

Application Brochure for

# INDUSTRIAL

Ver.3.1





# Supporting further technological innovation in industrial equipment through high quality, high reliability, and stable supply

A leading manufacturer of semiconductors and electronic components for over 60 years, ROHM continues to supply products featuring superior quality and reliability for a wide range of markets, from consumer electronics and IT equipment to automotive and industrial systems, based on a corporate objective of 'Quality First' established since its founding.

To respond to ever-increasing market demands, ROHM continues to develop innovative new products that contribute to greater energy savings, miniaturization, safety, and security, while offering a broad lineup of general-purpose products.

The ROHM Group achieves product development and stable supply through a vertically integrated production system in which the entire manufacturing process, from the material stage to finished products, is carried out in-house. Infusing a high level of quality into every process ensures outstanding traceability and an optimized supply chain, making it possible to achieve superior quality, high reliability, and stable supply required by industrial equipment.

ROHM will continue to carry out product development that meets the needs of customers and markets while providing society with advanced, high quality products that contribute to further technical innovation in industrial equipment.



ROHM Co.,Ltd.

The company name of ROHM, a semiconductor manufacturer, combines "R" the first letter of our original main product, resistors, with the unit for resistance "ohm". The "R" now also stands for Reliability. Quality First is ROHM's corporate policy.



ROHM develops innovative products that contribute to energy conservation, miniaturization, safety, and security in the industrial equipment field by combining design, manufacturing, quality assurance, and other technologies cultivated over many years. At the same time, ROHM contributes to the evolution of industrial equipment through a reliable production system that combines high quality and reliability with stable supply.

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# QUALITY

## Achieving high quality and stable supply through a vertically integrated production system

ROHM pursues 'quality first' manufacturing.

To guarantee consistent quality assurance and stable supply, the ROHM Group has established a vertically integrated production system in which the entire manufacturing process, from the material stage to finished products, is completed in-house, together with a BCM (Business Continuity Management) system that can maintain product supply even in the event of unforeseen circumstances such as natural disasters. The result is a business model that is less susceptible to the effects of natural and man-made disasters compared to general fabless and foundry, ensuring stable supply to customers around the world.

What's more, ROHM products achieve 4M traceability (Man, Machine, Material, Method) in all processes by allowing production information (production data/lot data) to be obtained from the actual items.

### Special Attention on Raw Materials

Wafer production from silicon ingot pulling



Raw silicon

Silicon Ingot



Si

SiC

**SiCrystal**  
A ROHM Group Company

### SiC Single-crystal Wafer Manufacturer

SiCrystal, a German SiC single-crystal wafer manufacturer, became a member of the ROHM Group in 2009

### In-house Photo Mask

Pursuing high quality through integrated quality control, from IC chip design layout to photo mask production

CAD

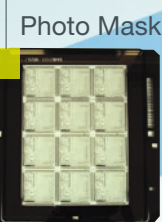
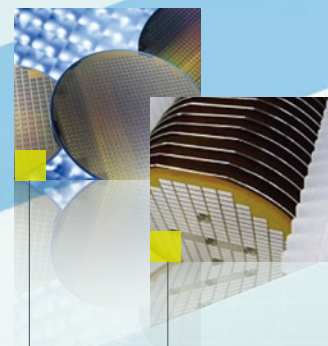


Photo Mask

### Wafer Process



### Wafer Process

Innovative device development from the wafer process, centered on our production facilities in Japan

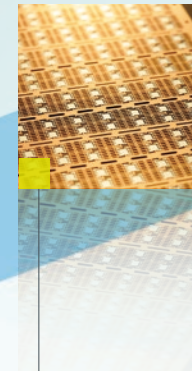
### Frame & Dies



### In-house Dies and Lead Frames

To provide high quality, some lead frames and molds are produced in-house to help control the quality of outsourced products and ensure stable supply

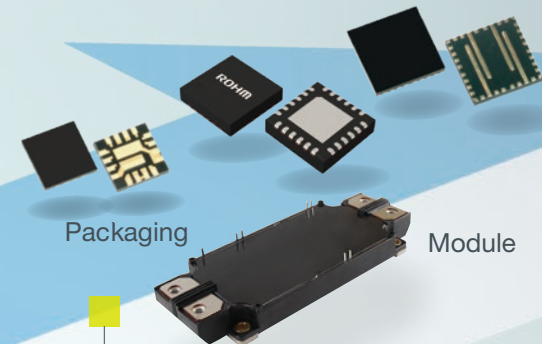
### Frame



### Assembly Line



### Packaging



### Module

### Packaging

Our overseas production facilities leverage the latest assembly technologies together with unmatched quality

### Flexible Lines

ROHM utilizes state-of-the-art production lines that minimize quality fluctuation factors by reducing human intervention through complete automation.

Developing Flexible Lines  
| Stories of Manufacturing |



In April 2021, ROHM launched operations of flexible lines that automate the assembly process utilizing in-house technologies with the goal of labor savings and high-mix low-volume production. These flexible lines improve product quality by increasing the capability of processes themselves based on FMEA (Failure Mode Effects Analysis) while doubling productivity, reducing manpower by automating everything from production instructions, material/product transport and supply to tool changes and record keeping. In addition, by implementing process design from the planning stage, lead time has been reduced by 10x vs conventional. Going forward, ROHM plans on applying this flexible line technology to mass production lines to achieve even more stable supply and strengthen our BCM system.



# BROAD MARKET

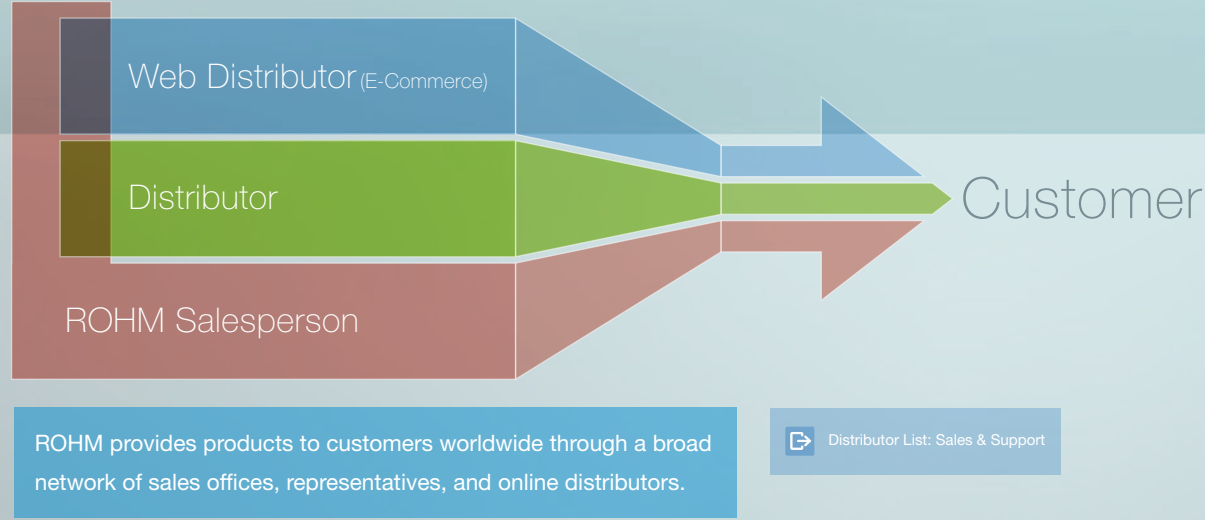
## Providing a wide ranges of sales channels by expanding sales and distribution bases

ROHM has established a network of sales offices, QA centers, and distribution facilities to ensure stable supply and support to customers around the world.

- Sales Offices
- R&D Centers
- QA Centers
- Production Facilities
- Distribution Sites



## SALES AND SUPPORT



## Product Longevity Program

To ensure worry-free use in industrial and other equipment with long life cycles, we disclose products scheduled for long-term supply (along with estimated supply periods) on our website.

ROHM launched a Product Longevity Program (PLP) to meet the demand of customers in the industrial equipment market. The PLP designates a supply period of 10 to 20 years for select products, taking into consideration production systems, equipment, and material procurement conditions, with the supply status and estimated supply duration for each product posted on ROHM's website. Over 1,300 products are registered in the program, ranging from resistors to semiconductor devices, ICs, and modules (as of July 2023).

Information (target products, supply periods) is updated once a year to allow customers to adopt our products with confidence.



Perform parametric search by product category, part number, or estimated support period

Product Longevity Program



# PRODUCT and SOLUTION

## PRODUCT

### Offering optimized solutions through a broad product lineup

ROHM's wide range of products from resistors to semiconductor components, ICs, and modules makes it possible to propose solutions at the system level for industrial equipment and other fields. The ROHM Group's considerable capabilities allow us to deliver solutions tailored to application needs.

#### Power Semiconductors/Power Devices

##### Power Transistors

- SiC MOSFET
- IGBT
- Si-MOSFET
- GaN HEMT



##### Power Diodes

- SiC Schottky Barrier Diodes
- Fast Recovery Diodes
- Schottky Barrier Diodes



##### Power Modules

- Full SiC Power Modules
- IGBT-IPM



#### ICs

##### Power ICs

###### Power Management/Power Supply ICs

- AC-DC Converter ICs
- DC-DC Converter ICs
- LDO
- Battery Monitoring ICs
- IPDs (Smart Power Switches)

###### Motor/Actuator Drivers

- Gate Drivers
- Motor Drivers



##### General Purpose ICs

- Memory
- Operational Amplifiers
- Comparators
- Voltage Detectors (Reset ICs)
- Clocks and Timers
- Switches/Multiplexers/Logic
- Data Converters
- Display Drivers
- Interface ICs
- Wireless ICs
- Audio/Video
- Speech Synthesis ICs
- Microcontrollers (MCUs)



##### Sensors and MEMS

- Accelerometers
- Ambient Light Sensor ICs
- Pressure Sensors etc.



#### Discrete Devices/Passive Devices/Opto Devices/Modules

##### Small-Signal Semiconductors/Devices

###### Transistors



###### Diodes



##### Resistors



##### Opto Devices

- LED
- Laser Diodes
- LED Displays
- Optical Sensors



##### Modules

- Wireless Communication Modules
- Printheads



#### ROHM's Product Portfolio

Analog Signal Chain			
Input	Processing	Output	
Analog Input (Sensor Devices)	Analog Front End (Op Amps, Comparators, A/D Converters, etc.)	Driver (Gate Driver ICs, Motor Driver ICs, etc.)	Output (Power Semiconductors, Opto Devices, etc.)
	Processing (MCU, etc.)		
Interface (Interface ICs)	Multifunctional Product (Various Driver ICs, Interface ICs, etc.)		
Power Supply/Power Management (Power Supply ICs, Control IC + Transistor, Battery Monitoring ICs, etc.)			
General Purpose (Resistors, Small-Signal Semiconductors, etc.)			

## TECHNOLOGY

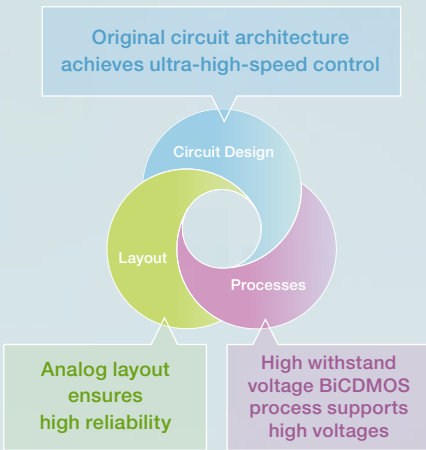
ROHM develops products featuring excellent performance by combining circuit design, layout, and manufacturing process technologies.

### Nano Pulse Control™

Ultra-high-speed pulse control technology achieves circuit control with switching ON times (control pulse width of the power supply IC) on the order of nanoseconds. Power supply ICs incorporating this technology enable high to low voltage conversion using a single IC - unlike conventional solutions requiring 2 or more power supply ICs. This is also being developed as a useful technology for driving GaN devices that excel at high frequency operation.

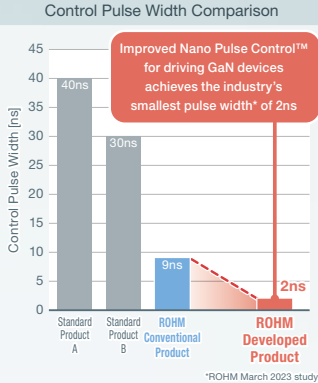


#### Nano Pulse Control™ Power Supply Technology Enables Dramatic System Miniaturization



#### Effects of Nano Pulse Control™

##### Control Pulse Width Comparison




Improved Nano Pulse Control™ for driving GaN devices achieves the industry's smallest pulse width\* of 2ns


\*ROHM March 2023 study

##### System Configuration Comparison

###### Conventional System Configuration



###### System Configuration with Nano Pulse Control™ Equipped DC-DC



Ultra-fast control in the high frequency range contributes to smaller, simpler systems

- New Power Supply IC Featuring the Industry's Highest Step-Down Ratio: 60V Input → 2.5V Output (at 2MHz)
- ROHM Establishes Ultra-High-Speed Control IC Technology that Maximizes the Performance of GaN Devices

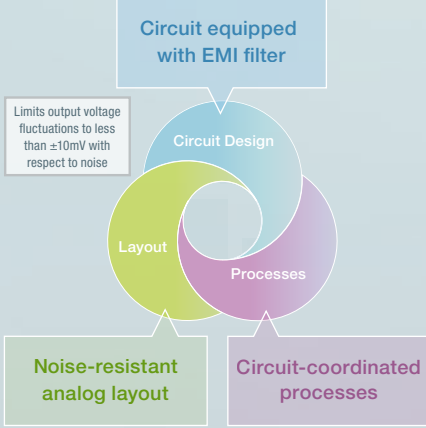
Nano Pulse Control™ is a trademark or registered trademark of ROHM Co., Ltd.

### EMARMOUR™

A brand name given only to products that achieve noise immunity limiting output voltage fluctuations to less than ±300mV over the entire noise frequency band during international noise evaluation testing under the ISO11452-2 standard. Unprecedented noise immunity both reduces design load while improving reliability by solving issues related to noise in the development of a variety of systems.



#### ROHM's EMARMOUR™ series Features Breakthrough Noise Immunity



#### High EMI Immunity Op Amp Development Concept

	Standard High EMI Immunity Op Amp	ROHM EMARMOUR™ High EMI Immunity Op Amp	Overview of Noise Evaluation Tests
Approach to Noise	Noise suppression in applications is handled by electronics manufacturers	Designed to prevent malfunctions due to noise without taking special measures in applications	
Radio Wave Emission Test ISO 11452-2	—	✓	Testing is commonly carried out by electronics manufacturers. Electromagnetic radiation from the antenna makes countermeasures difficult using an input filter alone
Bulk Current Injection Test ISO 11452-4	—	✓	A test in which noise is applied to the wiring harness connected to an electronic device using a current injection probe. The immunity of electronic devices is evaluated when excited by strong magnetic field noise.
Proximity Antenna Immunity Test ISO 11452-9	—	✓	A test being increasingly adopted by electronics manufacturers due to the proliferation of mobile phones. Electromagnetic radiation from the antenna makes countermeasures difficult using an input filter alone
Direct RF Power Injection Test IEC 62132-4	Resistant to noise only in specific frequency band due to filter measures	✓	A test in which noise signals are directly applied to a semiconductor terminal. Countermeasures are relatively easy, such as installing a filter at the input terminal in advance.

Achieves unparalleled performance in 4 international noise tests

ROHM's New EMARMOUR™ Op Amp series

EMARMOUR™ is a trademark or registered trademark of ROHM Co., Ltd.



# PRODUCT and SOLUTION

## SUPPORT

### Design support in line with the customer's development stage

Design support content that helps solve issues at all stages of customer development is available for immediate access on ROHM's website. ROHM provides solutions that can be used in customer circuit designing, such as content for each product required when designing industrial equipment, and application circuits with drive ICs that maximize the performance of power semiconductors.

#### Development Start

For contents without links [🔗](#), please visit the respective product page

##### Initial Study・Component Selection

- Identify market and technology trends
  - White Paper [🔗](#)
  - Catalogs・Brochures [🔗](#)
- Verify the device from the application
  - Application Block Diagram [🔗](#)
- Confirm recommended devices from the circuit topology
  - Topology Selection [🔗](#)
- Verify the reference design
  - Reference Design [🔗](#)

##### Circuit Design・Simulation

- Check detailed product characteristics
  - Datasheets [🔗](#)
  - Reference Design [🔗](#)
  - Application Notes [🔗](#)
  - ROHM Solution Simulator [🔗](#)
- Carry out circuit simulation
  - Design Models [🔗](#) (SPICE/PSpice® [🔗](#) LTspice® [🔗](#) PLECS® [🔗](#) Thermal Models [🔗](#) Ray Files [🔗](#) IBIS Models [🔗](#))
  - Design Calculation Tool (Calculation Sheet) [🔗](#)
  - ROHM Solution Simulator [🔗](#)
  - Application Notes [🔗](#)
- Evaluate the products
  - Product Samples・Evaluation Board (EVK) [🔗](#)

##### Board Design・Evaluation

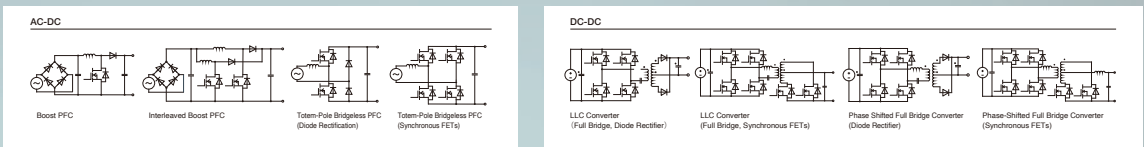
- Implement board design, evaluate the prototype board
  - PCB Library [🔗](#)
  - Package Information [🔗](#)
  - Application Notes [🔗](#)

##### Mass Production Preparation

- Prepare for mass production
  - Environmental Data [🔗](#)
  - Manufacturing Plant Information [🔗](#)

Mass Production

### Optimized Device Proposals Based on Circuit Configuration [Topology Selection]



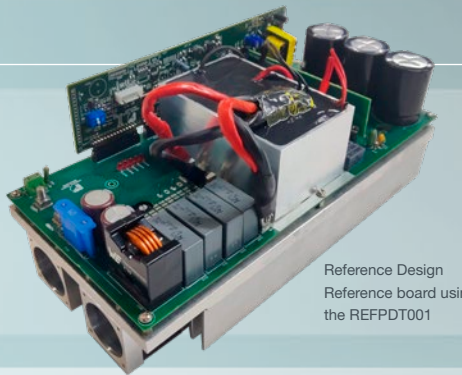
**Topology Selection** presents the devices most suitable for the circuit configuration (topology) used in the customer's application. Referencing the combination of devices that make up the circuit reduces the number of resources required for component selection.

[🔗 Topology Selection](#)

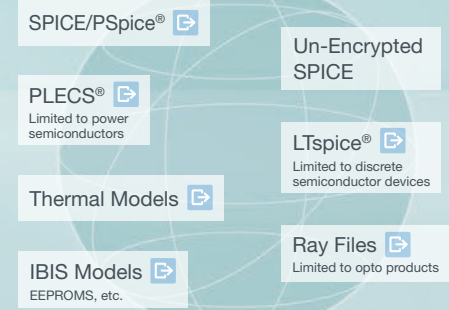
### Evaluated Design Data [Reference Design]

A **Reference Design** is design data that has been evaluated at the circuit level for the application. Circuit schematics, Bill of Materials (BOM), evaluation data, and board Gerber data are available for easy design reuse. Some boards are also available for sale, eliminating the need to develop boards for actual device verification.

[🔗 Reference Designs](#)



Reference Design  
Reference board using the REF PDT001



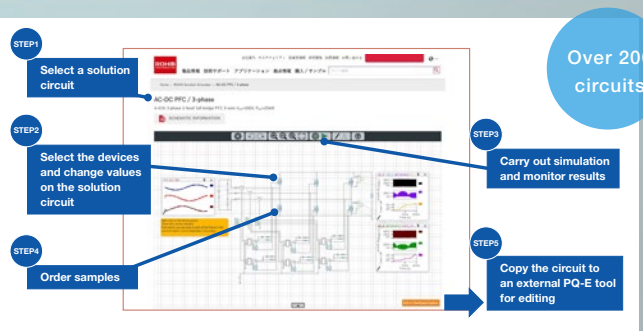
### Multiple Design Models for Different Tools and Applications

Various design models including thermal models, PLECS models, and Ray files are available for thermal, optical, and electronic circuit simulations. Usage is supported by application notes.

PSpice® is a registered trademark of Cadence Design Systems, Inc. LTspice® is a registered trademark of Analog Devices, Inc. PLECS® is a registered trademark of Plexim, Inc.

### ROHM Solution Simulator Enables Batch Verification of Power Semiconductors and Various ICs

**ROHM Solution Simulator** is a free electronic circuit simulator hosted on ROHM's website. A wide range of applications is supported, from initial studies to system-level operation verification. ROHM power semiconductors, gate drivers, power supply ICs, and passive components (e.g. shunt resistors) can be easily and accurately verified together in a solution circuit close to actual user conditions.



[🔗 ROHM Solution Simulator](#)



BLOCK DIAGRAM



Devices and solutions that support greater energy savings, higher speeds, and increased miniaturization required by Factory Automation equipment

FACTORY AUTOMATION

AC SERVO	P.12
INVERTER	P.13
AGV	P.15
PLC	P.17



Optimized devices for the system ensure efficient use of power without waste

ENERGY

SOLAR INVERTER	P.18
AC-DC CONVERTER	P.19
xEV CHARGING STATION	P.20
BMS	P.21



Configuring high reliability applications for safer, more secure lifestyles

INFRASTRUCTURE

BASE STATION	P.22
SERVER BOARD	P.23
SURVEILLANCE CAMERA	P.24
GAS LEAK ALARM	P.25

FACTORY AUTOMATION

ENERGY

INFRASTRUCTURE

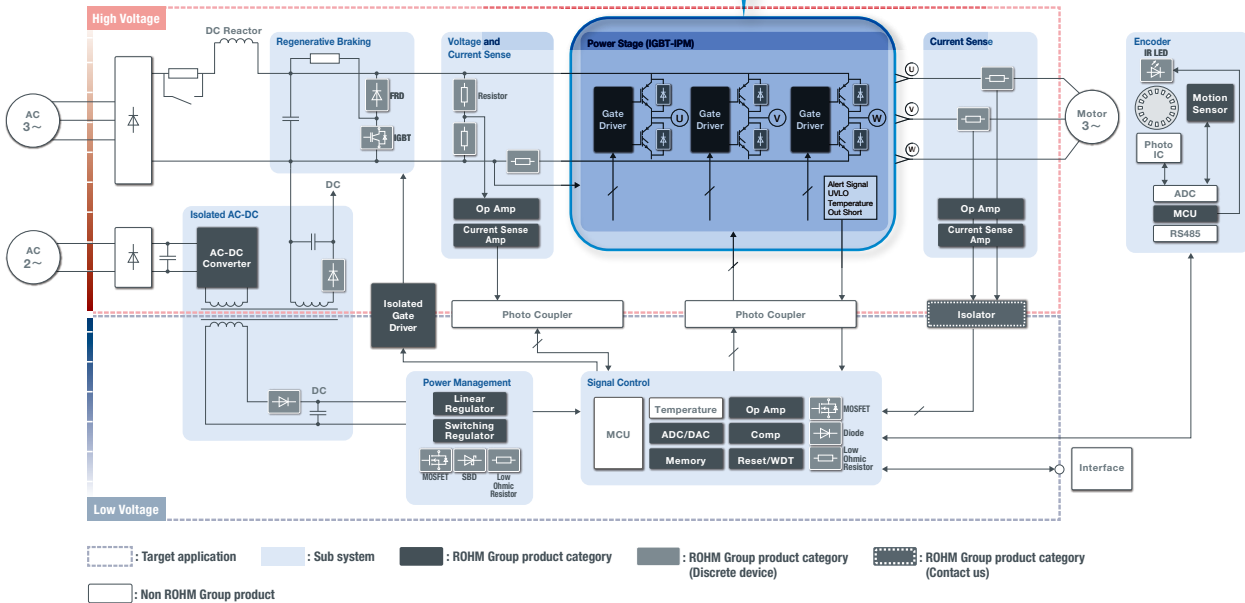
AC SERVO

AC Servos: 3-Phase AC100V to 240V Motor Drive

AC servos require not only high power and controllability, but greater miniaturization as well. ROHM offers a lineup of IGBT-IPM that integrate power semiconductors and drive ICs optimized for motor drive in a single package, along with a variety of power management ICs for power supply systems. ROHM also provides accelerometers for monitoring that contribute to greater energy savings, miniaturization, and safety.

HIGHLIGHT PRODUCT

IGBT-IPM: Achieves low loss and reduced radiation noise by optimizing the Fast Recovery Diodes (FRDs) soft recovery performance and low-loss IGBTs.



3-Phase AC240V AC Servo

PRODUCT

<b>Power Stage</b> <ul style="list-style-type: none"><li>IGBT-IPM</li><li>IGBT</li></ul> <b>Regeneration Braking</b> <ul style="list-style-type: none"><li>IGBT</li><li>Fast Recovery Diodes</li></ul> <b>Gate Driver</b> <ul style="list-style-type: none"><li>Isolated Gate Drivers</li><li>IGBT/MOSFET</li><li>High/Low Side Gate Drivers</li></ul>	<b>Voltage and Current Sense</b> <ul style="list-style-type: none"><li>Current Detection Resistors</li><li>Current Sense Amplifiers</li><li>Low Offset OpAmps</li><li>High Voltage Resistors</li></ul> <b>Isolated AC-DC</b> <ul style="list-style-type: none"><li>AC-DC Converters</li><li>Schottky Barrier Diodes</li></ul>	<b>Encoder</b> <ul style="list-style-type: none"><li>16bit MCU</li><li>Accelerometers</li><li>IR LEDs</li></ul> <b>Power Management</b> <ul style="list-style-type: none"><li>Switching Regulators</li><li>Linear Regulators</li><li>Schottky Barrier Diodes</li><li>MOSFETs</li><li>Resistors</li></ul>	<b>Signal Control/General Purpose</b> <ul style="list-style-type: none"><li>EEPROMs</li><li>Operational Amplifiers</li><li>Comparators</li><li>RESET ICs</li><li>A/D Converters</li><li>D/A Converters</li><li>MOSFETs</li><li>Diodes</li><li>Current Detection Resistors</li><li>Resistors</li></ul>
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Related Block Diagrams

- 3Phase AC400V Inverter
- Single Phase AC100V-240V non-Isolated
- DC12V-48V Industry

Related Articles

- New 600V IGBT-IPMs Deliver Class-Leading Low Noise with Low Loss



# INVERTER

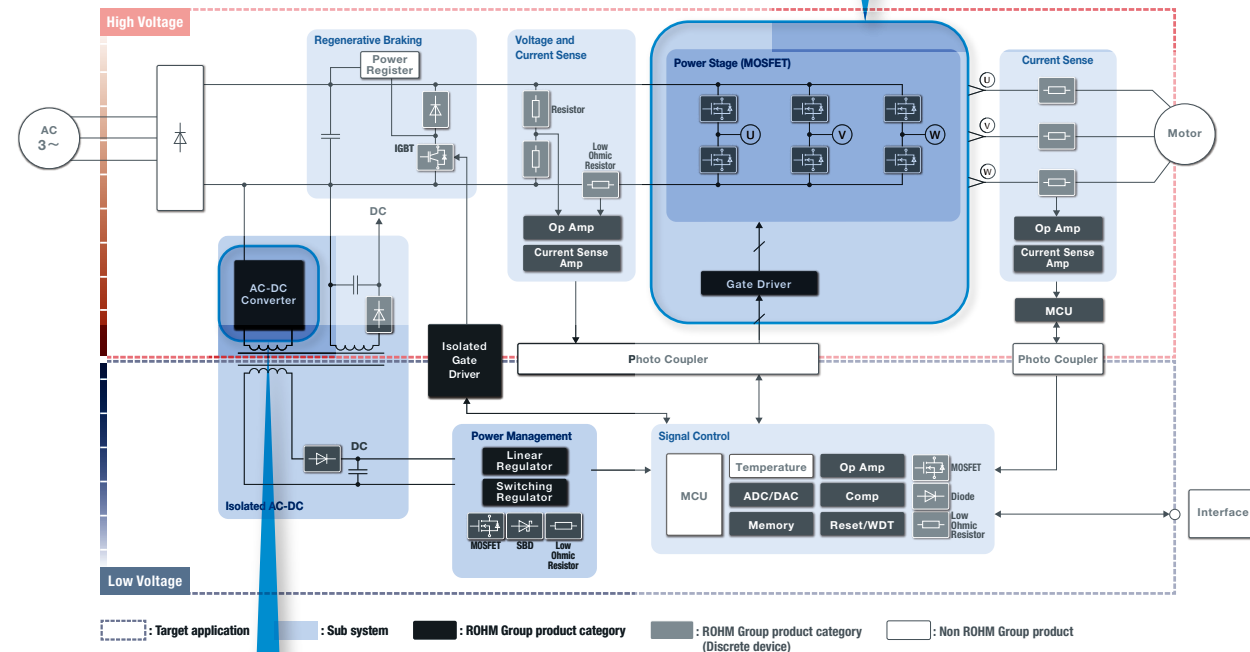
## Inverters: 3-Phase AC400V Motor Drive

Inverters require high power high efficiency operation to drive large current motors without waste.

ROHM provides power solutions for motor drive that incorporate state-of-the-art power semiconductors centered on SiC MOSFETs, high performance magnetically isolated gate driver ICs, and high accuracy shunt resistors. Also offered is a broad lineup of power supply ICs for auxiliary power supplies along with system-level solution proposals that contribute to high efficiency operation and improved reliability.

### HIGHLIGHT PRODUCT

SiC MOSFETs/Gate Driver IC: Power solutions include industry-leading SiC MOSFETs and gate driver ICs to maximize performance



### HIGHLIGHT PRODUCT

SiC MOSFET-Equipped AC-DC Converter IC: Fusing cutting-edge power semiconductors with a control analog IC achieves a compact, high efficiency auxiliary power supply

3-Phase AC400V Inverters

## PRODUCT

### Power Stage



SiC

IGBT

### Regeneration Braking

IGBT

Fast Recovery Diodes

### Gate Driver



Isolated Gate Drivers

IGBT/MOSFET High/Low Side Gate Drivers

### Isolated AC-DC



AC-DC Converters Built-in SiC MOSFET

Schottky Barrier Diodes

### Voltage and Current Sense

Current Detection Resistors

Current Sense Amplifiers

Low Offset Op Amps

High Voltage Resistors

MCU

### Power Management

Switching Regulators

Linear Regulators

Schottky Barrier Diodes

MOSFETs

Resistors

### Signal Control/General Purpose

EEPROMs

Operational Amplifiers

Comparators

RESET ICs

A/D Converters

D/A Converters

MOSFETs

Diodes

Current Detection Resistors

Resistors

### Related Block Diagrams

- Single Phase AC100V-240V non-Isolated
- DC12V-48V Industry
- 3Phase AC100V-240V AC Servo

### Related Articles

- ROHM's Industry-first\* AC-DC Converter ICs of Surface Mount Package with Built-In 1700V SiC MOSFET

\*ROHM June 17, 2021 study

## 5kW High Efficiency Fan-less Inverter Circuit Reference Design with SiC MOSFETs [REFPDT007]

The REFPDT007 utilizes a transformer-link interleaved circuit in the inverter block that takes advantage of the high-frequency switching performance of SiC MOSFETs to achieve a power conversion efficiency of 99% or higher at 5kW.

SiC MOSFETs (SCT3017AL, SCT3030AL) are implemented in a novel circuit topology that delivers high efficiency by reducing winding reactance and copper losses.

High 99% efficiency (51W) operation that suppresses heat generation enables cooling using just small heat dissipation fins without the need for a cooling fan.

What's more, the interleaved design doubles the apparent switching frequency, while miniaturization of the smoothing filter halves the size and weight compared to conventional full-bridge types.



Reference Board

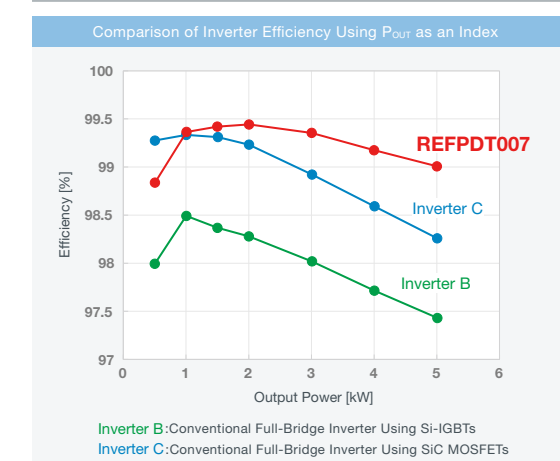
### Specifications

Reference Board Part No.	REFPDT007-EVK-001
$V_{IN}$	DC320V
$V_{OUT}$	AC200V
$I_{OUT}$	AC25A
$f_{sw}$	40kHz
$I_{OUT pp}/I_{OUT peak}$	Less than 0.2
$B_m Max$	Less than 0.15T

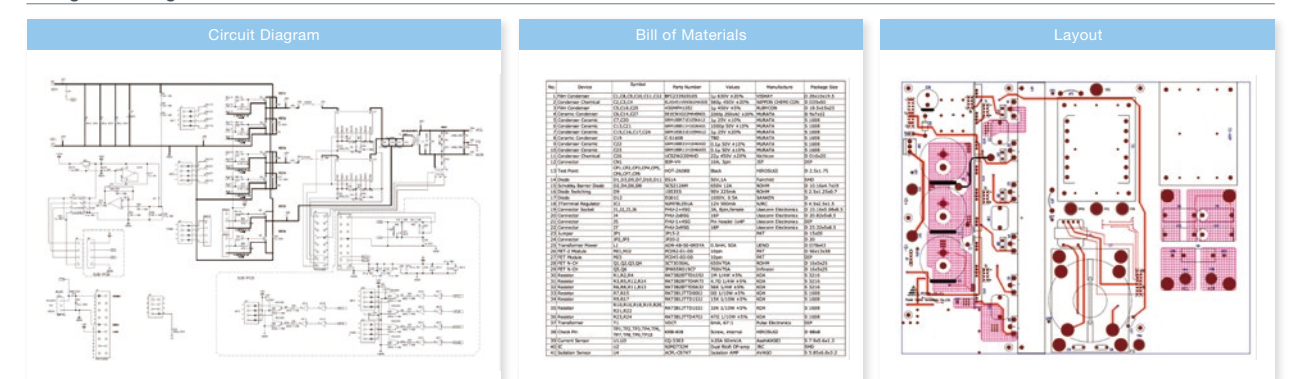
\*This reference board consists of three boards

Reference Board Part No.	Type
REFPDT007-EVK-001A	Power Stage
REFPDT007-EVK-001B	Controller Board
REFPDT007-EVK-001C	Aux Power Supply

### REFPDT007 Efficiency Graph



### Design Data e.g.:REFPDT007-EVK-001A



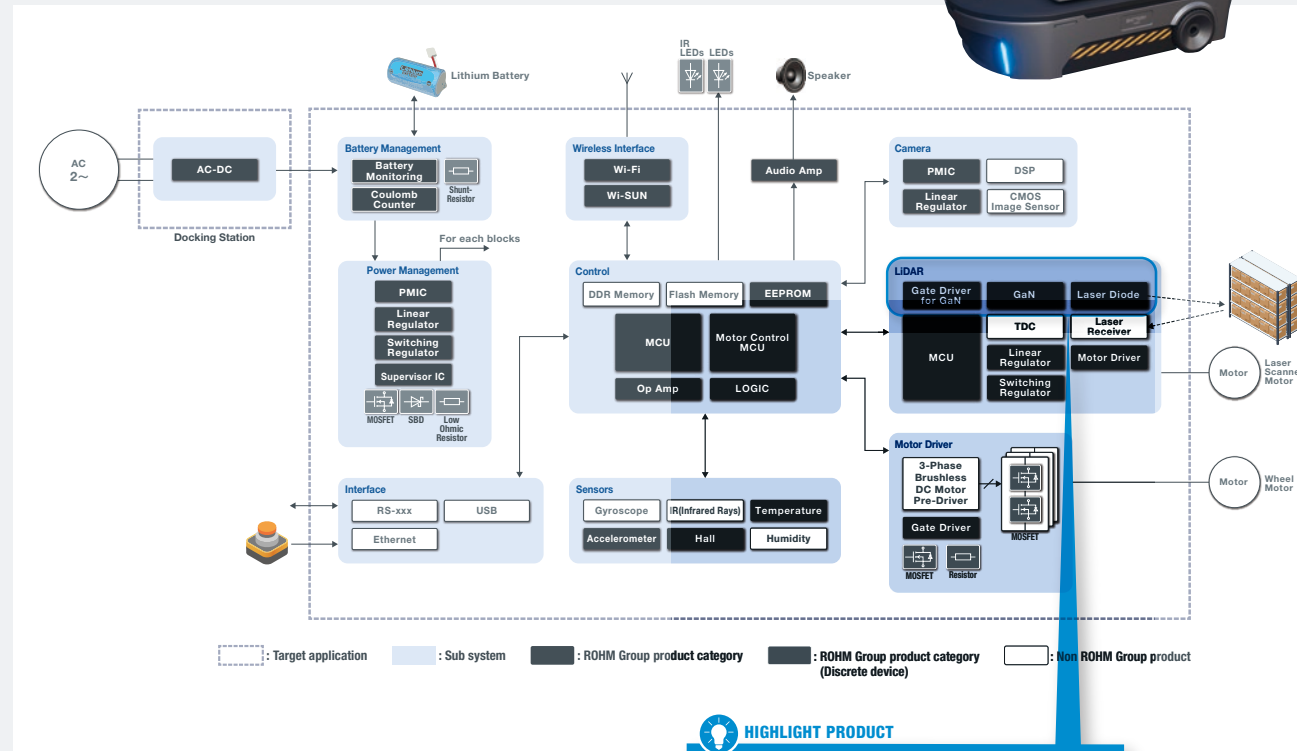
REFPDT007  
5kW High-Efficiency Fan-less Inverter Reference Design



# AUTOMATED GUIDED VEHICLE

## AGVs

As industrial automation progresses, AGVs are required to perform more accurate distance measurement and spatial awareness, increasing the demand for LiDAR (Light Detection and Ranging). ROHM contributes to the improvement of IoT technology for AGVs by combining wireless communication and sensors with long-range, high accuracy solutions for LiDAR using high-power laser diodes and GaN HEMTs.



### HIGHLIGHT PRODUCT

Laser Diode, GaN HEMT: GaN HEMTs drive narrow emission laser diodes at high speeds, allowing LiDAR to achieve high accuracy at long distances.



## PRODUCT

### Docking Station

AC-DC Converters

### Li-ion Battery pack

Battery Monitoring

Coulomb Counter

Shunt Resistors

### Power Supply

Switching Regulators

Linear Regulators

PMIC

Supervisor IC

MOSFETs

Schottky Barrier Diodes

Resistors

### Wireless Interface

Wi-SUN

### Sensors

Temperature

Hall

Magnetic

Accelerometer

### LiDAR

MCUs

Laser Diodes

Switching Regulators

Linear Regulators

GaN HEMT

Motor Drivers

Gate Driver for GaN

### Camera

PMIC

Linear Regulators

### Control

MCUs

EEPROMs

Standard Logic

Operational Amplifiers

Comparators

### Motor Drive

Gate Drivers

MOSFETs

Resistors

### Others

Audio Amp

LEDs

IR LEDs

### Related Articles

- ROHM starts Production of 150V GaN HEMTs: Featuring Breakthrough 8V Withstand Gate Voltage
- 75W High Power Output Laser Diode for LiDAR

## REFLD002

### Laser Driver Reference Design with GaN HEMT EcoGaN™ for High-Resolution LiDAR

The range of uses for LiDAR (Light Detection and Ranging) sensors is expanding to include not only autonomous driving, but also applications in the industrial and infrastructure fields. LiDAR sensors require longer sensing distances and higher resolution, so in addition to improving the characteristics of the laser diode, it is necessary to drive the laser diode at higher speeds and power. To meet these needs, ROHM offers the RLD90QZWx series of 905nm high power narrow emission laser diodes.

Reference designs are available that combine next-generation GaN HEMTs (EcoGaN™) capable of high-speed drive with high-speed gate drivers for GaN devices that contribute to improved LiDAR sensor characteristics.



### Specifications

Reference Design Part No.	REFLD002-1	REFLD002-2
Design Brief	REFLD002 Board Overview	
Board Part No.	S WAVE B-01	R WAVE B-01
Circuit Type	Square wave	Resonant
Input Voltage 1 (Laser Diode Drive)	up to 60V	up to 120V
Input Voltage 2 (Gate Driver)	5V	
Laser Power	TBD	
Switching Frequency	0.1 to 0.5kHz	0.1 to 100kHz
Onboard Devices	Laser Diodes	RLD90QZW8
	EcoGaN™	GNE1040TB
	Gate Driver	BD2311NVX-C
	Reverse Current Protection Diode	RF05VAM2S
	Shunt Resistors	LTR10 series

### Features

- Enables high-speed driving of laser diodes - key devices in LiDAR applications
- Next-generation EcoGaN™ devices
- High-speed gate driver for GaN HEMTs (BD2311NVX-C)
- 2 circuit types: square wave/resonant

### Application Examples

- Automotive LiDAR
- Industrial LiDAR
- Robot Vacuum Cleaner
- AGV

### Design Data e.g.: REFLD002-1 Square Wave Circuit

Block Diagram/Circuit Diagram/Parts List

REFLD002-1 S Wave B-01 (Square Wave) Design Data

High speed, High Power  
Laser Drive with EcoGaN™ and Gate Driver for LiDAR Reference Design

REFLD002-1 Square Wave

- Block Diagram
- Schematic
- Parts List

PCB Layout



Reference Board

EcoGaN™ is a trademark or registered trademark of ROHM Co., Ltd.

REFLD002  
Laser Driver Reference Design with GaN HEMT for High-Resolution LiDAR



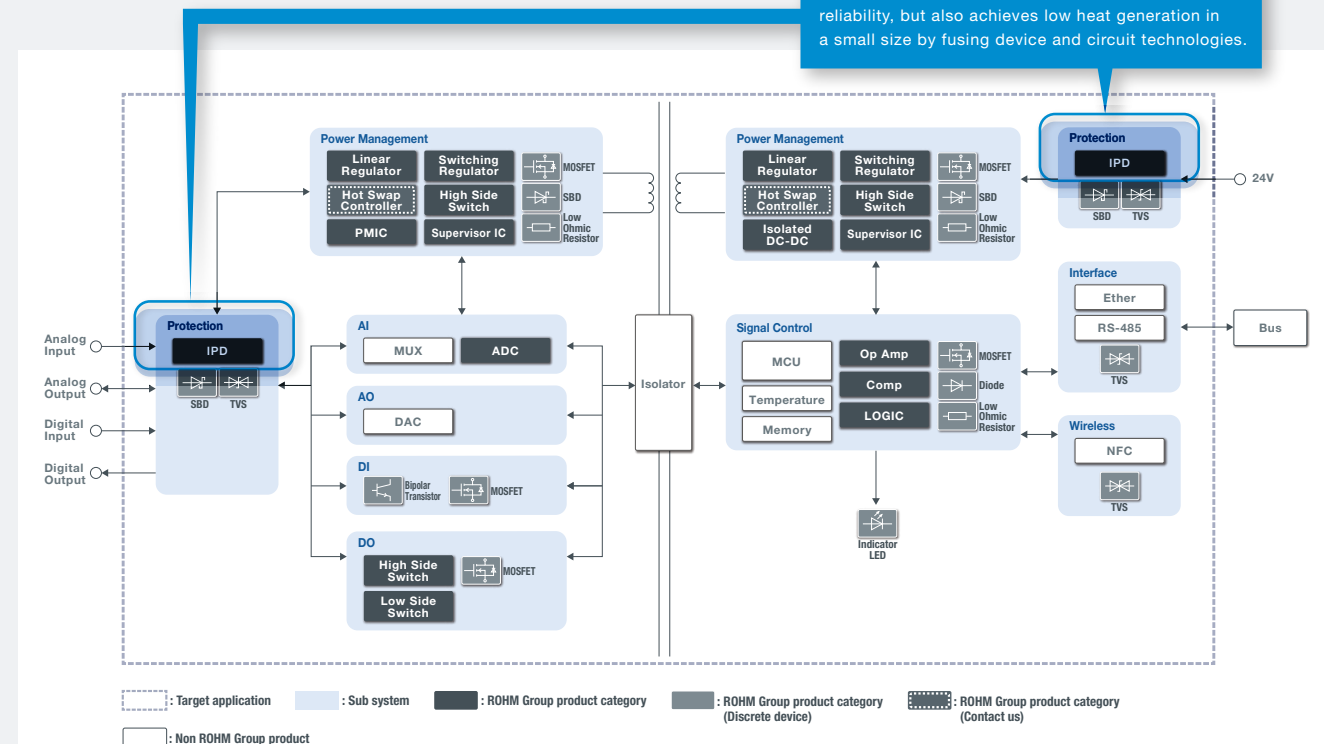
# PROGRAMMABLE LOGIC CONTROLLER

## PLC

Control devices that act as the 'brains' of factory automation, PLCs are essential components for high reliability long-life application designs. ROHM provides power semiconductors and power supply ICs for industrial power systems along with Intelligent Power Devices (Smart Power Switches) that incorporate protection functions. High reliability solutions centered on high-voltage products improve application performance while extending the robustness and lifetime of systems.

### HIGHLIGHT PRODUCT

**Intelligent Power Device:** A protection element that features not only excellent life, quietness, and reliability, but also achieves low heat generation in a small size by fusing device and circuit technologies.



PLC (Programmable Logic Controller) - IO Unit

PLC (Programmable Logic Controller) - Power Supply Unit

## PRODUCT

### Protection

- Smart High Side Switch ICs (IPDs)
- Schottky Barrier Diodes
- Transient Voltage Suppressor Diodes

### Power Management

- DC-DC Converter ICs
- Linear Regulators
- PMIC
- Supervisor IC
- Smart High Side Switch ICs (IPDs)
- Switching Regulators (Isolated type)
- Hot Swap Controller
- MOSFETs
- Schottky Barrier Diodes
- Resistors

### Signal Control

- MCUs
- Serial EEPROMs
- Standard Logic
- Operational Amplifiers
- Comparators
- LEDs
- Interface
- Transient Voltage Suppressor Diodes

### Functional (AI, AO, DI, DO)

- MOSFETs
- Bipolar Transistors
- A/D Converters
- Smart High Side Switch ICs (IPDs)
- Smart Low Side Switch ICs (IPDs)

#### Related Articles

- New Compact Intelligent (Smart) Low Side Switches: Reduced Power Loss and Safer Operation Using Proprietary TDACC™ Circuit and Device Technology

TDACC™ is a trademark or registered trademark of ROHM Co., Ltd.

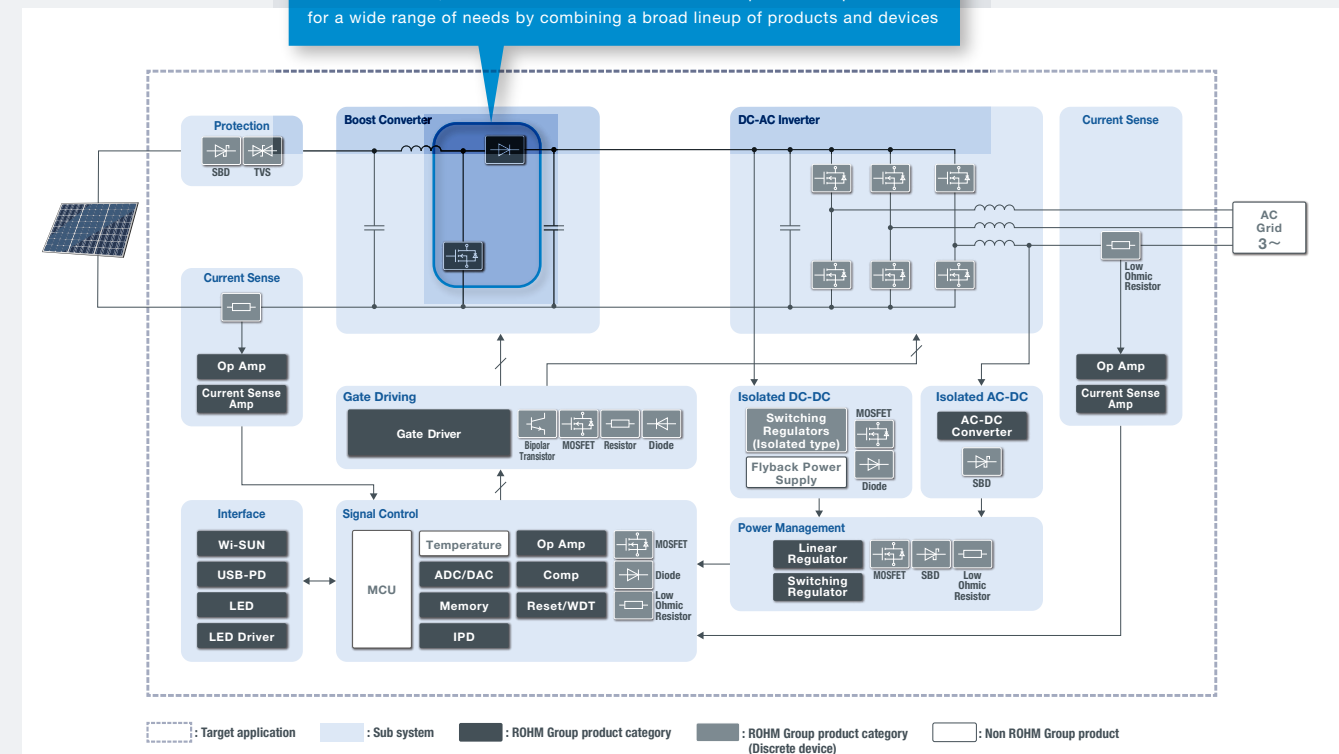
# SOLAR INVERTER

## Solar Power Inverters (PV Inverters)

The use of renewable energy is becoming more active as the demand for photovoltaic power generation systems increases to achieve a low-carbon society. ROHM proposes power solutions centered on power semiconductors to efficiently transmit electricity generated from sunlight to the power grid. Whether configuring a circuit for boosting unstable DC voltage generated from solar power or converting it to AC power with the desired voltage and frequency using a DC-AC inverter, we offer a lineup of optimized components for each block that improves the characteristics of the entire system.

### HIGHLIGHT PRODUCT

**SiC SBD/SI-FRD, SiC MOSFET/SJ-MOSFET:** Provides optimal cost performance for a wide range of needs by combining a broad lineup of products and devices



Solar Power Inverters (PV Inverters)

## PRODUCT

### Boost Converter

- SiC
- IGBT
- Fast Recovery Diodes
- SJ-MOSFETs

### DC-AC Inverter

- SiC
- IGBT
- SJ-MOSFETs

### Gate Driver

- Isolated Gate Drivers
- IGBT/MOSFET High/Low Side Gate Drivers

### Isolated DC-DC

- Isolated DC-DC
- MOSFETs
- Diodes

### Isolated AC-DC

- AC-DC Converters
- Schottky Barrier Diodes

### Current Sense

- Current Detection Resistors
- Current Sense Amplifiers
- Low Offset OpAmps

### Power Management

- Switching Regulators
- Linear Regulators
- Schottky Barrier Diodes
- MOSFETs
- Resistors
- Interface
- USB Power Delivery
- LEDs
- LED Drivers
- Wireless communication

### Protection

- Schottky Barrier Diodes
- Transient Voltage Suppressor Diodes
- Signal Control/General Purpose
- EEPROMs
- Operational Amplifiers
- Comparators
- RESET ICs
- D/A Converters
- MOSFETs
- Diodes
- Current Detection Resistors
- Resistors

#### Related Topology Selection

- PV Inverters

#### Related Articles

- New 4th Gen Fast Recovery Diodes Deliver Low Loss Performance Together with Ultra-Low Noise Characteristics
- 600V Super Junction MOSFETs Deliver Class-Leading Low ON Resistance Along with the Industry's Fastest Reverse Recovery Time

\*ROHM Friday, March 18, 2022 study



# AC-DC CONVERTER

## Industrial AC-DC Converters

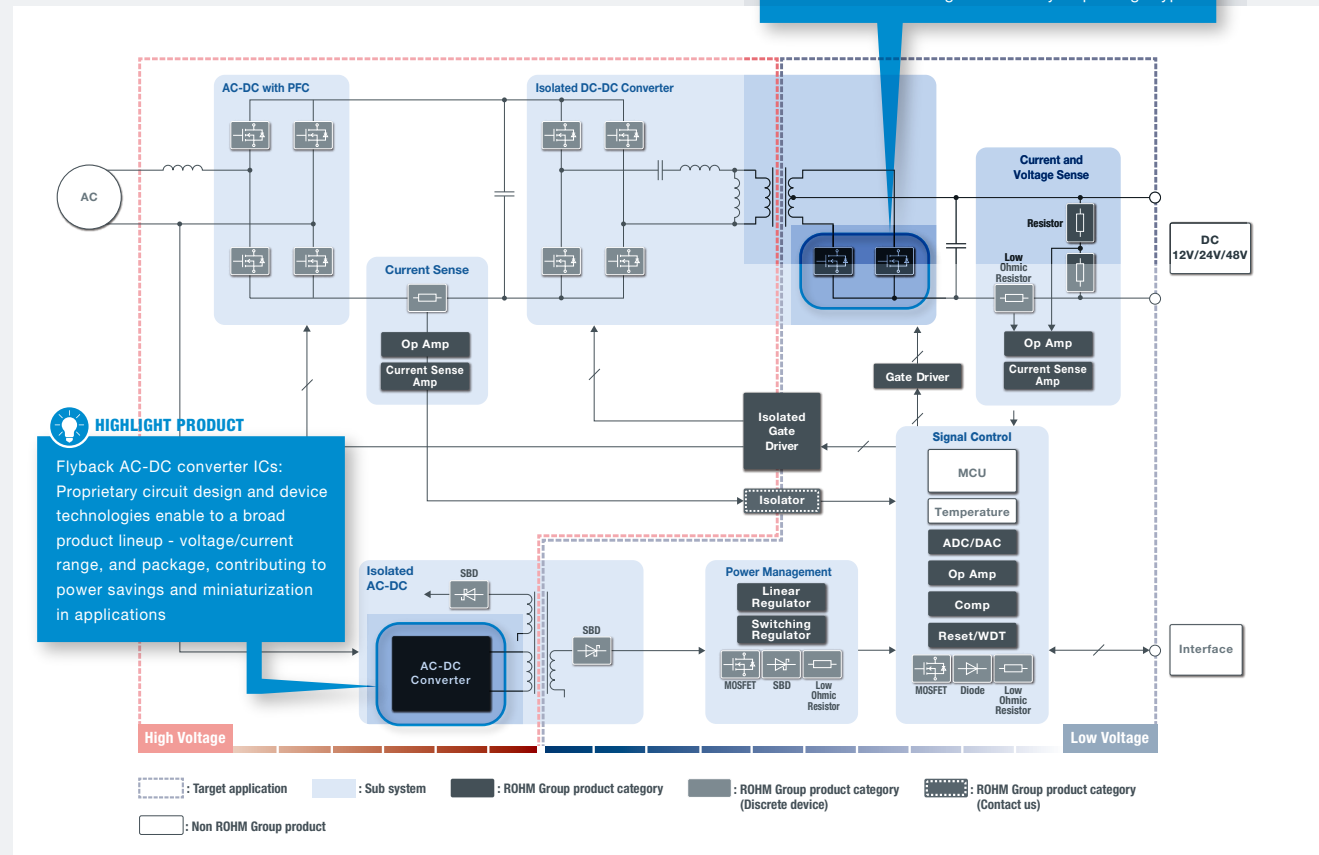
In addition to the main power supply block, industrial AC-DC converters are required in auxiliary power circuits to provide power supply voltages for multiple control systems configured in a variety of topologies.

ROHM offers a broad lineup of semiconductor devices, ICs, and modules for a wide range of industrial power supply equipment.

We provide solutions that can optimize the performance of primary/secondary, isolated/non-isolated, discrete, and IC configurations.

### HIGHLIGHT PRODUCT

MOSFETs: Deliver low ON-resistance with 40V or more withstand voltage in a variety of package types



## PRODUCT

### AC-DC with PFC

- SIC
- IGBT
- Fast Recovery Diodes
- SJ-MOSFETs
- Isolated DC-DC Converter
- SiC MOSFETs
- SJ-MOSFETs
- MOSFETs(40V)
- MOSFETs(100V)

### Gate Driver

- Isolated Gate Drivers
- IGBT/MOSFET High/Low Side Gate Drivers

### Voltage and Current Sense

- Current Detection Resistors
- Current Sense Amplifiers
- Low Offset OpAmps
- High Voltage Resistors

### Power Management

- Switching Regulators
- Linear Regulators
- Schottky Barrier Diodes
- MOSFETs
- Resistors
- Isolated AC-DC
- AC-DC Converters
- Schottky Barrier Diodes

### Signal Control/General Purpose

- EEPROMs
- Operational Amplifiers
- Comparators
- RESET ICs
- A/D Converters
- D/A Converters
- MOSFETs
- Diodes
- Current Detection Resistors
- Resistors

### Related Topology Selection

- Industrial Power Converters/SMPS

### Related Articles

- ROHM's Latest Generation Dual MOSFETs Deliver Class-Leading Low ON Resistance

# xEV CHARGING STATION

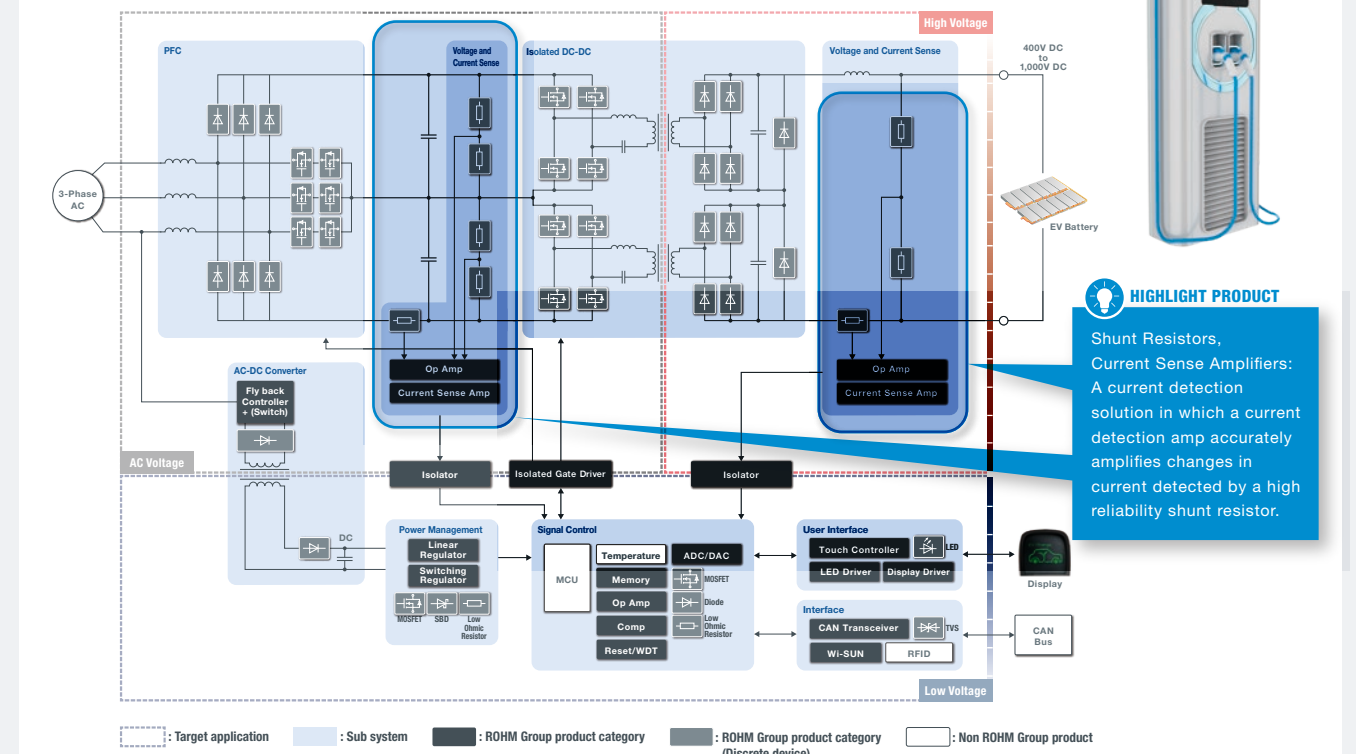
## EV Charging Stations

Fast charging technology at charging stations is quickly becoming indispensable for enhancing the convenience of EVs.

To achieve this, high efficiency, high-frequency switching is necessary to reduce the size and weight of devices for rapid charging.

ROHM contributes to even greater efficiency by providing power solutions such as driver ICs and power semiconductors centered on SiC devices along with high accuracy current detection using shunt resistors and current detection amps.

### Vienna Rectifier D6M6-PFC



### HIGHLIGHT PRODUCT

Shunt Resistors, Current Sense Amplifiers: A current detection solution in which a current detection amp accurately amplifies changes in current detected by a high reliability shunt resistor.

- xEV CHARGING STATION
- Vienna Rectifier D6M6-PFC
- 3-Phase Bidirectional B6-PFC

## PRODUCT

### AC-DC with PFC

- SIC
- Fast Recovery Diodes
- SJ-MOSFETs

### Isolated DC-DC Converter

- SiC MOSFETs
- SJ-MOSFETs
- MOSFETs(40V)
- MOSFETs(100V)

### Isolated Gate Driver

- Isolated Gate Drivers

### Voltage and Current Sense

- Current Detection Resistors
- Current Sense Amplifiers
- Low Offset OpAmps
- High Voltage Resistors

### Isolated AC-DC

- AC-DC Converters
- Schottky Barrier Diodes

### Power Management

- Switching Regulators
- Linear Regulators
- Schottky Barrier Diodes
- MOSFETs
- Resistors

### User Interface

- LEDs
- LED Drivers(LCD Back light)
- Display Drivers

### Signal Control/General Purpose

- EEPROMs
- Operational Amplifiers
- Comparators
- RESET ICs
- A/D Converters
- D/A Converters
- MOSFETs
- Diodes
- Current Detection Resistors
- Resistors

### Interface

- Wireless communication
- CAN Transceivers
- Transient Voltage Suppressor Diodes

### Related Topology Selection

- EV Charging Stations

### Related Articles

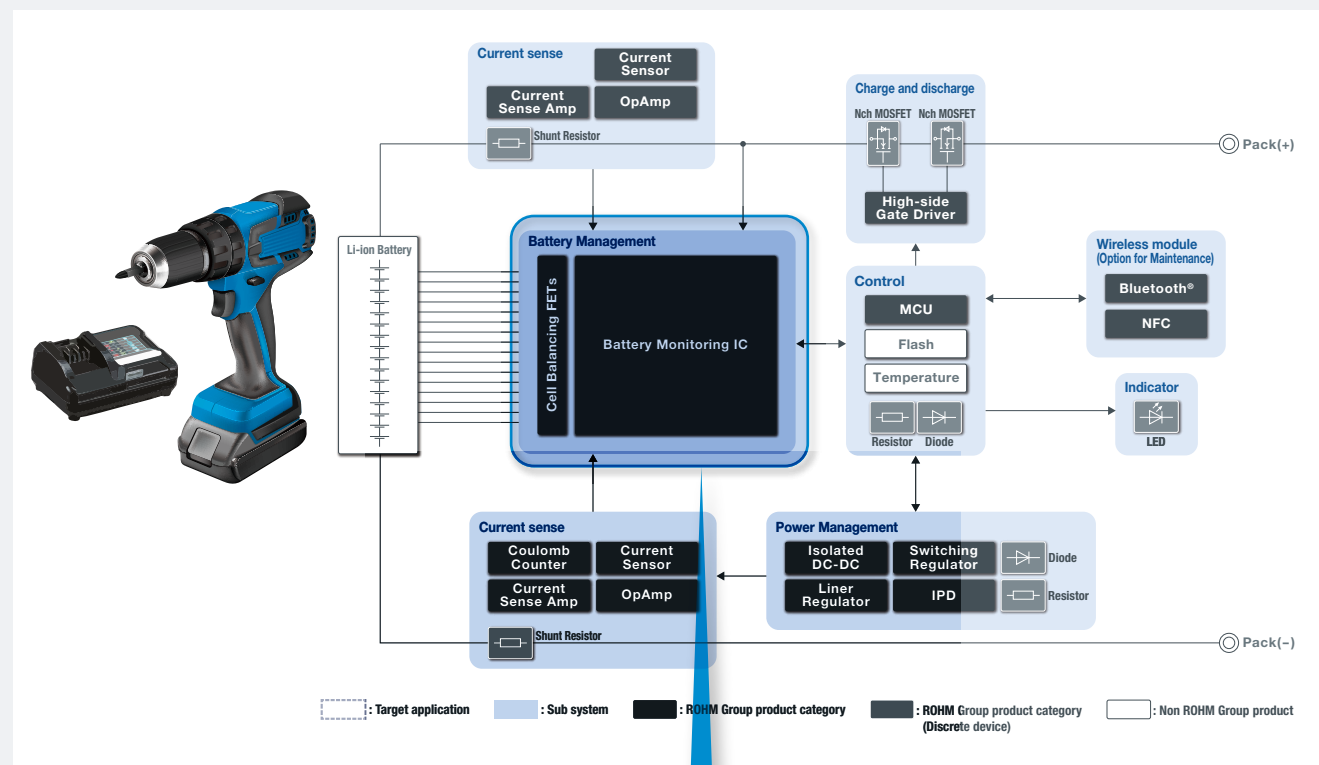
- The Industry's Highest Rated Power (1W) Shunt Resistors in the 0508 Size Contributes to Greater Miniaturization in a Variety of Applications
- ROHM's New  $\pm 1\%$  Accuracy Current Sense Amplifier ICs Reduce Mounting Area by Approx. 46% Over Conventional Configurations



# BATTERY MANAGEMENT SYSTEM

## Industrial BMS (Battery Pack)

In the industrial equipment field, li-ion batteries (LiB) are used in various applications, including UPS (Uninterruptible Power Supply) and robots, increasing the importance of Battery Management Systems (BMS) in order to make effective use of batteries. At the same time, to increase the capacity of LiBs it is necessary to construct a high voltage system by configuring battery cells in multiple series. A broad lineup optimized for battery packs in industrial equipment is offered, including battery monitoring ICs that support up to 16 connections and multi-stage series connections along with high-accuracy Coulomb counters for large currents, contributing to the configuration of high performance, high precision battery management systems.






















### HIGHLIGHT PRODUCT

**Battery Monitoring IC:** Supports up to 16 connections and multi-stage series configurations with individual cell voltage and current monitoring functionality. A broad lineup according to battery capacity extends life for a wide range of applications.

 Industrial BMS (Battery Pack)

## PRODUCT

Current Sense	Power Management	Battery Management	Charge and Discharge	Indicator
Current Sense Amp 	Switching Regulators 	 Battery Monitoring IC 	Nch MOSFET 	LEDs 
OpAmp 	Isolated DC-DC 	Cell Balancing FETs 	High-side Gate Drivers 	
Current Sensor 	Linear Regulators 	<b>Control</b>	<b>Wireless Module</b>	
Coulomb Counter 	IPDs 	General-purpose MCUs(16bit) 	Bluetooth® Low Energy Modules 	
Shunt Resistor 	Diodes 	Diodes 	NFC 	
	Resistors 	Resistors 		

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# BASE STATION

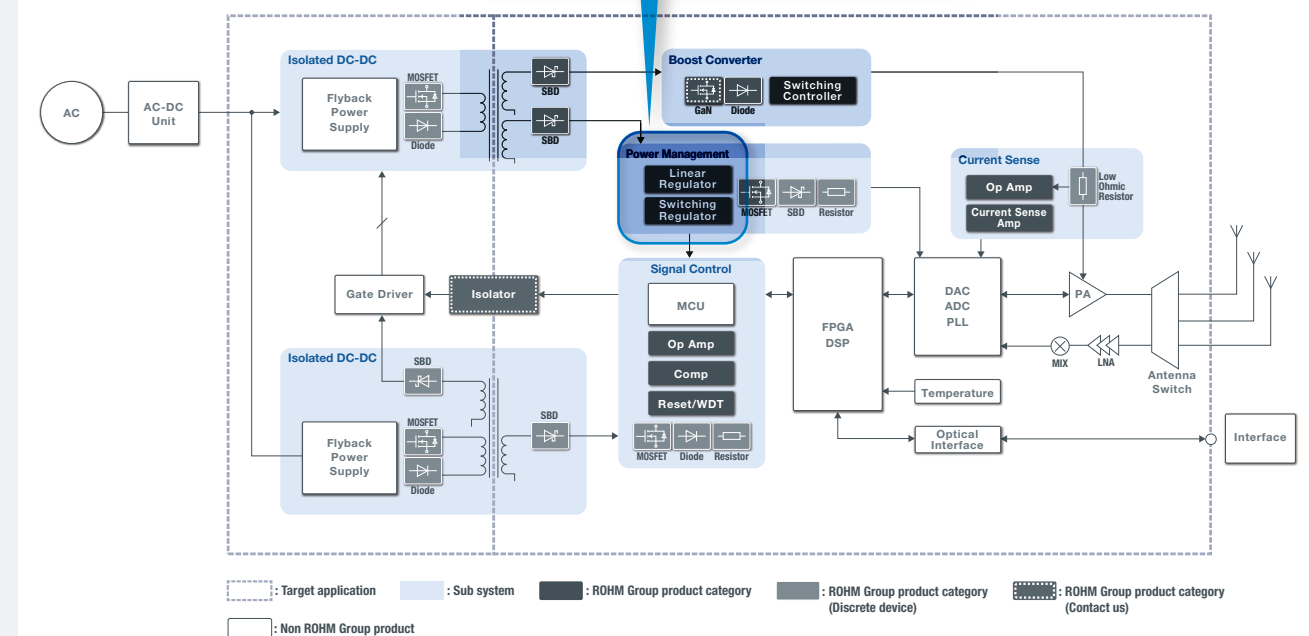
## Base Stations

5G and other high-speed communication base stations require high speed, high power systems to perform large-capacity signal processing for wireless demodulation and packet processing. At the same time, since many communication cells are used based on processing capacity and communication distance, they must be small enough to be installed virtually anywhere. In addition to power semiconductors, ROHM offers a lineup of compact, high voltage devices suitable for each block together with high efficiency power supply ICs that can reduce the number of components, providing solutions that contribute to not only lower power consumption, but greater miniaturization as well.





























### HIGHLIGHT PRODUCT

**DC-DC Converter IC, LDO:** Original analog design technology achieves extremely high stability against load current fluctuations with reduced output capacitance





 Base Station Remote Radio Head

## PRODUCT

Boost Converter	Current Sense	Signal Control/General Purpose
GaN 	Current Detection Resistors 	EEPROMs 
Switching Controller 	Current Sense Amplifiers 	Operational Amplifiers 
Power Management	Low Offset OpAmps 	Comparators 
 Switching Regulators 	<b>Isolated DC-DC</b>	RESET ICs 
 Linear Regulators 	MOSFETs 	D/A Converters 
Schottky Barrier Diodes 	Diodes 	MOSFETs 
MOSFETs 	<b>Auxiliary Isolated DC-DC</b>	Diodes 
Resistors 	Isolated DC-DC 	Current Detection Resistors 
	MOSFETs 	Resistors 
	Diodes 	

### Related Articles

- New Automotive LDO Regulators: Stable Operation at Nanoscale Output Capacitance 
- New DC-DC Converter IC for ADAS Achieves Best-in-Class-Leading Stable Operation 



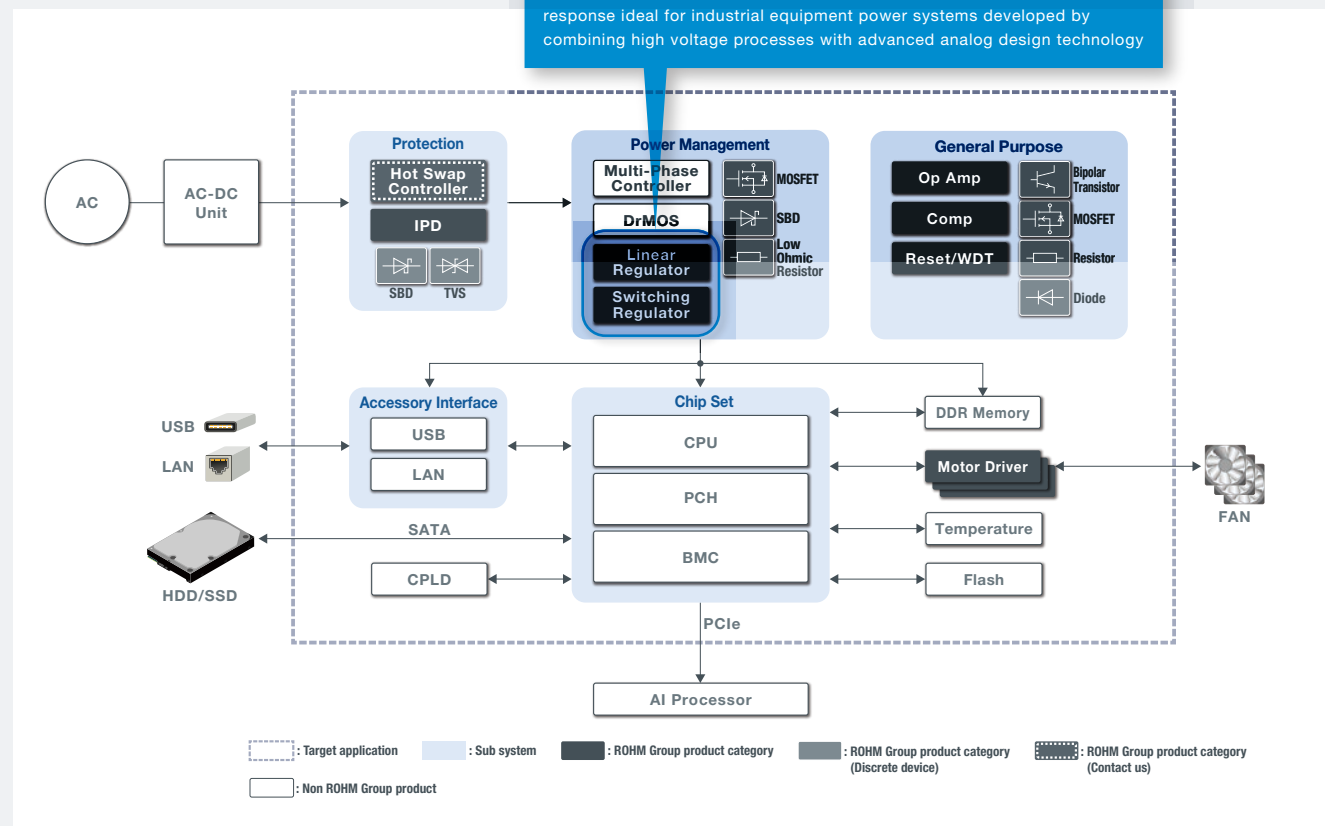
# SERVER BOARD

## Server CPU Board

The increased activity of cloud services and teleworking opportunities require that servers be faster and have greater capacity to handle more data. At the same time, however, increased power consumption resulting from higher server speeds and capacities are prompting the shift from conventional 12V distributed systems to centralized 48V systems for greater efficiency. ROHM offers a lineup of DC-DC converter ICs that support both 12V distributed and 48V centralized systems. Coil miniaturization through high-speed switching combined with high-speed response characteristics enable stable power supply under large current loads, contributing to lower power consumption and high reliability in server boards.

### HIGHLIGHT PRODUCT

DC-DC Converter IC: High efficiency power supply ICs that provide fast response ideal for industrial equipment power systems developed by combining high voltage processes with advanced analog design technology



Server (Server Board)

## PRODUCT

### Power Management

- Switching Regulators
- High Voltage Switching Regulators(>60V)
- Linear Regulators
- Schottky Barrier Diodes
- MOSFETs
- Resistors
- Current Detection Resistors

### Motor Driver

- FAN Motor Drivers
- Protection
- MOSFETs
- IPDs
- Schottky Barrier Diodes
- Transient Voltage Suppressor Diodes
- Hot Swap Controller

### Signal Control/General Purpose

- Operational Amplifiers
- Comparators
- RESET ICs
- MOSFETs
- Diodes
- Current Detection Resistors
- Resistors
- Bipolar Transistors

#### Related Articles

- New 80V Withstand 5A Output Power Supply ICs [BD9G500EFJ-LA, BD9F500QUZ]

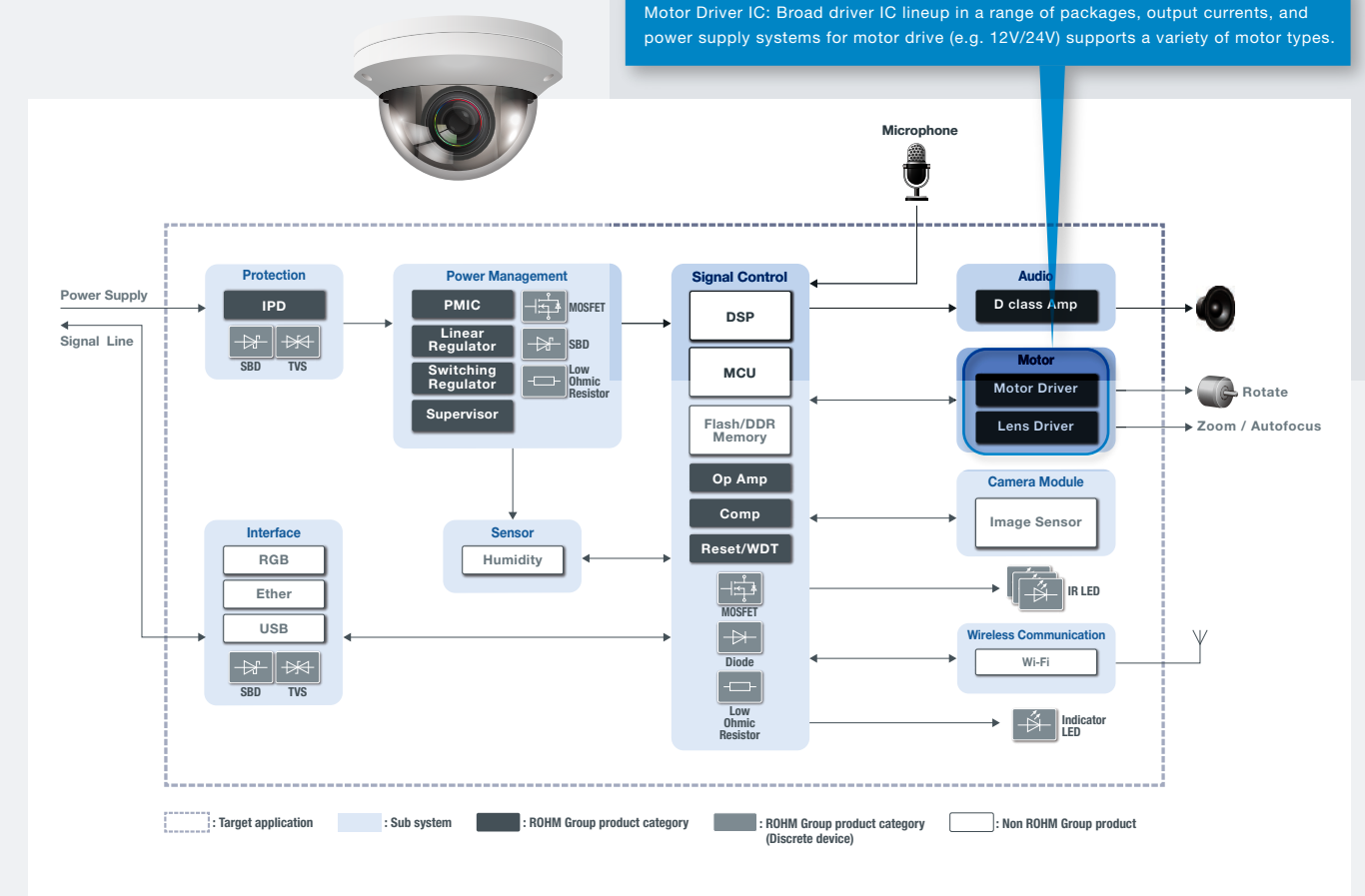
# SURVEILLANCE CAMERA

## Surveillance Cameras

Surveillance cameras provide greater safety and security by recording evidence while acting as a crime deterrent, and can even deliver notifications in the event of an emergency. In addition to semiconductor elements, power supply, and general-purpose ICs, ROHM offers a broad lineup of motor drivers for brush, stepper, and other motors that help reduce the number of design resources for surveillance cameras by providing the best solution based on application needs.

### HIGHLIGHT PRODUCT

Motor Driver IC: Broad driver IC lineup in a range of packages, output currents, and power supply systems for motor drive (e.g. 12V/24V) supports a variety of motor types.



Surveillance Camera

## PRODUCT

### Protection

- IPDs (Smart Low Side & High Side Switch ICs)
- Transient Voltage Suppressor Diodes
- Schottky Barrier Diodes

### Power Management

- PMIC
- DC-DC Converter ICs
- Linear Regulators
- Supervisor IC
- MOSFETs
- Schottky Barrier Diodes
- Resistors

### Signal Control

- Operational Amplifiers
- Comparators
- MOSFETs
- Diodes
- Resistors
- LEDs
- Infrared LEDs

### Motor Drive

- DC Brush Motor Drivers
- Stepper Motor Drivers
- Lens Drivers
- Audio
- Class D Speaker Amplifiers

### Interface

- Transient Voltage Suppressor Diodes
- Schottky Barrier Diodes



# GAS LEAK ALARM

## Gas Leak Detectors

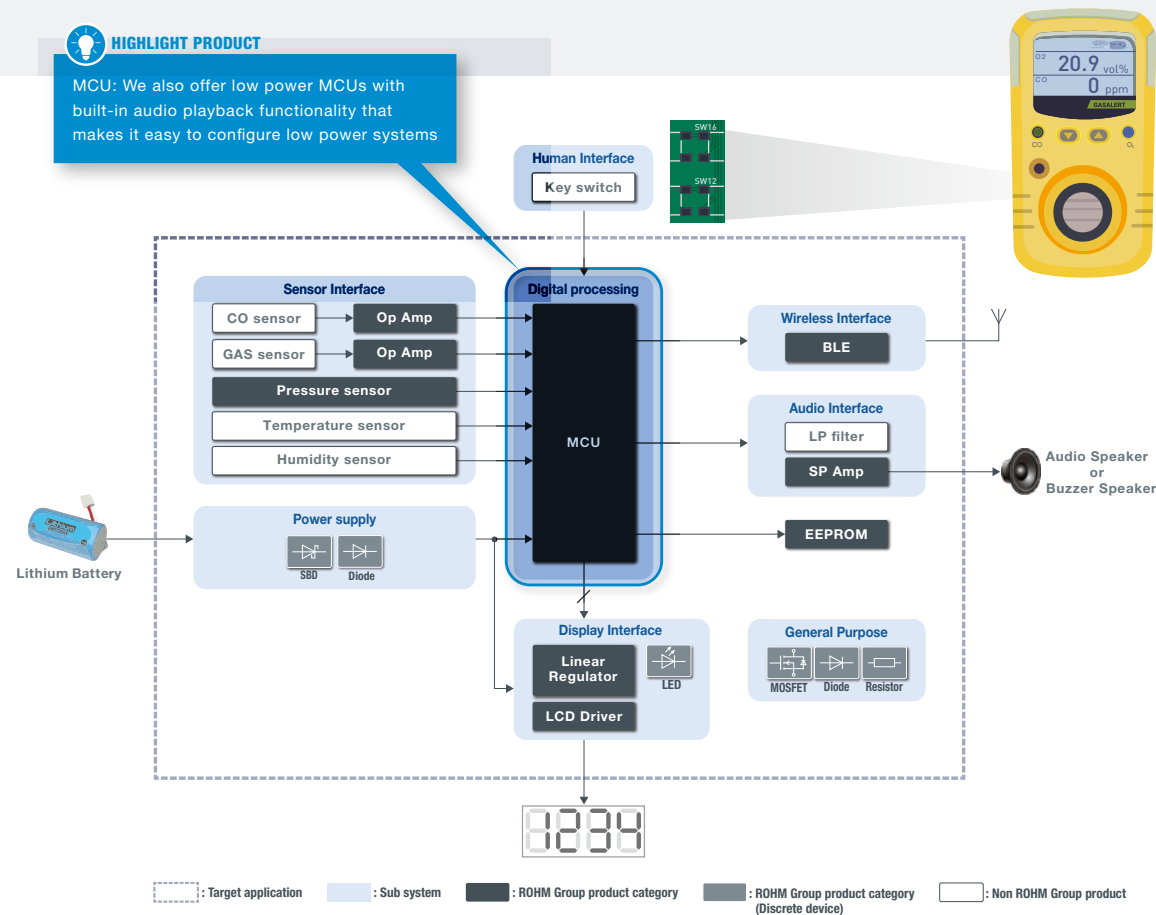
As devices that issue an alarm when detecting hazardous gases such as fuel leaks and carbon monoxide (CO) generated from incomplete combustion, gas leak detectors require high accuracy and reliability to ensure worry-free operation.

A human-friendly interface is also needed to provide voice notification of alarm information for storing data through communication functions to predict abnormalities.

ROHM contributes to safer living by offering everything from passive components to semiconductor elements, ICs, and modules that can achieve safety functions in equipment, with a focus on low-power MCUs and wireless communication technologies.

### HIGHLIGHT PRODUCT


MCU: We also offer low power MCUs with built-in audio playback functionality that makes it easy to configure low power systems



 Gas leak alarm (Industrial use, handy type)

## PRODUCT

### Sensor Interface

Operational Amplifiers 

Pressure Sensors 


### Digital Processing

 General-purpose MCUs(16bit) 


 Speech Playback MCU 

EEPROMs 


### Wireless Interface

Bluetooth® Low Energy Module 

### Audio Interface

Speaker Amp 

### Power Supply


Schottky Barrier Diodes 

Diodes 

### Display Interface

Linear Regulators 

LEDs 

LCD Drivers 

### General Purpose

MOSFETs 

Diodes 

Resistors 

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## FEATURED PRODUCTS

### Distinctive products that contribute to the evolution of industrial equipment

ROHM develops hundreds of new products every year. Here, we will introduce products\* that support the continuing evolution of industrial equipment.

\*Target products: Products announced after April 2021

#### Power Semiconductors/ Power Devices


Power Transistors	P.27
Power Diodes	P.29
Power Modules	P.29

#### ICs

Power ICs	P.30
General Purpose ICs	P.31
Sensor ICs	P.32

#### Passive Devices/ Opto Devices/Modules

Modules	P.32
Resistors	P.33
Opto Devices	P.33

 Latest Product Brochure



## Power Semiconductors/Power Devices

In the power device field, ROHM is strongly committed to the development of not only Si-based transistors and diodes, but also devices that use new materials such as SiC, as well as products that incorporate various structures, packages, and modularization. ROHM can provide a wide range of solutions to meet different power supply and motor drive needs, including ICs (control/drive ICs) that maximize the performance of power devices.

### Power Transistors

#### 4th Gen SiC MOSFETs

As the first supplier in the world to begin mass production of \* SiC MOSFETs in 2010, ROHM continues to develop industry-leading SiC power device technologies. Among these are ROHM's latest 4th Gen SiC MOSFETs that deliver improved short-circuit withstand time along with the industry's lowest ON-resistance, making it possible to contribute to greater miniaturization and lower power consumption in a variety of applications, including inverters and switching power supplies.

\*ROHM study

4th Gen SiC MOSFETs (Trench Structure)								
Part No.	Polarity (ch)	V <sub>DSS</sub> (V)	I <sub>D</sub> (A)	P <sub>D</sub> (W) (T <sub>C</sub> =25°C)	R <sub>DS (on)</sub> Typ (mΩ)	Qg Typ (nC)		Package
					V <sub>GS</sub> =18V	V <sub>GS</sub> =18V	Drive Voltage (V)	
SCT4013DE	N	750	105	312	13	170	15 to 18	TO-247 (TO-247N)
SCT4026DE			56	176	26	94	15 to 18	
SCT4045DE			34	115	45	63	15 to 18	
SCT4018KE		1,200	81	312	18	170	15 to 18	
SCT4036KE			43	176	36	91	15 to 18	
SCT4062KE			26	115	62	64	15 to 18	
SCT4013DR	N	750	105	312	13	170	15 to 18	TO-247-4L (C15)
SCT4026DR			56	176	26	94	15 to 18	
SCT4045DR			34	115	45	63	15 to 18	
SCT4018KR		1,200	81	312	18	170	15 to 18	
SCT4036KR			43	176	36	91	15 to 18	
SCT4062KR			26	115	62	64	15 to 18	
SCT4013DW7	N	750	98	267	13	170	15 to 18	TO-263-7L
SCT4026DW7			51	150	26	94	15 to 18	
SCT4045DW7			31	93	45	63	15 to 18	
SCT4018KW7		1,200	75	267	18	170	15 to 18	
SCT4036KW7			40	150	36	91	15 to 18	
SCT4062KW7			24	93	62	64	15 to 18	



Note: Indicates the JEDEC package notation. ( ) denotes ROHM package type, ( ) indicates the packaging symbol.

Dedicated 4th Gen SiC MOSFET Page

SiC Power Device Brochure

#### IGBTs with Built-in SiC Schottky Barrier Diode (Hybrid IGBTs) RGWxx65C series

The RGWxx65C series of hybrid IGBT utilizes ROHM's low-loss SiC Schottky barrier diode as the IGBT's freewheeling diode, resulting in significantly lower ON switching loss vs conventional IGBTs.

Field Stop Trench IGBTs IGBTs with Built-in SiC Schottky Barrier Diode (Hybrid IGBTs)													
Part No.	V <sub>CES</sub> (V)	I <sub>C</sub> (A)		P <sub>D</sub> (W)	V <sub>CE(sat)</sub>		t <sub>sc</sub> Min (μsec)	I <sub>F</sub> (Diode)(A)		V <sub>F</sub> (Diode)		Package	Internal Circuit Diagram
		T <sub>C</sub> =25°C	T <sub>C</sub> =100°C		Typ (V)	I <sub>C</sub> (A)		T <sub>C</sub> =25°C	T <sub>C</sub> =100°C	Typ (V)	I <sub>F</sub> (A)		
RGW60TS65CHR	650	64	39	178	1.5	30	—	39	25	1.35	20	TO-247N 	
RGW80TS65CHR		81	48	214	1.5	40	—	39	25	1.35	20		
RGW00TS65CHR		96	58	254	1.5	50	—	39	25	1.35	20		

Note: Indicates the JEDEC package notation.

RGWxx65C series Featured Product Catalog

#### 600V Super Junction MOSFETs R60xxVNx/R60xxRNx series

The R60xxVNx series of PrestoMOS™ power MOSFETs leverages original technology to achieve the industry's fastest trr (as of March 2022) while reducing ON resistance (which is in a trade-off with trr) by up to 20% over general super junction MOSFETs, contributing to higher efficiency in applications. At the same time, this series features the lowest noise of the PrestoMOS™ lineup, making it ideal for use in small motor equipment where noise is a concern.

600V Super Junction MOSFETs (PrestoMOS™)										
Product No.		Polarity (ch)	V <sub>DSS</sub> (V)	I <sub>D</sub> (A)	P <sub>D</sub> (A) (T <sub>C</sub> =25°C)	R <sub>DS(on)</sub> (Ω)		Qg Typ (nC) V <sub>GS</sub> =15V	trr Typ (ns)	Package
Part No.	Packing code					V <sub>GS</sub> =15V				
						Typ	Max			
R6013VND3	TL1	N	600	13	131	0.250	0.300	21*	65	TO-252 (DPAK)
R6009RND3	TL1			9	125	0.510	0.665	22.0	55	
R6007RND3	TL1			7	96	0.730	0.940	17.5	50	
R6004RND3	TL1	N	600	4	60	1.330	1.730	10.5	40	TO-220AB
☆R6055VNX3	C16			55	543	0.059	0.071	80*	112	
R6035VNX3	C16			35	348	0.095	0.114	50*	92	
R6024VNX3	C16	N	600	24	245	0.127	0.153	38*	80	(TO-220FM) (TO-220FP)
☆R6055VNX	C7 G			23	99	0.059	0.071	80*	112	
R6035VNX	C7 G			17	81	0.095	0.114	50*	92	
R6024VNX	C7 G	N	600	13	70	0.127	0.153	38*	80	TO-247AD (TO-247)
R6018VNX	C7 G			10	61	0.170	0.204	27*	68	
R6013VNX	C7 G			8	54	0.250	0.300	21*	65	
☆R60A4VNZ4	C13	N	600	140	1,388	0.022	0.027	195*	167	(TO-3PF)
R6077VNZ4	C13			77	781	0.042	0.051	108*	125	
R6055VNZ4	C13			55	543	0.059	0.071	80*	112	
R6077VNZ	C17	N	600	29	113	0.042	0.051	108*	125	(TO-3PF)
R6055VNZ	C17			23	99	0.059	0.071	80*	112	

Note: Indicates the JEDEC package notation. ( ) : ROHM Package, ( ) : GENERAL Code.

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\*V<sub>GS</sub>=10V



☆:Under Development

R60xxVNx series with Built-in High-Speed Diode (PrestoMOS™) / R60xxYNx Low ON Resistance series Featured Product Catalog

R60xxRNx series Low Noise Type (PrestoMOS™) Featured Product Catalog

#### 40V/60V Withstand Dual MOSFETs QH8Mx5/SH8Mx5 series (Nch+Pch) QH8Kxx/SH8Kxx series (Nch+Nch)

ROHM's dual MOSFETs pursue ON resistance performance in both Nch and Pch elements, combining two elements in a single package. This helps reduce design resources for motor and other applications.

40V/60V Dual MOSFETs												
Product No.		Polarity (ch)	V <sub>DSS</sub> (V)	I <sub>D</sub> (A)	P <sub>D</sub> (W) (T <sub>A</sub> =25°C)	R <sub>DS</sub> (mΩ)				Qg (nC) V <sub>GS</sub> =4.5V	Package	
Part No.	Packing code					V <sub>GS</sub> =10V		V <sub>GS</sub> =4.5V				
						Typ	Max	Typ	Max			
QH8KB6	TCR	N+N	40	8	1.5	13.7	17.7	16.4	27	5.0	(TSMT8) 3028 size	
QH8KB5	TCR		40	7.5*1	1.5	34	44	44	74	1.8		
QH8KC6	TCR		60	5.5	1.5	23	30	31	44	3.9		
QH8KC5	TCR		60	3	1.5	70	90	100	140	1.7		
QH8MB5	TCR	N+P	40	4.5	1.5	34	44	44	74	1.8		
QH8MC5	TCR		-40	-5	1.5	33	41	41	51	9.0		
			60	3	1.5	70	90	100	140	1.7		
			-60	-3.5	1.5	71	91	79	101	8.5		
SH8KB6	TB1	N+N	40	8.5	2	14.9	19.4	18.2	26	5.0	(SOP8) 5060 size	
SH8KB7	TB1		40	13.5	2	6.5	8.4	7.5	10.5	13		
SH8KC6	TB1		60	6.5	2	25	32	33	46	3.9		
SH8KC7	TB1		60	10.5	2	9.5	12.4	12.3	17.2	10.8		
SH8MB5	TB1	N+P	40	8.5	2	14.9	19.4	18.2	26	5		
SH8MC5	TB1		-40	-8.5	2	13.9	16.8	16.5	21	25		
			60	6.5	2	25	32	33	46	3.9		
			-60	-7	2	27	33	29	37	23		

Note 1: ( ) denotes ROHM package type.

Note2:\*1 PW≤1s





Nch+Pch Dual MOSFETs (QH8Mx5/SH8Mx5 series), Nch+Nch MOSFETs (QH8Kxx/SH8Kxx series) Featured Product Catalog



Power Diodes

650V Fast Recovery Diodes RFL Series (Low V<sub>F</sub> Type) RFS series (High-Speed trr Type)

This series improves both V<sub>F</sub> and trr performance (important diode characteristics in a trade-off relationship) over the previous generation.  
Two types of devices are available to meet the needs of power supply circuits for different applications.

650V Power Fast Recovery Diodes																
Product No.			Absolute Maximum Ratings (TC=25°C)					Electrical Characteristics (Tj= 25°C)*2						Package	Equivalent Circuit Diagram	
Part No.	Grade code	Packing code	V <sub>RM</sub> (V)	V <sub>R</sub> (V)	I <sub>O</sub> (A)	I <sub>FSM</sub> (A) 60Hz 1 <sup>ms</sup>	V <sub>F</sub> (V) Max	I <sub>F</sub> (A) Max	I <sub>S</sub> (μA) Max	V <sub>RRM</sub> (V)	t <sub>rr</sub> (ns) Max	I <sub>FT</sub> (A)	I <sub>NS</sub> (A)			
RFL30TZ6S	G	C13	650	650	30	200	1.5	30	5	650	55	0.5	1	TO-247-2L (TO-247GE-2L)		
RFS30TZ6S	G	C13			30	160	2.3	30	5	650	35	0.5	1			
RFL60TZ6S	G	C13			60	320	1.5	60	10	650	75	0.5	1			
RFS60TZ6S	G	C13			60	250	2.3	60	10	650	55	0.5	1			
☆RFL30TS6D	G	C13	650	650	30*1	100*2	1.5	15	5	650	45	0.5	1	TO-247-3L (TO-247GE-3L)		
☆RFS30TS6D	G	C13			30*1	80*2	2.3	15	5	650	30	0.5	1			
☆RFL60TS6D	G	C13			60*1	180*2	1.5	30	5	650	55	0.5	1			
☆RFS60TS6D	G	C13			60*1	150*2	2.3	30	5	650	35	0.5	1			

\*1: The average output current per element is I<sub>O</sub> (with one element) or 1/2 I<sub>O</sub> (with 2 elements). \*2: Standard per element.



Note: Indicates the JEDEC package notation. ( ) denotes ROHM package type.

☆: Under Development

 RFL/RFS series Featured Product Catalog

Compact High Reliability PMDE Package Schottky Barrier Diodes

The PMDE package (2.5mm×1.3mm), which not only achieves the same characteristics in a smaller size vs the general SOD123FL (3.5mm×1.6mm), but also provides 1.4x higher mounting strength, is being commercialized for various diodes.

PMDE Package Medium Power Schottky Barrier Diodes												
Product No.			Absolute Maximum Ratings (TC=25°C)				Electrical Characteristics (Tj= 25°C)				Package	Equivalent Circuit Diagram
Part No.	Grade code	Packing code	V <sub>RM</sub> (V)	V <sub>R</sub> (V)	I <sub>O</sub> (A)	I <sub>FSM</sub> (A) 60Hz, 1 <sup>1</sup> ~	V <sub>F</sub> (V) Max	I <sub>F</sub> (A)	I <sub>S</sub> (mA) Max	V <sub>RR</sub> (V)		
High Efficiency-Low I <sub>S</sub> Type												
RBLQ2VWM10	*	TR	100	100	2	30	0.77	2	0.01	100	<div>(PMDE)  </div>	
Low V <sub>F</sub> Type												
RBR1VWM30A	*	TR	30	30	1	30	0.48	1	0.05	30		
RBR2VWM30A		TR	30	30	2	30	0.53	2	0.05	30		
RBR1VWM40A		TR	40	40	1	20	0.52	1	0.05	40		
RBR2VWM40A		TR	40	40	2	20	0.62	2	0.05	40		
RBR1VWM60A		TR	60	60	1	20	0.53	1	0.075	60		
RBR2VWM60A		TR	60	60	2	20	0.65	2	0.075	60		
Ultra-Low I <sub>S</sub> Type												
RB168VWM-30	*	TR	30	30	1	30	0.69	1	0.0006	30		
RB068VWM-30		TR	30	30	2	30	0.75	2	0.0006	30		
RB168VWM-40		TR	40	40	1	30	0.69	1	0.0005	40		
RB068VWM-40		TR	40	40	2	30	0.79	2	0.0005	40		
RB168VWM-60		TR	60	60	1	30	0.76	1	0.0005	60		
RB068VWM-60		TR	60	60	2	30	0.84	2	0.0005	60		
RB168VWM100		TR	100	100	1	25	0.84	1	0.0003	100		
RB068VWM100		TR	100	100	2	25	0.94	2	0.0003	100		
RB168VWM150		TR	150	150	1	25	0.89	1	0.001	150		
RB068VWM150		TR	150	150	2	25	0.96	2	0.001	150		

\*The Grade code is left blank

Note 1: ( ) denotes ROHM package type.

 RBLQ(SBD)/RBR(SBD)/RBxx8(SBD)/RFN(FRD)/VS(TVS) Featured Product Catalog

Power Modules

600V IGBT-IPMs BM6437x series

Optimizing the built-in IGBT and fast recovery diode allows the BM6437x series to decrease radiated noise by more than 6dB over standard products.  
What's more, utilizing low-loss IGBTs results in class-leading low loss.

600V IGBT-IPMs								
Part No.	Power Device	V <sub>CES</sub> (V)	I <sub>C</sub> (A)	PWM Input Frequency (kHz)	Isolation Voltage*1 (Vrms)	Thermal Protection Function*2		Package
						TSD	VOT	
BM64374S-VA	IGBT	600	15	up to 20	1,500	✓	✓	HSDIP25
BM64375S-VA			20			✓	✓	HSDIP25
BM64377S-VA			30			✓	✓	HSDIP25
BM64378S-VA			35			✓	✓	HSDIP25

\*1: Supports 2,500Vrms when using a convex heat sink at AC60Hz for 1min \*2: TSD (Thermal Shutdown), VOT (Analog Temperature Output)

 BM6437x series Featured Product Catalog



ICs

Since the development of its first ICs in the 70's, ROHM has established and refined a three-pronged development system that thoroughly aligns analog technologies covering circuit design, layout, and processes. These technologies are utilized in the development of high value-added products centered on control and driver ICs that can maximize the performance of power supply ICs and power devices.

Power ICs

AC-DC Converters with Built-in 1,700V SiC MOSFET BM2SC12xFP2-LBZ series


The BM2SC12xFP2-LBZ series combines a SiC MOSFET for unprecedented power saving performance with control circuitry optimized for auxiliary industrial power supplies in a single package. This resolves many of the design issues plaguing discrete solutions, making it easy to develop power-saving AC-DC converters.

AC-DC Converters with Built-in 1,700V SiC MOSFET											
Part No.	Supply Voltage (V)	SiC MOSFET V <sub>DS</sub> (Max) (V)	Control Method	Maximum Frequency (kHz)	ON Resistance (Ω)	OCP Exchange Function	V <sub>OC</sub> OVP Protection	FB OLP Protection	ZT OVP Protection	Package	
BM2SCQ121T-LBZ	15 to 27.5	1,700	QR	120	1.12	✓	Latch	Auto Restart	Latch	TO220-6M 	
BM2SCQ122T-LBZ							Latch				
BM2SCQ123T-LBZ							Auto Restart				
BM2SCQ124T-LBZ							Latch				
BM2SC121FP2-LBZ	15 to 27.5	1,700	QR	120	1.12	✓	Latch	Auto Restart	Latch	TO263-7L 	
BM2SC122FP2-LBZ							Latch				
BM2SC123FP2-LBZ							Auto Restart				
BM2SC124FP2-LBZ							Latch				

 Built-in SiC MOSFET AC-DC Converters Leaflet

AC-DC Converter ICs with Built-in 730V Super Junction MOSFET BM2P06xMF-LBZ series

The BM2P06xMF-Z series of surface mount ICs combines ROHM's low-loss Super Junction MOSFETs with control circuitry in a single package, facilitating the development of 85V to 264V AC-DC converters that deliver high output power up to 45W.

AC-DC Converter ICs with Built-in 730V Super Junction MOSFET																
Part No.	Supply Voltage (V)	MOSFET V <sub>DS</sub> (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Function	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Steep Overcurrent Limiter (V)	Overcurrent Limiter (V)	Current Sense Resistor	Startup Current (mA)	Brownout	FB OLP Protection	Package	
BM2P060LF-Z	11 to 60	730	PWM	65	✓	75	0.7	21.0	✓	✓	Extrenal	15	✓	Latch	SOP20A	
BM2P061LF-Z							1.0	12.0								
BM2P060MF-Z							0.7	21.0								
BM2P061MF-Z							1.0	12.0								
BM2P063MF-Z							3.0	4.0						Auto Restart		

 BM2P06xMF-Z series Featured Product Catalog

45V Withstand 150mA Output Nano Cap™ LDO Regulators BD9xxN1 series

The BD9xxN1 series supports small output capacitances down to 100nF utilizing proprietary Nano Cap™ ultra-stable control technology, ensuring extremely stable operation even when the input voltage or output load current fluctuates.  
In addition to reducing the size of components and substrates, the number of design resources can be significantly reduced by enabling compatibility with a wide range of capacitors.

45V Withstand Low Iq 150mA Output Nano Cap™ LDO Regulators													
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Output Current (A)	Input-Output Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuits	Package/Part No.			
										HTSOP-J8	SSOP5		
BD900N1	3 to 42	Variable	±2.0	0.15	0.5 (I <sub>O</sub> =100mA)	28	T <sub>J</sub> =−40 to +150	—	Over-Current/ Temperature	BD900N1EFJ-C	BD900N1G-C		
BD933N1		3.3								BD933N1EFJ-C	BD933N1G-C		
BD950N1		5.0								BD950N1EFJ-C	BD950N1G-C		
BD900N1W	3 to 42	Variable	±2.0	0.15	0.5 (I <sub>O</sub> =100mA)	28	T <sub>J</sub> =−40 to +150	✓	Over-Current/ Temperature	BD900N1WEFJ-C	BD900N1WG-C		
BD933N1W		3.3								BD933N1WEFJ-C	BD933N1WG-C		
BD950N1W		5.0								BD950N1WEFJ-C	BD950N1WG-C		

45V Withstand 50mA Output Compact Ultra-Low Quiescent Current LDO Regulators

BD7xxL05G-C series

Despite its small size (2.9mm×2.8mm), the BD7xxL05G-C series achieves a Withstand voltage of 45V with low 6μA quiescent current, enabling suitability for a wide range of applications that require a small form factor, low power consumption, and constant operation.

45V Withstand Low Iq 50mA Output LDO Regulators										
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Output Current (A)	Input-Output Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuits	Package
BD725L05G-C	3.5 to 42.0	2.5	±2	0.05	—	6	−40 to +125	—	Over-Current/ Temperature	SSOP5
BD730L05G-C	3.5 to 42.0	3.0			0.3 (I <sub>O</sub> =50mA)					
BD733L05G-C	3.8 to 42.0	3.3			0.35 (I <sub>O</sub> =50mA)					
BD750L05G-C	5.6 to 42.0	5.0								



BD7xxL05G-C Featured Product Catalog

40V Low-Side IPDs (Smart Low-Side Switches) with Error Flag

BV1LExxxEFJ-C/BM2LExxxFJ-C series

Both series provide the advantage of easy design through a circuit configuration that facilitates replacement of standalone mechanical relays and MOSFETs when placed in the lower (ground side) circuits of equipment to be controlled.

Low ON resistance together with heat suppression are enabled in a small size (difficult to achieve), contributing to significantly lower power loss and safer device operation.

Low-Side IPDs (Smart Low-Side Switches) with 40V Error Flag								
Part No.	Supply Voltage (V)	V <sub>DS</sub> Max (V)	ch	I <sub>ON</sub> Max (A)	ON Resistance (Typ) (mΩ)	TSD	Package	
BV1LE040EFJ-C	3.0 to 5.5	40	1	17.5	40	Self-restart	HTSOP-J8 	
BV1LE080EFJ-C				9.0	80			
BV1LE160EFJ-C		40		5.0	160			
BV1LE250EFJ-C				3.0	250			
BM2LE040FJ-C	3.0 to 5.5	40	2	17.5	40		SOP-J8 	
BM2LE080FJ-C				9.0	80			
BM2LE160FJ-C		40		5.0	160			
BM2LE250FJ-C				3.0	250			

BV1LExxxEFJ-C (1ch)/BM2LExxxFJ-C (2ch) series Featured Product Catalog

Gate Driver ICs for GaN HEMT (Single-channel)

BD2311NVX-LB

The BD2311NVX-LB is a single-channel gate driver IC optimized for driving GaN HEMTs.

In addition to supporting narrow pulse high-speed switching required for GaN HEMTs, a built-in original overshoot suppression circuit ensures GaN reliability.

Gate Driver ICs for GaN HEMT (Single-channel)							
Part No.	Input Supply Voltage (V)	Output Current Typ (A)	Delay Time Typ (ns)		Minimum Input Pulse Width Typ (ns)	Operating Temperature (°C)	Package
			Turn ON	Turn OFF			
BD2311NVX-LB	4.5 to 5.5	+7/−5	0.65	0.70	1.25	−40 to +125	SSON06RX2020
☆BD2311NVX-C							

☆: Under Development


BD2311NVX-LB Featured Product Catalog

General Purpose ICs

40V Window-Type Voltage Detector (Reset IC)

BD48HW0G-C

The BD48HW0G-C achieves operating voltages up to 40V along with an ultra-high voltage detection accuracy of ±0.75% while minimizing current consumption to just 500nA. What's more, a flexible detection voltage enables use in a wide range of applications, from the low voltage region around MCUs to the high voltages used in industrial equipment power supplies.

Window-Type Voltage Detectors (Reset ICs)													
Part No.	Operating Supply Voltage (V)	Detection Voltage Accuracy T <sub>A</sub> =All Temperatures (%)	Overvoltage Detection (V)	Low Voltage Detection (V)	Output Type	Circuit Current (nA)	Hysteresis Voltage (V)	“L” Output Current (mA) (V <sub>OS</sub> =0.4V)		Reset Release Propagation Delay Time (ms)	Delay Time Accuracy (%)	Package	
BD48HW0G-C	1.8 to 40	±0.75	1.277	1.277	Open Drain	500	V <sub>DET</sub> ×0.01	2 or more (V <sub>DD</sub> =1.8V)		—	—	<div>SSOP6</div>	
BD48W00G-C	1.6 to 6.0	±2.5	1.2	1.2		3000							
BD52W01G-C		±5	1.32	1.08		300		1 or more (V <sub>DD</sub> =1.6V)	2 or more (V <sub>DD</sub> =2.4V)	Variable	±50 (All Temperature)		
BD52W02G-C			1.65	1.35									
BD52W03G-C			1.98	1.62									
BD52W04G-C			2.75	2.25									
BD52W05G-C			3.63	2.97									
BD52W06G-C			5.5	4.5									

BD48HW0G-C Featured Product Catalog

Sensor ICs

Compact Waterproof High Accuracy Barometric Pressure Sensor

BM1390GLV-Z

The BM1390GLV delivers IPX8 waterproof performance in a compact size. At the same time, excellent temperature characteristics that suppress characteristics fluctuations due to stress enable high accuracy barometric pressure measurement even in environments with large temperature variations.

Compact Waterproof High Accuracy Barometric Pressure Sensor IC								
Part No.	Supply Voltage (V)	Barometric Pressure Range (hPa)	Relative Pressure Accuracy (hPa)	Absolute Pressure Accuracy (hPa)	I/F	Operating Temperature (°C)	Waterproof Rating	Package (mm)
BM1390GLV-Z	1.7 to 3.6	300 to 1,300	±0.06	±1	I <sup>2</sup> C	−40 to +85	✓	RLGA10VG020T 2.0×2.0, H=Max 1.0

BM1390GLV Featured Product Catalog

Current Sense Amps

BD1421x-LA series

The BD1421x-LA series of amp ICs are specialized for current detection using shunt resistors. Integrating peripheral components reduces the number of external parts while optimizing the circuit, enabling high accuracy ±1% current detection over the entire temperature range when combined with a shunt resistor.

Current Sense Amp ICs								
Part No.	ch	Supply Voltage (V)	Current Consumption (μA)	Common-Mode Voltage(V)	Gain (V/V)	Current Sense Accuracy (%)	Operating Temperature (°C)	Package (mm)
BD14210G-LA	1	2.7 to 5.5	170	−0.2 to +26	20	±1 (Max)	−40 to +125	SSOP6 2.9×2.8, H=Max 1.25
☆BD14215FVJ-LA	2	2.7 to 5.5	310	−0.2 to +26	20	±1 (Max)	−40 to +125	TSSOP-B8J 3.0×4.9, H=Max 1.10

☆: Under Development

BD1421xG-LA/BD1421xFVJ-LA series Featured Product Catalog

Passive Devices/Opto Devices/Modules

ROHM also develops resistors (a founding product) as well as opto devices and modules that incorporate various elements.

We continue to contribute to the evolution of industrial equipment by leveraging our strengths as a comprehensive semiconductor manufacturer to provide optimized solutions utilizing ICs and discrete components.

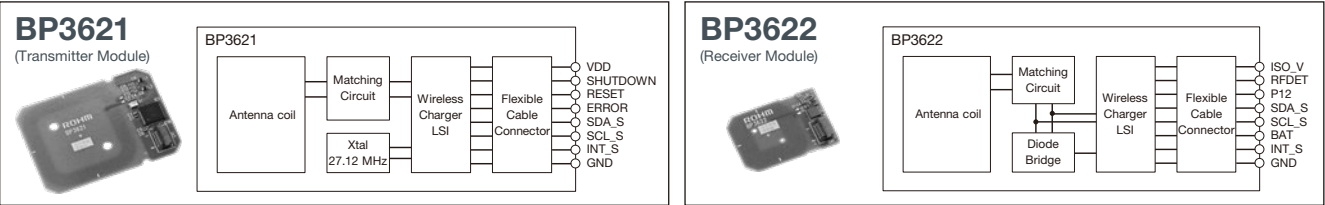
Modules

13.56MHz (NFC) Wireless Charger Modules

BP3621 (Transmitter)/BP3622 (Receiver)

ROHM's 13.56MHz wireless charger is a board-integrated module with built-in antenna.

The optimized design significantly reduces the number of development resources required for antenna design and matching, making it easy to achieve wireless charging functionality while contributing to the design of compact, connectorless, water-and dust-proof enclosures required for wearables and IoT devices.



Wide Ranging 13.56MHz Wireless Charger Transmitter Module

Part No.	Transmitter/ Receiver	Module Type	Module Size (mm)	Weight (g)	Supply Voltage (V)	Maximum Output Power (mW)	Charging Distance (d) (mm)	Operating Temperature (°C)	I/F
BP3621	Power Transmitter	Wide Range type	35.0×26.0×1.5	0.80	4.5 to 5.5	—	10	−10 to +50	8pin, 0.5mm pitch, FPC connector

Wide Ranging 13.56MHz Wireless Charger Receiver Module

BP3622	Power Receiver	Wide Range type	24.0×17.0×1.5	0.38	—	200	10	−10 to +50	8pin, 0.5mm pitch, FPC connector
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BP3621/BP3622 Featured Product Catalog



Resistors

Ultra-Low Ohmic High Power Metal Plate Shunt Resistors PSR series

The PSR series consists of high power ultra-low-ohmic metal plate shunt resistors ideal for current sensing applications. A full lineup of sizes and resistances are available, enabling high accuracy current detection in a wider range of applications.

Ultra-Low Ohmic High Power Metal Plate Shunt Resistors								
Part No.	Size Code mm (inch)	Resistance (mΩ)	Rated Power (W) (Rated Terminal Temp)		Resistance Tolerance	Temperature Coefficient of Resistance (ppm/°C)	Rated Current (A)	Operating Temp (°C)
			Low Temperature Side	High Temperature Side				
PSR100	6432 (2512)	☆ 0.2	12 (120°C)		F (±1%)	150±50	36 to 163 200	-65 to +175
		0.3	8 (75°C)	4 (140°C)		0 to +150		
		0.5				0 to +100		
		1.0				0 to +100		
		2.0	6 (75°C)	4 (140°C)		0 to +50		
		3.0	4 (75°C)	3 (140°C)		0 to +50		
PSR330	6464 (2525)	0.1	15 (120°C)		F (±1%)	100±50	77 to 387	
		0.5	8 (100°C)			0 to +100		
		1.0	6 (100°C)			0 to +50		
PSR350	7.9×5.6 (3222)	0.27	12 (120°C)		F (±1%)	0 to +150	Up to 210	
PSR400	10×5.2 (3921)	0.2	12 (75°C)	5 (130°C)	F (±1%)	125±50	40 to 244	
		0.3	10 (75°C)	5 (130°C)		0 to +100		
		0.5	10 (75°C)	5 (130°C)		0 to +100		
		1.0	8 (75°C)	5 (130°C)		0 to +75		
		2.0	6 (75°C)	4 (115°C)		0 to +75		
		3.0	5 (70°C)	3 (115°C)		0 to +75		
PSR500	15×7.75 (5931)	0.1	15 (75°C)	10 (120°C)	F (±1%)	200±50	59 to 387	
		0.2	15 (75°C)	10 (120°C)		0 to +150		
		0.3	10 (75°C)	7 (120°C)		0 to +150		
		0.4	10 (75°C)	7 (120°C)		0 to +150		
		0.5	10 (75°C)	7 (120°C)		0 to +150		
		1.0	10 (75°C)	6 (120°C)		0 to +75		
		2.0	7 (70°C)	4 (115°C)		0 to +75		


†(+20°C to +175°C)  
☆: Under Development

PSR series Featured Product Catalog

Opto Devices

1608 Size Low Current Chip LEDs CSL1901 series

The CSL1901 series of LEDs reduces visual variations in brightness and color under low light conditions by matching element characteristics to provide light emission at 2mA. Compared to general products (at 2mA), brightness variations are reduced by half and color differences suppressed, minimizing design resources required for light emission adjustment while improving visibility in indicators.

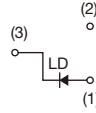
1608 Size Low Current Chip LEDs																		
Package (mm)	Emitting Color	Part No.	Electrical-Optical Characteristics (T <sub>a</sub> =25°C)											Absolute Maximum Ratings (T <sub>a</sub> =25°C)				
			Emission Wavelength λ <sub>c</sub> / Chromaticity (x,y)		Brightness I <sub>v</sub>				Forward Voltage V <sub>f</sub>		Reverse Current I <sub>s</sub>		Permissible Loss P <sub>o</sub> (mW)	Forward Current I <sub>f</sub> (mA)	Peak Forward Current I <sub>sp</sub> (mA)	Forward Voltage V <sub>f</sub> (V)	Operating Temp. Topr (°C)	Storage Temp. Tstg (°C)
			Typ (nm)	I <sub>f</sub> (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I <sub>f</sub> (mA)	Typ (V)	I <sub>s</sub> (mA)	Max (μA)	V <sub>s</sub> (V)						
 1.6×0.8 (t=0.55)	Red	CSL1901VW	630	2	1.6	4.8	6.3	2	1.8	2	10	5	44	20	100*1	5	-40 to +85	-40 to +100
		CSL1901UW	620	2	2.5	6	10	2	1.8	2	10	5	44	20	100*1	5	-40 to +85	-40 to +100
	Orange	CSL1901DW	605	2	6.3	9.4	25	2	1.8	2	10	5	44	20	100*1	5	-40 to +85	-40 to +100
	Yellow	CSL1901YW	590	2	6.3	9.4	25	2	1.8	2	10	5	44	20	100*1	5	-40 to +85	-40 to +100
	Yellow Green	CSL1901MW	570	2	1	3	4	2	1.8	2	10	5	44	20	100*1	5	-40 to +85	-40 to +100

\*1 Duty≤1/10, 1kHz

CSL1901 series Featured Product Catalog

905nm Invisible Pulsed 120W High Power Laser Diode RLD90QZW8

The RLD90QZW8 is a 120W infrared high power laser diode developed for distance measurement and spatial recognition applications such as LiDAR. Extremely low wavelength temperature dependence together with excellent luminous performance allow for high-definition, power-efficient, long-distance detection.

905nm Invisible Pulsed High Power Laser Diodes													
Part No.	Absolute Max. Ratings (T <sub>C</sub> =25°C)			Operating Temperature (°C)	Electrical-Optical Characteristics (T <sub>C</sub> =25°C)							Package	Equivalent Circuit Diagram
	I <sub>F</sub> (A)	P <sub>O</sub> (W)	V <sub>R</sub> (V)		I <sub>F</sub> Conditions (A)	P <sub>O</sub> (W)	V <sub>F</sub> (V)	Vertical Beam Spread Angle θ <sub>⊥</sub> (deg)	Horizontal Beam Spread Angle θ <sub>∥</sub> (deg)	Wavelength λ <sub>P</sub> (nm)	Luminous Area (μm×μm)		
RLD90QZW8	46	145	10	-40 to +85	38	120	13	20	11	905	270×10	Φ5.6mm CAN	
RLD90QZW3	28	90	2		23	75	11	25	12		225×10		
RLD90QZWD	13	40	2		12	35	11	25	13		100×10		
RLD90QZWB	11	25	2		9	25	13	25	14		50×10		
RLD90QZW5	9	25	2		9	25	14	25	12		70×10		
RLD90QZWC	11	30	2		9	25	11	25	13		70×10		
RLD90QZWJ	9	25	2		9	25	15	20	14		50×10		
RLD90QZWA	6	17	2		5	15	13	20	14		35×10		

RLD90QZW8 Featured Product Catalog

WEB SITE

ROHM Website

ROHM's website provides product materials including datasheets, technical documents such as application notes, design tools, and other content useful for development and learning.

These can be used not only for product searches, but also for collecting information and solving problems.



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