# NewsRelease

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**Renesas Technology Releases RNA51xxxFLP Series CMOS Reset ICs for Microcomputer Voltage Detection, Achieving Industry's Highest-Level Reset Detection Voltage Precision of ±1% and Lowest-Level Current Dissipation of 0.7 µA**

— Lineup of 74 high-precision, low-current-dissipation models for use in mobile products —

Tokyo, December 27, 2004 — Renesas Technology Corp. today announced the RNA51xxxFLP Series of CMOS reset ICs, achieving high precision and low current dissipation through the use of a CMOS process, as reset ICs that detect the power supply voltage of a microcomputer and execute a reset if an abnormal voltage is detected. A lineup of 74 models is available covering a reset voltage range from 1.4 V to 5.0 V, and phased sample shipments will begin from February 2005 in Japan.

The main features of the RNA51xxxFLP Series are summarized below.

(1) ±1% (max.) reset detection voltage precision

The industry's highest-level reset detection voltage precision of ±1% (max.) is achieved through the use of voltage trimming[1]. This high precision — three times the ±3% (max.) figure of current Renesas Technology models — enables RNA51xxxFLP Series devices to be used in a wide variety of products including low-voltage drive systems and battery-operated systems with stringent voltage management requirements.

(2) Low 0.7 µA (typ.) current dissipation

The previous bipolar process has been replaced with a CMOS process to achieve lower power consumption for use in mobile products, resulting in the industry's lowest current dissipation level of 0.7 µA (typ.).

(3) Product lineup offering wide range of reset detection voltages from 1.4 V to 5.0 V

RNA51xxxFLP Series products can handle a total of 37 reset detection voltages from 1.4 V to 5.0 V, in 0.1 V increments. A choice of CMOS output or open-drain output for each voltage level gives a total lineup of 74 models, enabling users to choose the right model for any application system.

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**< Product Background >**

With the continuing popularity of small battery-powered products such as notebook PCs and digital cameras, there is a demand for electronic parts that offer lower operating voltages and current dissipation in order to extend battery life.  Key components such as microprocessors and memory chips have evolved from the 2.5 V to the 1.8 V power supply voltage class, and reductions in current dissipation are also being pursued to the limit through techniques such as the use of power management circuits.

While Renesas Technology has been mass-producing bipolar process reset ICs, the need for lower current dissipation in mobile products has led to the development of the new RNA51xxxFLP Series of CMOS reset ICs offering lower current dissipation through the use of a CMOS process, together with lower reset voltages and higher precision.

**< Additional Product Details >**

RNA51xxxFLP Series CMOS reset ICs employ a 0.8 µm CMOS process and include an on-chip delay circuit providing a reset release timing delay function.  This makes it possible to generate a reset signal with an external input signal for manual reset input, which has been strongly requested by users.  Also, reset signal release timing can be varied by means of an external capacitor, enabling the user to set any desired power-on reset timing for use when the system is powered on.

The package used is a 5-pin SOT23-5 (Renesas package code: MPAK-5), featuring a small body size (excluding pins) of 1.6 mm × 2.9 mm together with lead-free specifications.

The product lineup includes models handling a total of 37 reset detection voltages from 1.4 V to 5.0 V in 0.1 V increments, as shown in the following table, offering ±1% (max.) reset detection voltage precision, 5% (typ.) detection voltage hysteresis*[2], and 0.7 µA (typ.) current dissipation over a wide voltage range.

- **RNA51xxxFLP Series Products**

| Detection Voltage | Output Format | |
| :---: | :---: | :---: |
| **[V]** | **Open-Drain Output** | **CMOS Output** |
| 1.4 | RNA51A14FLP | RNA51B14FLP |
| 1.5 | RNA51A15FLP | RNA51B15FLP |
| 1.6 | RNA51A16FLP | RNA51B16FLP |
| 1.7 | RNA51A17FLP | RNA51B17FLP |
| 1.8 | RNA51A18FLP | RNA51B18FLP |
| 1.9 | RNA51A19FLP | RNA51B19FLP |
| 2.0 | RNA51A20FLP | RNA51B20FLP |
| 2.1 | RNA51A21FLP | RNA51B21FLP |
| 2.2 | RNA51A22FLP | RNA51B22FLP |
| 2.3 | RNA51A23FLP | RNA51B23FLP |
| 2.4 | RNA51A24FLP | RNA51B24FLP |
| 2.5 | RNA51A25FLP | RNA51B25FLP |
| 2.6 | RNA51A26FLP | RNA51B26FLP |
| 2.7 | RNA51A27FLP | RNA51B27FLP |
| 2.8 | RNA51A28FLP | RNA51B28FLP |
| 2.9 | RNA51A29FLP | RNA51B29FLP |
| 3.0 | RNA51A30FLP | RNA51B30FLP |
| 3.1 | RNA51A31FLP | RNA51B31FLP |
| 3.2 | RNA51A32FLP | RNA51B32FLP |
| 3.3 | RNA51A33FLP | RNA51B33FLP |
| 3.4 | RNA51A34FLP | RNA51B34FLP |
| 3.5 | RNA51A35FLP | RNA51B35FLP |
| 3.6 | RNA51A36FLP | RNA51B36FLP |
| 3.7 | RNA51A37FLP | RNA51B37FLP |
| 3.8 | RNA51A38FLP | RNA51B38FLP |
| 3.9 | RNA51A39FLP | RNA51B39FLP |
| 4.0 | RNA51A40FLP | RNA51B40FLP |
| 4.1 | RNA51A41FLP | RNA51B41FLP |
| 4.2 | RNA51A42FLP | RNA51B42FLP |
| 4.3 | RNA51A43FLP | RNA51B43FLP |
| 4.4 | RNA51A44FLP | RNA51B44FLP |
| 4.5 | RNA51A45FLP | RNA51B45FLP |
| 4.6 | RNA51A46FLP | RNA51B46FLP |
| 4.7 | RNA51A47FLP | RNA51B47FLP |
| 4.8 | RNA51A48FLP | RNA51B48FLP |
| 4.9 | RNA51A49FLP | RNA51B49FLP |
| 5.0 | RNA51A50FLP | RNA51B50FLP |

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Notes: 1. Voltage trimming: Performing fine adjustment on a chip-by-chip basis in the wafer state in order to absorb reset voltage fabrication variations

2. Detection voltage hysteresis: The difference between the reset detection voltage and reset release voltage. Providing this difference prevents the occurrence of chattering in a reset output signal in the vicinity of the reset detection voltage due to system power supply noise.

\* Product names, company names, or brands mentioned are the property of their respective owners.


< Typical Applications >

- Power supply monitoring circuits for notebook PCs, digital still cameras, digital video cameras, PDAs, wireless communication devices such as mobile phones and similar battery-powered products, microprocessor systems , and so on.


< Prices in Japan > *For Reference

| Product Name | Detection Voltage | Output Format | Sample Price [ Tax Included ] (Yen) |
|---|---|---|---|
| RNA51A27FLP | 2.7 V | Open-drain output | 20 [ 21 ] |
| RNA51B27FLP | 2.7 V | CMOS output | 20 [ 21 ] |


< Specifications >

| Item | RNA51xxxFLP Series Specifications | |
|---|---|---|
| | RNA51AxxFLP Series | RNA51BxxFLP Series |
| Detection voltage | 1.4 V to 5.0 V (0.1 V increments) | |
| Detection voltage precision | $\pm 1$ % (max.) | |
| Detection voltage temperature coefficient | $\pm 100$ ppm/$^\circ$C (typ.) | |
| Detection voltage hysteresis | 5 % (typ.) | |
| Current dissipation | 0.7 $\mu$A (typ.) | |
| Output format | Open-drain output | CMOS output |
| Operating temperature (Topr) | -40$^\circ$C to +85$^\circ$C | |
| Process | 0.8 $\mu$m CMOS process | |
| On-chip functions | • Reset release timing delay function: Freely settable with external capacitor<br>• Manual reset function: Externally controllable | |
| Package | SOT23-5 (Renesas package code: MPAK-5)<br>• Body size: 1.6 mm × 2.9 mm × 1.1 mm (max.)<br>• Pb-free | |


Information contained in this news release is current as of the date of the press announcement, but may be subject to change without prior notice.


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