

## VOLTAGE REGULATORS RX5RE Series

The RX5RE series, developed with CMOS processing technology, are highly accurate, low power consumption, large output current 3-terminal voltage Regulators. They include reference voltage supply, error amplifier, control transistor, and resistor network to control the output voltage. Because of small input-output voltage difference, effective constant-voltage power supply can be designed. The RX5RE series have a current control circuit to protect themselves from the destruction due to over current. The output voltage is fixed in the device. The RX5RE series are both available in two different types of package: mini-power-mold and TO-92.

### ■ FEATURES

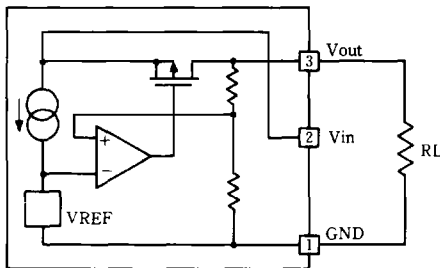
- Extremely low power consumption . . . . . TYP. 1.1 $\mu$ A (RX5RE30X,  $V_{in}$  = 5.0V)
- Small input-output voltage difference . . . . . TYP. 0.5V  $I_{out}$  = 60mA (RX5RE50X)
- Large output current . . . . . TYP. 120mA (RX5RE50X)
- Low temperature coefficient for output voltage . . . TYP.  $\pm 100$ PPM/ $^{\circ}$ C
- Wide operating voltage range . . . . . MAX. 10.0V
- Stable input rate . . . . . TYP. 0.1%/V
- Accurate output voltage . . . . .  $\pm 2.5\%$
- Variety of output voltage levels . . . . . 0.1V step (Note)
- Compact package . . . . . TO-92, mini power mold

(Note: RX5RE30X and RX5RE50X are standard. Custom type is also available.)

### ■ APPLICATIONS

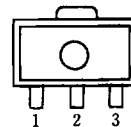
- Constant-voltage power supply for battery-powered devices
- Constant-voltage power supply for camera, communication, and video equipment
- Stable standard voltage supply

### ■ BLOCK DIAGRAM



### ■ PIN CONFIGURATION

TO-92



- 1 GND
- 2  $V_{in}$
- 3  $V_{out}$

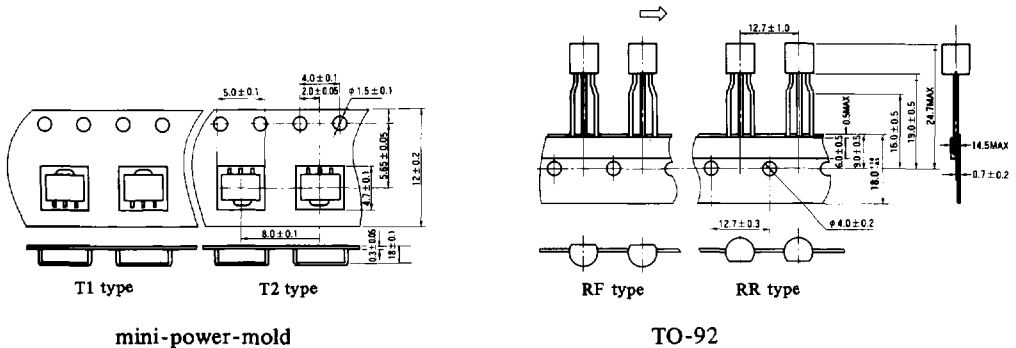
■ SELECTION GUIDE

You can define the output voltage and package of the RX5RA series.  
 The devices are defined by the following characters.

R X 5 R E  X X X  ← Type number  
 ↑            ↑    ↑  
 a            b    c

No.	Meaning
a	Defines the packaging type E : TO-92 H : Mini power mold (SOT-89)
b	Defines output voltage (Vout) The range for Vout is 2.0V to 6.0V in units of 0.1V, with an accuracy of ±2.5%.
c	Defines the packaging method for shipment A-T1 : Taping-T1 type A-T2 : Taping-T2 type A-RF : Taping-RF type A-RR : Taping-RR type B : Gluing (Gluing is for mini power mold package as a sample) C : Electric conductive bagging (for TO-92)

■ TAPING METHODS



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	V <sub>in</sub>	+12	V
Output Current	I <sub>out</sub>	150	mA
Output Voltage	V <sub>out</sub>	V <sub>in</sub> +0.3~-0.3	V
Power Dissipation	P <sub>d</sub>	300	mW
Operating Temperature Range	T <sub>opr</sub>	-30~+80	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	
Soldering Temperature	T <sub>solder</sub>	260°C 10 Sec	

### ■ RX5RE50X (V<sub>out</sub> = 5.0V)

T<sub>opr</sub> : 25°C

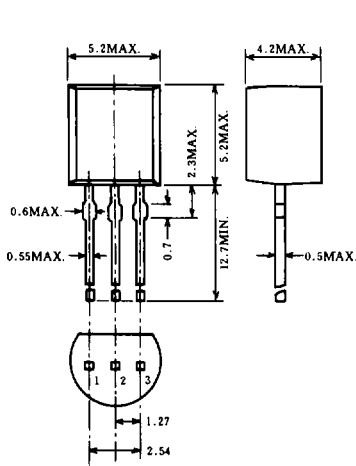
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V <sub>out</sub>	I <sub>out</sub> = 10mA	4.875	5.000	5.125	V
Output Current	I <sub>out</sub>	V <sub>in</sub> = 7.0V	80	120		mA
Load Regulation	ΔV <sub>out</sub>	V <sub>in</sub> = 7.0V, 1mA ≤ I <sub>out</sub> ≤ 80mA		40	80	mV
Input-Output Voltage Difference	V <sub>dif</sub>	I <sub>out</sub> = 60mA		0.5	0.7	V
Consumption Current	I <sub>ss</sub>	V <sub>in</sub> = 7.0V		1.3	3.9	μA
Line Regulation	$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	I <sub>out</sub> = 10mA  V <sub>out</sub> + 1.0V ≤  V <sub>in</sub>   ≤ 10V		0.1		%/V
Input Voltage	V <sub>in</sub>				10	V
Limit Current	I <sub>lim</sub>			240		mA
Temperature Coefficient	$\frac{\Delta V_{out}}{\Delta T_{opr}}$	I <sub>out</sub> = 10mA -30°C ≤ T <sub>opr</sub> ≤ 80°C		±100		$\frac{PPM}{°C}$

### ■ RX5RE30X (V<sub>out</sub> = 3.0V)

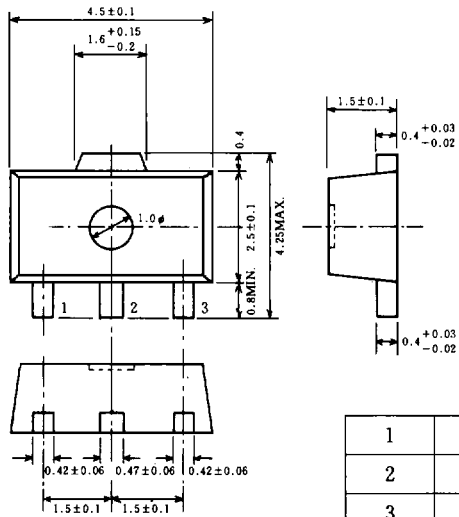
T<sub>opr</sub> : 25°C

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V <sub>out</sub>	I <sub>out</sub> = 10mA	2.925	3.000	3.075	V
Output Current	I <sub>out</sub>	V <sub>in</sub> = 5.0V	50	80		mA
Load Regulation	ΔV <sub>out</sub>	V <sub>in</sub> = 5.0V, 1mA ≤ I <sub>out</sub> ≤ 60mA		40	80	mV
Input-Output Voltage Difference	V <sub>dif</sub>	I <sub>out</sub> = 40mA		0.5	0.7	V
Consumption Current	I <sub>ss</sub>	V <sub>in</sub> = 5.0V		1.1	3.3	μA
Line Regulation	$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	I <sub>out</sub> = 10mA  V <sub>out</sub> + 1.0V ≤  V <sub>in</sub>   ≤ 10V		0.1		%/V
Input Voltage	V <sub>in</sub>				10	V
Limit Current	I <sub>lim</sub>			240		mA
Temperature Coefficient	$\frac{\Delta V_{out}}{\Delta T_{opr}}$	I <sub>out</sub> = 10mA -30°C ≤ T <sub>opr</sub> ≤ 80°C		±100		$\frac{PPM}{°C}$

■ PACKAGE INFORMATION



TO-92



mini-power-mold

1	GND
2	V <sub>in</sub>
3	V <sub>out</sub>