

Featured Products

Electronics for the Future

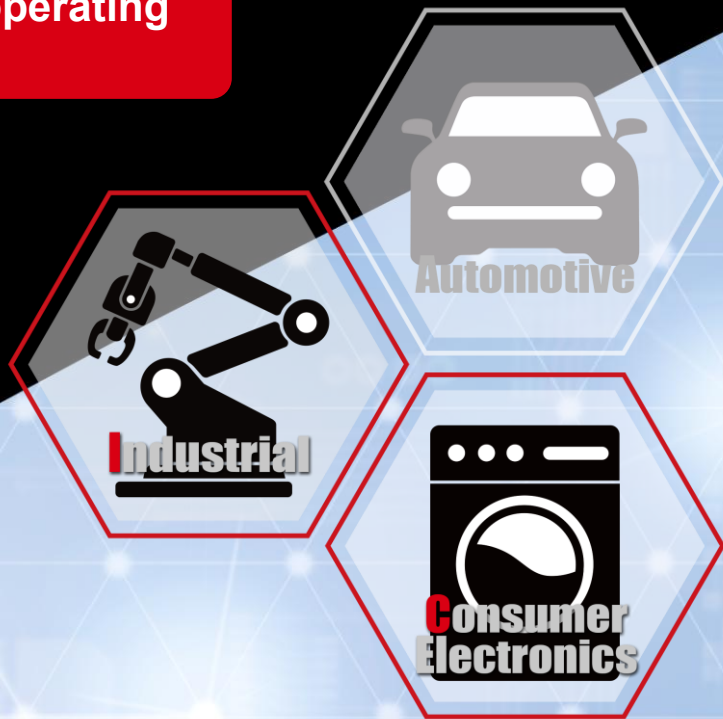


Ideal for miniaturizing wearables and extending operating time in battery-powered equipment

Ultra-Compact WLCSP*
Ultra-Low Current (160nA)
High Accuracy Op Amp

*Wafer Level Chip Size Package

TLR1901GXZ



The TLR1901GXZ is a WLCSP* Op Amp that achieves maximum space savings in sets requiring greater miniaturization. In addition, ultra-low current operation makes it ideal for sensing applications in compact battery-powered devices.

*Wafer Level Chip Size Package

Features

- **Extremely low current operation extends runtime in battery-powered devices**

Nano Energy™ technology provides unmatched low operating current: 160nA (Typ) at 3.0V supply voltage

- **Ultra-compact WLCSP contributes to device miniaturization**

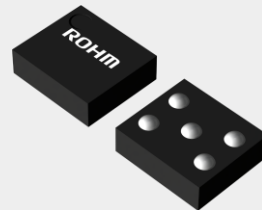
Achieves breakthrough space savings with external dimensions of just $0.91 \times 0.80 \times 0.33$ (Max) mm

- **Excellent input offset voltage characteristics simplify compensation design**

Guarantees a Max input offset voltage and temperature drift of 0.55mV and $7.0\mu\text{V}/^\circ\text{C}$, respectively, while achieving ultra-low current consumption



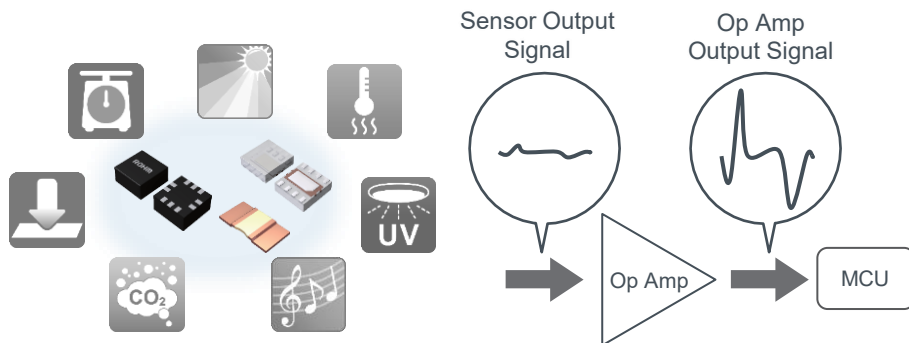
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XCSP30L1
 $0.91 \times 0.80 \times 3.5\text{mm}$ (Max)

Mechanism and Characteristics Required for Low Current Operation

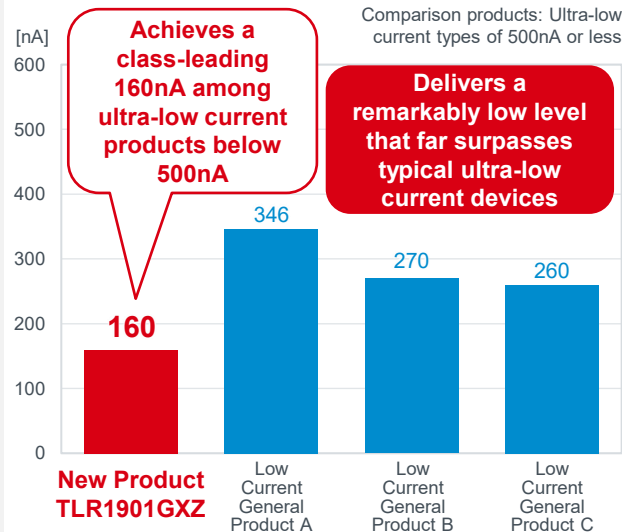
The Role of Op Amps in Sensing Applications



Light • Temperature • Pressure •
Acceleration Sensors

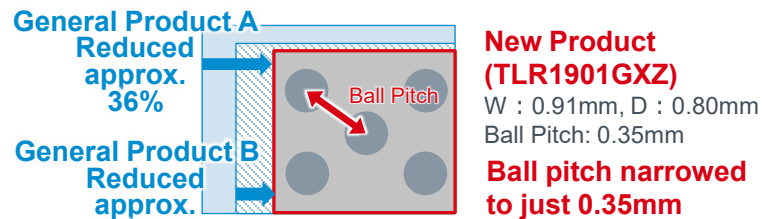
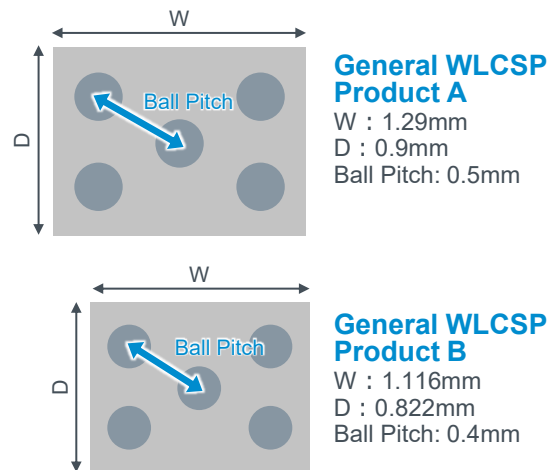
**Commonly used in battery-powered and always-on
applications requiring low current consumption**

Operating Current Comparison



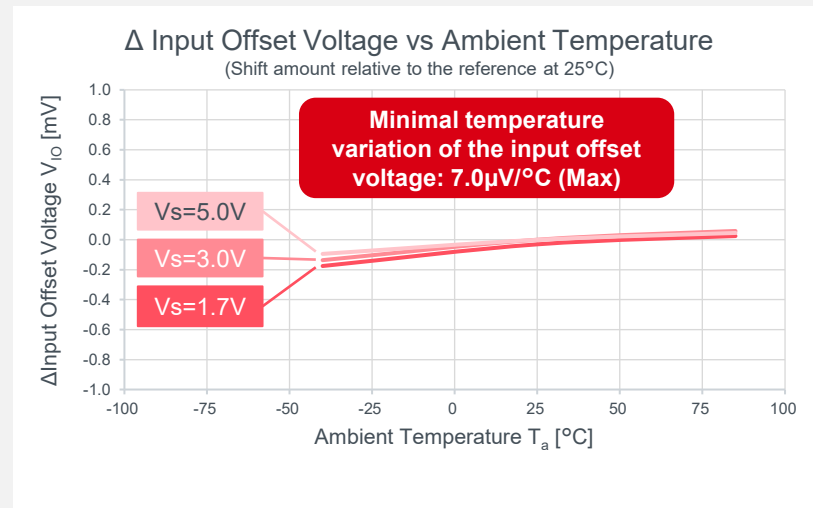
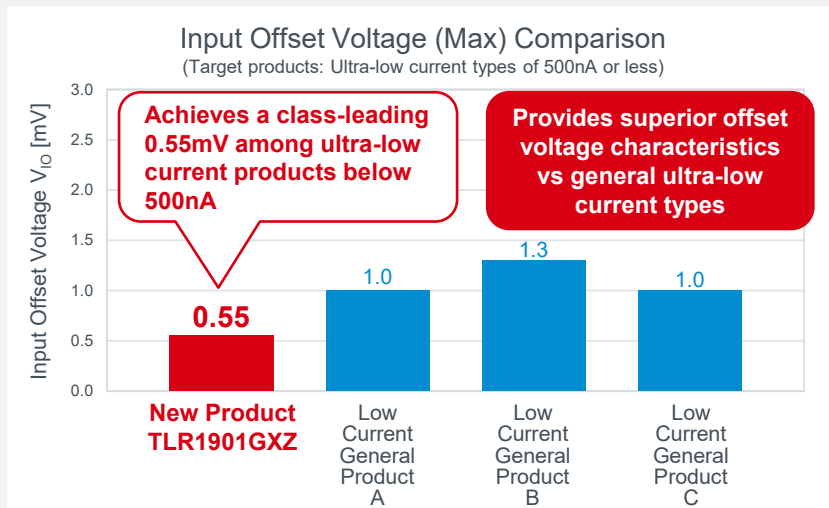
Low Op Amp current extends the operating time of sensing devices

Size Comparison vs General WLCSP Products



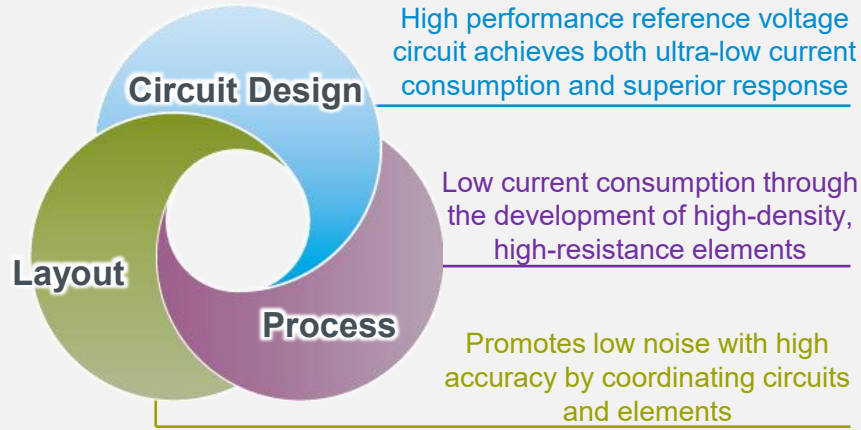
Achieves unprecedented space savings

Excellent Input Offset Voltage Characteristics Facilitate Compensation Design



Excellent input offset voltage characteristics streamline compensation design, even with ultra-low current products

Nano Energy™ Technology Overview



Nano Energy™ refers to ultra-low current consumption technology achieved by combining analog circuit design, layout, and processes leveraging ROHM's vertically integrated production system. The TLR1901GXZ utilizes a newly developed reference current source based on this technology to achieve an operating current of just 160nA by thoroughly suppressing current increase due to temperature.

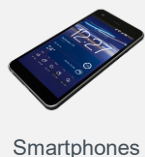
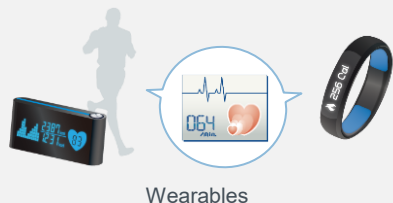
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Ultra-Compact WLCSP Op Amp Specifications

Part No.	Features	ch	Supply Voltage [V]	Circuit Current (Typ)	Shutdown Circuit Current (Max) (μA)	Input Offset Voltage (Max)[mV]	Input Offset Voltage Temperature Drift (Max)[μV/°C]	Input Equivalent Noise Voltage Density (Typ)[nV/√Hz]	Operating Temperature [°C]	Package [mm]	Automotive-Grade AEC-Q100
New TLR1901GXZ  	Ultra-compact ultra-low current WLCSP	1	1.7 to 5.5	160nA	—	0.55	7.0	—	-40 to +85	XCSP30L1 (5Pin) 0.91×0.80×0.33	—
LMR1901YG-M  	Ultra-low current	1	1.7 to 5.5	160nA	—	0.55	7.0	740	-40 to +105	SSOP5 2.90×2.80×1.25	Grade 2
TLR377GYZ  	Ultra-compact WLCSP	1	1.8 to 5.5	585μA	1.5	1	6.0	12	-20 to +85	YCSP30L1 (6Pin) 0.88×0.58×0.33	—

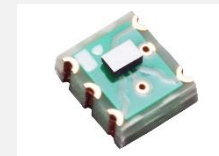
Click on the  icon to access the product page and the  icon to view the datasheet on ROHM's website.

Application Examples



Optimized for sensing applications in battery-powered devices

IC-Mounted Evaluation Board (Conversion Board for SSOP5)



TLR1901GXZ-EVK-001

Available from
ROHM's Official Website

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