

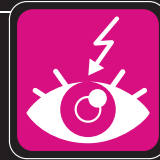
For
General-
purpose

Sensor IC

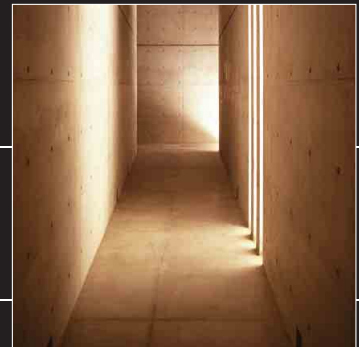
Selection
Lineup Catalog



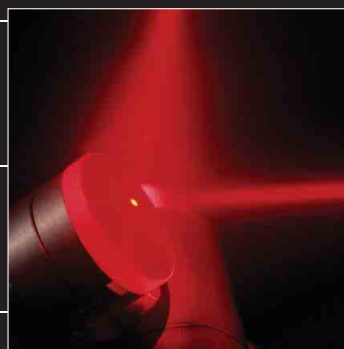
Hall
Sensor IC
series



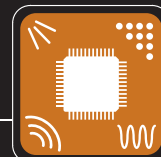
Ambient
Light
Sensor IC
series



Temperature
Sensor IC
series



Sensor
Backend IC
series



High reliability for non-contact sensing



Hall Sensor IC Series

ROHM Hall ICs integrate a highly sensitive Hall element on a single chip that can perform open/close switch operations through magnetic field detection. This contactless method increases reliability by eliminating failures due to repeated switching or the introduction of foreign objects. Five series are offered, making it possible to select the optimum solution based on set requirements.

Line-up and features

- Omnipolar Detection Hall IC Series**
Detects both S- and N-pole magnetic fields and turns the output ON. (active Low)
(BU52015GUL contains also inverted output.)
- Unipolar Detection Hall IC Series**
Detects either N- or S-pole.
- Bipolar Latch Hall IC**
Detect turn of pole (S→N or N→S)
- Omnipolar Detection Hall IC Series (polarity discriminative dual outputs)**
Features two outputs to discriminate between N- and S-pole detection.
- High Speed Latch Hall IC (contains 2 sensors)**
This single chip solution offers high speed, high accuracy and a small package.

Package	VCSP50L1 (1.1mmx1.1mm) H=0.5mm	VCSP50L1 (1.0mmx1.5mm) H=0.5mm	SSON004X1216	HVS0F5	SSOP5
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Applications Examples

Refrigerator, washing machine, humidifier, air cleaner, rice cooker, air conditioner, cleaner, electrical pot, massage machine, shower toilet, industrial robot, mobile phone, laptop, projector, digital camera, car navigation, (portable) DVD player, CD player, printer, electrical carpet, remote control, electrical toothbrush, copy machine, tablet PC etc

Feature of ultra-compact Hall ICs

ROHM Hall ICs implement several functions in an ultra-small package, integrating high sensitivity silicon hall element into a single chip.

- Detection of both S- and N-pole**
- Low current consumption**
- High sensitivity for precise magnetic field detection.**
ROHM Hall ICs detect and convert magnetic fields into electrical signals (voltage). The Hall element is integrated into a single chip
- Intermittent operation for low power consumption.**
- CMOS output eliminates the need for an external resistor, resulting in lower power consumption.**
CMOS output enables direct connection to the microcontroller, reducing current consumption.
- Ultra-compact package size contributes to increased space savings**
ROHM Hall ICs integrate both the Hall element and detection circuit into a single chip and in ultra-small package.
- High accuracy offset cancel function built in for high sensitivity.**
- Hysteresis comparator increases noise resistance.**

Block diagram is about omnipolar detection hall IC and unipolar detection hall IC series.

Spectrum sensitivity similar to human eye



Ambient Light Sensor IC Series

ROHM ambient light sensor ICs can measure a broad illuminance range from darkness to day light. It provides illuminance data for adjusting LCD backlight brightness of electricity, in order to decrease current consumption of the application and increase visibility. Both analog and digital output type are available.

Line-up and features

- Analog Current Output Type Ambient Light Sensor IC Series**
Easy-to-use because of excellent linearity characteristics against brightness
- Digital 16bit Serial Output Type Ambient Light Sensor IC Series**
Compatible with I²C bus.

Package	WSOF5	WSOF6	WSOF6I
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Applications Examples

Mobile phone, LCD TV/monitor, plasma TV, CRT TV, laptop, PDA, portable DVD player, portable video player, digital camera, camcorder, car navigation, electrical book, portable game, rear projector, projector, vending machine, clock, lighting, telephone, audio, air conditioner, public display, copy machine, security camera, electrical pot, rice cooker, etc

ROHM's highly reliable sensing Selection

For General-purpose

Features of analog ambient light sensor

Spectrum sensitivity similar to human eye. High sensitivity accuracy.

Internal processing is performed on multiple built-in photodiodes featuring different junction depths, resulting spectrum sensitivity similar to human eye.

Light source type	Conventional product X	ROHM ambient light sensor IC
Clear light bulb	~4.5	~1.0
Silica light bulb C	~3.5	~1.0
Silica light bulb B	~2.5	~1.0
Silica light bulb A	~2.0	~1.0
Fluorescent light (6700K)	~1.5	~1.0
Fluorescent light (5000K)	~1.2	~1.0
Fluorescent light (2800K)	~1.0	~1.0

Large sensitivity variation between different light sources vs. 10% max sensitivity difference.

Feature of digital 16bit serial output type ambient light sensor IC series

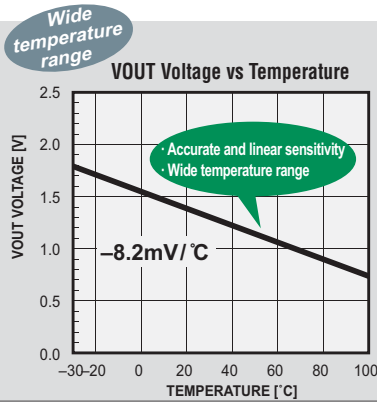
Built-in high accuracy 16bit AD converter. A thinner and more compact package type.

The built-in high accuracy AD converter enables high precision light measurement; from darkness to outdoors brightness in 1 lx step.

Direct sunlight vs. Darkness range. Measurable in 1 lx step from 0 lx to 65,000 lx.

Features of analog temperature sensor IC

ROHM temperature ICs implement a stable sensitivity ($-8.2\text{mV}/^\circ\text{C}$) in a wide range and are suitable for several applications.



Feature of thermostat type temperature sensor IC

There are several line-ups; 15 products each 10°C step detection temperature in -20°C ~ 120°C . The BDE series has 3 adjustable detection temperatures.

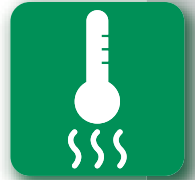
In case of the BDE series

Part No.	Adjustable detection temperature(°C)			Output type	
	Detection point1	Detection point2	Detection point3	Circuit	Logic
BDE1200G	115.0	120.0	125.0	Open drain	Active L
BDE1100G	105.0	110.0	115.0		
BDE1000G	95.0	100.0	105.0		
BDE0900G	85.0	90.0	95.0		
BDE0800G	75.0	80.0	85.0		
BDE0700G	65.0	70.0	75.0		
BDE0600G	55.0	60.0	65.0		
BDE0500G	45.0	50.0	55.0		
BDE0400G	35.0	40.0	45.0		
BDE0300G	25.0	30.0	35.0		
BDE0200G	15.0	20.0	25.0		
BDE0100G	5.0	10.0	15.0		
BDE0000G	-5.0	0	5.0		
BDE9100G	-15.0	-10.0	-5.0		
BDE9200G	-25.0	-20.0	-15.0		

This product can adjust 3 detection temperatures ($\pm 5^\circ\text{C}$ step)

Stable temperature sensitivity in wide range

Temperature Sensor IC Series



The ROHM temperature sensor IC series is integrating a sensor element, current source circuit and high accuracy reference voltage source into a single chip. This product series will reduce circuit design complexity and can be used in several electrical applications that need temperature detection; e.g. mobile phone, PC, LCD TV, Industrial machine, game, car navigation etc

Line-up and features

Analog output temperature sensor

Small package, low current consumption, wide temperature range (-30°C ~ 100°C) and high accuracy ($\pm 2.5^\circ\text{C}$)

Thermostat Type Temperature Sensor IC Series (adjustable detection temperature)

BDE series has 3 adjustable detection temperatures per product. BDF series has 5.

Thermostat Type Temperature Sensor IC Series (built-in power-down function)

Small package and low current consumption, so this is optimal for mobile applications.

Package



Applications Examples

Air conditioner, heater, PC, electrical blanket, ventilator, hair dryer, (de)humidifier, automatic sprinkler, washing machine, thermometer, rice cooker, electrical pot, coffee maker, oven, toilet seat, charger, vending machine, clinical thermometer, floor heating, fan controller for electronics, electrical carpet, socket with thermometer, etc

technology is integrated into IC

sensor IC line-up



Features of IrDA controller ICs

ROHM IrDA controller ICs comply with 3 IrDA formats (SIR, MIR, FIR) and IrSimple which is standardized as high speed Infrared communication protocol (max. 4Mbps).

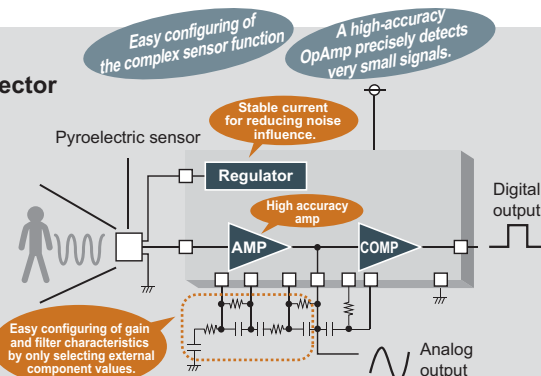
Compatible protocol and data rate

IrDA communication protocol	SIR	MIR	IrSimple
			FIR
Data rate	2.4kbps to 115.2kbps	0.576Mbps, 1.152Mbps	4Mbps
Features	This protocol is used for small data transmissions, e.g. exchanging mobile phone addresses	This protocol is mainly used in European mobile phones.	This protocol is suitable for transmitting much data like high resolution pictures.

*BU92001KN complies only with SIR.

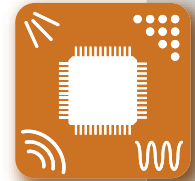
Features of IC for human body detector

A built-in regulator supplies stable power to the pyroelectric infrared sensor. Gain and filter characteristics can be fixed by external components to correspond several system.



Implementation of optimal system for each sensor

Sensor Backend IC Series



The ROHM sensor backend ICs integrate several functions into a single chip, allowing an optimal system implementation for each sensor. IrDA controller IC and IC for human body detector sensor are in line-up. ROHM can help to add a sensor function to implement higher functionality and energy saving.

Line-up and features

IrDA Controller IC Series

ROHM IrDA controller ICs correspond to IrSimple and it is high speed, so the customer can easily use wireless transmission. A FIFO(5kbyte) and frame interval timer function are built-in, reducing the load of CPU.

IC for human body detector sensor

All processing for the pyroelectric infrared sensor is integrated into a single chip, in order to reduce external components.

Package



Applications Examples

IrDA Controller ICs; mobile phone, printer, digital camera, digital photo frame, LCD TV, HDD recorder, car navigation.

IC for human body detector sensor; security camera, lighting, light switch, air conditioning, TV, ventilator, web camera, fire detector, etc

Hall IC Series

Omnipolar Detection Hall IC Series

Part No.	Supply Voltage(V)	Operate Point(mT)	Hysteresis(mT)	Period(ms)	Supply Current(av.)(μ A)	Output	Package(mm)
BU52001GUL	2.4 to 3.3	+/-3.7	0.8	50	8	CMOS	VCSP50L1(1.1mmx1.1mm) H=0.5mm
BU52011HFV	1.65 to 3.3	+/-3.0	0.9	50	5	CMOS	HVSOF5
BU52021HFV	2.4 to 3.6	+/-3.7	0.8	50	8	CMOS	HVSOF5
BU52015GUL	1.65 to 3.3	+/-3.0	0.9	50	5	CMOS	VCSP50L1(1.1mmx1.1mm) H=0.5mm
BU52025G	2.4 to 3.6	+/-3.7	0.8	50	8	CMOS	SSOP5
BU52051NVX	1.65 to 3.3	+/-3.0	0.9	50	5	CMOS	SSON004X1216
BD7411G	4.5 to 5.5	+/-3.4	0.4	Constant	2000	CMOS	SSOP5
☆BD7430G	4.2 to 24	+/-5.0	1.0	Constant	4000	Open Drain	SSOP5

Omnipolar Detection Hall IC Series (polarity detection for both S and N features dual outputs)

Part No.	Supply Voltage(V)	Operate Point(mT)	Hysteresis(mT)	Period(ms)	Supply Current(av.)(μ A)	Output	Package(mm)
BU52004GUL	2.4 to 3.3	+/-3.7	0.8	50	8	CMOS	VCSP50L1(1.1mmx1.1mm) H=0.5mm
BU52014HFV	1.65 to 3.3	+/-3.0	0.9	50	5	CMOS	HVSOF5

Unipolar Detection Hall IC Series

Part No.	Supply Voltage(V)	Operate Point(mT)	Hysteresis(mT)	Period(ms)	Supply Current(av.)(μ A)	Output	Package(mm)
BU52002GUL	2.4 to 3.3	+3.7	0.8	50	6.5	CMOS	VCSP50L1(1.1mmx1.1mm) H=0.5mm
BU52003GUL	2.4 to 3.3	-3.7	0.8	50	6.5	CMOS	VCSP50L1(1.1mmx1.1mm) H=0.5mm
BU52012HFV	1.65 to 3.3	+3.0	0.9	50	3.5	CMOS	HVSOF5
BU52013HFV	1.65 to 3.3	-3.0	0.9	50	3.5	CMOS	HVSOF5

Bipolar Latch Hall IC

Part No.	Supply Voltage(V)	Operate Point(mT)	Hysteresis(mT)	Period(ms)	Supply Current(av.)(μ A)	Output	Package(mm)
BU52040HFV	1.65 to 3.3	+/-3.0	6	0.5	200	CMOS	HVSOF5

High Speed Latch Hall IC (including 2 sensors)

Part No.	Supply Voltage(V)	Operate Point(mT)	Hysteresis(mT)	Operating frequency(kHz)	Supply Current(μ A)	Output	Package(mm)
New BU52742GUL	2.4 to 3.6	+/-10	20	250	10	CMOS	VCSP50L1(1.0mmx1.5mm) H=0.5mm

Ambient Light Sensor IC Series

Analog Current Output Type Ambient Light Sensor IC Series

Part No.	Supply Voltage(V)	Output Type	Sensitivity Accuracy(%)	Illuminance Measurement Range(lx)	Sensitivity Steps	Package
BH1600FVC	2.4 to 3.6	Current(Source)	\pm 35	0 to 50,000	2step	WSOF6
BH1603FVC	2.4 to 5.5	Current(Source)	\pm 15	0 to 100,000	3step	WSOF6
New BH1620FVC	2.4 to 5.5	Current(Source)	\pm 15	0 to 100,000	3step	WSOF5
New BH1621FVC	2.4 to 5.5	Current(Source)	\pm 15	0 to 50,000	2step	WSOF5
☆BH1630FVC	2.4 to 5.5	Current(Sink)	\pm 15	0 to 100,000	3step	WSOF5

Digital 16bit Serial Output Type Ambient Light Sensor IC Series

Part No.	Supply Voltage(V)	Output Type	Sensitivity Accuracy(%)	Illuminance Measurement Range(lx)	Sensitivity Steps	Package
BH1710FVC	2.4 to 3.6	I ² C I/F	\pm 38	0 to 65,000	-	WSOF6
BH1715FVC	2.4 to 3.6	I ² C I/F	\pm 15	0 to 65,000	-	WSOF6
New BH1721FVC	2.4 to 3.6	I ² C I/F	\pm 15	0 to 65,000	-	WSOF5
New BH1750FVI	2.4 to 3.6	I ² C I/F	\pm 20	0 to 65,000	-	WSOF6I

Temperature Sensor IC Series

Analog Temperature Sensor IC

Part No.	Supply Voltage(V)	Current Consumption (μ A)	Temperature Sensitivity (mV/ $^{\circ}$ C)	Temperature Accuracy($^{\circ}$ C)		Output Voltage(V) (Ta=30 $^{\circ}$ C, Vcc=3V)	Package
				Ta=30 $^{\circ}$ C	Ta=30, 100 $^{\circ}$ C		
BD1020HFV	2.4 to 5.5	4.0	-8.20	\pm 1.0	\pm 2.0	1.300	HVSOF5

Thermostat Type Temperature Sensor IC Series (adjustable detection temperature)

Part No.	Number of products	Detection Temperature($^{\circ}$ C)	Step size ($^{\circ}$ C)	Range of Step($^{\circ}$ C)	Output Type		Supply Voltage(V)	Current Consumption(μ A)	Detection Accuracy($^{\circ}$ C)		Package
					Type	Active			Ta=30 $^{\circ}$ C to +115 $^{\circ}$ C	Ta=-+125 $^{\circ}$ C	
BDE□□0Gseries	-20 $^{\circ}$ C to +125 $^{\circ}$ C 10 $^{\circ}$ C Step ;15Products	-25 to +125	\pm 5	\pm 5	Open Drain	L	2.9 to 5.5	16	\pm 4.0	\pm 5.0	SSOP5
BDF□□0Gseries	-20 $^{\circ}$ C to +120 $^{\circ}$ C 20 $^{\circ}$ C Step ;8Products	-30 to +130	\pm 2.5	\pm 10	Open Drain	L	2.9 to 5.5	16	\pm 4.0	\pm 5.0	SSOP5

*Part No. BDE is detection temperature; (□□□: 920(-20 $^{\circ}$ C), 910(-10 $^{\circ}$ C), 000, 010, 020, 030, 040, 050, 060, 070, 080, 090, 100, 110, 120)

*Part No. BDF is detection temperature; (□□□: 920(-20 $^{\circ}$ C), 000, 020, 040, 060, 080, 100, 120)

Thermostat Type Temperature Sensor IC Series (built in power-down function)

Part No.	Number of products	Detection Temperature($^{\circ}$ C)	Output Type		Supply Voltage(V)	Current Consumption(μ A)	Power-Down		Detection Accuracy($^{\circ}$ C)	Package
			Type	Active			Current Consumption(μ A)	Analog Output		
BDJ□□□1HFV	55 $^{\circ}$ C to 90 $^{\circ}$ C 5 $^{\circ}$ C Step;8Products	55 to 90	Open Drain	H	2.4 to 5.5	7.5	0.3	Invalid	\pm 2.5	HVSOF5
☆BDK□□□1HFV	55 $^{\circ}$ C to 90 $^{\circ}$ C 5 $^{\circ}$ C Step;8Products	55 to 90	Open Drain	H	2.4 to 5.5	1.0	-	-	\pm 2.5	HVSOF5

*Part No. BDJ is detection temperature; (□□□: 055, 060, 065, 070, 075, 080, 085, 090)

*Part No. BDK is detection temperature; (□□□: 055, 060, 065, 070, 075, 080, 085, 090)

Sensor Backend IC Series

IrDA Controller IC Series

Part No.	Supply Voltage(V)		Data Rate(bps)	Clock Frequency(Hz)	Interface	Package
	V _{DD}	V _{IO}				
BU92001KN	2.50 to 3.50	-	2.4k to 115.2k	24M to 30M	UART	VQFN20
New BU92747GUW	1.62 to 1.98	1.62 to 3.60	2.4k to 115.2k 0.576M, 1.152M, 4M	48M	Parallel bus(16bit)	VBG048W040
New BU92747KV	1.62 to 1.98	1.62 to 3.60	2.4k to 115.2k 0.576M, 1.152M, 4M	48M	Parallel bus(16bit)	VQFP48

IC for human body detector sensor

Part No.	Supply Voltage(V)	Drain Voltage(V)	AMP1/AMP2 Gain(dB)	Output Type	Package
☆BD9251FV	2.97 to 6.0	2.3	Max.46	CMOS	SSOP-B14

☆: Under Development

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