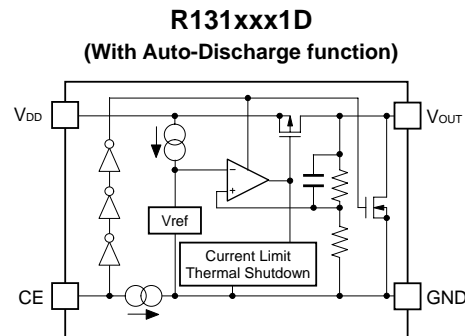
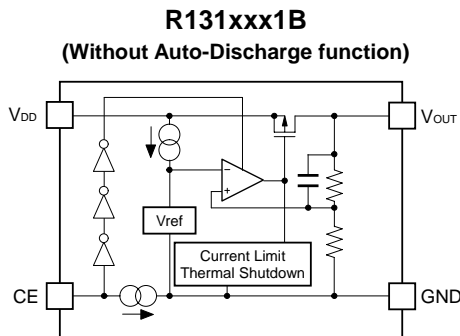


The RP131x Series are CMOS-based LDO regulators featuring 1A output with low on-resistance. The CMOS process provides both large output current and low supply current. The dropout voltage is significantly lower than bipolar regulators. The RP131x handles low voltage with an input voltage from 1.6V and an output voltage from 0.8V. Accordingly, the device supports highly integrated, low voltage-driven LSI as a rear stage of the DC/DC converter. The CE pin can switch the regulator into standby mode. In addition to a fold-back protection circuit built into conventional LDO regulators, RP131x has a thermal shutdown circuit and inrush current limit circuit. Ceramic capacitors can be used.

### FEATURES

- Supply Current ( $I_{SS}$ ) ..... Typ. 65 $\mu$ A ( $V_{IN}=6.5V$ )
  - Standby Current ( $I_{standby}$ ) ..... Typ. 0.15 $\mu$ A (Same as above, CE="L")
  - Dropout Voltage ( $V_{DIF}$ ) ..... Typ. 0.5V ( $I_{OUT}=1A$ ,  $V_{OUT}=2.8V$ )
  - Ripple Rejection (RR) ..... Typ. 70dB ( $f=1kHz$ ,  $V_{OUT}\leq 3.3V$ ),  
Typ. 60dB ( $f=1kHz$ ,  $V_{OUT}>3.3V$ )
  - Input Voltage Range ( $V_{IN}$ ) ..... 1.6V to 6.5V
  - Output Voltage Range ( $V_{OUT}$ ) ..... 0.8V to 5.0V (internally fixed)
  - Output Voltage Accuracy .....  $\pm 1\%$
  - Temp. coef. of Output Voltage ..... Typ.  $\pm 100ppm/^{\circ}C$
  - Line Regulation ..... Typ. 0.05%/V
  - Fold-back Protection Circuit ..... Current limit Typ. 250mA
  - Inrush Current Limit Circuit ..... Typ. 500mA
  - Thermal Shutdown Circuit ..... Stops at 165 $^{\circ}C$ .
  - Packages ..... DFN (PLP)1820-6,  
SOT-89-5, HSOP-6J  
TO-252-5-P2
  - Ceramic capacitors can be used. ... 2.2 $\mu$ F or more ( $V_{OUT}\leq 3.6V$ )  
4.7 $\mu$ F or more ( $V_{OUT}> 3.6V$ )
- (The above shows specification at  $T_{opt}=25^{\circ}C$ . Design assurance value at  $-40^{\circ}C\leq T_{opt}\leq 85^{\circ}C$  is also available. For details, please refer to the datasheet.)

### BLOCK DIAGRAMS



### SELECTION GUIDES

Package	Quantity per Reel	Part No.
DFN(PLP)1820-6	5,000 pcs	RP131Kxx1*-TR
SOT-89-5	1,000 pcs	RP131Hxx1*-T1-F
HSOP-6J	1,000 pcs	RP131Sxx1*-E2-F
TO-252-5-P2	3,000 pcs	RP131Jxx1*-T1-F

xx : Specify the output voltage within the range 0.8V(08) to 5.0V(50) in 0.1V steps.  
\* : Select from (B) without auto-discharge function or (D) with auto-discharge function.

### PACKAGES (Top View)

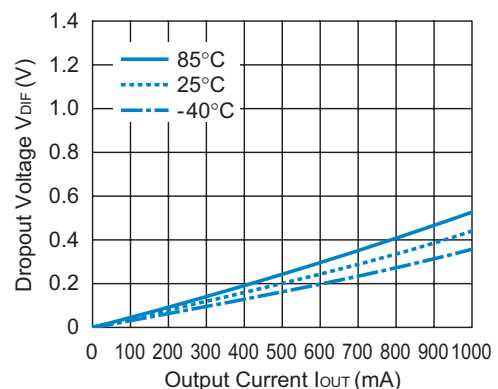
DFN(PLP)1820-6	SOT-89-5	HSOP-6J	TO-252-5-P2
1 VOUT* <sup>1</sup>	1 NC	1 VOUT	1 VOUT
2 VOUT* <sup>1</sup>	2 GND	2 GND* <sup>1</sup>	2 GND* <sup>1</sup>
3 GND	3 CE	3 NC	3 GND* <sup>1</sup>
4 CE	4 VDD	4 CE	4 CE
5 VDD* <sup>1</sup>	5 VOUT	5 GND* <sup>1</sup>	5 VDD
6 VDD* <sup>1</sup>		6 VDD	

\*) The tab is substrate level (GND).

\*1) The VOUT pin, VDD pin and GND pin must be wired each other when it is mounted on board.

### TYPICAL CHARACTERISTIC

RP131x331x Dropout Voltage vs. Output Current



### APPLICATIONS

- Power source for hand-held communication equipment, cameras, and VCRs
- Power source for laptop personal computers and home appliances
- Power source for battery-powered 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.

## RICOH COMPANY., LTD. Electronic Devices Company



■ Ricoh presented with the Japan Management Quality Award for 1999.  
Ricoch continually strives to promote customer satisfaction, and shares the achievements of its management quality improvement program with people and society.



■ Ricoh awarded ISO 14001 certification.  
The Ricoh Group was awarded ISO 14001 certification, which is an international standard for environmental management systems, at both its domestic and overseas production facilities. Our current aim is to obtain ISO 14001 certification for all of our business offices.

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

### RICOH COMPANY, LTD. Electronic Devices Company

● **Shin-Yokohama office (International Sales)**  
3-2-3, Shin-Yokohama, Kohoku-ku, Yokohama City, Kanagawa 222-8530, Japan  
Phone: +81-45-477-1697 Fax: +81-45-477-1698

### RICOH EUROPE (NETHERLANDS) B.V.

● **Semiconductor Support Centre**  
Prof. W.H.Keesomlaan 1, 1183 DL 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



Ricoh completed the organization of the Lead-free production for all of our products. 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.