ROHM

STRUCTURE   Silicon Monolithic Integrated Circuit

TYPE   **BD7851FP**

FUNCTION   16bit Serial IN / Parallel Out Driver

FEATURES   1) capable of driving a maximum of 50mA with only one external resistance.

2) Output is ON/OFF constant current source controllable.

3) 10 V high voltage output can be used.

● ABSOLUTE MAXIMUM RATINGS   (Ta=25℃)

Parameter	Symbol	Limit	Unit
Power Supply Voltage	V_{cc}	7.0*	V
Power Dissipation	Pd	1450*	mW
Operating Temperature Range	T_{opr}	-30~+85	℃
Storage Temperature Range	T_{stg}	-55~+150	℃
Input Voltage	V_{IN}	-0.3~Vcc+0.3	V

*Output (Q1~Q16) are 10V (Max.)
*70mm × 70mm × 1.6mm glass epoxy

Rev.D

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● ELECTRICAL CHARACTERISTICS   (unless otherwise noted, Ta=25℃,Vcc=5.0V)

Parameter	Symbol	Standard Value			Unit	Condition
		MIN	TYP	MAX		
Power Supply Voltage range	V_{cc}	4.5	5.0	5.5	V	V_{CC} pin
Supply current 1	I_{cc1}	-	0.7	1.0	mA	External resistance 13kΩ, Output on
Supply current 2	I_{cc2}	-	1.8	3.0	mA	External resistance 1.3 kΩ, Output off
Supply current 3	I_{cc3}	-	4.0	6.5	mA	External resistance 13 kΩ, Output on
Supply current 4	I_{cc4}	-	30	40	mA	External resistance 1.3 kΩ, Output off
Constant current output current1	Iolc1	48	55	62	mA	External resistance 1.3kΩ, Output voltage 2V
Constant current output current2	Iolc2	5.0	5.9	6.8	mA	External resistance 13kΩ, Output voltage 2V
Constant current output current3	ΔIolc	-	±1	±6	%	Difference between bits
Constant current output current4	IΔVcc	-	±1	±6	%	External resistance 1.3kΩ, Output voltage 2~3V
Input "L" voltage	V_{IL}	-	-	0.2	V/V	Ratio against VCC
Input "H" voltage	V_{IH}	0.8	-	-	V/V	Ratio against VCC
Output Leakage current	I_L	-	0.01	0.8	μA	Vout=10V
Output "H" voltage	V_{OH}	-0.5	-	-	V	Value from VCC, Ioh=1mA
Output "L" voltage	V_{OL}	-	-	0.5	V	Iol=-1mA
Data Minimum set up time	t_1	30	50	-	nS	V_{IH}=0.8Vcc,V_{IL}=0.2Vcc
Data hold time	t_2	30	50	-	nS	V_{IH}=0.8Vcc,V_{IL}=0.2Vcc
Minimum shift pulse width	t_3	20	50	-	nS	V_{IH}=0.8Vcc,V_{IL}=0.2Vcc
Data output time	t_4	-	-	650	nS	V_{IH}=0.8Vcc, V_{IL}=0.2Vcc, External resistance 1.3kΩ

This product is not assessed whether to be strategic materials in foreign exchange and trade law or not,
so please confirm at trading. This product is not deigned against radioactive ray.

● PHYSICAL DIMENSIONS
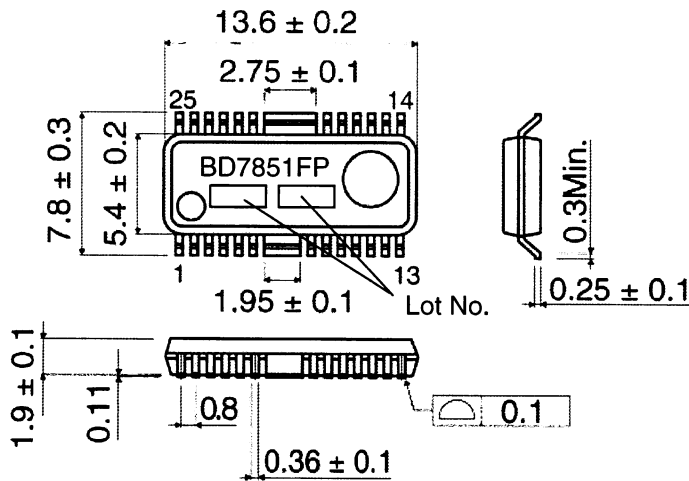
HSOP25   (UNIT : mm)

● Pin Description

Pin. No	Terminal	Symbol	Function
23	CLOCK	C	Shift pulse for shift register
4	S_IN	S_I	Data input for shift register, data is set at rising edge of shift pulse
3	LATCH	L	Latch signal input, output is renewable out "1" and reserved at "0".
22	SOUT	S_o	Data output for shift register, which is output led at the rising edge of shift pulse.
2	R_Iref	R_i	Terminal that can control output constant current.
24	ENABLE_B	S	Data in shift register can be output led at "0".
21	OUT1	$\bar{O}_0$	1st bit output, output constant current becomes active when data in register is "1".
20	OUT2	$\bar{O}_1$	2nd bit output, output constant current becomes active when data in register is "1".
19	OUT3	$\bar{O}_2$	3rd bit output, output constant current becomes active when data in register is "1".
18	OUT4	$\bar{O}_3$	4th bit output, output constant current becomes active when data in register is "1".
17	OUT5	$\bar{O}_4$	5th bit output, output constant current becomes active when data in register is "1".
15	OUT6	$\bar{O}_5$	6th bit output, output constant current becomes active when data in register is "1".
14	OUT7	$\bar{O}_6$	7th bit output, output constant current becomes active when data in register is "1".
13	OUT8	$\bar{O}_7$	8th bit output, output constant current becomes active when data in register is "1".
12	OUT9	$\bar{O}_8$	9th bit output, output constant current becomes active when data in register is "1".
11	OUT10	$\bar{O}_9$	10th bit output, output constant current becomes active when data in register is "1".
10	OUT11	$\bar{O}_{10}$	11th bit output, output constant current becomes active when data in register is "1".
9	OUT12	$\bar{O}_{11}$	12th bit output, output constant current becomes active when data in register is "1".
8	OUT13	$\bar{O}_{12}$	13th bit output, output constant current becomes active when data in register is "1".
7	OUT14	$\bar{O}_{13}$	14th bit output, output constant current becomes active when data in register is "1".
6	OUT15	$\bar{O}_{14}$	15th bit output, output constant current becomes active when data in register is "1".
5	OUT16	$\bar{O}_{15}$	16th bit output, output constant current becomes active when data in register is "1".
16	P_GND	PGND	GND for driver
1	GND	GND	GND
25	VCC	VCC	VCC

● BLOCK DIAGRAM
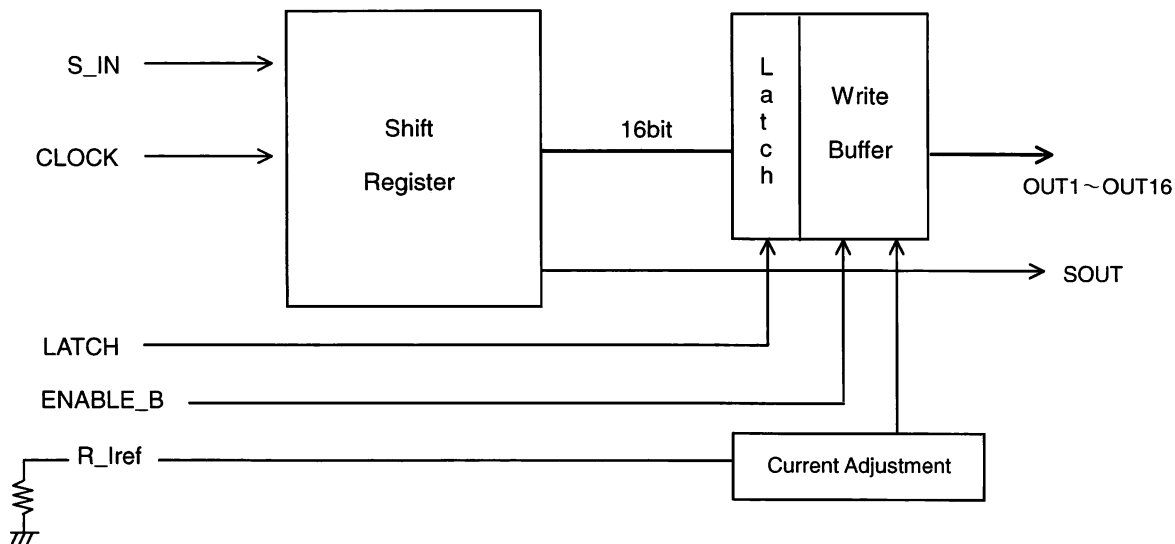
● NOTES FOR USE

(1) Absolute maximum ratings
Exceeding the absolute maximum ratings, including applied voltage and operating temperature range, may damage or destroy the IC. Since the cause of the damage cannot be conclusively identified (as, for example, a short or open mode), be sure to take appropriate physical safety measures, such as incorporating fuses, whenever a special mode anticipated to exceed absolute maximum ratings is employed.

(2) Ground Potential
Make sure the potential for the GND pin is always kept lower than the potentials of all other pins, regardless of the operating mode.

(3) Thermal design
Provide sufficient margin in the thermal design to account for the allowable power dissipation (Pd) expected in actual use.

(4) Electromagnetic fields
Use in strong electromagnetic fields may cause malfunctions. Be careful operating in electromagnetic fields.

(5) Ground wiring pattern
When both a small-signal GND and high current GND are present, single-point grounding (at the set standard point) is recommended, in order to separate the small-signal and high current patterns, and to be sure the voltage change stemming from the wiring resistance and high current does not cause any voltage change in the small-signal GND. In the same way, care must be taken to avoid wiring pattern fluctuations in any connected external component GND.

Notes

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