

General-purpose CMOS Logic IC Series (BU4S Series)

Single Gate CMOS Logic ICs

<Logic Gate>



**BU4S01G2, BU4S11G2, BU4SU69G2,
BU4S71G2, BU4S81G2, BU4S584G2**

●Description

The BU4SxxxG2 are 1ch logic ICs encapsulated in an SSOP5 package.
They are interchangeable with the general-purpose BU4000B series.

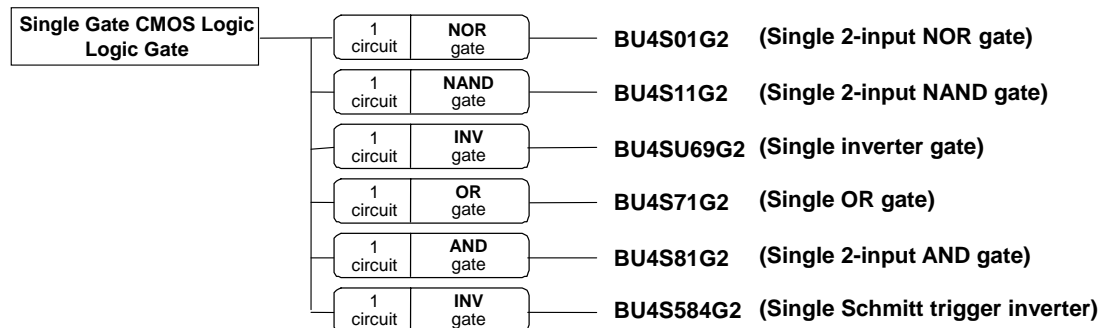
●Features

- 1) Low power consumption
- 2) Surface mount package (SSOP5)
- 3) Broad operating supply voltage range: 3V-16V
- 4) High input impedance
- 5) High fan out
- 6) L-TTL2 and LS-TTL1 inputs can be driven directly.
- 7) Function compatible with BU4000B series (1ch).

●Applications

Suitable for use where low power consumption and a high degree of noise tolerance are required.

●Lineup



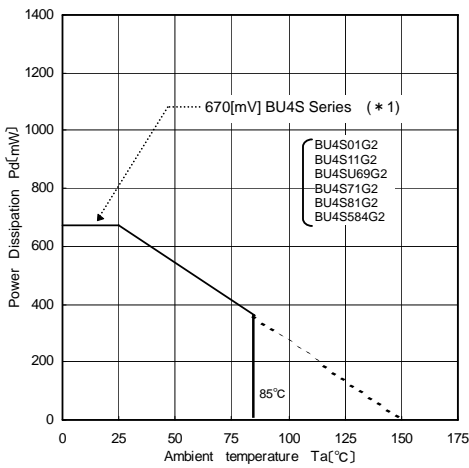
● Absolute Maximum Ratings

Parameter	Symbol	Limit						Unit
		BU4S01G2	BU4S11G2	BU4SU69G2	BU4S71G2	BU4S81G2	BU4S584G2	
Power supply voltage	VDD	- 0.3 to 18						V
Supply current	Iin	± 10						mA
Operating temperature	Topr	- 40 to 85						°C
Storage temperature	Tstg	- 55 to 150						°C
Input voltage	VIN	- 0.3 to VDD+0.3						V
Maximum junction temperature	Tjmax	150						°C

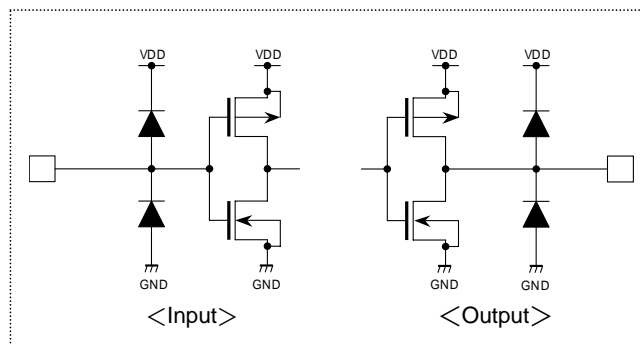
● Recommended Operating Conditions

Parameter	Symbol	Limit						Unit
		BU4S01G2	BU4S11G2	BU4SU69G2	BU4S71G2	BU4S81G2	BU4S584G2	
Operating power supply	VDD	3 to 16						V
Input voltage	VIN	0 to VDD						V

● Thermal Derating Curve



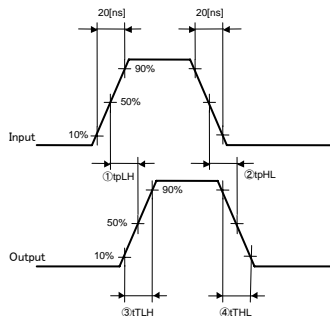
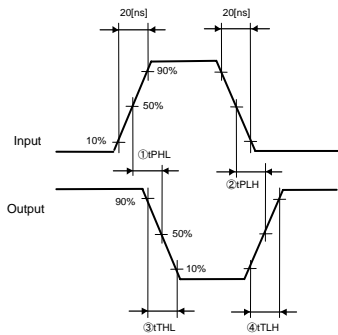
● Input / output Equivalent Circuits



(* 1)	UNIT
5.3	mW/°C

When used at Ta=25[°C] or above, values of above are reduced per 1[°C].
Power dissipation is the value for mounting 70[mm] x 70[mm] x 1.6[mm] FR4 glass epoxy circuit board (copper foil area is 3% or less).

● Switching Characteristics



Description of symbols

- (1) tPHL: Time up to 50% of rise time of input waveform
~ 50% of fall time of output waveform
- (2) tPLH: Time up to 50% of fall time of input waveform
~ 50% of rise time of output waveform
- (3) tTHL: Time up to 90% ~ 10% of fall time of output waveform
- (4) tTLH: Time up to 10% ~ 90% of rise time of output waveform

Description of symbols

- (1) tPLH: Time up to 50% of rise time of input waveform
~ 50% of rise time of output waveform
- (2) tPHL: Time up to 50% of fall time of input waveform
~ 50% of fall time of output waveform
- (3) tTLH: Time up to 10% ~ 90% of rise time of output waveform
- (4) tTHL: Time up to 90% ~ 10% of fall time of output waveform

●Electrical Characteristics (BU4S01G2)

DC Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Input "H" voltage	VIH	3.5	—	—	V	5	VOUT=0.5[V]	1
		7.0	—	—		10	VOUT=1.0[V]	2
		11.0	—	—		15	VOUT=1.5[V] IOUT <1[μA]	3
Input "L" voltage	VIL	—	—	1.5	V	5	VOUT=4.5[V]	1
		—	—	3.0		10	VOUT=9.0[V]	2
		—	—	4.0		15	VOUT=13.5[V] IOUT <1[μA]	3
Input "H" current	I _{IH}	—	—	0.3	μA	15	VIH=15[V]	—
Input "L" current	I _{IL}	—	—	-0.3	μA	15	VIL=0[V]	—
Output "H" voltage	VOH	4.95	—	—	V	5	IOUT <1[μA] VIN=VSS	4
		9.95	—	—		10		
		14.95	—	—		15		
Output "L" voltage	VOL	—	—	0.05	V	5	IOUT <1[μA] VIN=VDD	5
		—	—	0.05		10		
		—	—	0.05		15		
Output "H" current	IOH	-0.51	—	—	mA	5	VOH=4.6[V]	4
		-2.1	—	—		5	VOH=2.5[V]	
		-1.3	—	—		10	VOH=9.5[V]	
		-3.4	—	—		15	VOH=13.5[V] VIN=VSS	
Output "L" current	IOL	0.51	—	—	mA	5	VOL=0.4[V]	5
		1.3	—	—		10	VOL=0.5[V]	
		3.4	—	—		15	VOL=1.5[V] VIN=VDD	
Static supply current	IDD	—	—	0.25	μA	5	VIN=VSS,VDD	—
		—	—	0.5		10		
		—	—	1.0		15		

Switching Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C], CL=50[pF])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Output rising time	t _{TLH}	—	70	—	ns	5	—	6
		—	35	—		10		
		—	30	—		15		
Output falling time	t _{THL}	—	70	—	ns	5	—	7
		—	35	—		10		
		—	30	—		15		
Propagation delay time	t _{PLH}	—	85	—	ns	5	—	8
		—	40	—		10		
		—	30	—		15		
	t _{PHL}	—	85	—	ns	5	—	9
		—	40	—		10		
		—	30	—		15		
Input capacitance	C _{IN}	—	5	—	pF	5	—	—

●Electrical Characteristics (BU4S11G2)

DC Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Input "H" voltage	VIH	3.5	—	—	V	5	VOUT=0.5[V]	10
		7.0	—	—		10	VOUT=1.0[V]	11
		11.0	—	—		15	VOUT=1.5[V] IOUT <1[μA]	12
Input "L" voltage	VIL	—	—	1.5	V	5	VOUT=4.5[V]	10
		—	—	3.0		10	VOUT=9.0[V]	11
		—	—	4.0		15	VOUT=13.5[V] IOUT <1[μA]	12
Input "H" current	I _{IH}	—	—	0.3	μA	15	VIH=15[V]	—
Input "L" current	I _{IL}	—	—	-0.3	μA	15	VIL=0[V]	—
Output "H" voltage	VOH	4.95	—	—	V	5	IOUT <1[μA] VIN=VSS	13
		9.95	—	—		10		
		14.95	—	—		15		
Output "L" voltage	VOL	—	—	0.05	V	5	IOUT <1[μA] VIN=VDD	14
		—	—	0.05		10		
		—	—	0.05		15		
Output "H" current	IOH	-0.51	—	—	mA	5	VOH=4.6[V]	13
		-2.1	—	—		5	VOH=2.5[V]	
		-1.3	—	—		10	VOH=9.5[V]	
		-3.4	—	—		15	VOH=13.5[V] VIN=VSS	
Output "L" current	IOL	0.51	—	—	mA	5	VOL=0.4[V]	14
		1.3	—	—		10	VOL=0.5[V]	
		3.4	—	—		15	VOL=1.5[V] VIN=VDD	
Static supply current	IDD	—	—	0.25	μA	5	VIN=VSS,VDD	—
		—	—	0.5		10		
		—	—	1.0		15		

Switching Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C], CL=50[pF])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Output rising time	t _{TLH}	—	70	—	ns	5	—	15
		—	35	—		10		
		—	30	—		15		
Output falling time	t _{THL}	—	70	—	ns	5	—	16
		—	35	—		10		
		—	30	—		15		
Propagation delay time	t _{PLH}	—	85	—	ns	5	—	17
		—	40	—		10		
		—	30	—		15		
	t _{PHL}	—	85	—	ns	5	—	18
		—	40	—		10		
		—	30	—		15		
Input capacitance	C _{IN}	—	5	—	pF	5	—	—

●Electrical Characteristics (BU4SU69G2)

DC Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Input "H" voltage	VIH	4.0	—	—	V	5	VOUT=0.5[V]	19
		8.0	—	—		10	VOUT=1.0[V]	20
		12.0	—	—		15	VOUT=1.5[V] IOUT <1[μA]	21
Input "L" voltage	VIL	—	—	1.0	V	5	VOUT=4.5[V]	19
		—	—	2.0		10	VOUT=9.0[V]	20
		—	—	3.0		15	VOUT=13.5[V] IOUT <1[μA]	21
Input "H" current	I _{IH}	—	—	0.3	μA	15	VIH=15[V]	—
Input "L" current	I _{IL}	—	—	-0.3	μA	15	VIL=0[V]	—
Output "H" voltage	VOH	4.95	—	—	V	5	IOUT <1[μA] VIN=VSS	22
		9.95	—	—		10		
		14.95	—	—		15		
Output "L" voltage	VOL	—	—	0.05	V	5	IOUT <1[μA] VIN=VDD	23
		—	—	0.05		10		
		—	—	0.05		15		
Output "H" current	IOH	-0.51	—	—	mA	5	VOH=4.6[V]	22
		-2.1	—	—		5	VOH=2.5[V]	
		-1.3	—	—		10	VOH=9.5[V]	
		-3.4	—	—		15	VOH=13.5[V] VIN=VSS	
Output "L" current	IOL	0.51	—	—	mA	5	VOL=0.4[V]	23
		1.3	—	—		10	VOL=0.5[V]	
		3.4	—	—		15	VOL=1.5[V] VIN=VDD	
Static supply current	IDD	—	—	0.25	μA	5	VIN=VSS, VDD	—
		—	—	0.5		10		
		—	—	1.0		15		

Switching Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C], CL=50[pF])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Output rising time	t _{TLH}	—	70	—	ns	5	—	24
		—	35	—		10		
		—	30	—		15		
Output falling time	t _{THL}	—	70	—	ns	5	—	25
		—	35	—		10		
		—	30	—		15		
Propagation delay time	t _{PLH}	—	55	—	ns	5	—	26
		—	30	—		10		
		—	25	—		15		
	t _{PHL}	—	55	—	ns	5	—	27
		—	30	—		10		
		—	25	—		15		
Input capacitance	C _{IN}	—	5	—	pF	5	—	—

●Electrical Characteristics (BU4S71G2)

DC Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Input "H" voltage	VIH	3.5	—	—	V	5	IOUT <1[μA]	28
		7.0	—	—		10		29
		11.0	—	—		15		30
Input "L" voltage	VIL	—	—	1.5	V	5	IOUT <1[μA]	28
		—	—	3.0		10		29
		—	—	4.0		15		30
Input "H" current	I _{IH}	—	—	0.3	μA	18	V _{IH} =18[V]	—
Input "L" current	I _{IL}	—	—	-0.3	μA	18	V _{IL} =0[V]	—
Output "H" voltage	VOH	4.95	—	—	V	5	IOUT <1[μA] V _{IN} =VSS or VDD	31
		9.95	—	—		10		
		14.95	—	—		15		
Output "L" voltage	VOL	—	—	0.05	V	5	IOUT <1[μA] V _{IN} =VSS	32
		—	—	0.05		10		
		—	—	0.05		15		
Output "H" current	IOH	-0.51	—	—	mA	5	VOH=4.6[V]	31
		-2.1	—	—		5	VOH=2.5[V]	
		-1.3	—	—		10	VOH=9.5[V]	
		-3.4	—	—		15	VOH=13.5[V]	
Output "L" current	IOL	0.51	—	—	mA	5	VOL=0.4[V]	32
		1.3	—	—		10	VOL=0.5[V]	
		3.4	—	—		15	VOL=1.5[V]	
Static supply current	IDD	—	—	0.25	μA	5	V _{IN} =VSS, VDD	—
		—	—	0.5		10		
		—	—	1.0		15		

Switching Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C], CL=50[pF])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Output rising time	t _{TLH}	—	70	—	ns	5	—	33
		—	35	—		10		
		—	30	—		15		
Output falling time	t _{THL}	—	70	—	ns	5	—	34
		—	35	—		10		
		—	30	—		15		
Propagation delay time	t _{PLH}	—	90	—	ns	5	—	35
		—	45	—		10		
		—	30	—		15		
	t _{PHL}	—	90	—	ns	5	—	36
		—	45	—		10		
		—	30	—		15		
Input capacitance	C _{IN}	—	5	—	pF	5	—	—

●Electrical Characteristics (BU4S81G2)

DC Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Input "H" voltage	VIH	3.5	—	—	V	5	IOUT <1[μA]	37
		7.0	—	—		10		38
		11.0	—	—		15		39
Input "L" voltage	VIL	—	—	1.5	V	5	IOUT <1[μA]	37
		—	—	3.0		10		38
		—	—	4.0		15		39
Input "H" current	I _{IH}	—	—	0.3	μA	18	V _{IH} =18[V]	—
Input "L" current	I _{IL}	—	—	-0.3	μA	18	V _{IL} =0[V]	—
Output "H" voltage	VOH	4.95	—	—	V	5	IOUT <1[μA] V _{IN} =VSS or VDD	40
		9.95	—	—		10		
		14.95	—	—		15		
Output "L" voltage	VOL	—	—	0.05	V	5	IOUT <1[μA] V _{IN} =VSS	41
		—	—	0.05		10		
		—	—	0.05		15		
Output "H" current	IOH	-0.51	—	—	mA	5	VOH=4.6[V]	40
		-2.1	—	—		5	VOH=2.5[V]	
		-1.3	—	—		10	VOH=9.5[V]	
		-3.4	—	—		15	VOH=13.5[V]	
Output "L" current	IOL	0.51	—	—	mA	5	VOL=0.4[V]	41
		1.3	—	—		10	VOL=0.5[V]	
		3.4	—	—		15	VOL=1.5[V]	
Static supply current	IDD	—	—	0.25	μA	5	V _{IN} =VSS, VDD	—
		—	—	0.5		10		
		—	—	1.0		15		

Switching Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C], CL=50[pF])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Output rising time	t _{TLH}	—	70	—	ns	5	—	42
		—	35	—		10		
		—	30	—		15		
Output falling time	t _{THL}	—	70	—	ns	5	—	43
		—	35	—		10		
		—	30	—		15		
Propagation delay time	t _{PLH}	—	90	—	ns	5	—	44
		—	45	—		10		
		—	30	—		15		
	t _{PHL}	—	90	—	ns	5	—	45
		—	45	—		10		
		—	30	—		15		
Input capacitance	C _{IN}	—	5	—	pF	5	—	—

●Electrical Characteristics (BU4S584G2)

DC Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No
		MIN	TYP	MAX				
Input "H" voltage	VIH	2.6	—	—	V	3	—	46
		3.5	—	—		5		47
		7.0	—	—		10		48
		11.0	—	—		15		
Input "L" voltage	VIL	—	—	0.4	V	3	—	46
		—	—	1.5		5		47
		—	—	3.0		10		48
		—	—	4.0		15		
Input "H" current	I _{IH}	—	—	0.3	μA	15	VIH=15[V]	—
Input "L" current	I _{IL}	—	—	-0.3	μA	15	VIL=0[V]	—
Output "H" voltage	VOH	2.95	—	—	V	3	I _{OUT} <1[μA] VIN=VSS	49
		4.95	—	—		5		
		9.95	—	—		10		
		14.95	—	—		15		
Output "L" voltage	VOL	—	—	0.05	V	3	I _{OUT} <1[μA] VIN=VDD	50
		—	—	0.05		5		
		—	—	0.05		10		
		—	—	0.05		15		
Output "H" current	IOH	-0.1	—	—	mA	3	VOH=2.7[V]	49
		-0.51	—	—		5	VOH=4.6[V]	
		-2.1	—	—		5	VOH=2.5[V]	
		-1.3	—	—		10	VOH=9.5[V]	
		-3.4	—	—		15	VOH=13.5[V]	
Output "L" current	IOL	0.1	—	—	mA	3	VOL=0.3[V]	50
		0.51	—	—		5	VOL=0.4[V]	
		1.3	—	—		10	VOL=0.5[V]	
		3.4	—	—		15	VOL=1.5[V]	
		—	—	—		—	—	
Hysteresis voltage	VH	0.1	—	0.5	V	3	—	—
		0.15	—	0.6		5		
		0.25	—	1.0		10		
		0.40	—	1.5		15		
Supply current	IDD	—	—	0.2	μA	3	VIN=VSS or VDD	—
		—	—	0.25		5		
		—	—	0.5		10		
		—	—	1.0		15		
		—	—	—		—		

Switching Characteristics (Unless otherwise noted, VSS=0[V], Ta=25[°C], CL=50[pF])

Parameter	Symbol	Standard Value			Unit	VDD[V]	Condition	Fig. No	
		MIN	TYP	MAX					
Output rising time	t _{TLH}	—	140	—	ns	3	—	51	
		—	70	—		5			
		—	35	—		10			
		—	30	—		15			
Output falling time	t _{THL}	—	140	—	ns	3	—	52	
		—	70	—		5			
		—	35	—		10			
		—	30	—		15			
Propagation delay time	t _{PLH}	—	230	—	ns	3	—	53	
		—	125	—		5			
		—	60	—		10			
		—	50	—		15			
	t _{PHL}	t _{PHL}	—	230	—	ns	3	—	54
			—	125	—		5		
			—	60	—		10		
			—	50	—		15		

●Electrical Characteristics Curves (BU4S01G2)

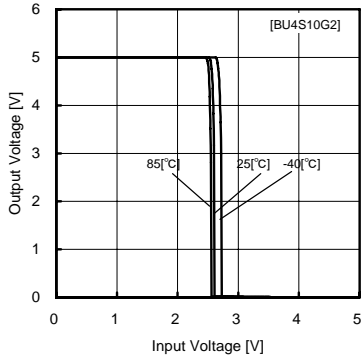


Fig.1

Output voltage—Input voltage characteristics
(VDD=5[V] / VSS=0[V])

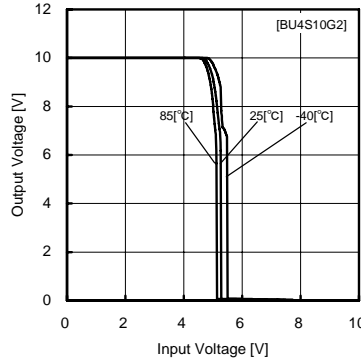


Fig.2

Output voltage—Input voltage characteristics
(VDD=10[V] / VSS=0[V])

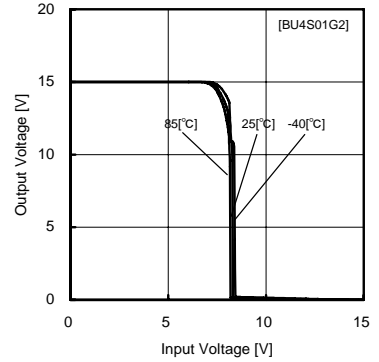


Fig.3

Output voltage—Input voltage characteristics
(VDD=15[V] / VSS=0[V])

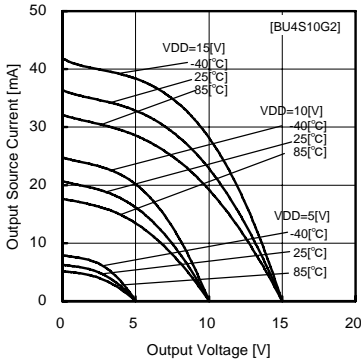


Fig.4

Output source current—voltage characteristics

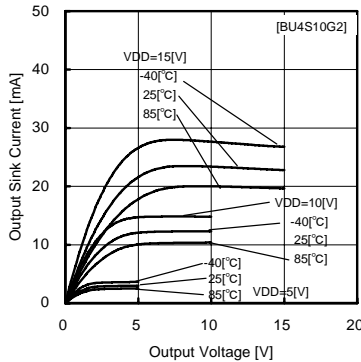


Fig.5

Output sink current—voltage characteristics

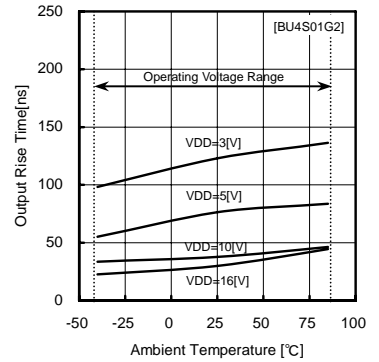


Fig.6

Output rising time tTLH

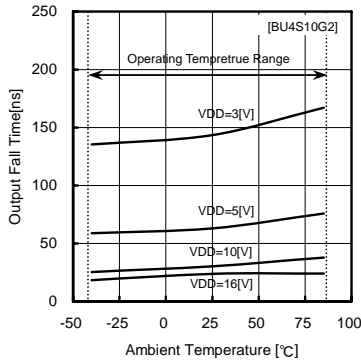


Fig.7

Output falling time tTHL

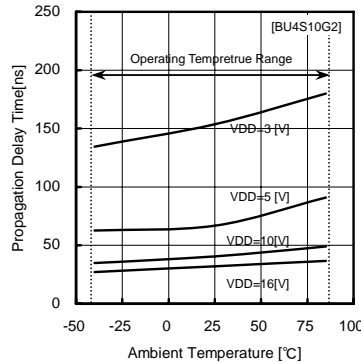


Fig.8

Propagation delay time tPLH

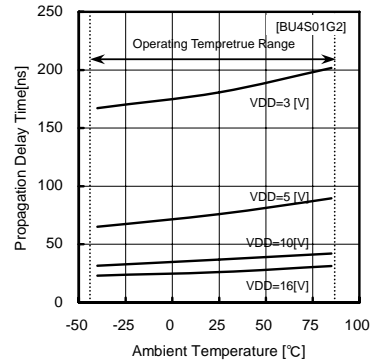
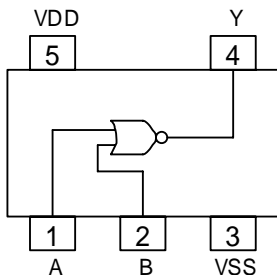


Fig.9

Propagation delay time tPHL

●Pinout Diagram · Pin Description · Input / Output Table



PIN	PIN NAME	I/O	PIN FUNCTION
1	A	I	Input
2	B	I	Input
3	VSS	—	Power supply(-)
4	Y	O	Output
5	VDD	—	Power supply(+)

A	B	Y
L	L	H
L	H	L
H	L	L
H	H	L

●Electrical Characteristics Curves (BU4S11G2)

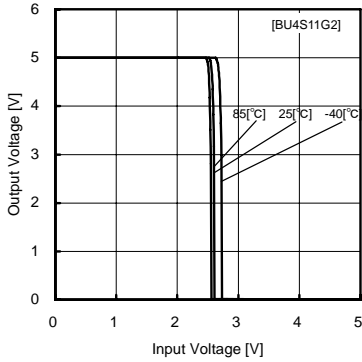


Fig.10
Output voltage—Input voltage characteristics
(VDD=5[V] / VSS=0[V])

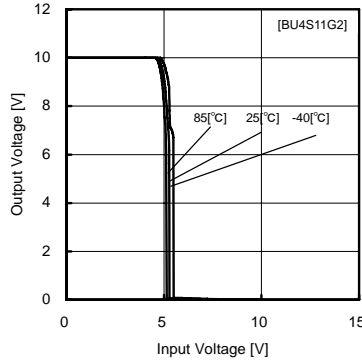


Fig.11
Output voltage—Input voltage characteristics
(VDD=10[V] / VSS=0[V])

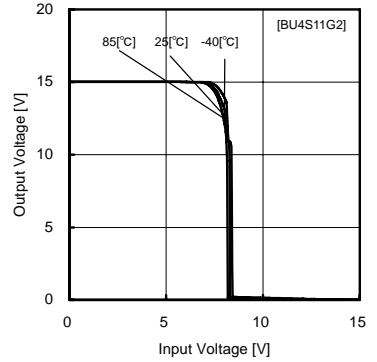


Fig.12
Output voltage—Input voltage characteristics
(VDD=15[V] / VSS=0[V])

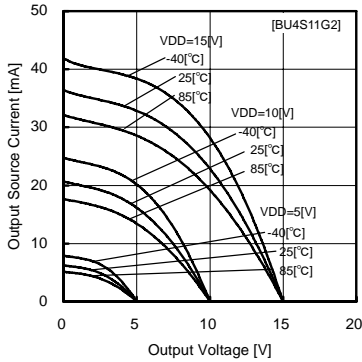


Fig.13
Output source current—voltage characteristics

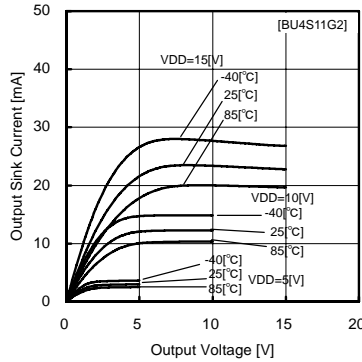


Fig.14
Output sink current—voltage characteristics

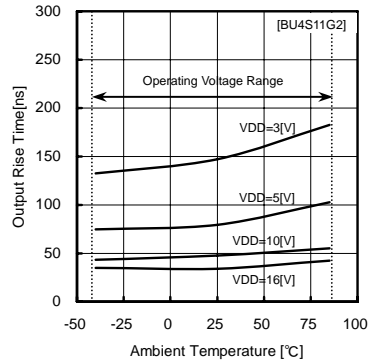


Fig.15
Output rising time tLH

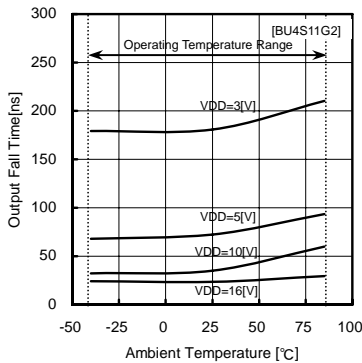


Fig.16
Output falling time tHL

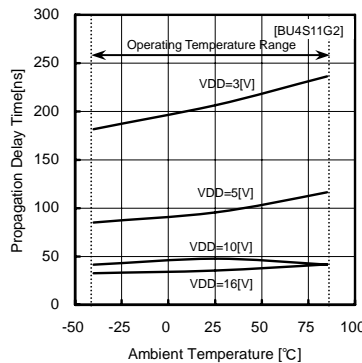


Fig.17
Propagation delay time tPLH

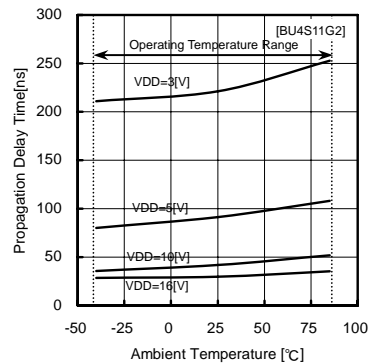
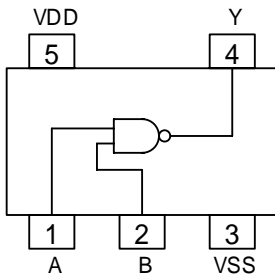


Fig.18
Propagation delay time tPHL

●Pinout Diagram · Pin Description · Input / Output Table



PIN	PIN NAME	I/O	PIN FUNCTION
1	A	I	Input
2	B	I	Input
3	VSS	—	Power supply(-)
4	Y	O	Output
5	VDD	—	Power supply(+)

A	B	Y
L	L	H
L	H	H
H	L	H
H	H	L

●Reference Date (BU4SU69G2)

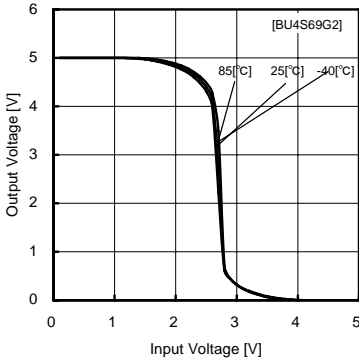


Fig.19
Output voltage—Input voltage characteristics
(VDD=5[V] / VSS=0[V])

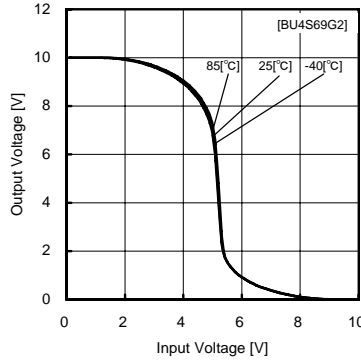


Fig.20
Output voltage—Input voltage characteristics
(VDD=10[V] / VSS=0[V])

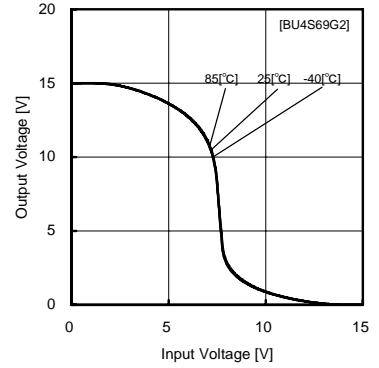


Fig.21
Output voltage—Input voltage characteristics
(VDD=15[V] / VSS=0[V])

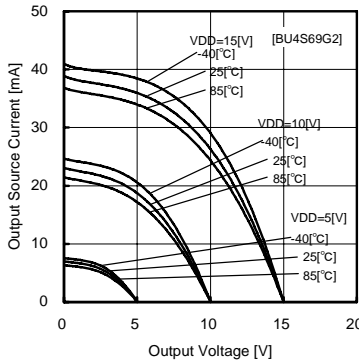


Fig.22
Output source current—voltage characteristics

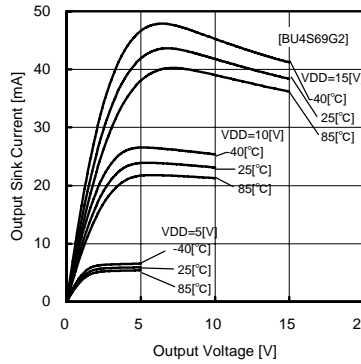


Fig.23
Output sink current—voltage characteristics

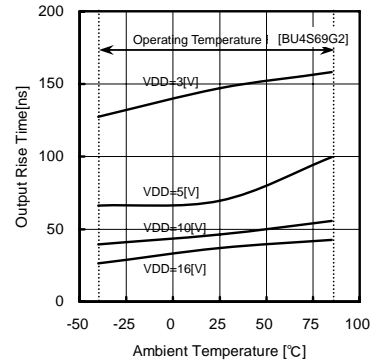


Fig.24
Output rising time tTLH

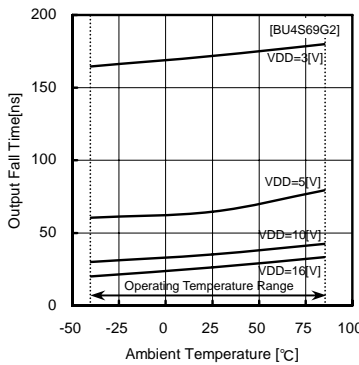


Fig.25
Output falling time tTHL

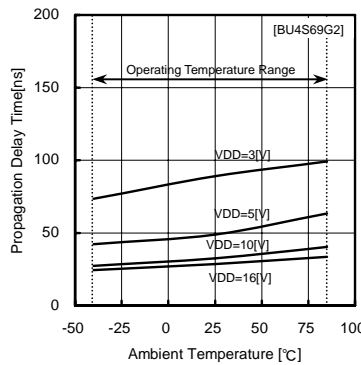


Fig.26
Propagation delay time tPLH

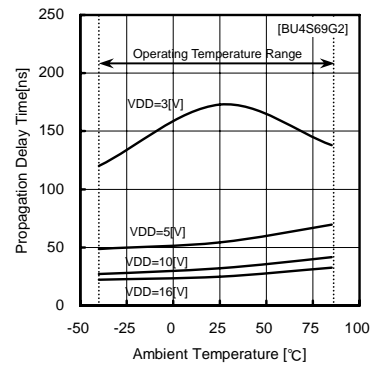
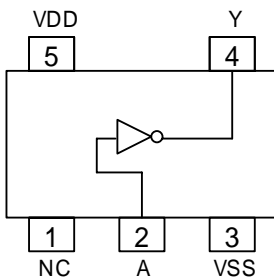


Fig.27
Propagation delay time tPHL

●Pinout Diagram · Pin Description · Input / Output Table



PIN	PIN NAME	I/O	PIN FUNCTION
1	NC	—	NC
2	A	I	Input
3	VSS	—	Power supply(-)
4	Y	O	Output
5	VDD	—	Power supply(+)

A	Y
L	H
H	L

●Reference Date (BU4S71G2)

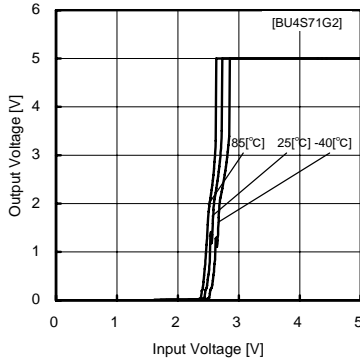


Fig.28

Output voltage—Input voltage characteristics (VDD=5[V] / VSS=0[V])

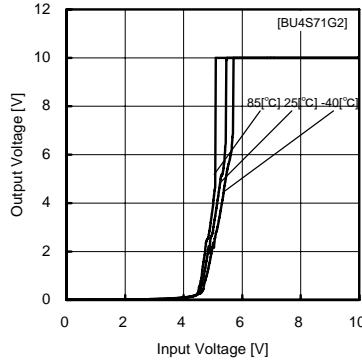


Fig.29

Output voltage—Input voltage characteristics (VDD=10[V] / VSS=0[V])

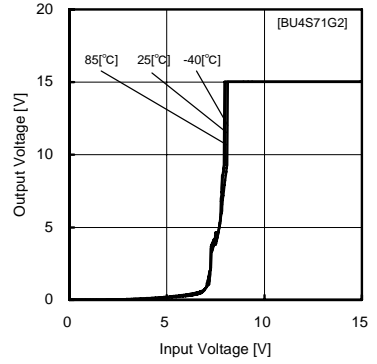


Fig.30

Output voltage—Input voltage characteristics (VDD=15[V] / VSS=0[V])

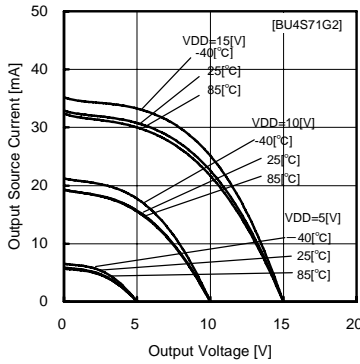


Fig.31

Output source current—voltage characteristics

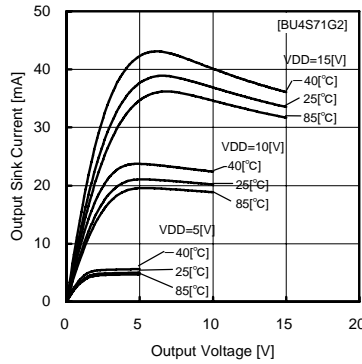


Fig.32

Output sink current—voltage characteristics

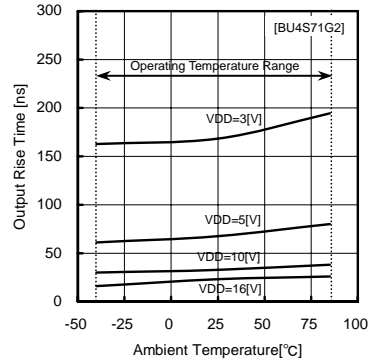


Fig.33

Rising time tRLH

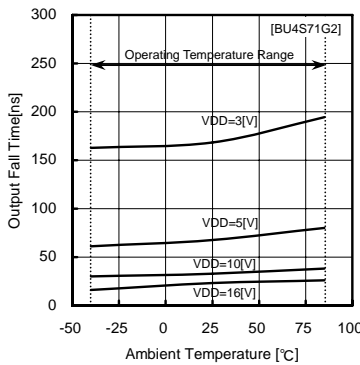


Fig.34

falling time tFHL

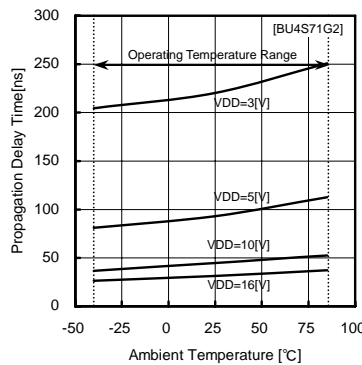


Fig.35

Propagation delay time tPLH

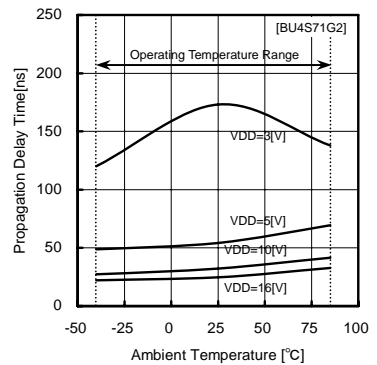
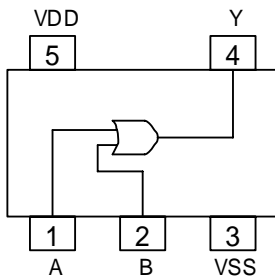


Fig.36

Propagation delay time tPHL

●Pinout Diagram · Pin Description · Input / Output Table



PIN	PIN NAME	I/O	PIN FUNCTION
1	A	I	Input
2	B	I	Input
3	VSS	—	Power supply(-)
4	Y	O	Output
5	VDD	—	Power supply(+)

A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

● Electrical Characteristics Curves (BU4S81G2)

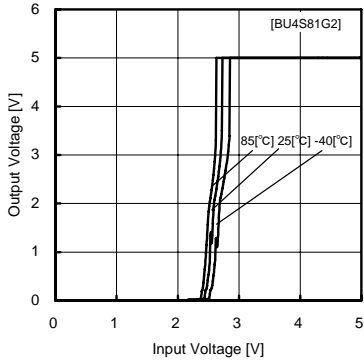


Fig.37

Output voltage—Input voltage characteristics (VDD=5[V] / VSS=0[V])

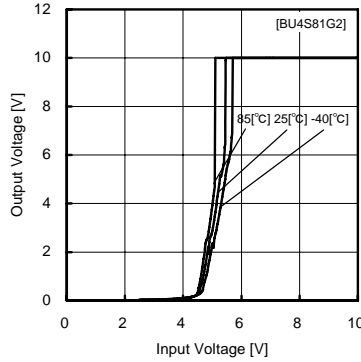


Fig.38

Output voltage—Input voltage characteristics (VDD=10[V] / VSS=0[V])

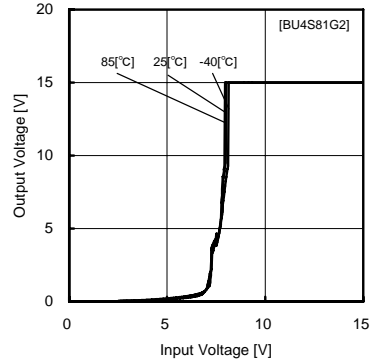


Fig.39

Output voltage—Input voltage characteristics (VDD=15[V] / VSS=0[V])

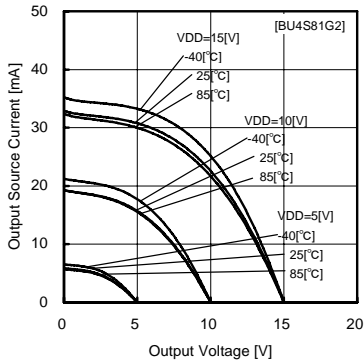


Fig.40

Output source current—voltage characteristics

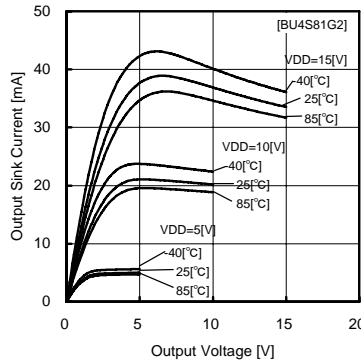


Fig.41

Output sink current—voltage characteristics

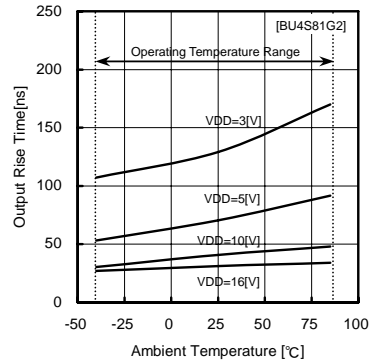


Fig.42

Output rising time tTLH

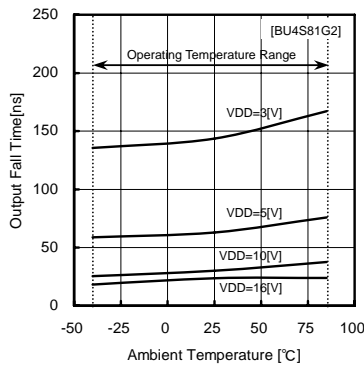


Fig.43

Output falling time tTHL

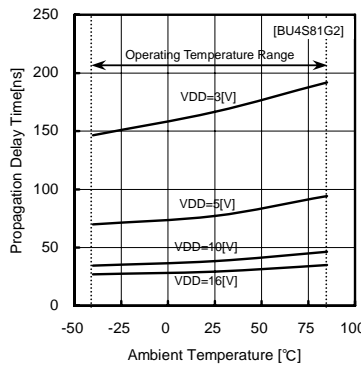


Fig.44

Propagation delay time tPLH

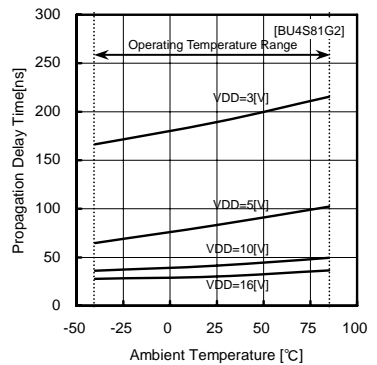
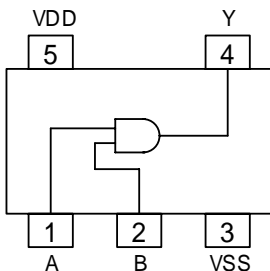


Fig.45

Propagation delay time tPLH

● Pinout Diagram · Pin Description · Input / Output Table



PIN	PIN NAME	I/O	PIN FUNCTION
1	NC	—	Input
2	A	I	Input
3	VSS	—	Power supply(-)
4	Y	O	Output
5	VDD	—	Power supply(+)

A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

● Electrical Characteristics Curves (BU4S584G2)

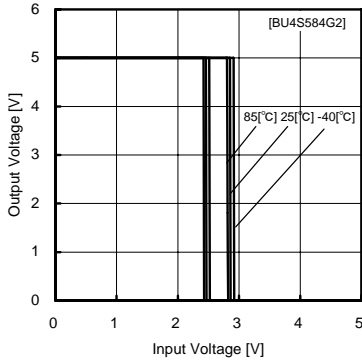


Fig.46

Output voltage—Input voltage characteristics (VDD=5[V] / VSS=0[V])

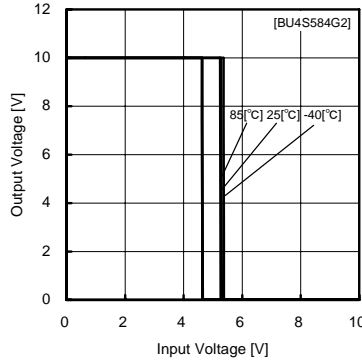


Fig.47

Output voltage—Input voltage characteristics (VDD=10[V] / VSS=0[V])

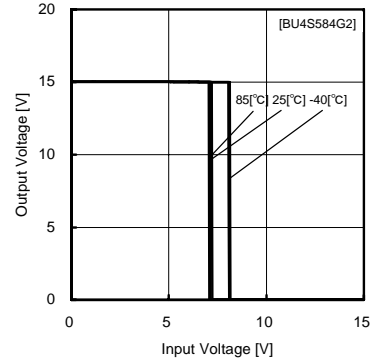


Fig.48

Output voltage—Input voltage characteristics (VDD=15[V] / VSS=0[V])

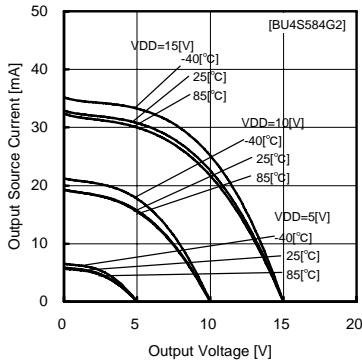


Fig.49

Output source current—voltage characteristics

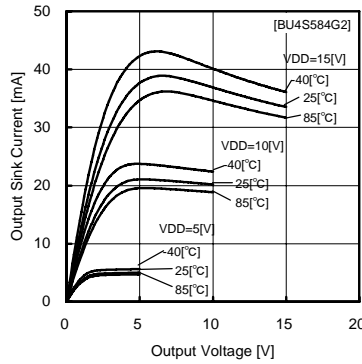


Fig.50

Output sink current—voltage characteristics

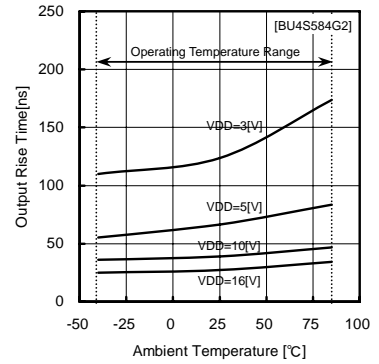


Fig.51

Output rising time tRLH

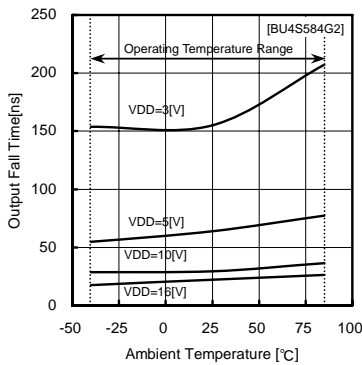


Fig.52

Output falling time tFHL

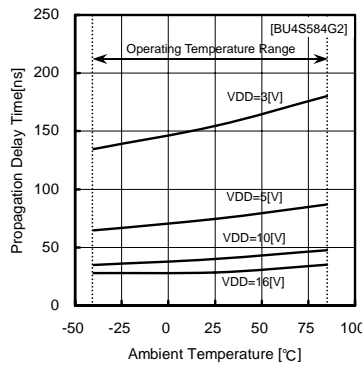


Fig.53

Propagation delay time tPLH

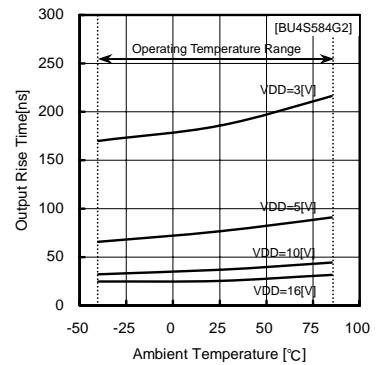
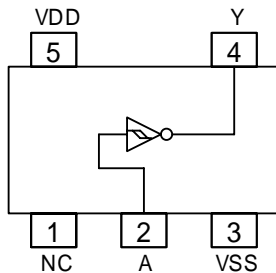


Fig.54

Propagation delay time tPHL

● Pinout Diagram · Pin Description · Input / Output Table



PIN	PIN NAME	I/O	PIN FUNCTION
1	NC	—	NC
2	A	I	Input
3	VSS	—	Power supply(-)
4	Y	O	Output
5	VDD	—	Power supply(+)

A	Y
L	H
H	L

● Operation Notes

1. Absolute Maximum ratings

An excess in the absolute maximum ratings, such as supply voltage, temperature range of operating conditions, etc., can break down the devices, thus making impossible to identify breaking mode, such as short circuit or an open circuit. If any over rated values will expect to exceed the absolute maximum ratings, consider adding circuit protection devices, such as fuses.

2. Connecting the power supply connector backward

Connecting of the power supply in reverse polarity can damage IC. Take precautions when connecting the power supply lines. An external direction diode can be added.

3. Power supply lines

Design PCB layout pattern to provide low impedance GND and supply lines. To obtain a low noise ground and supply line, separate the ground section and supply lines of the digital and analog blocks. Furthermore, for all power supply terminals to ICs, connect a capacitor between the power supply and the GND terminal. When applying electrolytic capacitors in the circuit, not that capacitance characteristic values are reduced at low temperatures.

4. GND voltage

The potential of GND pin must be minimum potential in all operating conditions.

5. Thermal design

Use a thermal design that allows for a sufficient margin in light of the power dissipation (Pd) in actual operating conditions.

6. Inter-pin shorts and mounting errors

Use caution when positioning the IC for mounting on printed circuit boards. The IC may be damaged if there is any connection error or if pins are shorted together.

7. Actions in strong electromagnetic field

Use caution when using the IC in the presence of a strong electromagnetic field as doing so may cause the IC to malfunction.

8. Testing on application boards

When testing the IC on an application board, connecting a capacitor to a pin with low impedance subjects the IC to stress. Always discharge capacitors after each process or step. Always turn the IC's power supply off before connecting it to or removing it from a jig or fixture during the inspection process. Ground the IC during assembly steps as an antistatic measure. Use similar precaution when transporting or storing the IC.

9. Ground Wiring Pattern

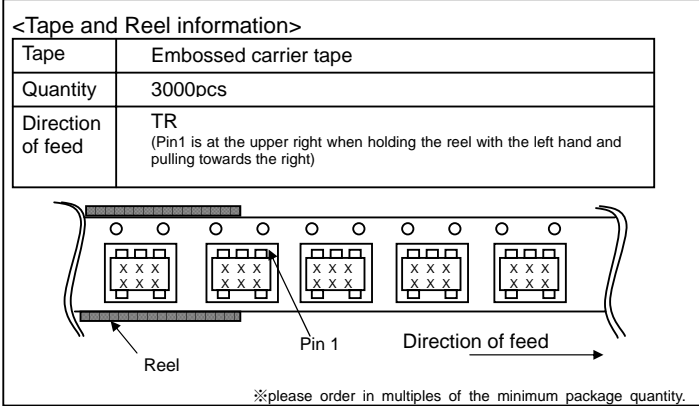
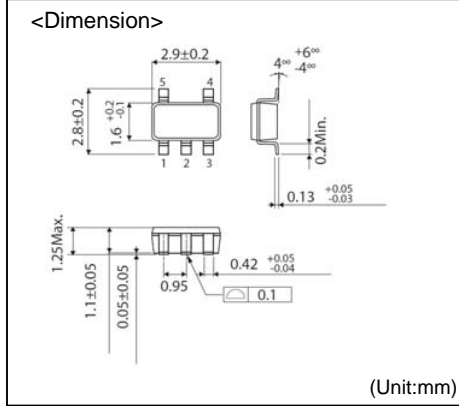
When using both small signal and large current GND patterns, it is recommended to isolate the two ground patterns, placing a signal ground point at the ground potential of application so that the pattern wiring resistance and voltage variations caused by large currents do not cause variations in the small signal ground voltage. Be careful not to change the GND wiring pattern of any external components, either.

10. Unused input terminals

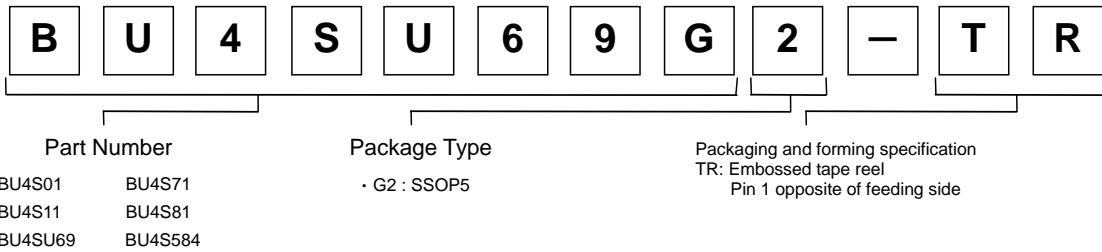
Connect all unused input terminals to VDD or VSS in order to prevent excessive current or oscillation. Insertion of a resistor (100k Ω approx.) is also recommended.

●Packaging Specifications

SSOP5



●Part Number Explanation



- The contents described herein are correct as of October, 2008
- The contents described herein are subject to change without notice. For updates of the latest information, please contact and confirm with ROHM CO.,LTD.
- Any part of this application note must not be duplicated or copied without our permission.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
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- The products described herein utilize silicon as the main material.
- The products described herein are not designed to be X ray proof.

The products listed in this catalog are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys). Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

Contact us for further information about the products.

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Dallas	TEL: +1-469-287-5366	FAX: +1-469-362-7973	Ningbo	TEL: +86-574-87654201	FAX: +86-574-87654208
Denver	TEL: +1-303-708-0908	FAX: +1-303-708-0858	Qingdao	TEL: +86-532-5779-312	FAX: +86-532-5779-653
Detroit	TEL: +1-248-348-9920	FAX: +1-248-348-9942	Suzhou	TEL: +86-512-6807-1300	FAX: +86-512-6807-2300
Nashville	TEL: +1-615-620-6700	FAX: +1-615-620-6702	Wuxi	TEL: +86-510-82702693	FAX: +86-510-82702992
Mexico	TEL: +52-33-3123-2001	FAX: +52-33-3123-2002	Shenzhen	TEL: +86-755-8307-3008	FAX: +86-755-8307-3003
Düsseldorf	TEL: +49-2154-9210	FAX: +49-2154-921400	Dongguan	TEL: +86-769-8393-3320	FAX: +86-769-8398-4140
Munich	TEL: +49-8999-216168	FAX: +49-8999-216176	Fuzhou	TEL: +86-591-8801-8698	FAX: +86-591-8801-8690
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