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endrich NEWS

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GERMANY – YOUR DIGITALIZATION

While many companies are already working in a connected and automated way, there are still major problems in many areas. The old saying, "From the cradle to the grave – forms, forms, forms," still holds true today. In schools, public offices, the healthcare system, and many other sectors, expectations and reality often collide. Yet, there are countless opportunities that need to be seized now – and huge amounts of money that could be saved in public administration, industry, and also by citizens. The key question is: How can digitalization be achieved responsibly? The will is there – but the road is often bumpy. The federal government has set ambitious goals. By 2030, Germany aims to be "digitally sovereign, innovative, and sustainable." Programs such as the Digital Pact for Schools, the KITA-Bit Strategy, or the Online Access Act, to name just a few, are intended to drive the digital transformation forward. Unfortunately, many of these projects have been delayed for years. According to the Federal Court of Auditors, only a small fraction of the over 600 planned digital public services are currently available nationwide. Our federal system doesn't help either – 16 federal states, 16 different administrations! Compared internationally, Germany is falling further behind, with many good intentions and ideas still waiting to be implemented. Trust, data protection, and digital ethics – due to technological lag, these remain top priorities on the agenda. In Germany, data protection, digital self-determination, and ethical standards are highly valued. And rightly so – in an age of AI, facial recognition, and algorithmic decisions, our democracy could be at risk. But this focus often leads to a paradox: fear of risks ends up blocking opportunities. Instead of shaping solutions, people tend to wait and hesitate. Responsible digitalization does not mean blocking progress – it means actively shaping it: transparently, fairly, data-efficiently, but also boldly and with a spirit of innovation. We don't just need fewer rules, but smarter frameworks that enable development while still offering protection. What's often lacking is not the technology, but trust – in our systems, in politics, and especially in our own capabilities. Many medium-sized companies, cities, and initiatives are already showing how digitalization can succeed without issues – with clear goals, open structures, and practical implementation. The goal should also be: a citizen has just one identification number – one that works for the tax office, the health insurance provider, and so on. Digitalization with responsibility also means bringing people along for the journey – the elderly just as much as the youth, tech enthusiasts as well as skeptics. This also means promoting digital skills from early on in schools, not just talking about them.

Conclusion: From talking to doing. We now have a new government, and Germany is at a turning point in its digital journey. The foundations are laid, and awareness of responsibility is there. Now it's time to consistently shape the transformation – with openness, a willingness to accept criticism, and a commitment to using technology for the good of society. And above all: bringing along the skeptics and those stuck in the past – with openness, critical thinking, and the will to use technology for the benefit of all. Because digitalization with responsibility is not an obstacle – it's the future for our younger generations.

NON-DISPERSIVE INFRARED CO_2 SENSORS

For indoor air quality and many industrial processes

Demand-Controlled Ventilation (DCV) is a feedback-based control method for maintaining indoor air quality, which automatically adjusts a room's ventilation rate in response to changing conditions such as the number of occupants or the concentration of indoor pollutants. The most commonly monitored pollutants in DCV systems are carbon dioxide and humidity.

Sensors for these substances can be manufactured using cost-effective microelectromechanical systems (MEMS) based on metal oxide semiconductor (MOS) technology. The measured value they produce is referred to as estimated CO_2 (eCO_2) or CO_2 equivalent (CO_2eq). Although the values tend to be accurate enough in the long term, the introduction of non-breathing sources — such as cutting fruit or using dyes — significantly degrades their reliability. A carbon dioxide sensor or CO_2 sensor is an instrument for measuring carbon dioxide gas. The most common principles used in CO_2 sensors are infrared gas sensors (NDIR), photoacoustic sensors, and chemical gas sensors. NDIR sensors are spectroscopic sensors used to detect CO_2 in a gaseous environment by its characteristic absorption. The main components are an infrared source, a light tube, an interference filter (wavelength filter), and an infrared detector.

The ENS190 is a high-performance non-dispersive infrared (NDIR) CO_2 sensor for precise and reliable carbon dioxide measurement. At the heart of the ENS190 is its patented M-shaped gas chamber with a long optical path — a uniquely designed structure that maximizes the effective beam path in a compact air cavity. This innovation, combined with a proprietary fully automatic high-precision calibration system, ensures exceptional accuracy, consistency, and a wide measurement range. With its advanced sensor features and robust design, the ENS190 offers a solution for applications requiring high-precision CO_2 monitoring. It complies with major regulatory standards such as WELL, RESET, California Title 24, and the latest ANSI/ASHRAE Addendum to Standard 62.1-2022.

APPLICATIONS

Modified atmospheres / Indoor air quality / Basements and gas storage Hidden passenger detection / Heating, ventilation, and air conditioning (HVAC) Marine vessels / Greenhouses / Landfill gas / Aerospace Healthcare / Horticulture / Cryogenic engineering / Ventilation management Mining / Indoor human occupancy detection Rebreather SCUBA systems / Decaffeination

FEATURES

- Accuracy: ± (30ppm + 3% of measured value)
- Measurement range: 400 – 10,000ppm CO_2
- Alarm output
- Communication interfaces: UART, PWM, RS485, and Modbus
- Lifetime: >15 years
- Supply voltage: 4.5V to 5.5V
- Average current consumption: < 15mA
- Dimensions: 33 × 20 × 9.6mm³

ScioSense

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IEWS

MACHINE LEARNING

All-in-one wireless sensor module for your IoT applications

SmartBug 2.0 is a smart remote data-collection module for IoT, developed after the success of the original SmartBug. A key attribute of the SmartBug 2.0 is the replacement of the ICM-42688-P IMU with ICM-45686-S, the latest BalancedGyro™ IMU and the world's lowest power IMU (220 µA @ 50 Hz 6-Axis) from TDK.

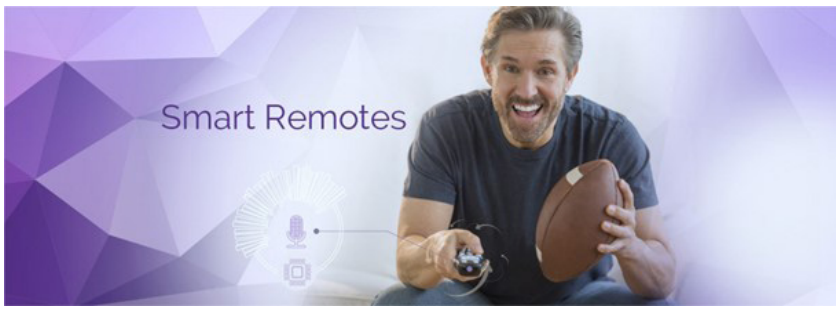
BalancedGyro™ technology enables developers to collect high quality IMU data for a longer period of time, due to the 3x battery life. The new IMU also provides premium temperature stability and vibration rejection, making SmartBug 2.0 useful for products such as AR glasses, VR, OIS, drones, MR, TWS, and robotics for prototyping, data collection, and machine learning-based algorithm development.

Key Hardware Components

- ICM-45686-S 6-Axis Motion Sensor
- Barometric Pressure Sensor ENS220
- CH101 Ultrasonic Time-Of-Flight Range Sensor
- High Precision Tri-axis Magnetic Sensor
- Digital Humidity and Temperature Sensor ENS21x
- Advanced Bluetooth 5 SOC with ARM® Cortex™-M4 CPU
- 32-bit MCU & 2.4 GHz Wi-Fi

APPLICATIONS

- Hearables: Stick SmartBug to headphones for easy collection of head position tracking data that can be used for Spatial Audio algorithm development. No need to wait for new hardware development.
- Wearables: Enable easy activity classification by collecting activity data wirelessly and using sensor inference frameworks to build machine learning solution and test these ML model in real use-case.
- Smart Home: Collect smart sensor data from smart home applications such as smart door lock, smart window lock, or HVAC filter
- Appliances Stick the SmartBug on home appliances such as robotic vacuum cleaners or smart washing machines and start getting smart appliance data.



TDK

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SMALL, SILENT, DIAGNOSABLE

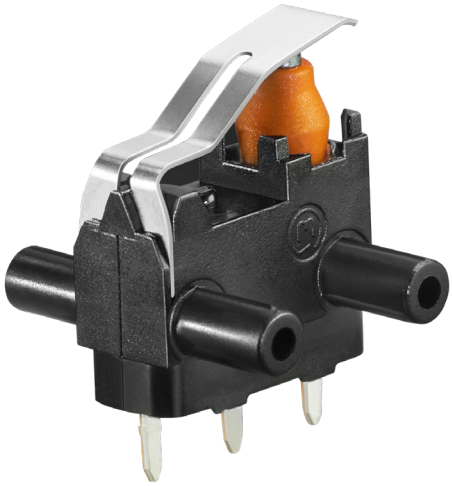
Micro signal switch 1065 for various applications

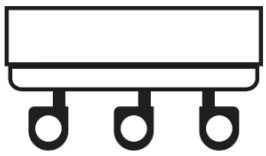
ADVANTAGES

Silent Operation:
Sliding contact system ensures quiet switching for acoustically sensitive environments.
Durability:
Over 200,000 switching cycles for reliable long-term performance.
Diagnostics:
Detects switch presence, short circuit, and cable break.
Cost and Space Efficiency:
Center-off switch cuts costs by 50% and saves space.
Redundant Contact System:
Two sliding contacts ensure reliable operation.

USE CASES

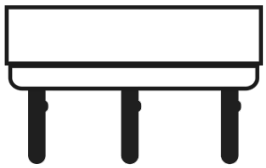
Automotive | Truck | Household Appliances | Power Tools:
Different locking systems and mechanical queries
Industrial Monitoring:
Real-time switch presence detection
Acoustically Sensitive Systems:
Silent operation
Space-Constrained Systems:
Compact design for applications with limited space





Solder terminal

Cable connector



PCB terminal

KEY FEATURES

Specifications:
- Switching Current: 1 mA to 100 mA
- Switching Voltage: 5 V to 30 V
- Contact Resistance: 500 mΩ (new), <1Ω (end of life)
- Operating Temperature: -40°C to + 85°C

Sealing and Protection:
- IP67 -rated for demanding environments
- Compact Design: Modular housing and pin variants: left, right, both, various lengths
- External Levers:
  Options include differential, simuluated roller and two different types of straight levers

MARQUARDT

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EWS

ZVU-SERIES

Setting new standards for hybrid capacitors in automotive and industrial electronics

With the introduction of the new ZVU series, Panasonic expands its range of hybrid aluminum electrolytic capacitors, setting new benchmarks in reliability, ripple current capability, miniaturization and thermal stability.

Key Technology Highlights of ZVU Series

- Operating temperature: up to 125 °C
- Lifetime: 4,000 hours at 125°C
- Compact case sizes: from Ø8 × 10 mm to Ø10 × 10 mm
- Highest ripple current capability in its class
- High vibration resistance: up to 30 G

Thanks to their excellent electrical and thermal characteristics, ZVU capacitors are also ideally suited for redesigning existing solutions.

Compact and powerful – a direct comparison

A conventional 500 µF / 35 V electrolytic capacitor (Ø18 × 21.5 mm), with six units on a board, can be replaced by just three ZVU hybrid capacitors, each rated at 470µF / 35V and sized Ø10 × 12.5 mm. This results in a space saving of up to 83 % while maintaining comparable performance.

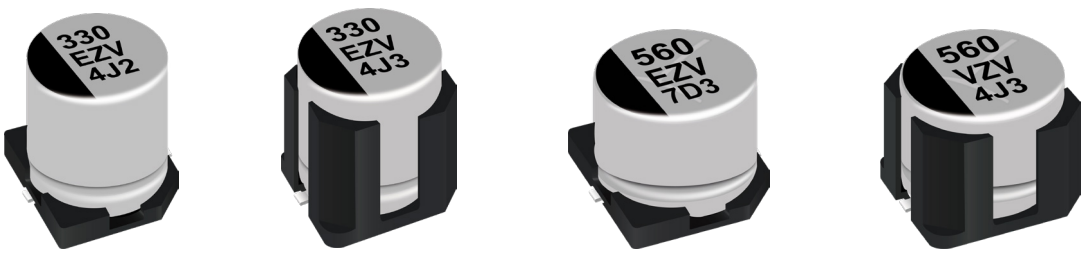
Designed for demanding applications

The ZVU series is specifically engineered for high-stress automotive and industrial environments, such as:

- Automotive: EPS, E-brake, 48V-ISG, LED headlamps, ECUs, ADAS
- Industrial & Communication: Base stations, servers, routers, solar power systems, cooling fans
- Power applications: Inverters, DC/DC converters

A technological milestone in hybrid capacitor development

The ZVU series represents more than just an incremental product improvement. It combines a compact design with high reliability, excellent thermal stability, and consistent performance under harsh operating conditions. This makes it the first choice for engineers looking to modernize existing designs or create new, space-saving solutions that meet the highest demands.



Panasonic

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WIRELESS CELLULAR CONNECTIVITY REDEFINED

C17QS: LTE Cat 1bis Module

LTE Cat 1bis is a Low Power Wide Area (LPWA) option for IoT applications, alongside SigFox, LoRaWAN, NB-IoT, and LTE-M. These cellular standards were specified in 2016 by 3GPP (Rel 13). LTE Cat 1bis uses a single Rx antenna, making it simpler and cheaper than the older LTE Cat 1, which used two antennas for better reception but higher hardware costs.

Why choose Cat 1bis instead of NB-IoT or LTE-M? Global network availability. NB-IoT dominates in China, LTE-M dominates in North America. Europe went for NB-IoT but supports is added now for LTE-M. LTE Cat 1bis was a bit neglected in the beginning, but this situation has led IoT developers and MNOs to search for cost-effective alternatives and thus guarantee LPWA worldwide connectivity, mobility, and roaming for the IoT ecosystem.

What to consider when choosing LTE Cat 1bis as an option?

Data Transmission and Battery Impact

- 20 MHz bandwidth (vs. 1.4 MHz for LTE-M) allows faster data transmission.
- Better power efficiency for low data rate applications like video surveillance, alarm systems with video, and eHealth.

Network Coverage and Availability

- Available wherever there is a 4G LTE network.
- Ideal for applications requiring global portability and roaming.

Service Lifespan

- No sunset plans for LTE Cat 1bis or LTE-M.
- Expected to remain viable into the late 2030s.

Link Budget

- The MCL (Maximum Coupling Loss)of LTE Cat 1bis is 8-9 dBm worse than LTE-M.
- LTE-M offers better connectivity in challenging signal conditions, though its lower cell density partially offsets this advantage.

Device Size

- Simplified antenna and shorter parts list make LTE Cat 1bis more affordable and smaller than the original LTE Cat 1

Technical Data	
Cellular Bands	B1/B2/B3/B4/B5/B7/B8/B12/B13/ B14/B18/B19/B20/B25/B26/B28/ B34/B38 TDD/B39/B40 TDD/ B41 TDD/B66/B71
OS	Free RTOS
Supported Location Services	GPS, GLONASS, Galileo, NavIC, BDS, QZSS, and SBAS Capable
Download Speed	10Mbps
Uplink Speed	5Mbps
Packaging	LGA 26.5 x 22.5 x 2.3 mm
Interfaces *Optional feature **Requires SDK	UART x4, USB 2.0 x1, USIM x1, SWD x1, Network Status Indicator x1, Power ON Status Indicator x1, ADC** x2, I2S** x1, I2C** x2, SPI** x1, GPIO** x8, Main ANT x1, GNSS ANT 1 x1

CAVLI wireless

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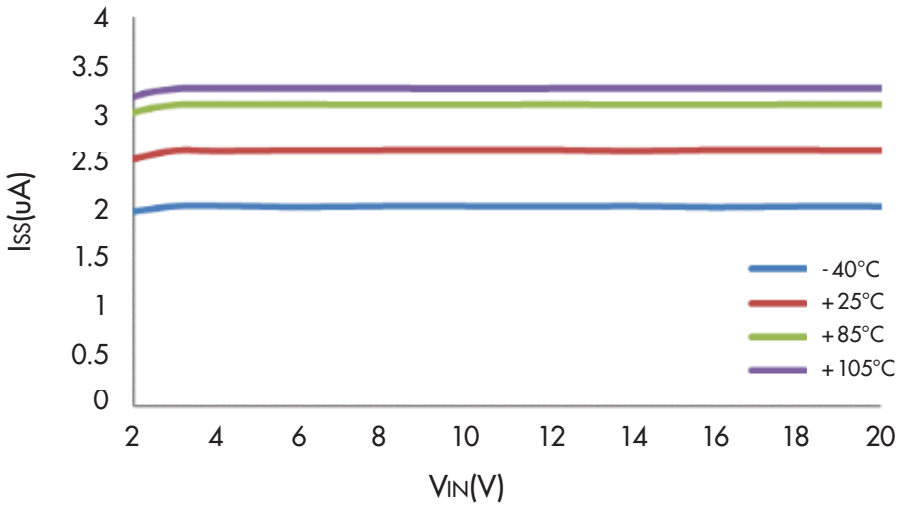
EWS

HT78RXX 500MA TINY POWER LOW DROPOUT VOLTAGE REGULATOR

Featuring ultra-low quiescent current of 3 µA (typ.), a wide input voltage range of up to 20 V and fixed output voltages ranging from 1.5 V to 5.0 V, the HT78Rxx series is ideal for energy-efficient industrial and battery-powered applications.

Quiescent Current vs Input Voltage



With a typical dropout voltage of only 60 mV at 500 mA and ±2 % output accuracy, the HT78Rxx series ensures stable, clean power even under fast load transients. Built-in current limiting and thermal shutdown provide robust protection in demanding environments.

The HT78Rxx is available in compact SOT23-5 and SOT89-3 packages and is optimized for low-power designs in remote sensors, metering, portable instruments and IoT edge devices, where space and efficiency are critical.

APPLICATIONS

- IoT sensor hubs & edge devices
- Industrial meters and data loggers (smart metering)
- Portable measuring and testing devices
- Backup supply for RTC/MCU

FEATURES

- Low dropout voltage: Only 60 mV typ. at 500 mA (VOUT = 5 V)
- Output voltages: 1.5 V to 5.0 V (fixed)
- High accuracy: 2% output voltage
- Integrated protection functions: Overcurrent and overtemperature protection
- <10 % transient deviation

HOLTEK

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ADP600B12TFNF 1200 V IGBT POWER MODULE

Actron Technology is expanding our portfolio of high-performance power modules for high-current applications with, at example the ADP600B12TFNF. Based on 1200 V IGBT, the module has been specially developed for use in electrified vehicles, industrial drives and uninterruptible power supplies, and meets the highest standards of efficiency, robustness, and thermal management.

The ADP600B12TFNF power module is ideal for use in electric vehicles (xEVs), agricultural vehicles, all-terrain vehicles, drive control systems and uninterruptible power supplies (UPS).

With a continuous current of 600 A and peak currents of up to 1200 A, it is based on a 1200 V IGBT and enables efficient high-current applications thanks to its low saturation voltage (1.75 V – 2.15 V), low gate charge (8.23 µC) and fast reverse recovery.

APPLICATIONS

- Automotive applications
- Electrical vehicles (xEV)
- Commercial agriculture vehicles
- Motor / Servo / UPS Drives

FEATURES

- Low QG
- Low VCE,sat
- Ti,op = 150°C
- Low inductance design
- Blocking voltage 1200 V
- Fast and soft reverse recovery

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