenuation	FT	—	– 70	—	dB	5	V_{IN} = 2.5V_{P-P}, f = 10kHz	Fig.9
Crosstalk (control / switch)	CT_C	—	620	—	mV_{P-P}	5	f = 10kHz	Fig.10
Crosstalk between channels	CT	—	– 50	—	dB	5	V_{IN} = 2.5V_{P-P}, f = 10kHz	Fig.11

●Measurement circuits

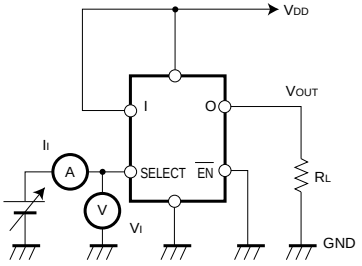


Fig.1 Input voltage, current

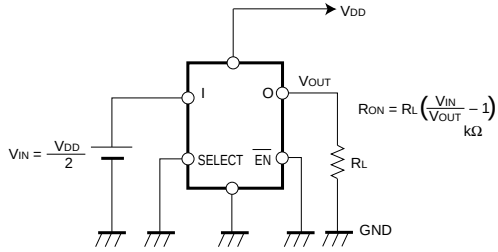


Fig.2 ON resistance, ON resistance deviation

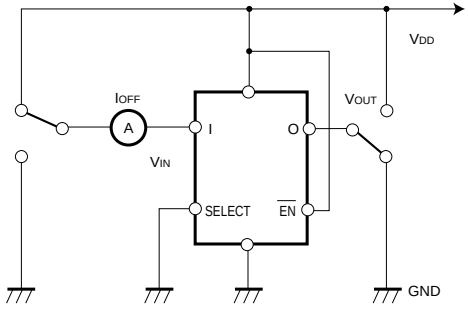


Fig.3 OFF-channel leakage current

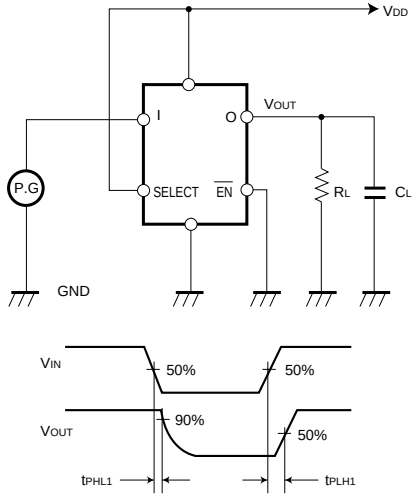


Fig.4 Propagation delay time (IN to OUT)

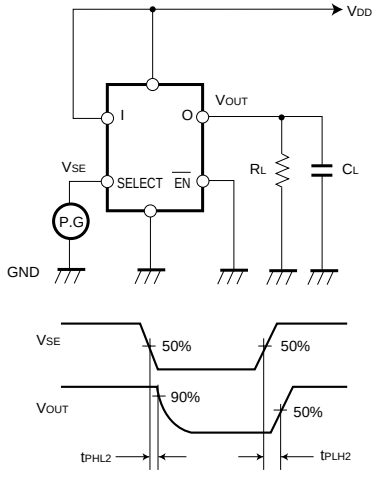


Fig.5 Propagation delay time (SELECT to OUT)

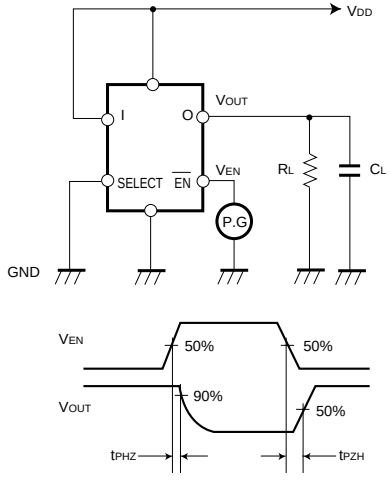


Fig.6 Output Enable, Disable time 1

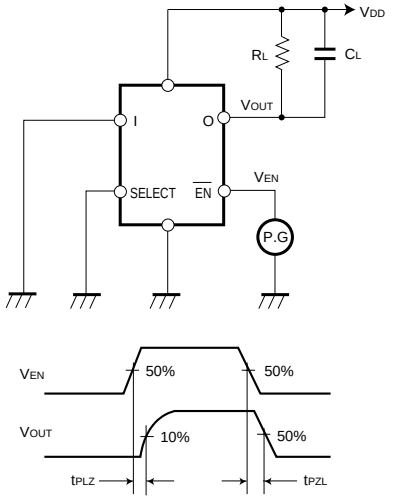


Fig.7 Output Enable, Disable time 2

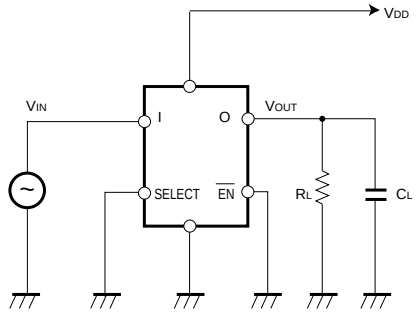


Fig.8 Sine wave distortion,
maximum propagation frequency

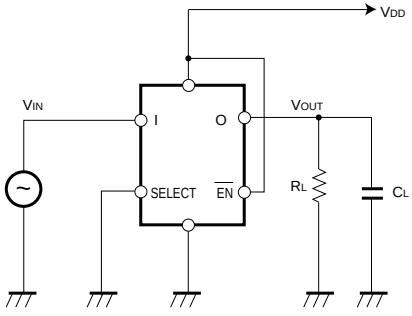


Fig.9 Feedthrough attenuation

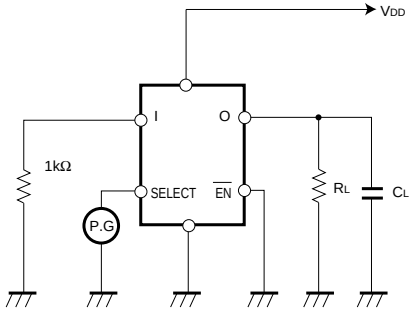


Fig.10 Crosstalk (between control switches)

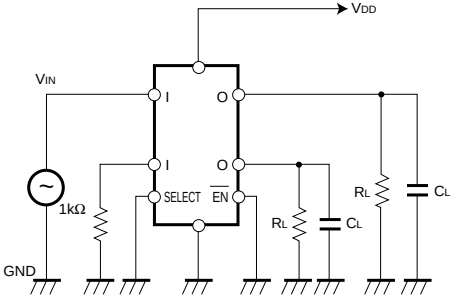


Fig.11 Crosstalk

●Electrical characteristic curve

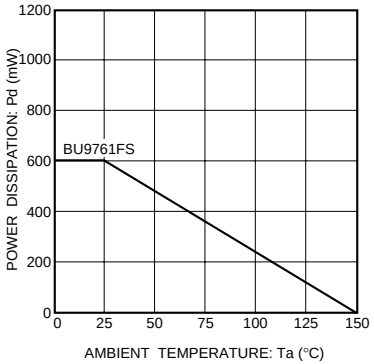
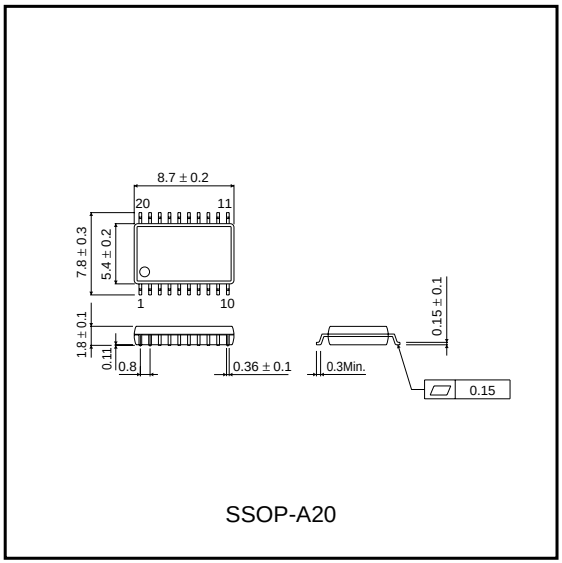


Fig.12 Power dissipation vs. ambient temperature

●External dimensions (Units: mm)



SSOP-A20