

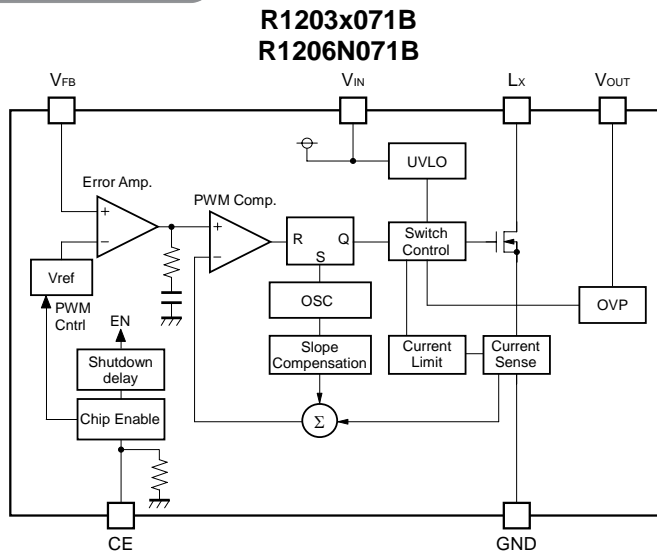
PWM Step-up DC/DC Converter for White LED

The R1203x/R1206N Series are CMOS-based PWM step-up DC/DC converters, which are optimized to drive white LEDs with constant current. R1203x/R1206N includes an under-voltage lockout circuit (UVLO), and over-voltage protection circuit (OVP). By simply using an inductor, a resistor, capacitors and a diode as external components, white LEDs can be driven with constant current and high efficiency. The LED current can be determined by the value of current setting resistor. The brightness of the LEDs can be adjusted quickly by applying a PWM signal (200Hz to 300kHz) to the CE pin. Two different pin layout of SOT-23-6 package as R1203N and R1206N are available.

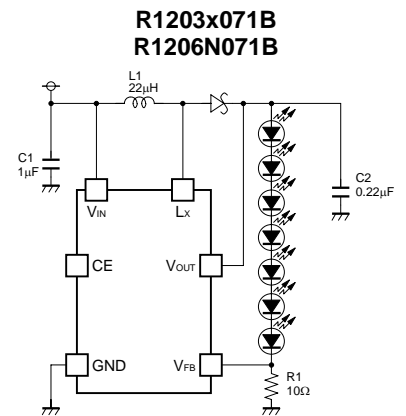
FEATURES

- Supply Current (I_{DD}) Typ. 500 μ A (No switching)
- Standby Current ($I_{standby}$) Max. 5 μ A (CE="L")
- Input Voltage Range (V_{IN}) 1.8V to 5.5V
(Absolute maximum rating: 6.5V)
- Feedback Voltage (V_{FB}) 0.2V
- Feedback Voltage Accuracy ± 10 mV
- Oscillator Frequency (f_{osc}) 1.2MHz
- Oscillator Maximum Duty Cycle (Maxduty) ... Min. 86%, Typ. 91%
- UVLO Detect Voltage (V_{UVLO}) Typ. 1.6V
- Coil-current Limit Circuit Current limit Typ. 700mA
- Over Voltage Protection Circuit (OVP) 29.5V
- LED High-speed Dimming Control
- Packages R1203x Series
DFN1616-6B, SOT-23-6
R1206N Series
SOT-23-6

BLOCK DIAGRAM



TYPICAL APPLICATION



SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN1616-6B	5,000 pcs	R1203L071B -TR
H/F	SOT-23-6	3,000 pcs	R1203N071B -TR-FE
			R1206N071B -TR-FE

xxx : Specify the OVP Voltage.
(071) 29.5V

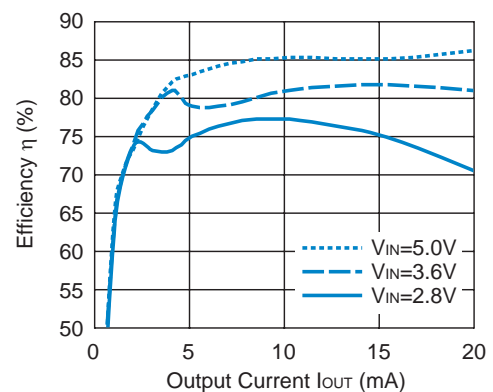
PACKAGES

DFN1616-6B		SOT-23-6	
Top View	Bottom View		
		R1203N	R1206N
1	CE	1	CE
2	VFB	2	VOUT
3	Lx	3	VIN
4	GND	4	Lx
5	VIN	5	GND
6	VOUT	6	VFB

*) The tab is substrate level (GND).

TYPICAL CHARACTERISTIC

7LEDs Efficiency vs. Output Current



APPLICATION

- White LED driver for hand-held equipment



1. The products and the product specifications described in this document are subject to change or discontinuation of production without notice for reasons such as improvement. Therefore, before deciding to use the products, please refer to Ricoh sales representatives for the latest information thereon.
2. The materials in this document may not be copied or otherwise reproduced in whole or in part without prior written consent of Ricoh.
3. Please be sure to take any necessary formalities under relevant laws or regulations before exporting or otherwise taking out of your country the products or the technical information described herein.
4. The technical information described in this document shows typical characteristics of and example application circuits for the products. The release of such information is not to be construed as a warranty of or a grant of license under Ricoh's or any third party's intellectual property rights or any other rights.
5. The products listed in this document are intended and designed for use as general electronic components in standard applications (office equipment, telecommunication equipment, measuring instruments, consumer electronic products, amusement equipment etc.). Those customers intending to use a product in an application requiring extreme quality and reliability, for example, in a highly specific application where the failure or misoperation of the product could result in human injury or death (aircraft, spacevehicle, nuclear reactor control system, traffic control system, automotive and transportation equipment, combustion equipment, safety devices, life support system etc.) should first contact us.
6. We are making our continuous effort to improve the quality and reliability of our products, but semiconductor products are likely to fail with certain probability. In order to prevent any injury to persons or damages to property resulting from such failure, customers should be careful enough to incorporate safety measures in their design, such as redundancy feature, firecontainment feature and fail-safe feature. We do not assume any liability or responsibility for any loss or damage arising from misuse or inappropriate use of the products.
7. Anti-radiation design is not implemented in the products described in this document.
8. Please contact Ricoh sales representatives should you have any questions or comments concerning the products or the technical information.



For the conservation of the global environment, Ricoh is advancing the decrease of the negative environmental impact material.
After Apr. 1, 2006, we will ship out the lead free products only. Thus, all products that will be shipped from now on comply with RoHS Directive.
Basically after Apr. 1, 2012, we will ship out the Power Management ICs of the Halogen Free products only. (RicoH Halogen Free products are also Antimony Free.)

RICOH RICOH COMPANY, LTD. Electronic Devices Company

<http://www.ricoh.com/LSI/>

RICOH COMPANY, LTD.

Electronic Devices Company

● Higashi-Shinagawa Office (International Sales)

3-32-3, Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-8655, Japan
Phone: +81-3-5479-2857 Fax: +81-3-5479-0502

RICOH EUROPE (NETHERLANDS) B.V.

● Semiconductor Support Centre

"Nieuw Kronenburg" Prof. W.H. Keesomlaan 1, 1183 DJ, Amstelveen, The Netherlands
P.O.Box 114, 1180 AC Amstelveen
Phone: +31-20-5474-309 Fax: +31-20-5474-791

RICOH ELECTRONIC DEVICES KOREA Co., Ltd.

11 floor, Haesung 1 building, 942, Daechidong, Gangnamgu, Seoul, Korea
Phone: +82-2-2135-5700 Fax: +82-2-2135-5705

RICOH ELECTRONIC DEVICES SHANGHAI Co., Ltd.

Room403, No.2 Building, 690#Bi Bo Road, Pu Dong New district, Shanghai 201203,
People's Republic of China
Phone: +86-21-5027-3200 Fax: +86-21-5027-3299

RICOH COMPANY, LTD.

Electronic Devices Company

● Taipei office

Room109, 10F-1, No.51, Hengyang Rd., Taipei City, Taiwan (R.O.C.)
Phone: +886-2-2313-1621/1622 Fax: +886-2-2313-1623