

endrich news

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OUR PRODUCT OF THE MONTH:

TRI MODE IoT MODULE 3BIG-MOD FROM ENDRICH



FEATURES

- LTE IoT gateway based on Fibocom MA510-GL-00 Tri Mode Module
- Operating frequency LTE FDD CatM1: B1/B2/B3/B4/B5/B8/B12/B13/B14/B18/B19/B20/B25/B26/B27/B28/B66/B85
- Operating frequency LTE FDD CatNB2: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28/B66/B71/B85
- Operating frequency GSM/GPRS/EGPRS: 850/900/1800/1900
- GNSS: GPS, Glonass, BeiDou
- Interfaces: UART (AT Communication), USB (FW Update)
- Operating temperature: -40 °C to +85 °C



Contact for information: Mr. Schubert · phone: +49 7452 6007-22 · e-mail: v.schubert@endrich.com

TRI MODE IoT MODULE 3BIG-MOD



HAVE A LOOK

Powered by Fibocom's MA510-GL Tri Mode series wireless IoT module – 3BIG-MOD serves as a gateway for customer applications to send data via LTE Cat-M1 / Cat-NB2 / EGPRS network to appointed endpoints – like data visualised cloud servers. It can provide data connections at LTE-FDD, GPRS and EGPRS network and also supports GNSS (GPS / GLONASS / BeiDou) to get global positioning data.

Ramp up Support for all customers that want to use 3BIG-MOD as a development board for IoT data collection – can be provided by Endrich:

- Detailed documentation of getting access to Endrich cloud services
- Available sensor boards that can easily be connected to 3BIG-MOD
- Example python scripts and C-code to start your development and get ready for IoT
- Support by external partner (Germany) to ramp up your development in software and hardware

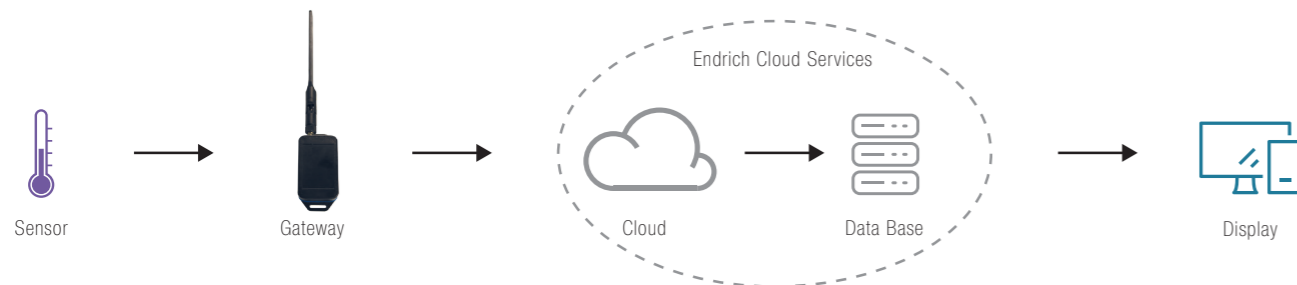


Full Flexibility

- In choosing your communication protocol and adapting your application to your needs is guaranteed by Fibocom protocol stacks: PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/MQTT/CoAP/LWM2M
- In using your operating system, as drivers are available – to directly communicate via serial interface to 3BIGMOD: Linux/Windows/Android

APPLICATIONS

- Transfer industry application data via worldwide LTE network
- Smart parking
- Asset tracking
- Smart meter
- Smart city



TRI MODE IoT MODULE 3BIG-MOD

TECHNICAL SPECIFICATIONS

Target	Transfer industry application data via worldwide LTE network	
Overview		
Product type	LTE IoT gateway	
Product family	3BIG-MOD	
Housing	Yes, Bopla/BoLink	
Module	Fibocom MA510-GL-00 Tri Mode	
Wireless technologies	CAT-NB2 (NB-IoT), CAT-M1 (eMTC), GPRS, GNSS (GPS)	
Band		
Operating frequency LTE FDD CatM1	B1 / B2 / B3 / B4 / B5 / B8 / B12 / B13 / B14 / B18 / B19 / B20 / B25 / B26 / B27 / B28 / B66 / B85	
Operating frequency LTE FDD CatNB2	B1 / B2 / B3 / B4 / B5 / B8 / B12 / B13 / B18 / B19 / B20 / B25 / B26 / B28 / B66 / B71 / B85	
Operating frequency GSM / GPRS / EGPRS	850 / 900 / 1800 / 1900	
Power Class	FDD-LTE: 21 dBm (Power class 5)	
	GSM850 / 900: 33 dBm	
	DCS1800 / PCS1900: 30 dBm	
Dimensions		
Dimension	90.2 x 43.2 mm	
Weight	68 g incl. antenna	
Interfaces		
FW update	USB	
AT communication	UART (Male mini module 12pin, Wuerth part type 690 357 281 276)	
Network access	Micro SIM card holder (push / push)	
Antenna connector	1 x SMA connector (optional: 1 x SMA connector GPS / GNSS)	
Antenna type	BGS-015D (optional: BGS-607C GPS / GNSS) – manufacturer BGS	
Features		
Protocols	PPP / TCP / UDP / SSL / TLS / FTP(S) / HTTP(S) / MQTT / CoAP / LWM2M	
AT commands	3GPP TS 27.007 and 27.005 + proprietary Fibocom AT	
Initial customer support scripts	C, Python	
Initial customer support hardware	Case adapter interface available	
Customer integration support on demand	main (embedded) GbR a partner of Endrich Bauelemente Vertriebs GmbH	
Transmission Rate		
Data rate upload	Cat.M1 (1119 kbps), Cat.NB2 (150 kbps), EGPRS (236 kbps), GPRS (85.6 kbps)	
Data rate download	Cat.M1 (589 kbps), Cat.NB2 (136 kbps), EGPRS (296 kbps), GPRS (107 kbps)	
General		
Operating temperature	-40 °C to +85 °C	
Voltage supply	5 V DC / 3.0 A Peak	
Protection class	IP53	
Certifications		
Regulatory	CE-RED (Europe) (pending), FCC (USA) (pending), ISED (Canada) (pending)	
Industry	GCF, PTCRB	
Carrier	DT (pending), Vodafone (pending)	
Ordering Code		
Part Number	Endrich Part Number	Description
3BIG-MOD-PCB	E0682MAE00001	3BIGMOD PCB only
3BIG-MOD-A	E0682MAE00002	Ready to use 3BIG-MOD PCB + housing + LTE antenna + cable
BGS-607C	E0588BGS00002	GPS antenna
C485GST-006.5MC137-UFL	E0588JSR00036	Adapter cable for GPS antenna
EVAL ADP-3BIG-MOD	E0682MAE00003	Adapter board for 3BIG-MOD

Regulatory approvals for FCC (USA), ISED (Canada), CE (Europe) are pending. **Cellular** approvals GCF, PTCRB are already approved by the Fibocom Chip.

NEW!
EXCLUSIVE
BY ENDRICH!



A major challenge we face today is digitalization of industrial processes, extending machinery with low power, feature rich microcontroller-based electronics to collect sensor readings and forward data with LPWA communication channels to a Cloud Database in order to build up the "BIG DATA" – the knowledge

base of the future, and the elementary food of Artificial Intelligence. A mass of sensor readings needs to be organized into central databases for future processing, so as to meet the expectations of Industry 4.0. The Internet of Things (IoT) provides the ecosystem to deal with this challenge.

As a component distributor Endrich is fully engaged in supporting IoT projects of its customers and developed an IoT device family based on key components provided by its leading suppliers. As each and every customer require different mix of functions, the product family acts as a demonstration system and the E-IoT platform offers the following services:

- ✓ Hardware family based on „open source” concept, all schematics, design layout are available for free to our registered customers
- ✓ Free data collection and data visualization services to the users of the Endrich IoT concept, such as free access to the **Endrich Cloud Database Service** and the **Endrich Data Visualization Gateway**
- ✓ Free hardware and software guide available on a dedicated website of the platform at <http://e-iot.info>

ADDITIONAL SERVICES:

- Key components to be used for IoT design are available at Endrich, amongst others sensors, microcontrollers, communication modules, aerials, lithium batteries and all commodities necessary for powering, tuning, filtering and protecting the finished product
- Modular, out of box IoT hardware board family is available as demonstration boards or as final solution
- Professional knowledgebase is available for the customers including software samples, connection diagrams, interfacing and circuit design support.

The hardware family is constantly developing, today there are several boards available:

Endrich IoT Board v052 offers all three major functions of IoT devices: sensing, controlling and communication. The

board is battery powered, its operation is based on RISC-V micro-controller architecture and offers a low power wide area networking by using an NB-IoT /LTE-M/ 2G GSM modem.

All major IoT functions included: Sensor – Controller – GSM Communication

CONTROLLER

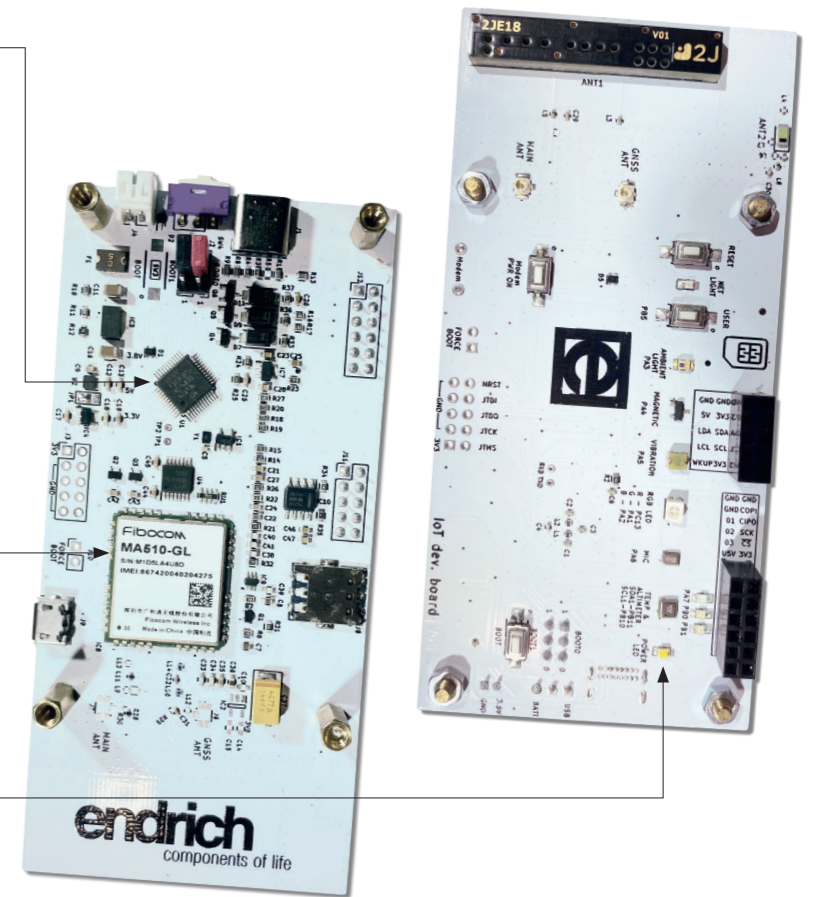
Controlling the sampling, and data transfer: Low power microcontrollers make it possible to collect sensors' data and to command the communication channel used for sending the results to cloud database.

COMMUNICATION

Wireless LPWA communication: The communication channel used for sending the results to cloud database is usually based on a wireless technology such as a (low power) local (WiFi, Bt, ZigBee stb), or wide area (NB-IoT, LTE-M, SigFox, LoRa) network. This board offers NB-IoT, LTE-M & 2G.

SENSORS

Different sensors for environmental parameters: Ambient light, magnetic field, temperature, air pressure, vibration, noise, altitude, position.

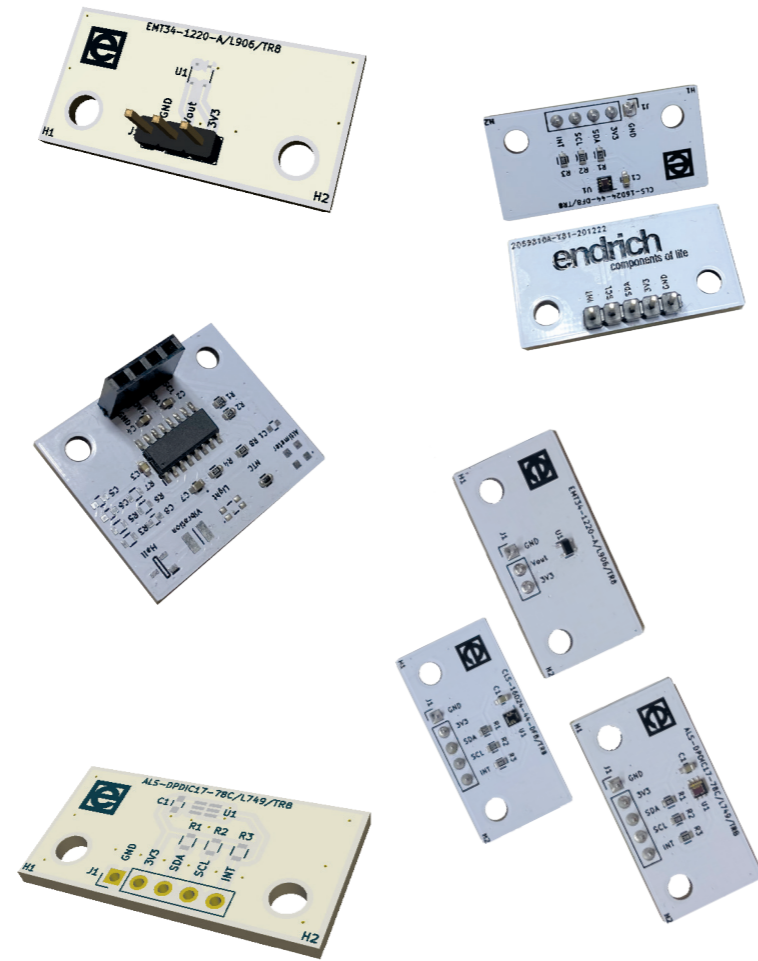


E-IoT platform offers a variety of **external sensor boards**, which can be connected to the mainboard (E-IoT SBC or other MCUs) via standard interfaces such as I²C or SPI or proprietary interfaces like the Endrich long distance I²C port, which supports extended range up to 50 meters.

External sensor boards for E-IoT MCU board and 3rd party boards

EXTERNAL SENSOR BOARDS FOR E-IoT

- I²C and SPI multi sensor boards:
Ambient light, magnetic field, temperature, air pressure, vibration, noise, altitude, position standard interface to E-IoT SBC board and 3rd party MCU boards
- CLS (color) sensor board:
Based on Everlight's RGBW low power, high sensitivity Color Light Sensor with I²C interface. This sensor board extends the IoT devices' capability with sensing red, green, blue, white (RGBW) and infrared light.
- Temperature sensor board:
Based on Everlight's EMT34-1220-A/L906/TR8 Temperature Sensor (with built-in amplifier), this board offers an external thermometer for IoT applications.
- Ambient light sensor board:
Based on Everlight's ALS-DPDC17-78C/L749/TR8 Digital Ambient Light Sensor, this board offers an extension to IoT devices to provide capability of sensing ambient light in a spectrum which is close to the human eye's response, with a maximum resolution of 0.0033 Lux / count and a maximum detectable illumination of 83000 Lux

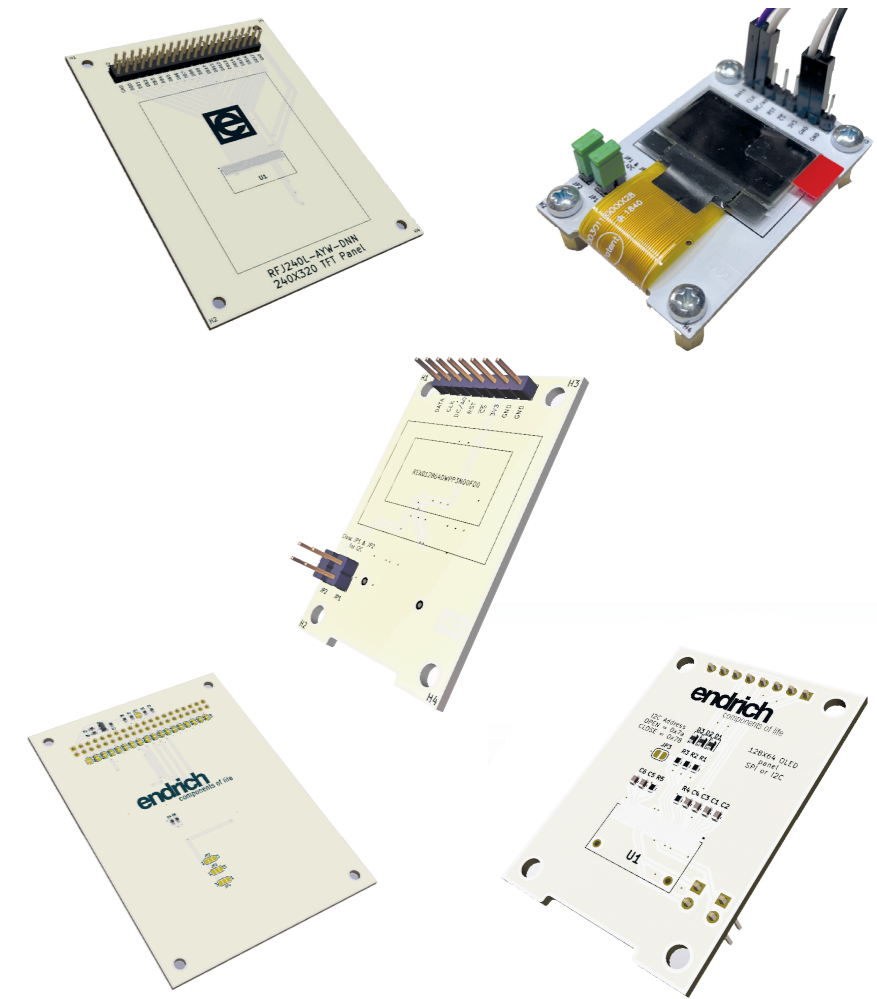


As new feature to extend the E-IoT platform, we introduced **display solutions** in a form of external boards based on different display standards such as pmOLED or TFT. These boards can be connected to either E-IoT SBC board or 3rd party MCU boards (Arduino, ESP32, Raspberry etc.) via standard interfaces.

External display boards for E-IoT SBC and 3rd party MCUs (Arduino etc.)

DISPLAY BOARDS

- pmOLED display board with I²C & SPI interface:
This extension board offers basic visualization capability to E-IoT SBC and 3rd party MCU boards based on Raystar's REX012864DWPP3N00F00 0.96" white pmOLED display with 128 x 64 pixels dot matrix organization. User can select by jumper. between using I²C or SPI interface to connect to SBC/MCU board.
- TFT based display board with SPI interface (preliminary, more for custom designs):
This extension board offers basic visualization capability to E-IoT SBC and 3d party MCU boards based on Raystar's RFJ240L-AYW-DNN 2.4" color TFT with the resolution of 320 x 24 pixels.



Sensor readings are stored in a customer specific dedicated area of **Endrich Cloud Database System** and can be visualized through **Endrich Visualization Gateway**, a special website made for each E-IoT SBC boards and customer devices.

Data visualization



More information about the Endrich IoT Ecosystem, its open source hardware platform, the dedicated software services and free code samples for the embedded software can be found at <http://e-iot.info>

A video about the award winning E-IoT platform, the Endrich IoT EcoSystem is available on the short link: <https://bit.ly/3eikguc> or by scanning the QR Code.



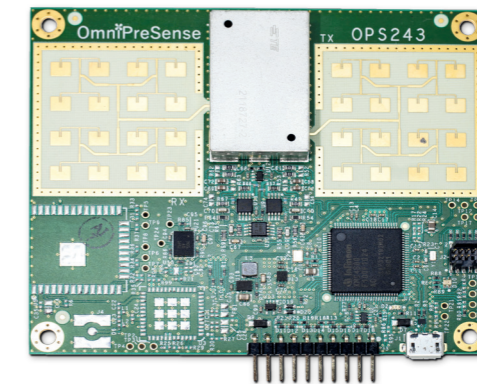
OmniPreSense provides short range radar sensors which are operating in the millimeter wave spectrum (24 GHz ISM K-band) to give your systems a new way to “see” the world. This makes these systems smarter about their environment, provides improved operation, and makes the world safer.

Moreover, OmniPreSense radar sensors have an easy to use API to control their output. The simple commands can be used to configure the operation and output information provided by the sensor. Over time OmniPreSense will enhance the capabilities

of its sensors by adding new features and functionality. These will come as new code versions which can be flashed to the board while keeping backwards compatibility.

APPLICATIONS

- Indoor automation
- Movement detection / Foot traffic
- Speed measurement
- Door opening
- Intrusion alarm / Perimeter protection
- Street light
- Counting



	PART NUMBER	RADAR TYPE	MOTION	SPEED	DIRECTION	SIGNAL MAGNITUDE	RANGE	FCC/IC REGULATORY APPROVAL
HAVE A LOOK	OPS241-A-CW-RP	Doppler	✓	✓	✓	✓	–	–
HAVE A LOOK	OPS241-B-FM-RP	FMCW	–	–	–	–	✓	–
HAVE A LOOK	OPS242-A-CW-RP	Doppler	✓	✓	✓	✓	–	✓
HAVE A LOOK	OPS243-A-CW-RP	Doppler	✓	✓	✓	✓	–	✓
HAVE A LOOK	OPS243-C-FC-RP	FMCW & Doppler	✓	✓	✓	✓	✓	pending
HAVE A LOOK	OPS7242-A-CW-RP	Doppler	✓	✓	✓	✓	–	✓
HAVE A LOOK	OPS7243-A-CW-RP	Doppler	✓	✓	✓	✓	–	✓
HAVE A LOOK	OPS7243-C-FC-RP	FMCW & Doppler	✓	✓	✓	✓	✓	pending

NEW SURFACE MOUNTABLE VARISTORS

INPAQ Technology Co., Ltd. has introduced two families of surface mountable varistors. The new families are offered in EIA standard size 2825 & 4032, which typically refer to disc sizes with diameters of 5 and 7 mm. The new SMD series are designed to replace leaded metal-oxide varistors in a variety of applications like power supplies, home appliances, different kind of industrial equipment, telecommunication systems and smart meters.

Both the MOV2825 & MOV4032 series are offered for voltages starting with 11 Vac. The maximum of the MOV4032 series is up to 510 Vac. Like their leaded counterparts INPAQ's SMD varistors offer a high transient current capability. The peak current is specified with up to 400 A respectively 1.200 A (8/20µs waveform).

The SMT technology offers the advantage to replace leaded devices, which are no longer up-to-date, and resolve the issue of PCB space limitations. They are reflow solderable up to 250 °C according J-STD-020C. Beside that the components are RoHS compliant and UL/cUL 1449 approved.

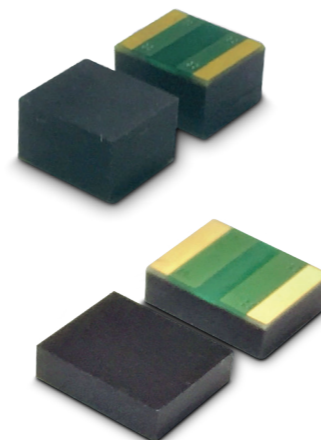
FEATURES

- Form Factor Compatible with EIA 2825/4032
- Compact Space Saving Package
- Available for SMT Reflow Soldering
- RoHS Compliant
- UL/cUL 1449 Approved

APPLICATIONS

- Power Supply
- Home Appliance
- Industrial Equipment
- Telecommunication or Telephone System
- LED Lighting
- Smart Meter

TYPE	MOV2825XXX	MOV4032XXX
WORKING VOLTAGE (V_{RMS})	11 ~ 420 V	11 ~ 510 V
WORKING VOLTAGE (V_{DC})	14 ~ 560 V	14 ~ 670 V
VARISTOR VOLTAGE (V_V)	18 ~ 681 V	18 ~ 821 V
CLAMPING VOLTAGE (V_C)	40 ~ 1120 V	40 ~ 1355 V
PEAK CURRENT (I_{MAX})	150 ~ 400 Amps	250 ~ 1200 Amps



SITIME EXPANDS CONSUMER AND IOT PORTFOLIO WITH LOW POWER TCXO – ACCELERATES CUSTOMER DEVELOPMENT THROUGH RAPID PRODUCT CUSTOMIZATION

SiTime Corporation (NASDAQ: SITM), a market leader in MEMS timing, announced the SiT5008 temperature-compensated silicon MEMS oscillator (TCXO). The SiT5008 is ideal for connected consumer and IoT devices such as internet-connected audio-video, over-the-top streaming devices, industrial smart meters, and other devices that use low power wireless connectivity. Like other SiTime offerings, the SiT5008

offers programmable features, high reliability, and environmental resilience in a small package. It is pin-compatible with traditional quartz TCXOs, enabling 100% drop-in replacement without redesign or layout changes. This silicon MEMS-based TCXO provides higher reliability and industry-best vibration and shock environmental resilience.

"The development of our SiT5008 is a great example of our rapid release strategy, where we develop up to 15 product derivatives from a single base platform and bring them to market quickly," said Piyush Sevalia, executive vice president of marketing of SiTime.

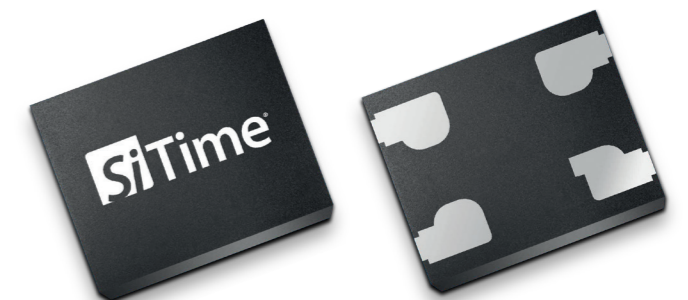
"Each derivative has customized features and solves unique timing problems for customers. In this case, we improved the frequency stability by 10 times by optimizing our algorithms and delivered the product in just two months. This accelerated development was possible because of our systems knowledge and continued investment in automation."

FEATURES

- In mass production 26 MHz. Possible any frequency between 10 MHz and 60 MHz accurate to 6 decimals on certain demand
- ±2 ppm to ±10 ppm frequency stability
- Operating temperature from -40 °C to +85 °C
- Low power consumption of 3.5 mA typical at 1.8 V
- Standby mode for longer battery life
- LVCMOS output
- Industry-standard 2.5 x 2.0 mm x mm package, 100% pin-compatible with quartz devices
- RoHS and REACH compliant, Pb-free, Halogen-free, and Antimony-free

APPLICATIONS

- Connected consumer products
- Smart meters (AMR)
- Over-the-top (OTT) streaming devices
- IoT devices
- Networked audio systems
- Wireless equipment



THE NEW HIGH VOLTAGE MONITOR IC NJU7890

HAVE A
LOOK

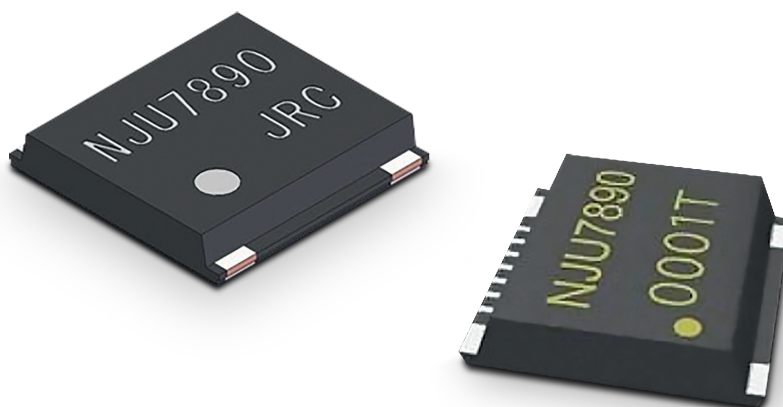
The NJU7890 is a high voltage monitor IC capable of inputting voltages up to 1000 V. With our proprietary semiconductor process technology, NJU7890 realizes wide common mode / differential input voltage. The NJU7890 is suitable for powertrain application such as HV and EV.

FEATURES

- Realizes high voltage monitor up to 1000V and high precision of attenuation rate $\pm 1\%$
- Uses the package PMAP11 with high reliability and small size, and it is ideal for small size and weight reduction of ECU
- Operation Voltage Range 2.2V to 5.5V
- Common Mode Input Voltage Range 1000V
- Differential Input Voltage $\pm 1000V$
- High Precision Attenuation Rate $\pm 1\%$ ($T_a = -40^\circ C$ to $+125^\circ C$)
- High Input Resistance 30M Ω min.
- Operating Temperature $-40^\circ C$ to $+125^\circ C$

APPLICATIONS

- Power Control Unit (PCU)
- Inverter Control
- Automotive Application
- Powertrain and Battery Management ECU
- High-Voltage Monitoring Applications



Contact for information: Mr. Kinn · phone: +49 7452 6007-31 · e-mail: d.kinn@endrich.com

HEADQUARTERS

Endrich Bauelemente Vertriebs GmbH
P.O.Box 1251 · 72192 Nagold, Germany
T +49 7452 6007-0
F +49 7452 6007-70
E endrich@endrich.com
www.endrich.com

SALES OFFICES IN EUROPE

France
Paris:
T +33 1 86653215
france@endrich.com

Lyon:
T +33 1 86653215
france2@endrich.com

Spain
Barcelona:
+34 93 2173144
spain@endrich.com

Bulgaria
Sofia:
bulgaria@endrich.com

Austria & Slovenia
Gmunden:
+43 1 6652525
austria@endrich.com

Romania
Timisoara:
romania@endrich.com

Hungary
Budapest:
T +36 1 2974191
hungary@endrich.com

Switzerland – Novitronic
Zurich:
T +41 44 30691-91
info@novitronic.ch