

# Pulse driver for LCD drive

## BU9764FV

The BU9764FV is a level converter IC designed for LCD drive, which receives 5V signals and converts them to 16V signals. The compact SSOP-B16 package contains six internal level converters.

### ●Applications

Small- to medium-sized TFT liquid crystal panels for movie projectors, LCD projectors, and other similar devices

### ●Features

- 1) Six internal level converter channels.
- 2) TTL input.
- 3) Shifts levels to convert 5V signals into 16V signals.
- 4) Compact SSOP-B16 package.

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

Parameter	Symbol	Limits	Unit	Pin
Power supply voltage (1)	V <sub>DD1</sub>	- 0.5 ~ V <sub>SS</sub> + 7.0	V	V <sub>DD1</sub>
Power supply voltage (2)*1	V <sub>DD2</sub>	- 0.5 ~ V <sub>SS</sub> + 20.0	V	V <sub>DD2</sub>
Input voltage	V <sub>IN</sub>	- 0.5 ~ V <sub>DD1</sub> + 0.5	V	V <sub>IN1</sub> ~ V <sub>IN6</sub>
Output voltage	V <sub>OUT</sub>	- 0.5 ~ V <sub>DD2</sub> + 0.5	V	V <sub>OUT1</sub> ~ V <sub>OUT6</sub>
Output current	I <sub>OUT</sub>	± 10	mA	V <sub>OUT1</sub> ~ V <sub>OUT6</sub>
Operating temperature range	T <sub>opr</sub>	- 25 ~ + 85	°C	—
Storage temperature range	T <sub>stg</sub>	- 65 ~ + 150	°C	—
Power dissipation*2	P <sub>d</sub>	400	mW	—

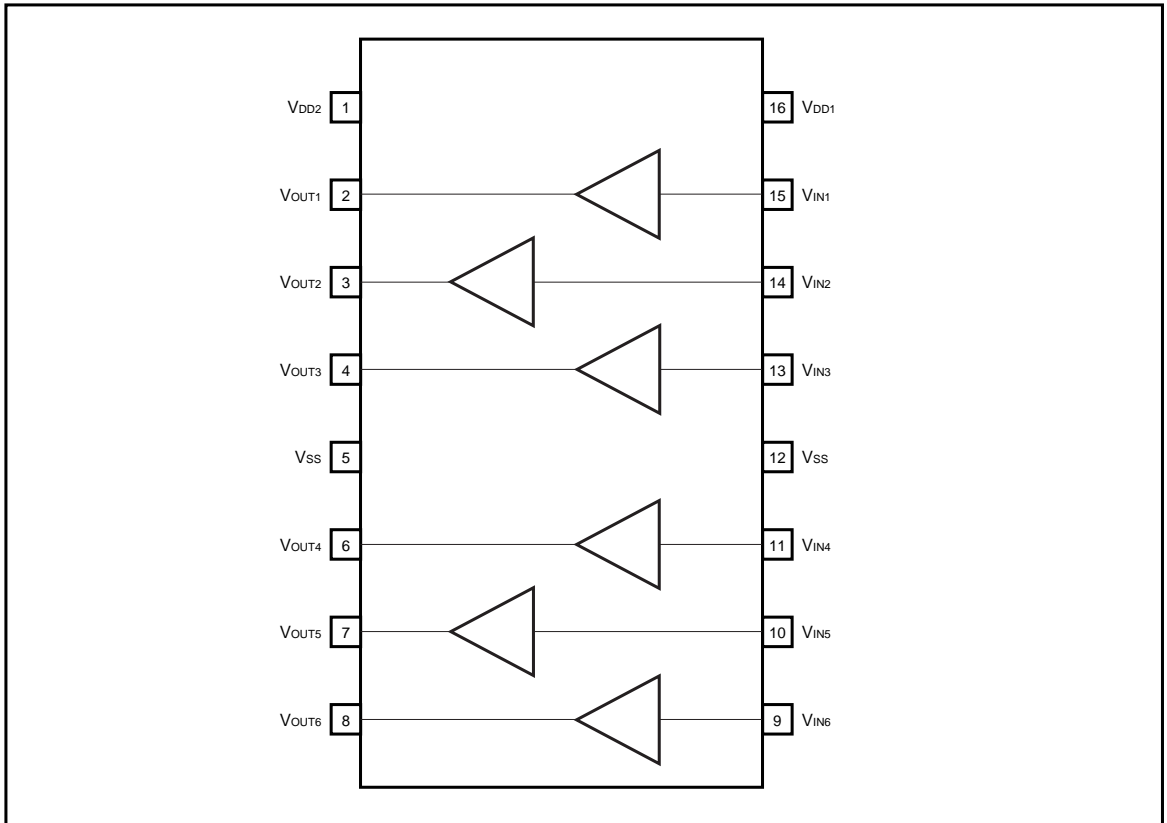
\*1 V<sub>DD2</sub> > V<sub>DD1</sub>

\*2 Power dissipation is reduced by - 4.0mW for each increase in Ta of 1°C over 25°C.

### ●Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Limits	Unit	Pin
Power supply voltage (1)	V <sub>DD1</sub>	5.0 ± 0.5	V	V <sub>DD1</sub>
Power supply voltage (2)	V <sub>DD2</sub>	16 ± 0.5	V	V <sub>DD2</sub>
Ambient temperature	T <sub>a</sub>	0 ~ 70	°C	—

## ●Block diagram



## ●Pin descriptions

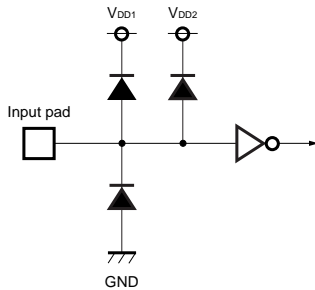
Pin No.	Pin name	I / O	Function	Processing when not used
16	$V_{DD1}$	—	Power supply pin for input buffer	—
1	$V_{DD2}$	—	Power supply pin for output buffer	—
9, 10, 11 13, 14, 15	$V_{IN1} \sim V_{IN6}$	I	Pulse input pin	short $V_{SS}$
2, 3, 4 6, 7, 8	$V_{OUT1} \sim V_{OUT6}$	O	Pulse output pin	Open
5, 12	$V_{SS}$	—	Ground pin*3	—

\*3 When using the IC, ground both pins 5 and 12.

●Input / output circuits

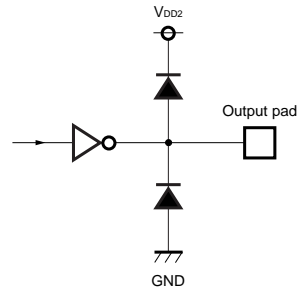
(1) Input circuit

Pin nos. 9, 10, 11, 13, 14, 15



(2) Output circuit

Pin nos. 2, 3, 4, 6, 7, 8



●Electrical characteristics (unless otherwise noted, Ta = 25°C, VDD1 = 5V, VDD2 = 16V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Input high level voltage	V <sub>IH</sub>	2.0	—	—	V	—
Input low level voltage	V <sub>IL</sub>	—	—	0.8	V	—
Input current	I <sub>IN</sub>	- 1.0	—	1.0	μA	—
Output high level voltage	V <sub>OH</sub>	15.9	16.0	—	V	I <sub>OH</sub> = - 20μA
Output low level voltage	V <sub>OL</sub>	—	0.0	0.1	V	I <sub>OH</sub> = 20μA
Output high level current	I <sub>OH</sub>	—	—	- 1.0	mA	V <sub>OH</sub> = 15.5V
Output low level current	I <sub>OL</sub>	1.0	—	—	mA	V <sub>OL</sub> = 0.5V
Standby current	I <sub>DD</sub>	—	—	20	μA	V <sub>IN</sub> = 0V, or V <sub>DD1</sub>

●AC characteristics (unless otherwise noted, Ta = 25°C, VDD1 = 5V, VDD2 = 16V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output transition time*4	t <sub>TLH</sub>	—	20	40	ns	Load: 5pF
	t <sub>THL</sub>	—	20	40	ns	
	t <sub>TLH</sub>	—	30	60	ns	Load: 35pF
	t <sub>THL</sub>	—	30	60	ns	
Propagation delay time	t <sub>PLH</sub>	—	20	40	ns	Load: 5pF
	t <sub>PHL</sub>	—	20	40	ns	
	t <sub>PLH</sub>	—	30	60	ns	Load: 35pF
	t <sub>PHL</sub>	—	30	60	ns	
Propagation delay time differential between channels*4	ΔT	—	—	10	ns	Load: 5pF
	ΔT	—	—	10	ns	Load: 35pF

\*4 NOT 100% TESTED

●External dimensions (Units: mm)

