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FOR IMMEDIATE RELEASE

## **Ricoh launches a Buck-Boost DC/DC Converter with 300 nA quiescent current for IoT devices and wearables**

**Campbell, CA, February 7, 2018** – Ricoh Electronic Devices Co., Ltd. has launched the RP604 Buck-Boost DC/DC Converter, designed to use in wearable devices, applications for Internet of Things (IoT) and wireless communications modules requiring a low level of current consumption to extend battery life. In order to reduce valuable circuit board space, the product requires only three external components and has an option to select from two packages.

The RP604 is particularly well suited when a supply voltage is required and located somewhere in between the voltage level of a fully charged and fully discharged battery. At the correct moment the DC/DC Converter switches over from Buck to Boost mode automatically in order to maintain the output voltage setting. The RP604 is designed for applications that are mainly in sleep mode and wake-up periodically to perform a measurement, transmit data and then return to sleep mode. For these type of applications, the current consumption in sleep mode should remain as low as possible. The RP604 has an impressive low quiescent current and consumes only 300 nA, prolonging battery life or makes it possible for the designer to select a smaller sized battery for the application.

The RP604 is able to provide up to 300 mA in Buck mode whilst in Boost mode the output current is less and related to the input voltage level.

Multiple protection circuits are integrated, including an Under Voltage Lock-Out circuit which disables the DC/DC Converter in case the input voltage drops below a minimum threshold. A soft-start circuit controls the output voltage to ramp-up smoothly and prevents any output overshoot and undershoot during the start-up period. The Lx current limit circuit prevents the peak current through the inductor to exceed a specific maximum current threshold. An output overvoltage protection which turns off both the P-channel and N-channel MOSFETs and thermal protection, shutting down the IC in case the junction temperature increases above 140°C.

The RP604 has an optional auto-discharge function, which rapidly discharges the output capacitor once the chip is disabled by the CE pin. As for the available packages, one can select from a small sized WLCSP-20-P2 and DFN(PLP)2730-12.

## RP604 Features

Input Voltage Range	1.8 V to 5.5 V
Output Voltage Range	(in 0.1 V step) 1.6 V to 5.2 V
Output Voltage Accuracy	±1.5%
Output Current	(buck mode) 300 mA
Quiescent Current	(device not switching) Typ. 300 nA
Standby Current	0.01 µA
PMOS On-Resistance	(Vin = 3.6V, RP604Z) 0.12 Ω
NMOS On-Resistance	(Vin = 3.6V, RP604Z) 0.12 Ω
Protection Circuits	UVLO, OVP, Soft-Start, Lx Peak Current, Thermal
Peak Efficiency	92%
Auto-Discharge Function	Optional
Package RP604Z, RP604K	WLCSP-20-P2, DFN(PLP)2730-12

For further information, please visit [www.e-devices.ricoh.co.jp/en/](http://www.e-devices.ricoh.co.jp/en/) or contact:

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Headquartered in Tokyo, Ricoh Group operates in approximately 200 countries and regions. In the financial year ended March 2017, Ricoh Group had worldwide sales of 2,028 billion yen (approx. 18.2 billion USD).

For further information, please visit [www.ricoh.com](http://www.ricoh.com)

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