RICOH

RP112x Series

Low Noise 150mA LDO

The RP112x Series are CMOS-based LDO regulators featuring 150mA output current. The RP112x features ultra low noise and its Ripple Rejection is as low as 80dB at f=1kHz, 75dB at f=10kHz and 65dB at f=100kHz. The Output Noise is also as low as Typ. 10µVrms. It is kept the low level at any output voltage. RP112x is suitable for the power source for the portable music player and RF module that demands for higher level of noise reduction. SOT-23-5 and SC-88A packages, a 1mm square DFN(PLP)1010-4 package are available.

FEATURES

- Supply Current (Iss) Typ. 75µA (VIN=SET VOUT+1V, IOUT=0mA)
- Standby Current (Istandby) Typ. 0.1µA (Same as above, VcE=0V)
- Dropout Voltage (VDIF) ·······Typ. 0.20V (Iout=150mA, Vout=2.8V)
- Ripple Rejection (RR)·······Typ. 80dB (f=1kHz), Typ. 65dB (f=100kHz)
- Input Voltage Range (VIN) 2.0V to 5.25V
- Output Voltage Range (Vour) 1.2V to 4.8V (internally fixed)
- Output Voltage Accuracy ······± 1%
- Temp. coeff. of Output Voltage …… Typ. ± 30ppm/°C

- Line Regulation Typ. 0.02%/V
- Output Noise (en) ······Typ. 10μVrms
- Fold-back Protection CircuitCurrent limit Typ. 40mA
 - Auto-Discharge function ······D Version

SC-88A, SOT-23-5

 \bullet Ceramic Capacitor can be used. $\cdots 1 \mu F$ or more

(The above shows specification at Topt=25°C. Design assurance value at -40°C ≤ Topt ≤ 85°C is also available. For details, please refer to the datasheet.)

BLOCK DIAGRAMS



SELECTION GUIDES

Halogen Free	Package	Q'ty per Reel	Part No.
H/F	DFN(PLP)1010-4	10,000 pcs	RP112Kxx1*-TR
H/F	SC-88A	3,000 pcs	RP112Qxx2*-TR-FE
H/F	SOT-23-5	3,000 pcs	RP112Nxx1*-TR-FE

PACKAGES (Top View)



*) The tab is substrate level (GND).

APPLICATIONS

• Power source for RF module that demands for higher level of noise reduction

• Power source for the portable music player

- RP112xxxxD (With Auto-Discharge function)
- Specify the output voltage within the range of 1.2V (12) to 4.8V (48) in 0.1V steps.
- Select from (B) without auto-discharge function or (D) with auto-discharge function.

TYPICAL CHARACTERISTIC



Low Noise 150mA LDO

Comparison of ow Noise 150mA | DO

	RP112x Series	RP130x Series	RP103x Series	RP109x Series	
Supply Current	Тур. 75μА	Тур. 38μА	Тур. 36μА	Тур. 50μΑ	
Input Voltage Range	2.0V to 5.25V	1.7V to 6.5V	1.7V to 5.25V	1.4V to 5.25V	
Output Voltage Range	1.2V to 4.8V	1.2V to 5.3V	1.2V to 3.3V	0.8V to 3.6V	
Dropout Voltage	Typ. 0.20V	Typ. 0.32V	Typ. 0.21V	Typ. 0.25V	
Ripple Rejection (Iout=30mA,f=1kHz)	Typ. 80dB	Typ. 80dB	Typ. 75dB	Typ. 75dB	
Output Voltage Accuracy	±1%	±1%	±1%	±1%	
Temp. coeff. of Output Voltage	±30ppm/°C	±20ppm/°C	±30ppm/°C	±30ppm/°C	
Output Noise	Typ. 10μVrms	Typ. 30μVrms	Typ. 60μVrms	20 × Vουτ μVrms (Vουτ ≥1.8V)	
Package	DFN (PLP) 1010-4 (1.0mm × 1.0mm) SC-88A (2.0mm × 2.1mm) SOT-23-5 (2.9mm × 2.8mm)	DFN (PLP) 1010-4 (1.0mm × 1.0mm) SC-82AB (2.0mm × 2.1mm) SOT-23-5 (2.9mm × 2.8mm)	DFN (PLP) 1010-4 (1.0mm × 1.0mm) SC-82AB (2.0mm × 2.1mm) SC-88A (2.0mm × 2.1mm) SOT-23-5 (2.9mm × 2.8mm)	DFN (PLP) 0808-4 (0.8mm × 0.8mm) DFN1010-4 (1.0mm × 1.0mm) SC-88A (2.0mm × 2.1mm) SOT-23-5 (2.9mm × 2.8mm)	

The High Ripple Rejection

The ripple rejection of RP112x Series is 80dB at f=1kHz under lour=30mA. The ripple rejection of conventional LDO's decline rapidly according to frequency. However, the one of RP112x Series decline gradually and exceed the one of conventional LDOs, as 75dB at f=10kHz, 65dB even if it's f=100kHz. It can be realized that the one of RP112x Series is high level, compared to RP130x Series that of the same 150mA output LDO as shown in the graphs below.







RP130x281x

Ricoh Co., LTD. Electronic Devices Company

Ricoh presented with the Japan Management Quality Award for 1999. Ricoh 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.



 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.

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

RICOH COMPANY,LTD. ELECTRONIC DEVICES COMPANY • Shin-Yokohama Office(International Sales) 3-2-3, Shin-Yokohama, Kouhoku-ku, Yokohama City, Kanagawa 222-8530, Japan Phone +81-45-477-1697 FAX +81-45-477-1694