

## Automatic Mode Shift Low Voltage 200mA LDO

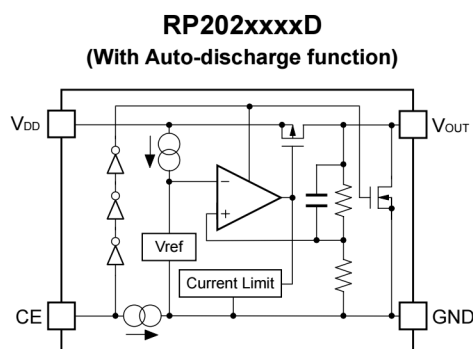
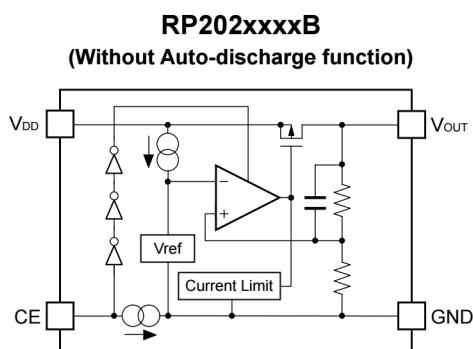
The RP202x Series are CMOS-based auto mode switching LDO regulators featuring 200mA output. In auto switching mode, the operation can switch automatically to fast response mode or low power mode of the ECO function according to output current. (Automatic switching to fast response mode under  $I_{OUT} > 8\text{mA}$  conditions or to low power mode under  $I_{OUT} < 1\text{mA}$  conditions.) In low power mode, supply current is as low as  $2.5\mu\text{A}$ . In fast response mode, ripple rejection is 70dB and noise is low. RP202x requires neither ECO pin for switching mode nor microcontroller pin. RP202x supports low voltage, featuring input voltage from 1.4V and output voltage from 0.8V. Standby mode and auto-discharge function are also available. In addition to SOT-23-5 and SC-88A packages, and a 1mm square DFN(PLP)1010-4 are also available. RP202x Series contributes to the downsizing of the hand-held equipment because it can use the  $0.47\mu\text{F}$  ceramic capacitor.

### FEATURES

- Supply Current ( $I_{SS2}$ ) ..... Typ.  $50\mu\text{A}$  (Fast mode,  $V_{IN}=V_{SET}+1.0\text{V}$ )
- Supply Current ( $I_{SS1}$ ) ..... Typ.  $2.5\mu\text{A}$  (Low power mode, same as above,  $V_{SET}=2.8\text{V}$ )
- Standby Current ( $I_{standby}$ ) ..... Typ.  $0.1\mu\text{A}$  (Same as above,  $CE="L"$ )
- Dropout Voltage ( $V_{DIF}$ ) ..... Typ.  $0.20\text{V}$  ( $I_{OUT}=200\text{mA}$ ,  $V_{SET}=2.8\text{V}$ )
- Ripple Rejection (RR) ..... Typ. 70dB ( $f=1\text{kHz}$ , Fast mode)
- Input Voltage Range ( $V_{IN}$ ) ..... 1.4V to 5.25V (Absolute maximum rating : 6.0V)
- Output Voltage Range ( $V_{OUT}$ ) ..... 0.8V to 4.0V (Internally fixed)
- Output Voltage Accuracy .....  $\pm 1\%$
- Temp. coeff. of Output Voltage ..... Typ.  $\pm 100\text{ppm}/^\circ\text{C}$
- Line Regulation ..... Typ.  $0.02\%/V$  (Fast mode)
- Fold-back Protection Circuit ..... Current limit Typ. 60mA
- Auto-discharge Function ..... D Version
- Constant Slope Circuit (Soft Start Function)
- Packages ..... DFN(PLP)1010-4, SC-88A, SOT-23-5
- Ceramic capacitor can be used. ....  $0.47\mu\text{F}$  or more

(The above shows specification at  $T_{opt}=25^\circ\text{C}$ . Design assurance value at  $-40^\circ\text{C} \leq T_{opt} \leq 85^\circ\text{C}$  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	RP202Kxx1*-TR
H/F	SC-88A	3,000 pcs	RP202Qxx2*-TR-FE
H/F	SOT-23-5	3,000 pcs	RP202Nxx1*-TR-FE

xx : Specify the output voltage within the range of 0.8V (08) to 4.0V (40) in 0.1V steps.

\* : Select from (B) without auto-discharge function or (D) with auto-discharge function

### PACKAGES (Top View)

DFN(PLP)1010-4	SC-88A	SOT-23-5
1 $V_{OUT}$ 2 GND 3 CE 4 $V_{DD}$	1 CE 2 NC 3 GND 4 $V_{OUT}$ 5 $V_{DD}$	1 $V_{DD}$ 2 GND 3 CE 4 NC 5 $V_{OUT}$

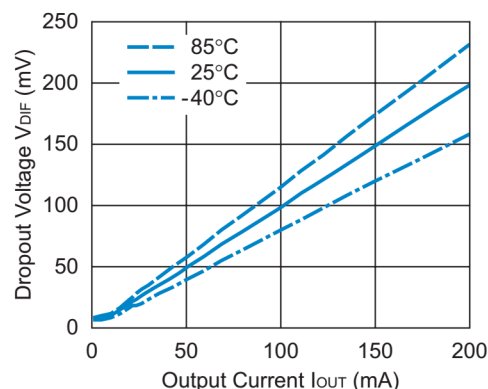
\*) The tab is substrate level (GND).

### APPLICATIONS

- Power source for hand-held communication equipment, camera and VCRs
- Power source for home appliances and digital home appliances
- Power source for battery-powered equipment

### TYPICAL CHARACTERISTIC

**RP202x28xx Dropout Voltage vs. Output Current**





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