ROHM

Structure	Silicon Monolithic Integrated Circuit
Product Name	RGB Illumination LED Driver for mobile phone
Type	**BD2802GU**
Features	RGB LED driver

A slope control function is incorporated

Slope control can be implemented using the DC current.

Two modes "continuous illumination mode" and "illumination single cycle mode" are supported.

Independent external ON/OFF synchronizing terminals (of dual drivers) are provided.

● Absolute Maximum Ratings (Ta=25 °C)

Parameter	Symbol	Limits	Unit	Condition
Maximum Applied voltage	VMAX	7	V	
Power Dissipation	Pd	1250 (Note)	mW	
Operating Temperature Range	Topr	-40 ~ +85	°C	
Storage Temperature Range	Tstg	-55 ~ +150	°C	

(Note)   Power dissipation deleting is 10.0mW/°C, when it's used in over 25 °C.

(It's deleting is on the board that is ROHM's standard)
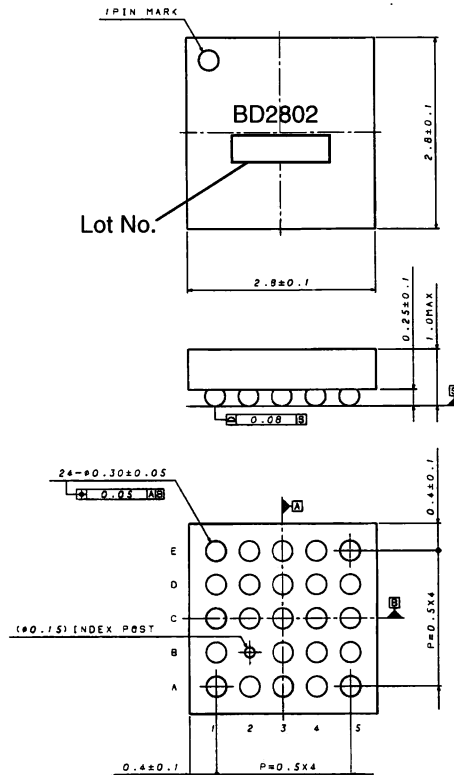
● Operating conditions (VBAT≥VIO, Ta=-40~85 °C)

Parameter	Symbol	Limits	Unit	Condition
VBAT input voltage	VBAT	2.7 ~ 5.5	V	
VIO pin voltage	VIO	1.65 ~ 3.3	V	

*This driver has not been designed for anti-radiation.

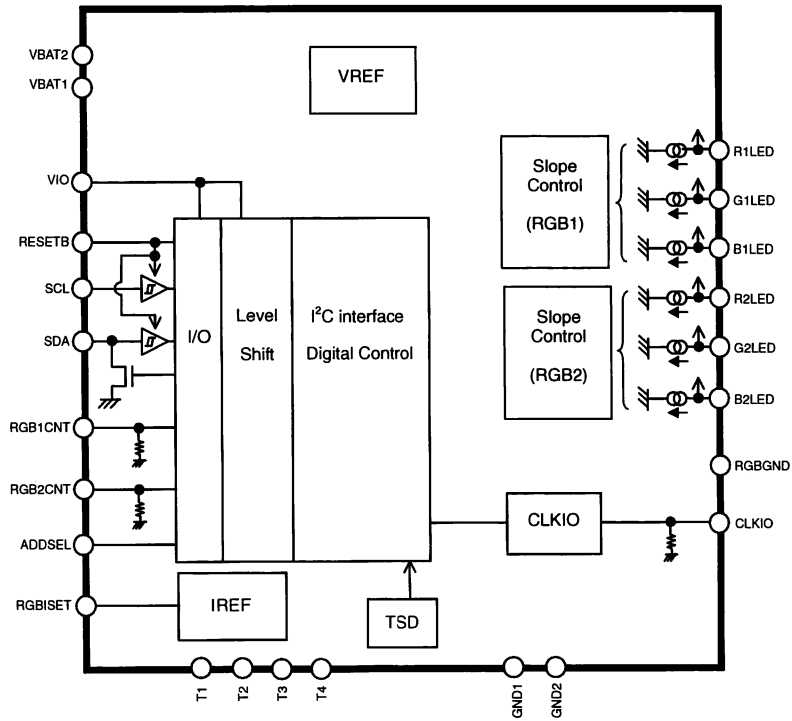● Electrical Characteristics (Unless otherwise specified, Ta=25 °C, VBAT=3.6V, VIO=1.8V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
【Circuit Current】						
VBAT Circuit current 1	IBAT1	-	0.1	3.0	μA	RESETB=0V, VIO=0V
VBAT Circuit current 2	IBAT2	-	0.5	3.0	μA	RESETB=0V, VIO=1.8V
VBAT Circuit current 3	IBAT3	-	0.8	1.2	mA	LED 6Ch ON, ILED=10mA setting Exclusive of LED current, RGBISET=120kΩ
【LED Driver】						
LED Maximum setup curren	IMAX	-	-	30.48	mA	RGB1 group, RGB2 group RGBISET=100kΩ
LED current accurate	ILED	18	20	22	mA	RGB1 group, RGB2 group Terminal voltage =1V ILED=20mA setting, RGBISET=120kΩ
LED current Matching	ILEDMT	-	5	10	%	RGB1 group, between RGB2 group Terminal voltage=1V ILED=20mA setting
LED OFF Leak current	ILKL	-	-	1.0	μA	
【OSC】						
OSC oscillation frequency	fosc	0.8	1.0	1.2	MHz	

● Outside size figure

IPIN MARK

BD2802

Lot No.

2.8±0.1

2.8±0.1

0.25±0.1   1.0MAX

0.08

24-φ0.30±0.05
0.03 AB

E
D
C
B
A

(φ0.15) INDEX POST

0.4±0.1

P=0.5×4

P=0.5×4

0.4±0.1

1 2 3 4 5

VCSP85H2 (24Pin)   (Unit:mm)

● Block diagram

● Pin List

PIN	PIN NAME	PIN	PIN NAME
D5	VBAT1	E3	RGBGND
C1	VBAT2	C2	RGBISET
A1	T1	D4	R1LED
A5	T2	E4	G1LED
E5	T3	D3	B1LED
E1	T4	D2	R2LED
A3	VIO	E2	G2LED
A4	RESETB	D1	B2LED
B5	SDA	C3	RGB1CNT
B4	SCL	A2	RGB2CNT
B1	GND1	C4	ADDSEL
C5	GND2	B3	CLKIO

REV. A

● Cautions on use

(1) Absolute Maximum Ratings

An excess in the absolute maximum ratings, such as supply voltage, temperature range of operating conditions, etc., can break down devices, thus making impossible to identify breaking mode such as a short circuit or an open circuit. If any special mode exceeding the absolute maximum ratings is assumed, consideration should be given to take physical safety measures including the use of fuses, etc.

(2) Power supply and ground line

Design PCB pattern to provide low impedance for the wiring between the power supply and the ground lines. Pay attention to the interference by common impedance of layout pattern when there are plural power supplies and ground lines. Especially, when there are ground pattern for small signal and ground pattern for large current included the external circuits, please separate each ground pattern. Furthermore, for all power supply pins to ICs, mount a capacitor between the power supply and the ground pin. At the same time, in order to use a capacitor, thoroughly check to be sure the characteristics of the capacitor to be used present no problem including the occurrence of capacity dropout at a low temperature, thus determining the constant.

(3) Ground voltage

Make setting of the potential of the ground pin so that it will be maintained at the minimum in any operating state. Furthermore, check to be sure no pins are at a potential lower than the ground voltage including an actual electric transient.

(4) Short circuit between pins and erroneous mounting

In order to mount ICs on a set PCB, pay thorough attention to the direction and offset of the ICs. Erroneous mounting can break down the ICs. Furthermore, if a short circuit occurs due to foreign matters entering between pins or between the pin and the power supply or the ground pin, the ICs can break down.

(5) Operation in strong electromagnetic field

Be noted that using ICs in the strong electromagnetic field can malfunction them.

(6) Input pins

In terms of the construction of IC, parasitic elements are inevitably formed in relation to potential. The operation of the parasitic element can cause interference with circuit operation, thus resulting in a malfunction and then breakdown of the input pin. Therefore, pay thorough attention not to handle the input pins, such as to apply to the input pins a voltage lower than the ground respectively, so that any parasitic element will operate. Furthermore, do not apply a voltage to the input pins when no power supply voltage is applied to the IC. In addition, even if the power supply voltage is applied, apply to the input pins a voltage lower than the power supply voltage or within the guaranteed value of electrical characteristics.

(7) External capacitor

In order to use a ceramic capacitor as the external capacitor, determine the constant with consideration given to a degradation in the nominal capacitance due to DC bias and changes in the capacitance due to temperature, etc.

(8) Thermal shutdown circuit (TSD)

This LSI builds in a thermal shutdown (TSD) circuit. When junction temperatures become detection temperature or higher, the thermal shutdown circuit operates and turns a switch OFF. The thermal shutdown circuit, which is aimed at isolating the LSI from thermal runaway as much as possible, is not aimed at the protection or guarantee of the LSI. Therefore, do not continuously use the LSI with this circuit operating or use the LSI assuming its operation.

(9) Thermal design

Perform thermal design in which there are adequate margins by taking into account the permissible dissipation (Pd) in actual states of use.

(10) About the pin for the test, the un-use pin

Prevent a problem from being in the pin for the test and the un-use pin under the state of actual use. Please refer to a function manual and an application notebook. And, as for the pin that doesn't specially have an explanation, ask our company person in charge.

(11) About the rush current

Because the rush current flows momentarily for internal logic instability caused by a power-on sequence or delay, special care should be taken to the power supply coupling capacity, power supply, ground pattern wiring width and wiring.

(12) About descriptions given in this document

Though the function description and application node are design documents prepared for application design, we don't take liability for descriptions given in these documents.   Be sure to decide applications after thoroughly investigating and evaluating the external devices as well as this BS2802GU LED driver.

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- 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.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document 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.

It is our top priority to supply products with the utmost quality and reliability. However, there is always a chance of failure due to unexpected factors. Therefore, please take into account the derating characteristics and allow for sufficient safety features, such as extra margin, anti-flammability, and fail-safe measures when designing in order to prevent possible accidents that may result in bodily harm or fire caused by component failure. ROHM cannot be held responsible for any damages arising from the use of the products under conditions out of the range of the specifications or due to non-compliance with the NOTES specified in this catalog.

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available, please contact your nearest sales office.

ROHM Customer Support System

THE AMERICAS / EUPOPE / ASIA / JAPAN

www.rohm.com

Contact us : webmaster @ rohm.co.jp