

## New Products

### Newly Developed Differential Serial Transmission Interface LSI for QVGA-size LCDs Greatly Reduced Internal Wiring of Cellular Phones

The number of signal wires between the CPU and each module of the cellular phone has been increasing significantly as a result of progress in the employment of multimedia technologies, such as the high-resolution LCD and camera. Folding-type cellular phone models are now in wide use, and are increasing significantly. Also, with the appearance of a cellular phone model incorporating a rotating hinge



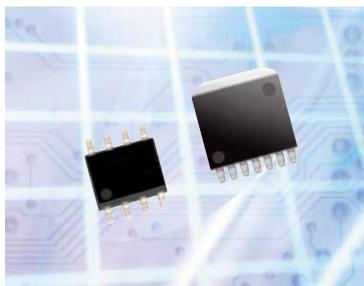
part as a result of the incorporation of a camera, further miniaturization of the casing along with the complicated structure has been making progress. However, wiring restrictions in the hinge part, in particular, have been a serious obstacle to the further development of cellular phones in pursuit of advanced features.

ROHM has the industry's top-class technology and know-how in the field of the LVDS<sup>\*1</sup> (Low Voltage Differential Signaling) interface that is becoming a standard high-speed digital image interface. ROHM has applied those technological advances and know-how in combination with its system LSI technology intended for cellular phones to develop a Mobile Shrink Data Link (MSDL<sup>\*2</sup>) LSI for use as a differential serial transmission interface for cellular phones.

Compared with conventional parallel interfaces, the MSDL interface makes it possible to reduce EMI<sup>\*3</sup> (electromagnetic interference) noise by -10 dB, thus eliminating an adverse influence on electronic end-products in terms of wireless characteristics, ensuring ease of EMI countermeasures, and contributing to improvements in the quality of the end-products. Furthermore, ROHM are developing wafer-level CSP package products to achieve a mounting area of 5 x 5 mm or less.

### Switching Regulator Controller Incorporating Power MOS FET, Supporting Diverse Power Supply Specifications

Electronic equipment normally requires more than one power-supply voltage. Switching regulator controllers are in wide use to efficiently convert between different voltages. In conventional power supply circuits, power supply ICs called 3-terminal regulators have been used despite their low efficiency, due to the convenience of requiring less external components. Switching regulator controllers are environmentally friendly with high power-supply efficiency, but not very user-friendly in that they require a number of external components and also generate noise.

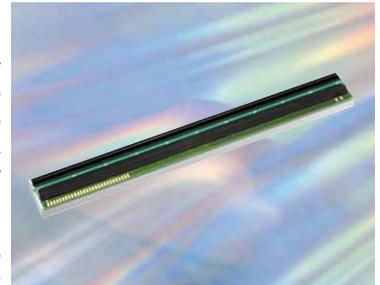


ROHM integrated a switching regulator circuit and a power MOS FET into a single chip to develop ICs that can be used as easily as 3-terminal regulator ICs. The newly developed switching regulator ICs have a remarkably high conversion efficiency of 90% or more. ROHM offers an extended lineup of these ICs with a wide input voltage range of up to 50 V, enabling customers to incorporate them into products requiring high input voltage, such as plasma TVs and office automation equipment.

With a high switching frequency of up to 500 kHz, ROHM's new switching regulator ICs contribute to the miniaturization of inductors and capacitors. Furthermore, by incorporating into the ICs an oscillator capable of changing frequencies, it makes it easier to develop designs that reduce noise affecting peripheral circuitry.

### Thermal Printheads for 310 dpi Color Photo Printers, with a Power Requirement of Only 0.06 W/dot, Achieving the Industry's Highest Energy-saving Levels

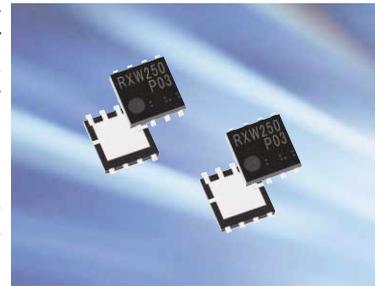
Digital still cameras are spreading worldwide, replacing conventional film cameras. Dye sublimation type color photo printers have been developed to enable users of digital still cameras to print photographs from the image data stored in the cameras. The market for color photo printers as dedicated high-resolution, high-speed devices for digital still cameras that enable users to make prints quickly and easily without using personal computers, and that cause little degradation of images over time is rapidly expanding. Market growth in sales is expected to reach 7.5 million units in 2006, up from three million units in 2004.



Developed by ROHM for the expanding market of energy-saving digital color photo printers, the NF3004-VC20A is a thermal head that contributes significantly to printer manufacturers' success in developing high-resolution, high-speed printers. The NF3004-VC20A incorporates a hard conductive overcoat protective layer especially developed by ROHM to ensure excellent heat conduction, realizing high efficiency, size reduction and weight reduction at the industry's top-level<sup>\*4</sup> (a 15% efficiency increase compared with conventional models, with a 35% size reduction and 23% weight reduction) thus contributing to energy saving. Moreover, ROHM made full use of its LSI technology to mount a dedicated high-speed driver IC that was specifically developed for color printing. Incorporating this IC, the NF3004-VC20A is rated excellent in that its heating elements have high-speed response characteristics, which have a decisive influence on the quality of images

### Power MOS FET in standard SOP8 Package with the Industry's Lowest Level On-resistance of 2.0 mΩ (when ID = 20 A), Half as Low as That of Conventional Products

Recently, there is high demand for a reduction in the size and weight of lithium ion rechargeable batteries to be used as the main power supplies for mobile devices such as notebook PCs. The number of applications incorporating lithium ion rechargeable batteries is also increasing. In connection with these increases is the increased demand for on-resistance reduction and increased power in the power MOS FETs<sup>\*5</sup> used as protection circuits functioning to conserve power and reduce heat generation. In the past, products with an on-resistance<sup>\*6</sup> of 5.0 mΩ and a package of dissipation power of 2.0 W were the standard.



ROHM developed the RXW250P03 exclusively for the protection circuits of lithium ion rechargeable batteries. The RXW250P03 is a P-channel MOS FET with the industry's lowest level on-resistance (2.0 mΩ), and with its high-power package (at 3.0 W) the RXW250P03 has made significant improvements in heat dissipation in comparison with conventional models. These features have allowed two MOS FETs (which had to be connected in parallel in the past) to be integrated into a single element, thus enabling high-density mounting on electronic end-products. ROHM has been making full use of its unique manufacturing technology along with its unique design and device technologies to develop products responding to market needs ahead of its competitors. The RXW250P03 is one of the fruits of an exquisite combination of these technologies. ROHM intends to continue to develop products with constant attention paid to customers' viewpoints.

<sup>\*1</sup> LVDS: Low Voltage Differential Signaling

An interface standard that performs the differential transmission of signals within the small amplitude range of between 100 and 600 mV. Featuring high speed, LVDS is widely spread for signal transmission, such as the image signal transmission of notebook PCs.

<sup>\*2</sup> MSDL: Mobile Shrink Data Link

A differential signal transmission method developed by ROHM for cellular phones. The MSDL interface has been developed to realize differential transmission at low power consumption.

<sup>\*3</sup> EMI: Electromagnetic Interference

Interference caused by electromagnetic wave noise (unwanted radiation) from electronic devices. Regulatory standards are established in each country for the prevention of electromagnetic interference. Generally, the harmonic components of digital signals are EMI sources.

<sup>\*4</sup> As of August 31, 2004

<sup>\*5</sup> MOS FET

Metal Oxide Semiconductor Field Effect Transistor

<sup>\*6</sup> On-resistance

A resistance component that is consumed when the MOS FET is turned ON (i.e., when the current passes through). The lower the on-resistance, the better the performance of the MOS FET