

11/2024

endrich NEWS

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SUCCESSFUL PERFORMANCE BY ENDRICH AT ELECTRONICA

Endrich looks back on a successful participation at Electronica in Munich.

Our booth attracted numerous visitors and provided the perfect platform to showcase our latest innovations in areas such as IoT, energy efficiency, and automation.

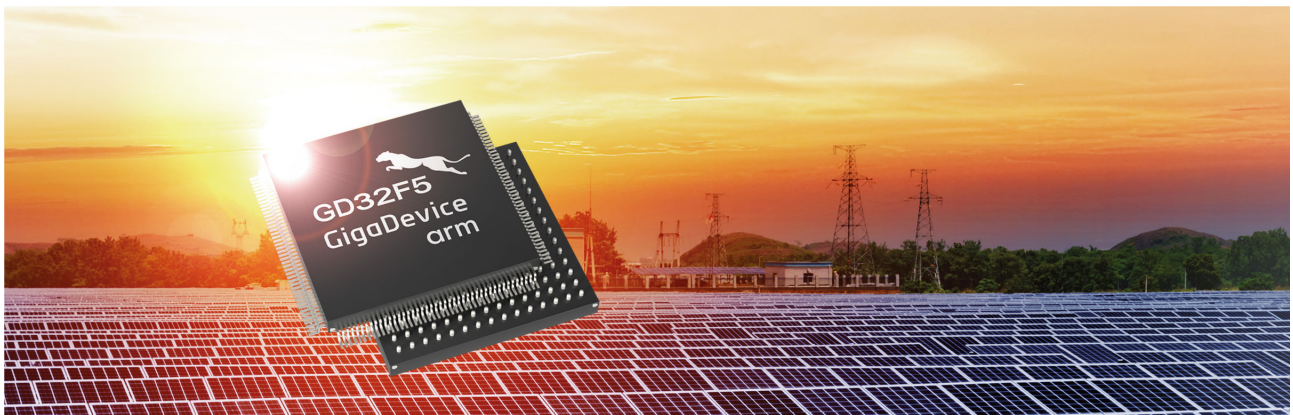
We were pleased with many engaging discussions, valuable new contacts, and the strengthening of existing partnerships. The trade fair once again demonstrated how important personal exchanges and innovative solutions are for the future of our industry.

A big thank you to all visitors, partners, and our team – we look forward to the upcoming projects!

Here is an overview of the products exhibited at Electronica 2024:



GD32F5 SERIES CORTEX®-M33 CORE HIGH PERFORMANCE MCU



The GD32F5 series high-performance MCUs offer significantly expanded storage space, excellent processing efficiency and a wide array of interface options. Compliant with the system-level IEC61508 SIL2 functional safety standard, they provide a comprehensive software and hardware security solution to meet the industrial market's demands for high reliability and security applications. The product is fully adapted for applications in energy and power management, photovoltaic energy storage, industrial automation, Programmable Logic Controllers (PLC), network communication devices, and graphic displays.

HIGH PERFORMANCE

- Arm® Cortex® - M33 200MHz
- Up to 7.5MB Flash, including 2MB Code-Flash; 1088KB SRAM
- Hardware DSP, Single Precision FPU

MULTI-PERIPHERAL

- Integrated 2xCAN-FD, 1xUSB FS+HS, 1xEthernet
- Up to 8xU(S)ART/LIN, 6xI2C, 6xSPI, 2xI2S
- 3x12bit ADC, 2x12bit DAC, Multi 32/16-bit Timers

SECURITY & FUNCTIONAL SAFETY

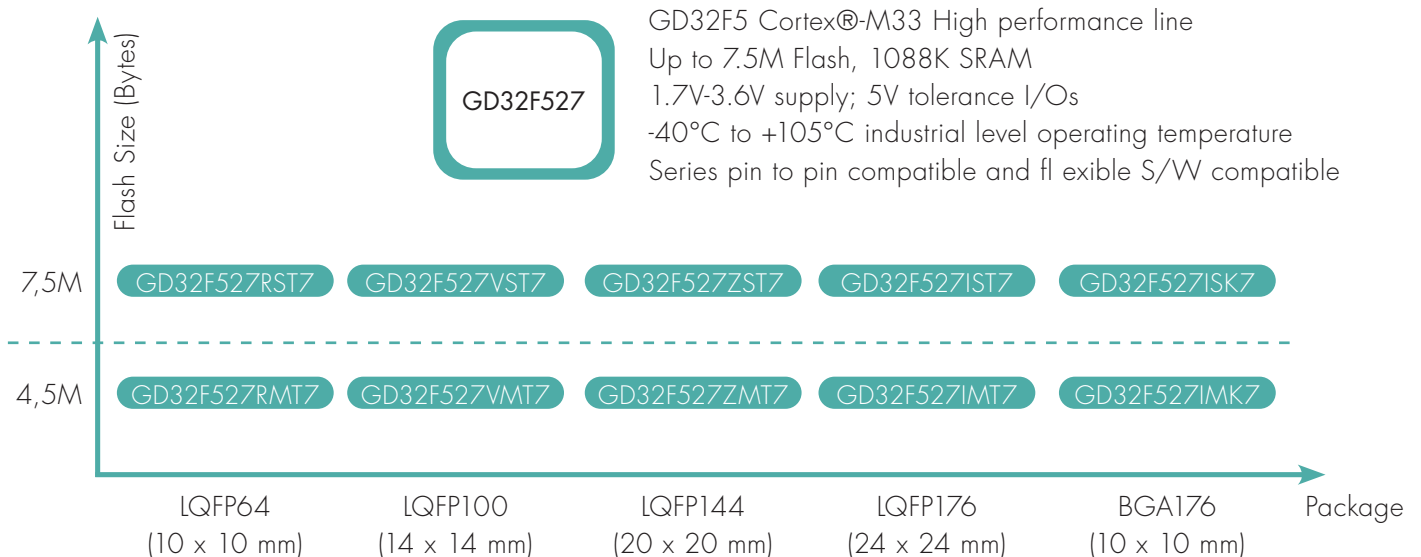
- Support IEC61508 SIL2 Certification
- Support a maximum of 2MB for Read-While-Write (RWW) OTA upgrade
- Flash/RAM with ECC
- Cryptographic Acceleration Unit: AES, DES, TDES

HMI (HUMAN MACHINE INTERFACE) ENHANCEMENT

- TFT LCD Driver with graphic accelerator
- SAI (Serial Audio Interface)
- DCI (Digital Camera Interface)

NEWS

GD32F5 MCU PORTFOLIO



DEVELOPMENT TOOLS GD32F5 MCU PORTFOLIO

Development Boards	Ordering Part Number	MCU Part Numbers
Evaluation Boards	GD32F527I-EVAL	GD32F527IST7
Starter Kit	GD32F527Z-START	GD32F527ZST7
Starter Kit	GD32F527V-START	GD32F527VST7
Starter Kit	GD32F527R-START	GD32F527RST7

The full-featured evaluation board is based on the LQFP176 package and supports complete functional demonstration, development and debugging. The entry-level learning kit corresponds to various packages and pins, which is convenient for function evaluation, development and debugging.

AUTOMOTIVE GAS SENSOR SOLUTIONS FOR SAFETY AND ENVIRONMENTAL MONITORING

In recent years, lithium-ion batteries and thermal runaway have attracted a lot of attention. The main causes of thermal runaway are overheating and mechanical penetration.

To further reduce the loss of life and property caused by thermal runaway of lithium-ion batteries, some important regulations have been issued. UN GTR 20 (United Nations Global Technical Regulation): 'The vehicle shall give an advance warning indication to allow disembarkation or 5 minutes before the occurrence of a hazardous situation in the passenger compartment caused by thermal runaway.'

In order to fulfil the requirements of the above-mentioned regulations for a 'thermal runaway warning within five minutes', the safety status of batteries must be monitored in time manner. Current research shows that for earlier detection of thermal runaway of lithium-ion batteries, it is more effective and faster to monitor gas concentration than to monitor battery voltage, smoke detector, absolute

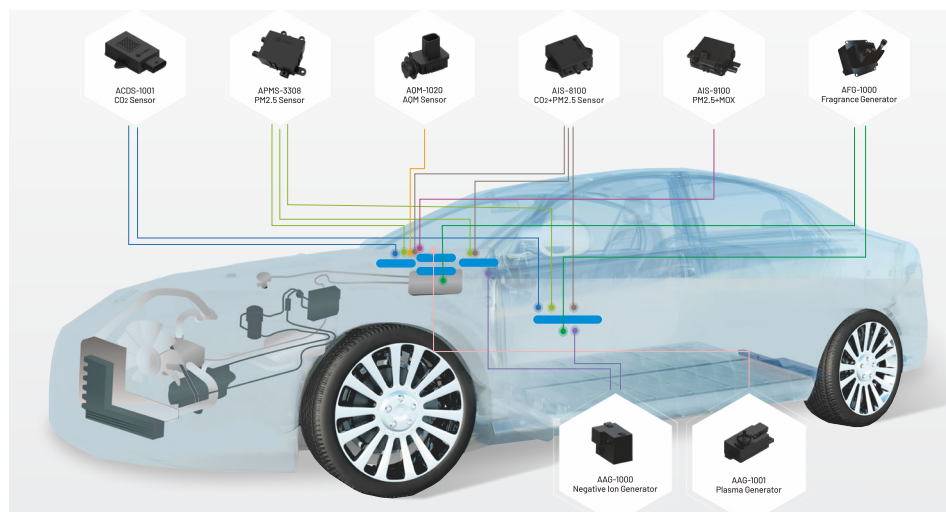
pressure, force (piezoresistive) or temperature (surface). This is because lithium-ion batteries release large amounts of gases such as CO₂, CO, HC and H₂ before thermal runaway is triggered and the gas concentration is significantly increased. By monitoring the concentration of these gases, it is possible to detect the thermal runaway of lithium-ion batteries even earlier.

The majority of the total gas released during thermal runaway is CO₂ and H₂.

Cubic automotive gas sensor solutions include Li-battery sensors (ATRS series) for thermal runaway (aerosol sensor, CO₂ + CO+/H₂ + PM2.5 + temperature + pressure), refrigerant leakage monitoring sensors (ARS series R290, C₃H₈ and R744 CO₂) and exhaust gas sensors (oxygen, nitrogen oxides Nox, PN, NO, NO₂, NH₃, SO₂).

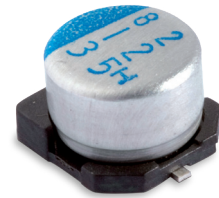
For air conditioning systems that use the refrigerant R290 or R744, the sensor monitors the gas leakage in real time and issues alarms in good time.

Oxygen sensors for petrol vehicles and NOx sensors for diesel vehicles detect the O₂ or NOx concentration in the exhaust gas in order to achieve the best performance of the three-way catalytic converter.



NEWS

HYBRID CAPACITOR WITH COST SAVING EFFECT



Hybrid capacitors combine the advantages from both technologies, aluminium electrolytic capacitors (e-cap) and aluminium electrolytic capacitors with hybrid conductive polymer (EP-cap), in one component.

The new SunCon FVCL (SMD) and FECL (THT) series were developed specifically to meet the technical and commercial (low cost) requirements from non-automotive applications. On the Roadmap for 2025 are versions with 16Vdc/50Vdc/63Vdc and sizes 10x13.8mm.

FVCL (SMD)

VOLTAGE		6.3			10		
items	Case size DxL (mm)	ESR (mΩmax.) (20°C/100kHz)	Rated ripple current (mArms/100kHz)	Case size DxL (mm)	ESR (mΩmax.) (20°C/100kHz)	Rated ripple current (mArms/100kHz)	
μF							
820				8x10.5	18	3600	
1200	8x10.5	18	3600				
1500				10x10.5	16	3900	
1800				10x12.5	14	4300	
2200	10x10.5	16	3900	10x13.8	12	4700	
2700	10x12.5	14	4300	10x16.5	10	5100	
3300	10x13.8	12	4700				
3900	10x16.5	10	5100				

VOLTAGE		25			36		
items	Case size DxL (mm)	ESR (mΩmax.) (20°C/100kHz)	Rated ripple current (mArms/100kHz)	Case size DxL (mm)	ESR (mΩmax.) (20°C/100kHz)	Rated ripple current (mArms/100kHz)	
μF							
220				8x10.5	27	2800	
390	8x10.5	27	2800	10x10.5	20	3200	
470				10x12.5	16	3700	
680	10x10.5	20	3200				
820	10x12.5	16	3700				
1000							
1200							

FEATURES

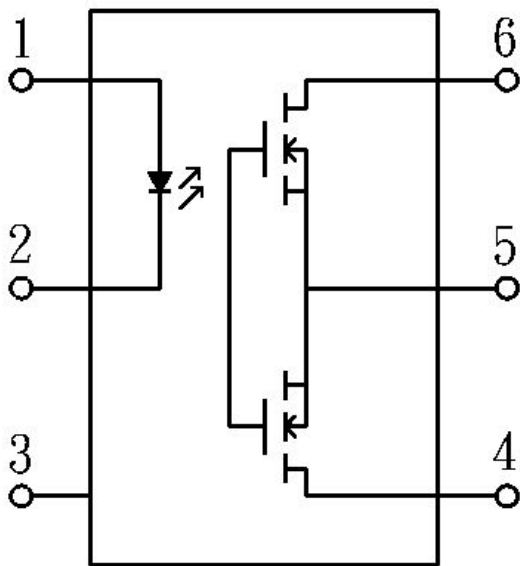
- Long life time: 105°C x 5,000 hr
- High ripple current: up to 5,100mA and low ESR down to 10mOhm
- Highest quality: made in Japan on IATF16949 certified manufacturing line
- Low cost: is achieved by omitting automotive reliability qualifications
- FVCL/FECL features: downsizing, performance upgrading, cost saving

APPLICATIONS

- Industrial power supplies
- Consumer applications
- IT and peripheral applications
- General DC/DC converts



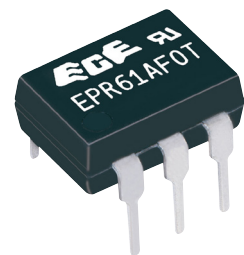
HIGH VOLTAGE MOS RELAY FOR BATTERY MANAGEMENT SYSTEMS



Circuit diagram

The new MOS Relay EPR3(2)11AF06000EZ from the manufacturer Excel Cell is solution with a high load voltage of 1500V. The EPR3(2)11AF06000EZ is offered in a SMD-6(DIP-6) package, in 1-Form-A configuration and a continuous load current of up to 30mA. This makes it suitable for the use in industrial battery management systems (BMS), charging stations, industrial and infrastructure controls, medical equipment and much more applications.

The new device has a MOSFET output and the on-resistance remains stable throughout the entire lifetime. Like all semiconductor MOS relays, in contrast to electromechanical relays, they are not affected by vibration, which is a significant benefit in many applications. Beside that they have an almost unlimited lifetime if used according to the specifications.



FEATURES

- Load voltage: 1500 V
- Load current: 30 mA
- No EMI/RFI Generation
- High reliable
- No moving parts
- Low drive power requirement (TTL/CMOS Compatible)
- Low On-state Resistance
- 3750 Voltage input/output isolation
- Arc-free with no snubbing circuits
- Machine insertable or wave solderable 6-pin DIP package

APPLICATIONS

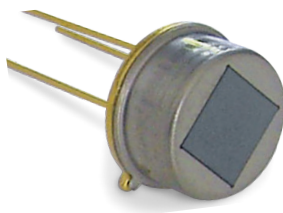
- Battery management systems (BMS)
- Charging stations
- Infrastructure control
- Industrial control
- Telecommunications
- Instrumentation
- Medical Equipment
- Security



NEWS

NEW GENERATION OF PYROSENSORS

D-Pyro™ - Digital communication passive infrared sensor (PIR sensor)



In PIR-sensors, ferroelectric elements absorb thermal energy, which changes the spontaneous polarization and generates an electrical surface charge.

This charge is proportional to the change in polarization. This phenomenon is known as the pyroelectric effect. NiCeRa pyrosensors, using thin ferroelectric ceramic materials, can detect even the slightest infrared energy, such as that emitted by the human body. They can be used as detectors for non-contact temperature measurement but also recognize the presence of a human body.

The latest generation of digital pyrosensors D-Pyro™ manufactured by NiCeR integrates an amplifier, a microcontroller chip and just two pyroelectric elements

in a single metal housing. The signals generated by the pyrosensor elements are converted into digital signals. Their main advantages are the simple signal evaluation with only a few external devices and the high immunity to electromagnetic interference (EMI). Due to the special shape of the elements (Yin-Yang), the pyro sensor reacts to movement in all directions and can therefore be used like a pyrosensor with four elements.

Energy saving is particularly important today. Pyrosensors can help with this, not only in the home but also in industry and plant engineering. They can also be used for safety monitoring.

APPLICATIONS

SECURITY

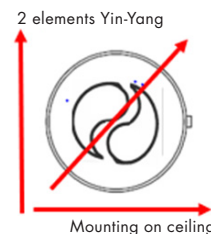
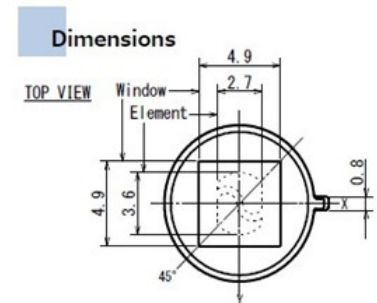
- Detection of break-ins and intrusion by suspicious persons
- Activation of camera surveillance to combat crime
- Detection of customer visits and crime prevention in shops

ENERGY CONSUMPTION

- Automatic light switching
- Automatic backlight control of LCD panels
- Switching on air conditioning or heating when people are present

HOUSEHOLD

- Switching the power on/off for household appliances
- Opening the toilet lid when approaching
- Contactless door opening



FEATURES

- Omni-directional dual sensor with only two elements
- Ultra-low current consumption, typical 2.5µA
- High S/N ratio
- ASIC build-in type
- Digital output (on/off, I²C interface, UART)
- 12 types of selectable built-in digital bandpass filter
- TO-5 package and SMD type available
- Field of view :X-axis 146° - Y-axis 156° or X-axis 136° - Y-axis 146°
- Wake-up trigger output function
- Also available with Fresnel-lens. Choose from a variety of different shapes.

PAN W601-1X- WIFI 6E + BLE 5.3 MODULE



The PAN W601-1x is a Wi-Fi 6 companion module that supports tri-band frequencies at 2.4 GHz, 5 GHz, and 6 GHz, along with built-in Bluetooth BDR/EDR/Low Energy (LE).

This module can be integrated with any Linux or Android-based host platform through SDIO or PCIe for Wi-Fi connectivity and HS UART for Bluetooth, enabling smooth wireless communication. It features a compact design and is available with either an integrated chip antenna or a connection point for an external antenna via the bottom pad.

PAN W601-1x is expected to be available in the first half of 2025.

SPECIFICATION:

RF technology	Wi-Fi® 6E (802.11 a/b/g/n/ac/ax) & Bluetooth® 5.3 (BR, EDR, LE)
Chipset	SYN43711
Frequency	2.4, 5 & 6 GHz
Operating temperature	-40 to +85 °C
Antenna option	Integrated chip (PAN W601-1C) or Bottom pad (PAN W601-1B)
Size	12.2 x 9.9 x 2.55 mm (PAN W601-1B) 14.0 x 9.9 x 2.55 mm (PAN W601-1C)
Planned Certification	CE RED, FCC, ISED, MIC, RCM

APPLICATIONS

- Smart Home
- Building Automation
- Industrial IoT
- Wearable Devices

Panasonic
INDUSTRY



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