

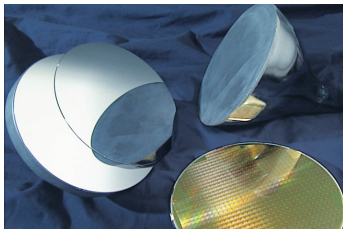
New Technologies

Outstanding products founded on creative technologies in a new digital era

The acceleration of digitized media formats is providing an ideal business opportunity for ROHM in the electronics industry. In the music sector, besides music CDs and audio data compression and distribution technologies such as MP3*1 and WMA*1, a number of new ultra-compact audio players capable of downloading music files from the internet have been released to the market. Also, in the area of digital graphics and images, new media and entertainment software using MPEG*2 and JPEG*3 compression technologies have evolved to include DVDs and digital cameras, HDD recording, and digital broadcasting. Accordingly, digital household appliances are becoming increasingly responsive to diverse consumer needs and tend to deliver high performance with reduced product life cycles. In view of these circumstances as a great opportunity for business and making the best use of its leading digital technology, ROHM is devoting its resources to the development of fundamental technologies and new products that benefit society.

In system LSI design technology, ROHM has developed and begun operation of the REAL PLATFORM, a system LSI development platform to respond to the increasing needs for higher-performance electronic products and reduced design lead-time. REAL PLATFORM integrates the three major elements of product design: system design, LSI hardware design and software design onto a common platform to increase development efficiency. REAL PLATFORM provides system LSI specifications on virtual chips and enables designers to check the operation of hardware and software simultaneously. This allows the time required for examining optimum hardware and software configurations to be considerably reduced. Offering software/hardware co-design, REAL PLATFORM also reduces development time. PLATFORM uses a configurable processor*4 to develop functional blocks with high processing performance in a short period. By providing this platform environment, software tools including OS and middleware and substantial hardware IPs, ROHM has enabled high-quality designs that satisfy customer needs and a considerable development cycle reduction.

In regard to fundamental LSI technology, ROHM is the first semiconductor manufacturer to establish a totally integrated manufacturing system that initiates with in-house production of materials such as silicon wafers, photomasks, lead frames and molding dies. The Company has also established a system aimed at quality improvement and lead-time reduction through thorough quality control even during the wafer fabrication process and a clear defining of responsibilities developed from the results of product development activities. This system is founded on ROHM's strong intention to supply products with the highest level of reliability in the world.



Silicon ingots and wafers

The cutting-edge 300mm wafer process was another major accomplishment. ROHM began full-scale mass production of a variety of liquid crystal drivers through this process. The Company is also developing 90-nm process technology to replace the products that are currently mass-produced on 130-nm process. In package technology, ROHM developed and began mass production of extremely compact and thin Chip Scale Packages miniaturized to the size of a LSI chip. CSPs are offered with a different design for each chip. This feature effectively differentiates the Company's custom LSI products from those of its competitors.

As for R&D on next-generation semiconductors, ROHM is proceeding with the commercial introduction of high-power dual-wavelength laser diodes for high-speed writing to CD/DVD media, which are made of a compound semiconductor and highly immune to self-destruction. R&D is also underway on blue-violet laser diodes intended for next-generation optical discs. In utilizing new material for semiconductors, ROHM has successfully produced a prototype power MOS FET that is based on a SiC*5 substrate and features the world's lowest on-resistance in the 1,000-volt class category. SiC is a new material with far better temperature characteristics compared with conventional Si (silicon) materials, thus promising for use not only in home electronic equipment but also as a next-generation material for electric vehicles.

In the area of new material development, ROHM has also made breakthroughs in R&D on organic materials. In the organic EL (electroluminescence) display category, ROHM has begun mass production of low-molecular-weight passive organic EL display modules as one of the industry's ranking manufacturers of such products. The Company has also successfully prototyped a 180 ppi QVGA*6 full-color organic EL display, a phosphorescent organic display, and a micro display fabricated on a silicon substrate. In addition, the achievements made under the Comprehensive Industrial-academic Collaboration Alliance initiated by Kyoto University, ROHM and other companies include an organic light-emitting transistor for flexible displays as well as a bio-nanofiber-reinforced, low-thermal-expansion transparent substrate. These successful R&D results in relation to new materials are certain to be extended into the Company's new products and technologies.

As part of its environmentally friendly technological development efforts, ROHM has expanded the application of lead-free technology for terminal mounting process to all products way ahead of its competitors. Successful lead-free effort combined with the complete abolishment of the use of five other RoHS*7-designated hazardous substances, has already made ROHM compliant with the RoHS Directive; a strict European directive that will take effect in 2006.

Always focusing on community contributions through electronics, ROHM continues to achieve this objective by commitment to R&D on new technologies.

*1 MP3 (Moving Picture Experts Group 1 Audio Layer 3)

An audio data compression standard.
WMA (Windows Media Audio)
An audio data distribution standard.

*2 MPEG (Moving Picture Experts Group)

A compression standard for moving image data.

*3 JPEG (Joint Photographic Experts Group)

A compression standard for still image data.

*4 Configurable processor

A processor of which internal configuration can be changed according to purpose.

*5 SiC (silicon carbide)

A compound semiconductor made of carbon (C) and silicon (Si) with excellent fracture strength and high-temperature operating characteristics.

*6 180 ppi (pixel per inch) QVGA (Quarter Video Graphics Array)

A 320 x 240 dot screen formed at densities of 180 dots per inch (2.54 cm).

*7 RoHS (Restriction on Hazardous Substances)

A European directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment that will take effect in 2006. Six RoHS-designated substances are lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).