

**ICs**

Sensors & MEMS

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Hall ICs

Omnipolar Detection Hall ICs Detects S- or N-pole magnetic fields and turns the output ON (active Low).

Part No.	Supply Voltage (V)	Operate Point (mT)		Hysteresis (mT)	Period (ms)	Supply Current (Avg.) (μA)	Output	Operating Temperature Range (°C)	Package (mm)
		S-pole	N-pole						
BU52011HFV	1.65 to 3.3	+3.0	−3.0	0.9	50	5	CMOS	−40 to +85	HVSOF5
BU52015GUL	1.65 to 3.3	+3.0	−3.0	0.9	50	5	CMOS (2 Outputs : Active L, H)	−40 to +85	VCSP50L1 (1.1 × 1.1)H=0.5
BU52061NVX	1.65 to 3.6	+3.3	−3.3	0.9	50	4	CMOS	−40 to +85	SSON004X1216
BD7411G	4.5 to 5.5	+3.4	−3.4	0.4	—	2.0(mA)	CMOS	−40 to +85	SSOP5
BU52025G	2.4 to 3.6	+3.7	−3.7	0.8	50	8	CMOS	−40 to +85	SSOP5
BU52055GWZ	1.65 to 3.6	+ 4.1	− 4.1	0.8	50	5	CMOS	−40 to +85	UCSP35L1 (0.8 × 0.8)H=0.35
BU52054GWZ	1.65 to 3.6	+ 6.3	− 6.3	0.9	50	5	CMOS	−40 to +85	UCSP35L1 (0.8 × 0.8)H=0.35

Unipolar Detection Hall ICs Detects either N- or S-pole

BU52012HFV	1.65 to 3.3	+3.0	—	0.9	50	3.5	CMOS	−40 to +85	HVSOF5
BU52012NVX	1.65 to 3.6	+3.0	—	0.9	50	3.5	CMOS	−40 to +85	SSON004X1216
BU52002GUL	2.4 to 3.3	+3.7	—	0.8	50	6.5	CMOS	−40 to +85	VCSP50L1 (1.1 × 1.1)H=0.5
BU52013HFV	1.65 to 3.3	—	−3.0	0.9	50	3.5	CMOS	−40 to +85	HVSOF5
BU52003GUL	2.4 to 3.3	—	−3.7	0.8	50	6.5	CMOS	−40 to +85	VCSP50L1 (1.1 × 1.1)H=0.5

Omnipolar Detection Hall ICs with Polarity Discrimination (Polarity detection for both S and N features dual outputs)

Features 2 outputs to discriminate between N- and S-pole detection.

BU52014HFV	1.65 to 3.3	+3.0	−3.0	0.9	50	5	CMOS (2 Outputs : S, N pole)	−40 to +85	HVSOF5
New BU52058GWZ	1.65 to 3.6	+3.0	−3.0	0.9	50	5	CMOS (2 Outputs : S, N pole)	−40 to +85	UCSP35L1 (0.8 × 0.8)H=0.35
BU52004GUL	2.4 to 3.3	+3.7	−3.7	0.8	50	8	CMOS (2 Outputs : S, N pole)	−40 to +85	VCSP50L1 (1.1 × 1.1)H=0.5
New BU52075GWZ	1.65 to 3.6	+9.5	−9.5	0.9	50	5	CMOS (2 Outputs : S, N pole)	−40 to +85	UCSP35L1 (0.8 × 0.8)H=0.35
New BU52077GWZ	1.65 to 3.6	+15	−15	0.9	50	5	CMOS (2 Outputs : S, N pole)	−40 to +85	UCSP35L1 (0.8 × 0.8)H=0.35

Bipolar Latch Hall ICs Detects turn of pole (S→N or N→S)(N-pole→S-pole : Out put High→Low S-pole→N-pole : Out put Low→High)

Part No.	Supply Voltage (V)	Operate Point(mT)		Hysteresis (mT)	Period (ms)	Frequency (kHz)	Supply Current (Avg.) (μA)	Number of sensor	Output	Operating Temperature Range (°C)	Package (mm)
		S-pole	N-pole								
BU52040HFV	1.65 to 3.3	+3.0	−3.0	6	0.5	—	200	1	CMOS	−40 to +85	HVSOF5
BU52742GUL	2.4 to 3.6	+10	−10	20	—	250	7.5(mA)	2	CMOS	−25 to +85	VCSP50L1(6Pin) (1.0 × 1.5)H=0.5

Ambient Light Sensor

Analog Current Output Type Ambient Light Sensor ICs

Part No.	Output Type	Supply Voltage (V)	Sensitivity Variations (%)	Output Sensitivity Gain	Illuminance Measurement Range (lx)	High Sensitivity	IR Cut	Operating Temperature Range (°C)	Package
BH1603FVC	Current(Source)	2.4 to 5.5	± 15	3 step	0 to 100,000	—	—	−40 to +85	WSOF6
BH1620FVC	Current(Source)	2.4 to 5.5	± 15	3 step	0 to 100,000	—	—	−40 to +85	WSOF5
BH1680FVC	Current(Source)	2.4 to 5.5	± 15	3 step	0 to 50,000	✓	✓	−40 to +85	WSOF5

Digital 16bit Serial Output Type Ambient Light Sensor ICs

Part No.	I/F	Supply Voltage (V)	Sensitivity Variations (%)	I/O Voltage (V)	Illuminance Measurement Range (lx)	High Sensitivity	IR Cut	Operating Temperature Range (°C)	Package
BH1715FVC	I ² C	2.4 to 3.6	± 15	1.65 to V _{CC}	0 to 65,000	—	—	−40 to +85	WSOF6
BH1721FVC	I ² C	2.4 to 3.6	± 15	1.65 to V _{CC}	0 to 65,000	—	—	−40 to +85	WSOF5
BH1751FVI	I ² C	2.4 to 3.6	± 20	1.65 to V _{CC}	0 to 65,000	—	✓	−40 to +85	WSOF6I
BH1780GLI	I ² C	2.3 to 3.0	± 20	—	0 to 65,000	—	✓	−40 to +85	WGA04IW02
BH1730FVC	I ² C	2.4 to 3.6	± 15	1.65 to V _{CC}	0 to 65,000 (1/128 lx step)	✓	—	−40 to +70	WSOF6

Color Sensor

Digital 16bit Serial Output Type Color Sensor IC

Part No.	I/F	Supply Voltage (V)	λp (nm)				Illuminance Measurement Range (lx)	High Sensitivity	IR Cut	Operating Temperature Range (°C)	Package
			Red	Green	Blue	Clear					
BH1745NUC	I ² C	2.3 to 3.6	620	540	460	585	0 to 40,000	✓	✓	−40 to +85	WSON008X2120

Pressure Sensor IC

Digital Pressure sensor IC with built-in temperature compensation function

Part No.	Supply Voltage (V)	Pressure Range (hPa)	Relative Pressure Accuracy (hPa)	Absolute Pressure Accuracy (hPa)	Average Current Consumption (μA)	Operating Temperature Range (°C)	I/F	Package (mm)
☆ BM1383GLV	1.71 to 3.6	300 to 1100	±0.12	±1	3.7	−40 to +85	I ² C	CLGA12V025M (2.5 × 2.5)H=0.95

☆ : Under Development

Temperature Sensor

Analog Output Temperature Sensor IC

Part No.	Supply voltage (V)	Supply current (μA)	Temperature sensitivity(mV/°C)	Temperature accuracy (°C)		Output voltage (V) (Ta=30°C, V _{DD} =3V)	Operating Temperature Range (°C)	Package
				Ta=30°C	Ta=−30, 100°C			
BD1020HFV	2.4 to 5.5	4.0	−8.2	±1.5	±2.5	1.3	−30 to +100	HVSOF5

Low Power Thermostat Output Temperature Sensor ICs

Part No.	Detect temperature (°C)	Output type		Supply voltage (V)	Supply current (Operation/Power down) (μA)	Detect temperature accuracy (°C)	Operating Temperature Range (°C)	Package
		Type	Active					
BDJxxx1HFV _{series}	60, 70, 75, 80, 85, 90	Open Drain	H	2.4 to 5.5	7.5/0.3	±2.5	−30 to +100	HVSOF5
BDJxxx0HFV _{series}	55, 60, 65, 70, 80		L					

Low Power Thermostat Output Temperature Sensor ICs : * Detection temperature (xxx : 055, 060, 065, 070, 080) is applied in the BDJxxx0HFV of part No.
Detection temperature (xxx : 060, 070, 075, 080, 085, 090) is applied in the BDJxxx1HFV of part No.

Amplifier for Human Body Detector

Pyroelectric Infrared Sensor Amplifier

Part No.	Supply Voltage (V)	DRAIN Voltage (V)	AMP1/AMP2 Gain (dB)	Output type	Package
BD9251FV	2.97 to 6.00	2.3	Max. 46	Analog / CMOS	SSOP-B14

Capacitive Switch Controller

Capacitive Switch Controller ICs

Part No.	Supply voltage (V)	Cap switch	LED_Driver	LED_PWM control	Matrix control	Interface	MCU	Program memory	Intermittent motion	Package
BU21170MUV	3.0 to 5.5	5ch	5ch	✓	—	I ² C	32 bit	ROM	—	VQFN020V4040
BU21072MUV	3.0 to 5.5	10ch	6ch	✓	4 × 4	I ² C	32 bit	ROM	—	VQFN024V4040
BU21078MUV	3.0 to 5.5	12ch	8ch	✓	6 × 6	I ² C	32 bit	ROM	—	VQFN028V5050
BU21079F	3.0 to 5.5	8ch	—	—	4 × 4	I ² C	32 bit	ROM	✓	SOP16
BU21077MUV	2.7 to 5.5	8ch	—	—	Adjustable	I ² C	32 bit	RAM	✓	VQFN020V4040

Touch Screen Controller

Resistive type

Part No.	Supply voltage (V)	MCU	Resolution	Touch detection	Stand-by current (μA)	Active current (mA)	Host I/F	Operating Temperature Range (°C)	Package (mm)
BU21021GUL	2.7 to 3.6	32bit	4096 × 4096	2 point/Single	60	4.0	I ² C/SPI	−20 to +85	VCSP50L2 2.65 × 2.70, t=0.55
BU21029GUL	1.65 to 3.6	—	4096 × 4096	2 point/Single	100	0.8	I ² C	−20 to +85	VCSP50L2 2.0 × 2.0, t=0.55
BU21029MUV	1.65 to 3.6	—	4096 × 4096	2 point/Single	100	0.8	I ² C	−20 to +85	VQFN020V4040
BU21024FV-M	2.7 to 3.6	8bit	1024 × 1024	2 point/Single	60	4.0	I ² C/SPI	−40 to +85	SSOP-B28
BU21023GUL	2.7 to 3.6	8bit	1024 × 1024	2 point/Single	60	4.0	I ² C/SPI	−20 to +85	VCSP50L2 2.6 × 2.6, t=0.55
BU21023MUV	2.7 to 3.6	8bit	1024 × 1024	2 point/Single	60	4.0	I ² C/SPI	−20 to +85	VQFN028V5050
BU21025GUL	1.65 to 3.6	—	4096 × 4096	Single	0.8	0.12	I ² C	−30 to +85	VCSP50L2 2.0 × 1.5, t=0.55

Touch Screen I/F LSI supporting SPI/I²C

(LAPIS Semiconductor products)

Part No.	Supply voltage (V)	MCU	Resolution	Touch detection	Stand-by current (μA)	Active current (mA)	Host I/F	Operating Temperature Range (°C)	Package (mm)
ML26700CGD	2.7 to 3.6	—	4096 × 4096	Single	30	0.42	I ² C	−40 to +85	WQFN12 3.0 × 3.0, t=0.55
ML26700SGD	2.7 to 3.6	—	4096 × 4096	Single	30	0.56	SPI	−40 to +85	WQFN12 3.0 × 3.0, t=0.55

Accelerometer

(Kionix products)

3-Axis Accelerometer

Part No.	Axis	Full Scale G Range	Interface Output	Current Consumption (μA)	Size, Pins, and Package Type	Features
KX022-1020	3	User-selectable 2g, 4g, 8g	Digital SPI/I ² C	10 to 130	2×2×0.9mm, 12-pin, LGA	Small Footprint, Directional Tap/Double-Tap™, Excellent Temperature Performance, Embedded FIFO/FILO buffer, Digital High-Pass Filter Outputs, User-configurable wake-up function
KX023-1025	3	User-selectable 2g, 4g, 8g	Digital SPI/I ² C	10 to 130	3×3×0.9mm, 16-pin, LGA	Directional Tap/Double-Tap™, Device Orientation Detection, Excellent Temperature Performance, Low Current Consumption, Embedded FIFO/ FILO buffer, Digital High-Pass Filter Outputs, User-configurable wake-up function
☆KX23H-1035	3	User-selectable 2g, 4g, 8g	Digital SPI/I ² C	10 to 135	3×3×0.9mm, 16-pin, LGA	An integrated sensor hub device, combining a high performance, very low power 3-axis accelerometer with a 32 bit ARM cortex microcontroller
☆KX122-1037	3	User-selectable 2g, 4g, 8g	Digital SPI/I ² C	10 to 145	2×2×0.9mm, 12-pin, LGA	2KB FIFO/FILO, Wide range of ODRs from 0.781Hz to 25.6kHz, Directional Tap/Double-Tap™, Free Fall, Orientation Detection
KXCNL-1010	3	User-selectable 2g, 4g, 6g, 8g	Digital (I ² C)	8 to 250	3×3×0.9mm, 16-pin, LGA	Dual User-programmable State Machines, Low Power, Low Noise, Unmatched User Flexibility and Programmability
KXCJA-1019	3	User-selectable 2g, 4g, 8g	Digital (I ² C)	10 to 135	3×3×0.7mm, 10-pin, LGA	High Stability, Low Power, Low Noise, Wakeup Interrupt, Excellent Temperature Performance, Ultra Thin
KXCJK-1013	3	User-selectable 2g, 4g, 8g	Digital (I ² C)	10 to 135	3×3×0.9mm, 16-pin, LGA	High Stability, Wakeup Interrupt, Excellent Temperature Performance, Low Current Consumption
KXTJ2-1009	3	User-selectable 2g, 4g, 8g	Digital (I ² C)	10 to 135	2×2×0.9mm, 12-pin, LGA	High Stability, Low Power, Low Noise, Wakeup Interrupt, Small Footprint
KXCJ9-1008	3	User-selectable 2g, 4g, 8g	Digital (I ² C)	10 to 135	3×3×0.9mm, 10-pin, LGA	High Stability, Low Power, Low Noise, Wakeup Interrupt, Excellent Temperature Performance
KXTC9 series	3	1.5g to 6g	Analog	170 to 310	3×3×0.9mm, 10-pin, LGA	Low Power, Factory Programmable Internal Low Pass Filter
KXR94 series	3	1.0g to 4g	Multiplexed Analog or Digital (SPI)	500 to 1400	5×5×1.2mm, 14-pin, DFN	Excellent Temperature Performance, Low Noise Density
KXRB5 series	3	1.5g to 6g	Multiplexed Analog or Digital (SPI)	300 to 700	3×5×0.9mm, 14-pin, LGA	Auxiliary Input to Multiplexer or ADC, Low Noise Density
KXD94 series	3	5g to 15g	Multiplexed Analog	700 to 1500	5×5×1.2mm, 14-pin, DFN	Internal 1kHz Filter or User-definable Bandwidth, Mid-range acceleration measurements

☆ : Under Development

6-Axis Combo Sensor

(Kionix products)

6-Axis Accelerometer/Magnetometer

Part No.	Axis	Accelerometer G-Range	Interface (Output)	Current (μA)	Magnetometer Range	Angular Velocity Range	Operating temperature Range (°C)	Size, Pins, and Package Type	Features
KMX61-1021	6	2g, 4g, 8g	Digital (I ² C)	10 to 450	± 1200 μT	N/A	− 40 to + 85	3×3×0.9mm, 16-pin, LGA	E-compass Solution
KMX61G-1030	6	2g, 4g, 8g	Digital (I ² C)	10 to 450	± 1200 μT	2000 DPS Max.	− 40 to + 85	3×3×0.9mm, 16-pin, LGA	9 Axis Solution with Magnetic Gyro
☆KMX62-1031	6	User-selectable 2g, 4g, 8g, 16g	Digital (I ² C)	10 to 395	± 1200 μT	N/A	− 40 to + 85	3×3×0.9mm, 16-pin, LGA	E-compass Solution, Magnetic field change, Freefall Communications down to 1.2V
☆KMX62G-1033	6	User-selectable 2g, 4g, 8g, 16g	Digital (I ² C)	10 to 395	± 1200 μT	2000 DPS Max.	− 40 to + 85	3×3×0.9mm, 16-pin, LGA	9 Axis Solution with Magnetic Gyro

☆ : Under Development

Infrared Image Sensor

(LAPIS Semiconductor products)

Infrared (IR) sensor

Part No.	Feature	Pixel	Measurement Range (°C)	Temperature precision (°C)	Output Type	Read Speed	Supply Voltage (V)	Operating temperature Range (°C)	Package
ML8540WD	2K pixels thermopile type IR image sensor	48row × 47column 2256 pixels	− 30 to 300 (Variable)	0.5	Analog	6FPS	4.5 to 5.5	− 30 to + 85	Wafer
☆ML8540	2K pixels thermopile type IR image sensor PKG	48row × 47column 2256 pixels	− 30 to 300 (Variable)	0.5	Analog	6FPS	4.5 to 5.5	− 30 to + 85	C-QFN24

☆ : Under Development

Ultraviolet Sensor

(LAPIS Semiconductor products)

Ultraviolet (UV) sensor

Part No.	Feature	Maximum Sensitive Wave (nm)	Length Sensitive Range	Supply Voltage (V)	Output Type	Current Consumption (Operation) (μA)	Current Consumption (Stand-by) (μA)	Operating temperature Range (°C)	Package
ML8511-00FC	UV sensor with built-in amplifier	365	UV-A and B	2.7 to 3.6	Analog	300	0.1	− 20 to + 70	C-TQFB12
☆ML8511-00NA	UV sensor with built-in amplifier CSP small package	365	UV-A and B	2.7 to 3.6	Analog	300	0.1	− 20 to + 70	S-WFBGA6

☆ : Under Development