

# Divisional Review

## INTEGRATED CIRCUITS

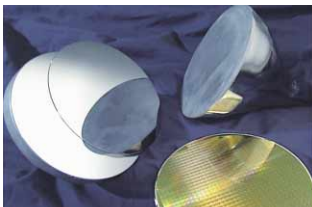
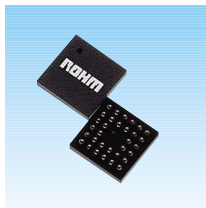
### ICs, LSIs

#### *Mastering the art of circuit design in system LSIs*

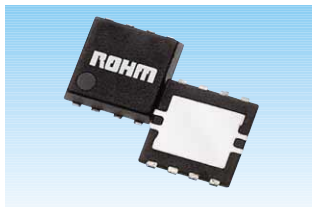
With the growing demand for multifunctional IT equipment and mobile phones and the widespread use of digital home appliances, customer requirements for system LSIs are becoming increasingly complex.

ROHM system LSIs are a product of the extensive expertise the Company has built up over years of proven success in manufacturing custom-designed LSIs, as well as the advanced planning and circuit design capabilities of its forward-thinking engineers. At ROHM, we fulfill customers' system LSI requirements with complete design solutions and comprehensive support, from product planning through wafer manufacturing, mass production and packaging. Our successful track record includes mastering the art of advanced linear circuit design that demands exceptional engineering skills, developing and delivering a variety of digital cores and an enhanced lineup of analog and digital interface modules, as well as establishing proprietary low-power, low-noise circuit technologies.

ROHM has also developed a System C-based system LSI design environment named "Real Platform," enabling the Company to design and verify entire processes including software and hardware concurrently with its customers using the same environment, thus greatly shortening system LSI design cycles and meeting customer needs faster than the competition.



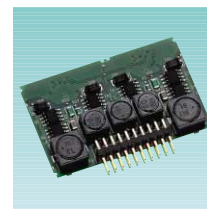
Silicon ingots and wafers



Power Package

### Power Modules

#### *Our tremendous contribution to energy conservation*



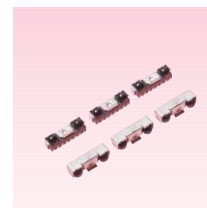
ROHM power modules, including AC/DC and DC/DC converters, contribute to energy conservation and consequently to the prevention of global warming. In recent years, the trend toward low-voltage, large-current power supplies has accelerated in tandem with the speed of micro-computers. This trend has led to the development of highly efficient DC/DC converter products. Additionally, as part of our goal of reducing power demand during standby, we have developed an AC/DC converter that achieves ultra-low standby power consumption of 7mW or less.

ROHM AC/DC converters meet the high-efficiency requirement. These miniaturized lightweight power modules were developed by making full use of the Company's high-breakdown-voltage, high-speed switching circuit technology. ROHM has also brought to the market insulated models, which are now enjoying popularity as the standard power supply IC for home appliances and communications equipment.

ROHM DC/DC converters are also achieving new levels of efficiency, miniaturization and safety. They feature a dedicated LSI that incorporates a speed-up circuit and wedge-shaped protection circuit, with reference voltage precision of  $\pm 1\%$ .

### Photo Link Modules

#### *Constant innovations in product miniaturization*



ROHM supplies IrDA and remote control modules incorporating LSIs and optical semiconductors (infrared LEDs and PIN photodiodes) developed in-house.

ROHM IrDA modules are widely utilized in networking devices for infrared wireless data communications between mobile phones, notebook computers, and printers. ROHM has also developed and brought to the market a new, extremely miniaturized photo link module, which is one-fifth the size of conventional models, intended for use as infrared receiver in the remote control units of various household electrical appliances such as air-conditioners and TVs.

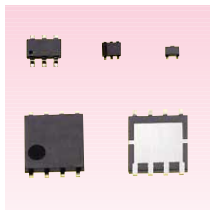
## DISCRETE SEMICONDUCTOR DEVICES

### Transistors

#### *New energy-efficient solutions*

ROHM is one of the largest manufacturers of discrete transistors in the world. By responding promptly to the needs of the times, ROHM maintains its leading position in the market. In meeting the increasing demand for resource- and energy-saving products in consideration of global environmental protection, ROHM has expanded its environmentally-friendly product lineup with low-on-resistance MOSFETs and low-saturation small signal bipolar transistors. These products are available in micro-miniature VMT3 packages (1.2 mm by 0.8 mm), as well as in EMT5/EMT6 packages (1.6 mm by 1.2 mm) intended for dual transistors. Additionally, ROHM has developed high-efficiency, surge-resistant MOSFETs for use in switching power supplies.

ROHM leads the industry in developing and marketing new energy- and space-saving transistors that offer high reliability while contributing to the miniaturization of end-products. Meeting diverse market needs, ROHM transistors are available in thin, high-power packages and a variety of other configurations.



### Diodes

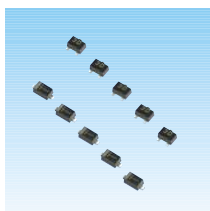
#### *Utilizing original component technology to develop advanced diodes*

Diodes are the most basic discrete semiconductor components. ROHM develops diode product lines that command a high world market share. This success is attributed to our policy of reliance on the basics while developing products and solutions mindful of the future needs of customers.

One example of this approach is our proprietary device technology which allows our Schottky barrier diodes to combine low forward voltage (VF) and low reverse current (IR) in the same diode. This was once an unattainable combination. With this advantage, ROHM Schottky barrier diodes have earned strong customer support in a myriad of markets.

ROHM's accumulated technology in the small signal and middle power class categories has been expanded into the power diode area. The Company has introduced high-quality power Schottky barrier diodes and fast recovery diodes (FRDs), which have received positive customer feedback. In addition, ROHM has completed the development of 400V high surge-resistant fast recovery diodes, low-loss diodes, and many other high-performance models that are ready to be released on the market. In the small signal category, ROHM intends to enhance the lineup of high-performance Schottky barrier diodes and Zener diodes, with a focus on those products housed in the ultra-compact VMN2 package (1.0 mm by 0.6 mm).

By developing high-reliability products and offering stable supplies, ROHM continues to serve market demands by meeting technological challenges as they evolve.

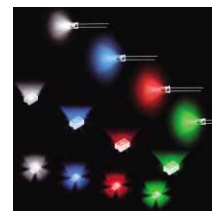


### Light Emitting Diodes

#### *Bright sources in energy efficiency*

With our advanced compound semiconductor technology, we are able to design and develop packages suited to the needs and the requirements of our customers.

ROHM's product line includes blue, red and white LEDs. Our diverse lineup of packages includes ultra-thin, top-view, side-view, and reverse-mount types. Our LED lamp products include a unique 3-mm-diameter model with pressure release structure, which can be directly mounted on a board using an insertion machine. Our LED products offer high reliability and advanced energy-saving features that our customers have come to expect.



### Laser Diodes

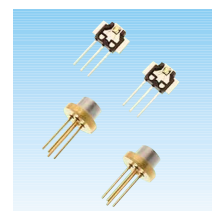
#### *Setting the worldwide standard in the optical disc market*

By offering a product line of highly reliable solutions developed with advanced device technology, ROHM has become the world leader in producing laser diodes for the ever-growing optical disc market.

ROHM laser diodes are finding widespread application in the optical disc drive market, which is undergoing a significant shift from playback-only to recordable models, as well as in the laser printer market, where faster speeds and higher resolutions are a constant demand.

ROHM's proactive efforts also include the development of higher laser output power products in anticipation of future market trends. We have already surpassed the competition by delivering a 240 mW laser diode for x16-speed recording, the highest available speed for DVD recording.

We have also enhanced our package lineup by adding new thin-frame type packages. As these examples demonstrate, our flexible development approaches enable us to respond quickly to the increasingly diverse needs of the market.



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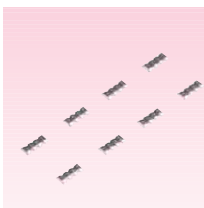
### PASSIVE COMPONENTS

#### Resistors

*Flexibility in production, the key to market leadership*

Ultra-compact rectangular chip resistors and chip resistor networks, first developed by ROHM, are essential components for mobile phone handsets, PDAs, and other information technology equipment. ROHM has expanded its resistor lineup to accommodate the needs of various fields, by adding the world's smallest MCR004 resistor (0402-size) ideal for increasingly miniaturized electronic end-products, and the ESR series of surge-resistant chip resistors and the KTR series of high-voltage chip resistors, both featuring exceptional reliability. We have also expanded the PMR series of chip resistors for battery detection as well as the MVR series, the world's thinnest chip potentiometers.

ROHM continues to meet new challenges by delivering a stable supply of high-quality products within shorter delivery time based on advanced supply chain management.



#### Capacitors

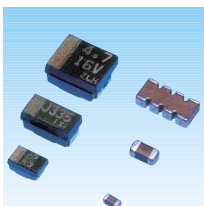
*Higher capacity for smaller products*

ROHM multi-layer ceramic chip capacitors and tantalum capacitors have the highest degree of reliability, thanks to our original automated production system designed to assure quality stabilization. By successfully establishing production bases overseas, we have enhanced our ability to supply these capacitors to markets worldwide.

In response to the growing demand for surface mount components, ROHM offers an extensive lineup of multi-layer ceramic chip capacitors, ranging from ultra-compact (0402-size) to large (5750-size) packages.

The Company is also making tremendous strides in developing miniaturized, larger-capacity tantalum capacitor products. Orders are increasing for ROHM's bottom electrode type, M-case, low-profile P-case, and low-profile A-case capacitors, particularly for mobile phone and digital camera applications. These products are offered in ROHM's original chip-size packages, which combine the use of bottom and side electrodes to deliver a capacity double the size of conventional models.

To meet a wider range of requirements, ROHM has also expanded its capacitor lineup to include new compact models of ultra-low ESR, functional polymer capacitors.



### DISPLAYS

#### Liquid Crystal Displays

*Combining semiconductor, display, and mounting technologies into one module*

With our proprietary ultra-thin, miniaturization technology, ROHM's liquid crystal modules are used in large quantities in the sub-displays of mobile phones. We feature a variety of display modes in our mono-chrome line to allow design freedom in end-products. In terms of color, we have developed a multi-color mode in addition to the normal full-color mode, both featuring lower power consumption. A large number of ROHM LCD modules find usage in printers, facsimiles and audio equipment.



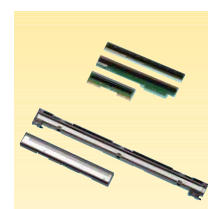
#### Thermal Printheads / Image Sensor Heads

*Integrated innovations for industry-leading performance*

Using its leading-edge LSI technology, thin/thick-film hybrid technology and proprietary optical components, ROHM has developed thermal printheads and image sensor heads as essential components for bar code printers, point-of-sale (POS) printers and multifunctional imaging and printing devices. Made with a ceramic substrate that ensures stable operation under high temperature conditions while producing minimal dust, our thermal printheads and image sensor heads offer exceptional reliability.

In the area of thermal printheads for POS, ROHM is developing compact, lightweight heads for high-speed transfer (CLK frequency: 16MHz) in a broad range of drive voltages (3.3V to 5.0V) for faster printing and better image quality. ROHM's original Step-Free technology is used in barcode printers, ensuring a significantly improved level of reliability.

ROHM also offers the FB series of image sensor heads featuring 600/1200dpi and the FE series with 3ch output and high-speed reading capability.



#### LED Displays

*As an integrated semiconductor manufacturer, ROHM has utilized the most advanced technology in order to develop thin, lightweight, low-power consumption custom modules using original high-luminosity LEDs.*

Providing a 1,024-level grayscale driver for each of the three colors (red, green and blue), ROHM full-color dot-matrix LED modules are capable of producing and displaying colors close to natural. They enjoy a very favorable reputation in the market, finding use in a variety of innovative applications. Examples include portrait-oriented LED display boards for advertisements and promotional purposes as used in boutiques and showrooms, as well as information boards in public arenas, such as destination screens on trains.

Custom LED backlight modules from ROHM are widely used in vehicles and large household appliances. By taking advantage of our proprietary CAE system, which allows a flexible development approach, ROHM can respond quickly to the increasing demand for thin, lightweight and low-power-consumption backlight modules. Using in-house high-intensity LED products enable our custom LED backlight modules to reduce power consumption significantly.

