

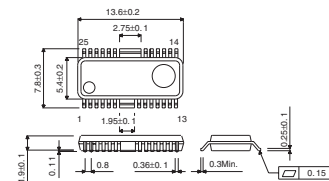
## LED driver IC with built-in 16bit shift register

# BD7851FP

### ●Description

The BD7851FP is a constant-current output LED driver that incorporates a shift register and latch circuit, which drives 16 LED lamps. Output value of the constant-current can be set from 1mA to 50mA (Max.) by a single external resistor. In addition, this IC incorporates a thermal-shut-down circuit which detects the IC temperature rising and turns the constant-current output OFF.

### ●Dimension (Units : mm)



HSOP25

### ●Features

- 1) Drive capability: constant-current output 50mA (Max.)
- 2) Can set the constant-current output value by one external resistor.
- 3) 3 wire serial (Data, Clock, Latch) control from micro computer
- 4) With ENABLE pin
- 5) Power ON reset function
- 6) Built-in thermal-shut-down circuit
- 7) Low power consumption
- 8) Cascade connection
- 9) Allows multiple LED displays due to the dynamic operation.
- 10) Small power package HSOP25

### ●Applications

All sets having micro computers and LED displays

### ●Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V <sub>cc</sub>	0 ~ 7.0	V
Input voltage	V <sub>i</sub>	-0.3 ~ V <sub>cc</sub> +0.3	V
Output voltage	V <sub>o</sub>	0 ~ 10	V
Power dissipation	PD	* 1450	W
Storage temperature range	T <sub>stg</sub>	-55 ~ +150	°C
Operating temperature range	T <sub>opr</sub>	-20 ~ +85	°C

\*Derating : -11.6mW/°C for operation above Ta=25°C PCB (70mm×70mm×1.6mm glass epoxy board)

● Recommended Operating Conditions (Ta=25°C)

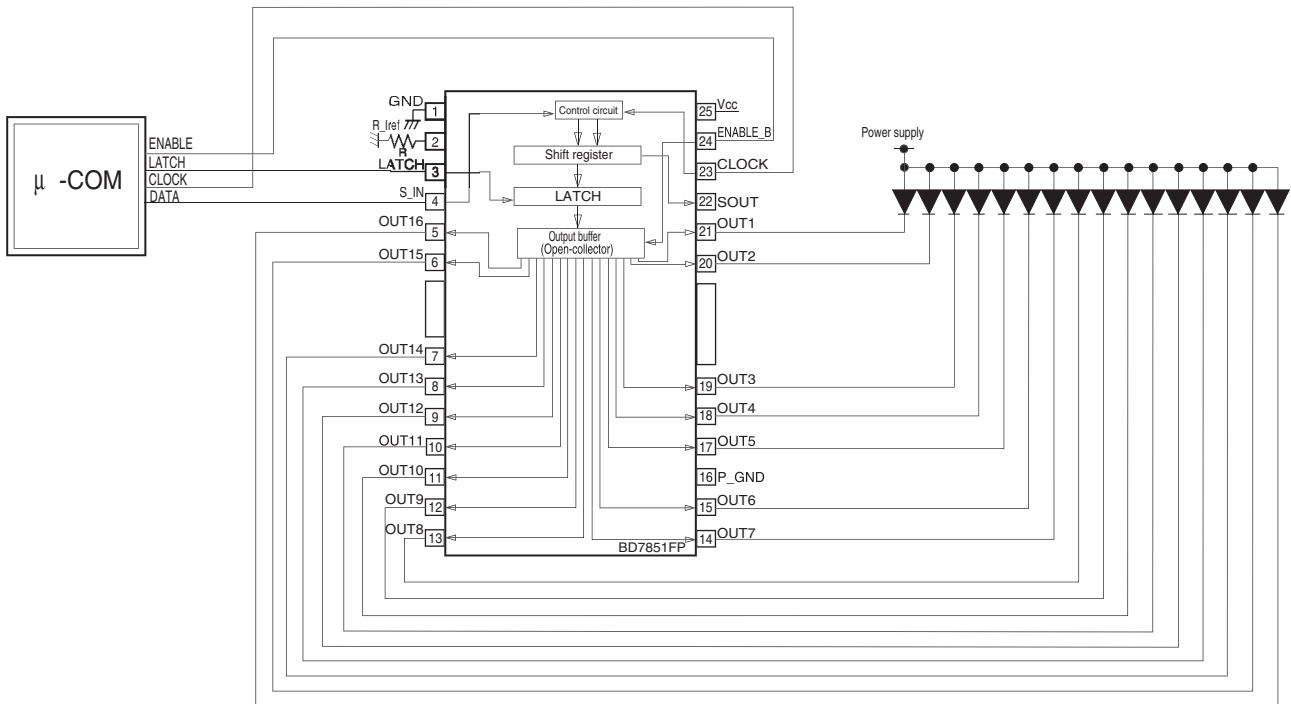
Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V <sub>CC</sub>	4.5	—	5.5	V
Input voltage "H" level	V <sub>IH</sub>	0.8 × V <sub>CC</sub>	—	V <sub>CC</sub>	V
Input voltage "L" level	V <sub>IL</sub>	GND	—	0.2 × V <sub>CC</sub>	V

\*This product is not designed for protection against radioactive rays.

● Electrical characteristics (Unless otherwise noted; Ta=25°C, V<sub>CC</sub>=5.0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Output voltage "H"	V <sub>OH</sub>	V <sub>CC</sub> -0.5	—	—	V	I <sub>OH</sub> =1mA
Output voltage "L"	V <sub>OL</sub>	—	—	0.5	V	I <sub>OL</sub> =-1mA
Consumption current	I <sub>CC</sub>	—	0.7	1.0	mA	R=13kΩ, OUT1~OUT16:OFF
		—	1.8	3.0	mA	R=1.3kΩ, OUT1~OUT16:OFF
		—	4.0	6.5	mA	R=13kΩ, OUT1~OUT16:ON
		—	30	40	mA	R=1.3kΩ, OUT1~OUT16:ON
Constant-current output current (Including error between bits)	I <sub>OLC1</sub>	48	55	62	mA	V <sub>OUT</sub> =2.0V R=1.3kΩ
	I <sub>OLC2</sub>	5.0	5.9	6.8	mA	V <sub>OUT</sub> =2.0V R=13kΩ
Constant-current output current error between bits	ΔI <sub>OLC</sub>	—	±1	±6	%	V <sub>OUT</sub> =2.0V R=1.3kΩ (1bit ON mode)
Output current regulation against output voltage	IΔV <sub>CC</sub>	—	±1	±6	%/V	V <sub>OUT</sub> =2.0~3.0V R=1.3kΩ
Output leak current	I <sub>OH</sub>	—	0.01	0.8	mA	V <sub>OUT</sub> =10V

● Application Circuit



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