

# endrichnews

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We wish you all a Merry Christmas and a Happy New Year. Thank you very much for your trust and for further good cooperation.



## ONE OF THE SMALLEST 4-CHANNEL POWER MANAGEMENT ICs (PMIC) IS AVAILABLE AT ENDRICH

The NJW4750 from New Japan Radio (NJR), one of the smallest 4-channel power management ICs (PMIC) on the European market, is available at Endrich.

New Japan Radio (NJR) introduces the NJW4750, one of the smallest 4-channel power management ICs (PMIC) on the market. The device, in a 3.4x2.6 mm measuring EQFN26 housing, offers three buck regulators and one LDO in a small package. Channel 1 is connected to the supply voltage of max. 40V directly and serves as a primary controller for the secondary synchronous buck regulators and the LDO. One of the two secondary controllers can be switched to LDO mode to further increase flexibility in circuit design. Each controller has both an individual power-good pin and an enable input, allowing finer control of the output voltages during the system power-on phase.

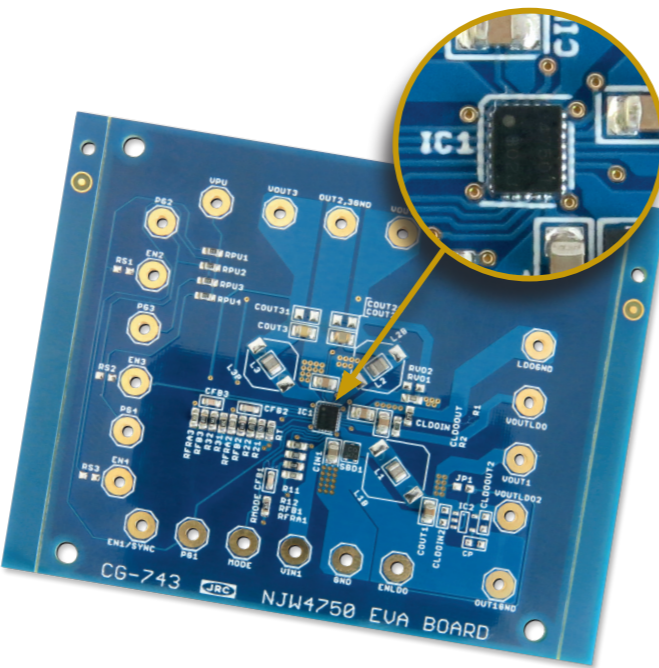
The NJW4750 is controlled either via the external sync input or via an internal oscillator, which covers a frequency range from 280 kHz to 2.4 MHz, enabling the use of compact coils.

The NJW4750 is excellently suited for supplying e.g. 3.3V and the derived voltages of 2.8V (LDO), 1.8V (Ch2) and 1.2V (Ch3) in a temperature range of -40 °C ... +125 °C.

Application areas include industrial controls, camera systems, IoT boards, photoelectric sensors and single-board controllers consisting of MCUs, peripherals and sensors, which require a very small design.

Samples, evaluation boards and technical documentation are available on 11-29-2019.

**Order your free promo board at Endrich now!\***



### FEATURES

- Input voltage: 5V to 40V
- Output voltage / current:
  - Ch1. 3.3V / 1100 mA maximum
  - Ch2. 1.8V / 500 mA maximum
  - Ch3. 1.2V / 500 mA maximum
  - Ch4. 2.8V / 300 mA maximum
- Voltage output not fixed (adjustable)
- Switching frequency: 2.4 MHz
- Temperature range: -40 °C ... +125 °C
- Size: 3.4 x 2.6 mm

\* as long as stock lasts

## TINY NEW FRONT END MODULE (FEM) FOR GPS L2 + G2 AND GALILEO E5B BAND, AEC-Q QUALIFIED

Front-end modules (FEMs) are designed to fulfil the market demand on cost and space saving products. FEMs combine power amplifier (PA) or low noise amplifiers (LNA) and filter, RF switches and matching circuits in one single package. The tiny front end modules integrate various functionalities and are used for wireless application such as GPS (GNSS) LTE, Wi-Fi, Bluetooth.

Beside cost and space saving, these products can as well improve the overall performance such as low noise figure, low current consumption, reduced number of external components, etc.

TaiSaw Technology, design and service provider for high performance communication components, announces a new front-end module (FEM) designed for covering full band 1189MHz ~ 1254MHz, GPS L2+G2 and Galileo E5b – for GPS/Galileo receiver. The TN0175A-B1397 offers low noise figure, high linearity, and high out-band rejection characteristics brought by included high performance pre-SAW filter and low noise amplifier (LNA). The TN0175A-B1397 is manufactured in a tiny 1.5 x 1.1 mm SMD package.

### APPLICATIONS

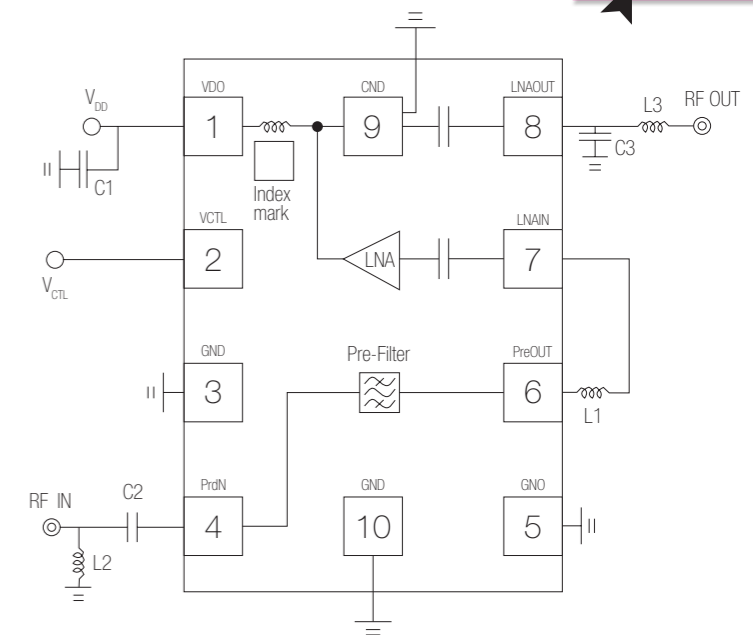
- GPS / GNSS radio receivers
- Global Navigation Satellite Systems (GLONASS)
- Personal navigation devices
- Wearable / Healthcare devices
- Smartphones

P / N	FREQUENCY	GAIN	NOISE FIGURE	SIZE	NOTE
TN0175A-B1397	1221.5 MHz , BW = 65 MHz	16.5 / 17.2 dB	2.28 / 2.31 dB	1.5 x 1.1 x 0.5 mm	GPS L2+G2 and Galileo E5b

This new product complements the **product line of FEM for GNSS (GPS)** applications as:

TN0081A-B1397 (GPS + GLONASS)	1575 MHz 1597 ~ 1606 MHz	18.5 dB	1.65 dB	2.5 x 2.5 x 1.55 mm	L1-Band
TN0089A-B1397 (GPS + GLONASS + GALILEO + BEIDOU)	1575 MHz 1597 ~ 1606 MHz 1559 ~ 1591 MHz	15.5 dB	1.7 dB	1.5 x 1.1 x 0.5 mm	L1-Band
TN0126A-B1397	1164 ~ 1189 MHz	16.5 dB	1.6 dB	1.5 x 1.1 x 0.5 mm	L5-Band

**HAVE A LOOK**



### FEATURES

- Low noise figure
- High linearity
- Excellent out-of-band rejection characteristics
- Low current consumption
- Temperature range -40 °C to +105 °C
- Minimal number of external components required
- Evaluation board and PCB layout guide available
- Including a high performance Pre-SAW Filter

## BAOLONG BRINGS VIBRATION INTO NEXT LEVEL

HAVE A LOOK



Zhejiang Baolong M&E Co., Ltd is a leading mini vibration motors and DC micro motors manufacturer located at Wenzhou Zhejiang China. Founded in 1986, they have been specialized in manufacturing mini vibration motors and micro DC motors for more than 33 years.

Certified with ISO9001, ISO14001 and OHSAS18001. All products meet standards of ROHS and Reach. Strong research and development capability and excellent producing technology have created the high-quality brand.

Baolong provides haptic feedback solutions for some of the world's biggest smartphone companies. In addition to the smartphone field, they also offer vibration solutions and drive solutions for terminal production, such as wearable devices, beauty apparatus, medical products, electric toothbrush, etc.

In addition to the high-quality products, the portfolio has a flexible "add-on" of customized solutions such as cables and connectors.



## BAOLONG BRINGS VIBRATION INTO NEXT LEVEL



### FEATURES

- Cylindric, coin or linear types
- Various sizes
- For different driving voltages (typically 1.3 or 3 VDC)
- Different rotation speed and vibration strength
- SMD, spring contact and wired versions available
- Fully encapsulated versions available (dust- and waterproof)

### APPLICATIONS

- Generation of perceptible feedback (mechanical vibration)
- Portable phones and communication devices
- Silent alarm / security communication
- Industrial control units (haptic feedback confirmation)



Vibration alerting for wearables devices



Ultrasonic vibration for electric toothbrushes



Haptic feedback for game handle and VR Glove

## EMERALD OCXOS – FOR PRECISION TIME SYNCHRONIZATION

HAVE A LOOK

SiTime's Emerald Platform™ Stratum 3E OCXOs are designed to solve the long-standing problems of quartz OCXOs, which are sensitive to environmental conditions, require protective components, and are difficult to use. Emerald OCXOs provide the best dynamic performance (under airflow, thermal shock,

vibration, shock, and EMI), programmability for the shortest lead time, and the smallest size. Also available in standard OCXO footprints, these devices can be used as drop-in replacements for quartz OCXOs while improving system performance and robustness.

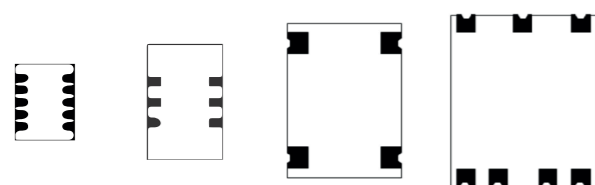
### BENEFITS

- Enhance system robustness / performance in harsh environments
- Reduce design / manufacturing overhead by eliminating placement constraints and shielding requirements
- Shrink system size with smallest OCXO package, fewer supporting components
- Minimize time error in time synchronization applications

### APPLICATIONS

- SONET / SDH Stratum 3E
- 4G / 5G RRH, DU
- IEEE 1588 Boundary Clocks and Grandmasters
- Macro Base Stations
- Carrier Class Routers
- Optical Transport
- Digital Switching
- Test Instrumentation
- Synchronous Ethernet

Four package options (actual size)



9 x 7 mm    14 x 9 mm    20 x 13 mm    25 x 22 mm

Industry's smallest 9.0 x 7.0 x 6.5 mm OCXO, plus 3 industry standard packages for drop-in replacement of quartz.

### FEATURES

- Exceptional dynamic stability under airflow, fast temp ramp
  - $\pm 5$  to  $\pm 50$  ppb over-temp stability
  - $\pm 50$  ppt / °C frequency slope ( $\Delta F / \Delta T$ )
  - $2e-11$  ADEV at 10 seconds averaging time, under airflow
  - 0.1 ppb / g vibration, for outdoor pole mounted equipment
  - Resistant to microphonic and / or board bending effects
- On-chip regulators for power supply noise filtering
- $\pm 0.25$  ppb daily aging,  $\pm 500$  ppb 20 year aging
- Excellent holdover through a wide range of conditions
- Programmable platform, any frequency from 1 to 220 MHz
- LVCMOS or clipped sinewave output
- No activity dips or micro jumps
- GR-1244 Stratum 3E compliant

Contact us for  $\pm 3$  ppb or better stability options, 105 °C operating temperature, and I°C frequency tuning

## ENDURA MEMS TIMING – FOR HIGH-RELIABILITY RUGGEDIZED APPLICATIONS

HAVE A LOOK

Endura™ MEMS oscillators set new benchmarks in ruggedized performance for aerospace and defense applications. SiTime's revolutionary technology enables robust and durable oscillators, delivering the most stable timing while operating under harsh

environmental conditions – airflow, temperature perturbation, mechanical shock, vibration, power supply noise, and electro-magnetic interference (EMI).

### BENEFITS

- Accurate timing in extreme environments with better frequency stability over temperature, shock / vibration immunity, and high quality
- Any combination of frequency, stability, and voltage within a wide range ensures optimum operation for each application
- Minimal need for maintenance and calibration due to industry-leading aging and drift

### APPLICATIONS

- Command / Control
- Avionics & Drones
- Satellite / GNSS
- Field Communications
- Vehicle Comms / Telemetry
- Ruggedized Applications

### FEATURES

- Highest robustness and reliability
  - 0.004 ppb / g acceleration sensitivity
  - 30,000 g shock, 70 g vibration resistance
  - 1 billion hour MTBF, <1 FIT
  - $\pm 500$  ppb 20 year aging
- Exceptional dynamic stability under airflow
  - $\pm 0.9$  ppb / °C frequency slope ( $\Delta F / \Delta T$ )
  - $1.5e-11$  ADEV at  $\tau = 10$  seconds, under still air and airflow
- Maximum flexibility with factory programmable devices
  - 1 to 725 MHz (any frequency)
  - $\pm 0.05$  ppm to  $\pm 50$  ppm over temp stability
  - -55 °C to 125 °C maximum operating temperature range
  - On-chip regulators eliminate the need for an external LDO
- Integrated MEMS resonator, quartz free
  - MEMS resonator encapsulated in silicon at 1100 °C
  - Resonator designed to never age or fatigue
  - Ultra-low mass, immune to shock and vibration

### MEMS OUTPERFORMS QUARTZ

#### Acceleration sensitivity

0.004 ppb / g

3 ppb / g

#### Mechanical shock sensitivity

30,000 g

1500 g

#### Quality

< 1 dppm

50 dppm

#### Reliability

< 1 Failure

> 30 Failures

## TOUCH PANELS AND DISPLAYS FROM SOLOMON GOLDENTEK DISPLAY

Endrich sells displays and capacitive touch panels (PCAP) of the Taiwanese premium manufacturer Solomon Goldentek Display (SGD) with a very good price-performance and a long-term availability.



The touch panels are available in sizes from 3.5" to 21.5". All displays are disposable as a high-brightness version with an improved backlight of 1,000 cd/m<sup>2</sup> and are easy to read even in direct sunlight or very bright ambient light. Together with the extended temperature range of -30 °C to +85 °C, the displays are optimally suited for outdoor use.

All displays have IPS or MVA technology and are disposable with a protective glass thickness of up to 6 mm. This combination makes it possible to use it in harsh industrial environments such as production machines, construction or commercial vehicles. Various protective glass coatings such as antibacterial or anti-fingerprint are possible, allowing use in medical technology.

The display versions from 5.0" to 15.0" are delivered with a uniform 20-pin LVDS interface and the sizes from 15.6" to 21.0" with a 30-pin LVDS interface. The uniform touch interface for the diagonals 4,3" to 10,4" is available both in the I<sup>2</sup>C bus version and in a USB version. For the high quality touch controller Solomon cooperates with the manufacturer EETI. Depending on version and application, optical bonding of the displays and PCAPs is possible.

Contact for information: Mr. Bauer · phone: +49(0)7452-6007-50 · e-mail: j.bauer@endrich.com

### HEADQUARTERS

Endrich Bauelemente Vertriebs GmbH  
P.O.Box 1251 · 72192 Nagold, Germany  
T +49 (0) 7452 6007-0  
F +49 (0) 7452 6007-70  
E [endrich@endrich.com](mailto:endrich@endrich.com)  
[www.endrich.com](http://www.endrich.com)

### SALES OFFICES IN EUROPE

**France**  
Paris:  
T +33/186653215  
[france@endrich.com](mailto:france@endrich.com)

Lyon:  
T +33/186653215  
[france2@endrich.com](mailto:france2@endrich.com)

**Spain**  
Barcelona:  
T +34/93 217 31 44  
[spain@endrich.com](mailto:spain@endrich.com)

**Bulgaria**  
Sofia:  
[bulgaria@endrich.com](mailto:bulgaria@endrich.com)

**Austria & Slovenia**  
Brunn am Gebirge:  
T +43/1 665 25 25  
[austria@endrich.com](mailto:austria@endrich.com)

**Romania**  
Timisoara:  
[romania@endrich.com](mailto:romania@endrich.com)

**Hungary**  
Budapest:  
T +361/2 97 41 91  
[hungary@endrich.com](mailto:hungary@endrich.com)

**Switzerland – Novitronic**  
Zurich:  
T +41/44 306 91 91  
[info@novitronic.ch](mailto:info@novitronic.ch)