Quad analog switch

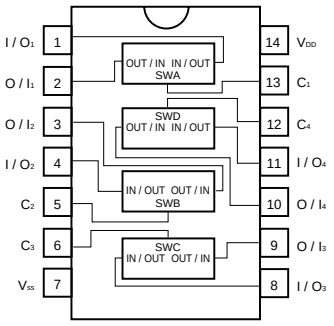
BU4066BC / BU4066BCF / BU4066BCFV

The BU4066BC, BU4066BCF, and BU4066BCFV each consist of four independent switches capable of controlling either digital or analog signals. When Enable Input (CONT) is set to the "H" level, impedance is low (ON status) between switch input and output, and when Enable Input (CONT) is set to the "L" level, impedance is high (OFF status). As the BU4066BC has a good propagation characteristic, it can control large input voltage amplitudes. These switches can be used in analog and digital signal switching and in chopper modulator and demodulator circuits.

●**Absolute maximum ratings** (Ta=25°C)

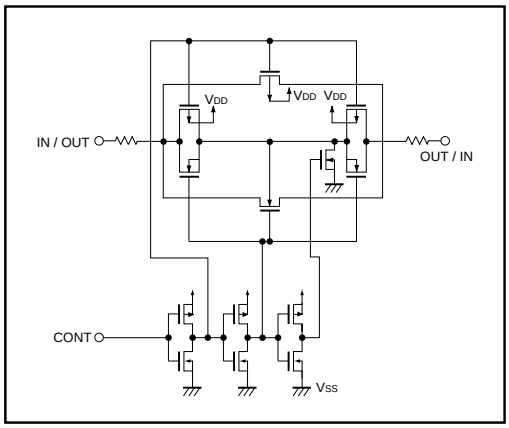
Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	−0.3~+20	V
Power dissipation	Pd	1000(DIP), 450(SOP) 350(SSOP)	mW
Operating temperature	Topr	−40~+85	°C
Storage temperature	Tstg	−55~+150	°C
Input voltage	V_{IN}	−0.5~V_{DD}+0.5	V

●**Block diagram**



DIP / SOP / SSOP

●Logic circuit diagram



●Electrical characteristics

DC characteristics (unless otherwise noted, Ta=25°C, V_{SS}=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	V_{DD} (V)	Conditions	Measurement circuit
Input high-level voltage	V_{IH}	3.5	–	–	V	5	–	Fig. 1
		7.0	–	–		10		
		11.0	–	–		15		
Input low-level voltage	V_{IL}	–	–	1.5	V	5	–	Fig. 1
		–	–	3.0		10		
		–	–	3.75		15		
Input high-level current	I_{IH}	–	–	0.3	µA	15	V_{IH}=15V	Fig. 1
Input low-level current	I_{IL}	–	–	–0.3	µA	15	V_{IL}=0V	Fig. 1
ON resistance	R_{ON}	–	150	600	Ω	5	V_{IN}=0.25V, R_L=10kΩ	Fig. 1
		–	500	950		5	V_{IN}=2.5V, R_L=10kΩ	
		–	200	600		5	V_{IN}=5V, R_L=10kΩ	
		–	230	500		10	V_{IN}=5V, R_L=10kΩ	
		–	180	280		15	V_{IN}=7.5V, R_L=10kΩ	
ON resistance deflexion	ΔR_{ON}	–	25	–	Ω	5	V_I=V_{DD}/2 R_L=10kΩ	Fig. 1
		–	10	–		10		
		–	5	–		15		
OFF-channel leakage current	I_{OFF}	–	–	0.3	µA	15	V_{IN}=15V, V_{OUT}=0V	Fig. 1
		–	–	–0.3		15	V_{IN}=0V, V_{OUT}=15V	
Static current dissipation	I_{DD}	–	–	1.0	µA	5	V_I=V_{DD} or GND	–
		–	–	2.0		10		
		–	–	4.0		15		
Input capacitance (control input)	C_C	–	8	–	pF	–	f=1MHz	–
Input capacitance (switch input)	C_S	–	10	–	pF	–	f=1MHz	–

Switching characteristics (unless otherwise noted, Ta=25°C, C_L=50pF)

Parameter	Symbol	Min.	Typ.	Max.	Unit	V_{DD} (V)	Conditions	Measurement circuit
Propagation delay time SW IN→OUT	t_{PLH} t_{PHL}	–	20	50	ns	5	R_L=10kΩ	Fig.2
		–	12	40		10		
		–	10	30		15		
Propagation delay time CONT→OUT	t_{PHZ} t_{PLZ}	–	40	90	ns	5	Output "H", "L" → "High-Z" R_L=1kΩ	Fig.2
		–	35	80		10		
		–	30	70		15		
Propagation delay time CONT→OUT	t_{PZH} t_{PZL}	–	60	140	ns	5	Output "High-Z"→ "H", "L" R_L=1kΩ	Fig.2
		–	20	50		10		
		–	15	40		15		
Feedthrough attenuation	FT	–	0.7	–	MHz	5	V_{SS}=–5V, R_L=10kΩ *1	Fig.2
Sine wave distortion	D	–	0.1	–	%	5	V_{SS}=–5V, R_L=10kΩ *2	Fig.2
Crosstalk (CONT→OUT)	CT_C	–	–	600	mV_{P-P}	5	V_{SS}=–5V, R_L=10kΩ f=1MHz	Fig.2
Crosstalk (2) between channels	CT	–	1	–	MHz	5	V_{SS}=–5V, R_L=10kΩ *1	Fig.2

*1 V_{IN} : $5V_{P-P}$ sine wave, frequency that enables $\frac{V_{OUT}}{V_{IN}}$ –50dB at channel off.

*2 V_{IN} : $5V_{P-P}$ sine wave.

●Measurement circuits

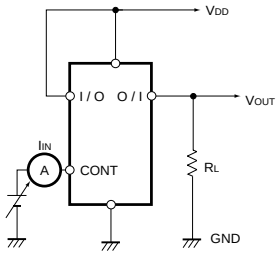


Fig.1 (a) Input voltage, current

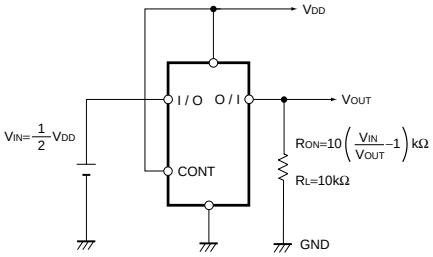


Fig.1 (b) On resistance

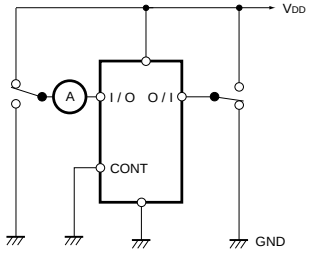


Fig.1 (c) Channel off leakage current

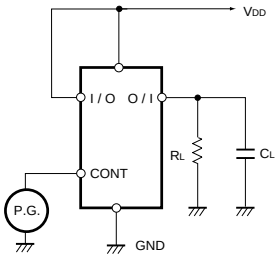


Fig.2 (a) Propagation delay time (IN to OUT)

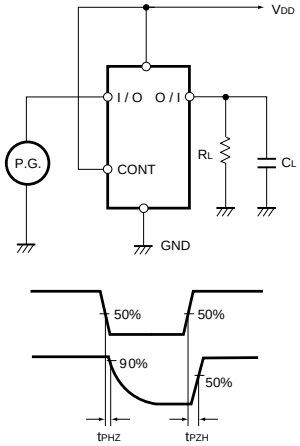


Fig.2 (b) Propagation delay time (CONT to OUT)

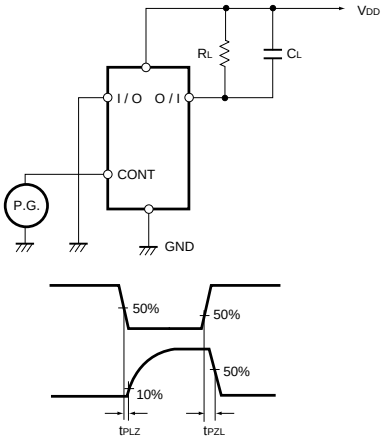


Fig.2 (c) Propagation delay time (CONT to OUT)

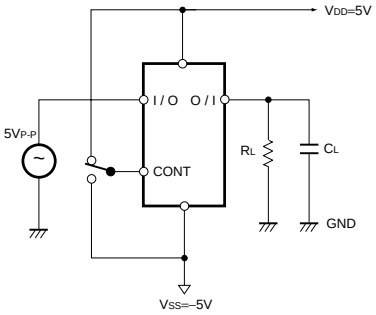


Fig.2 (d) Sine wave distortion, feedthrough attenuation

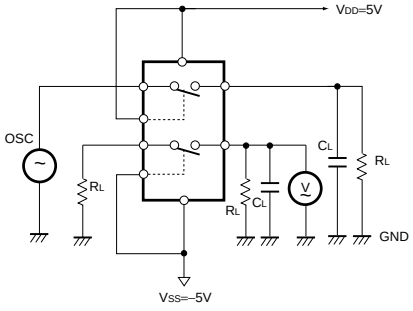


Fig.2 (e) Crosstalk

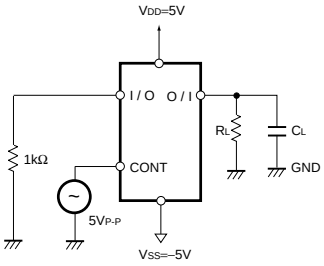


Fig.2 (f) Control IN→OUT crosstalk

●Electrical characteristics curves

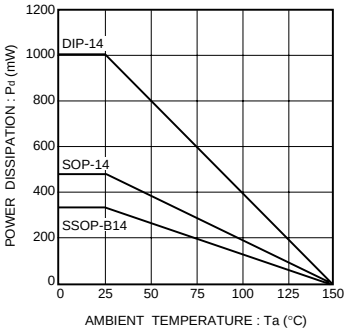
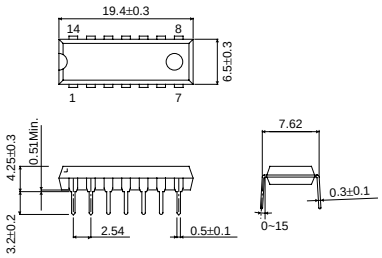


Fig.3 Power dissipation vs. ambient temperature

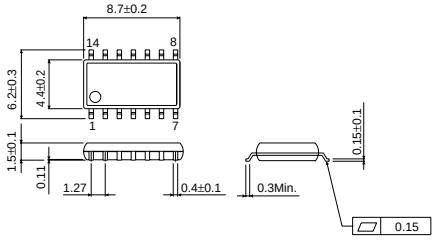
●External dimensions (Units : mm)

BU4066BC



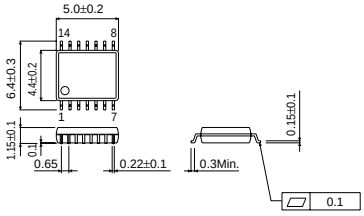
DIP14

BU4066BCF



SOP14

BU4066BCFV



SSOP-B14