

01/2025




# endrich NEWS

[www.endrich.com](http://www.endrich.com)

## INVITATION ENDRICH PASSIVE TECH DAY FEBRUARY 20, 2025

Together with four manufacturers, we will show you the current progress in the field of passive components and cordially invite you to a lively exchange.

### THEMES

Manufacturer	Theme
	Effective EMI noise suppression with ABC-ATEC's ferrite toroidal SMD power line filter
<b>Panasonic</b>	Beat the next MLCC shortage: save money and improve performance with Panasonic Polymer technology
	High heat-resistant technology for hybrid polymer capacitors leading to higher ripple & long-life and cost reduction
	Improving reliability and lifetime of precision circuits with Susumu resistors and shunts

The event is divided into three lecture blocks starting at 10:00 a.m., 11:30 a.m. and 1:30 p.m., so that you can attend up to three lectures according to your interests.

We kindly ask you for a binding written registration by 07.02.2025 to [techday@endrich.com](mailto:techday@endrich.com) or scan the attached QR code.



More information on our homepage [www.endrich.com](http://www.endrich.com)

Are you interested?  
Then register directly.

## AMORPHOUS SILICON SOLAR CELLS PANASONIC



For indoor and outdoor

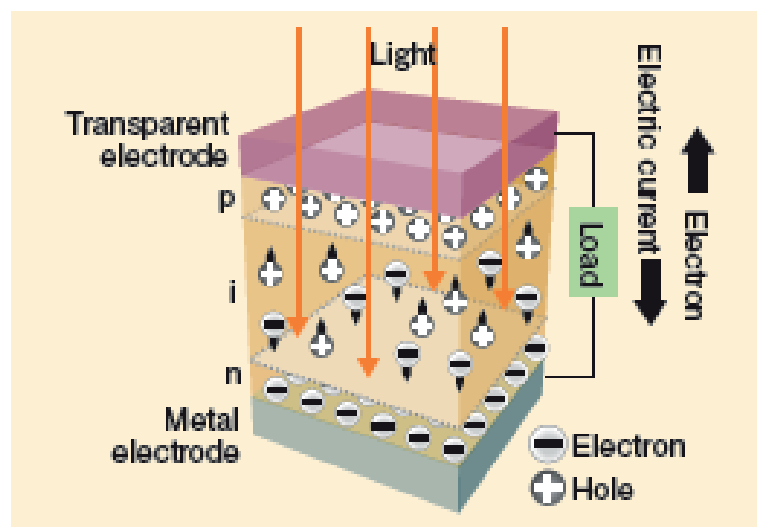
Available with glass,- stainless steel- and plastic film substrate

In today's eco-conscious world, the demand for sustainable and efficient energy solutions is greater than ever. "Amorton" is Panasonic's proprietary line, offering energy efficiency, flexibility, and reliable performance. Unlike traditional crystalline silicon cells, these are made of non-crystalline material, featuring high light absorption and an ultra-thin design. The name "Amorton" combines "amorphous silicon" and "photons," showcasing its advanced light-capturing technology.

When a semiconductor is exposed to a light source of suitable intensity, a large number of electrons (-) and holes (+) are generated and form electricity.

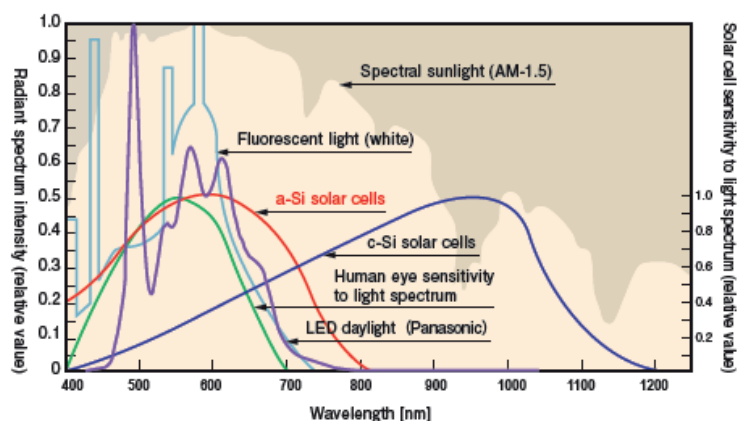
At a p/n junction between two different semiconductor materials, the electrons are collected in the n-type material and the holes are collected in the p-type material by internal electric field.

When an external load is connected, electricity flows through the load. Then generated electricity can be used.



# NEWS

Amorphous silicon solar cells offer excellent adaptability to device voltage requirements by allowing multiple cells to be connected in series during formation, unlike crystalline silicon cells. Their unique manufacturing methods enable the use of various substrates like stainless steel, glass or plastic film, creating flexible, bendable, or custom-shaped designs, including transparent sections. With high sensitivity to visible light (400–700 nm), these solar cells can also function effectively as visible light sensors.



Radiant spectrum of light source and spectral sensitivity of solar cells

## APPLICATIONS

- Wearables and electronics: powering devices like wristwatches, e-books, and toys
- Smart home systems: serving as visible light sensors for smart lighting and security devices
- Energy harvesting: supporting energy-efficient IoT devices, temperature sensors, and RFID systems
- Outdoor solutions: ideal for garden lights, LED markers

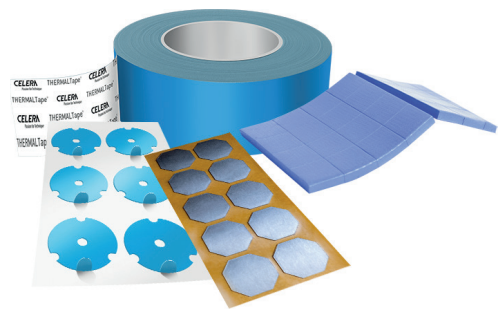
## FEATURES

- High sensitivity to visible light:  
Amorton solar cells efficiently capture light in the 400-700 nm range, making them ideal for visible light sensors in smart homes and wearable devices
- Customizable shapes and forms:  
Amorton solar cells can be made using various substrates like glass, stainless steel, and plastic film, allowing for unique shapes (round shape), sizes, and even bendable designs suitable for applications such as wristwatches and outdoor lighting
- Lightweight and durable:  
The ultra-thin amorphous silicon film (less than 1mm) ensures Amorton cells are lightweight, portable, and durable for indoor and outdoor use
- Energy efficiency for indoor and outdoor use:  
Amorton solar cells perform reliably under artificial indoor light or natural sunlight, powering devices like calculators indoors and garden lights outdoors

## THERMAL INTERFACE MATERIALS FOR SMART INDUSTRY APPLICATIONS

Celera has the most suitable solutions for the thermal profile of your application.

Celera offers a comprehensive range of solutions for thermal interface materials, sealants and coatings, which are designed to ensure optimal thermal management in a diverse array of applications.



YOUR APPLICATION	THE CHALLENGES	OUR SOLUTIONS
<p><b>On-board-chargers</b></p> 	<p>Efficiently dissipating heat from high-power conversion components to prevent overheating and ensure reliable performance in compact, enclosed space</p>	<p><b>COOLPhase®</b> Phase change material pads</p> 
<p><b>Inverters</b></p> 	<p>Effectively managing heat from high voltage switching components to prevent thermal degradation and ensure stable performance in power conversion</p>	<p><b>FORMAPad®</b> No bleed high-end thermal grease</p> 
<p><b>Converters</b></p> 	<p>PCB attachment to aluminum profile and mid/low thermal load generated by LED packages</p>	<p><b>COOLPad®</b> Low and super low compression pads</p> 
<p><b>IoT sensors</b></p> 	<p>Very high/high thermal load generated by COB packages and low clamping force between PCB and heat sink</p>	<p><b>FlexCOAT®</b> Single-component and silicone-free conformal coating</p> <p><b>SILCap®</b> Low-stress potting compound</p> 

# NEWS

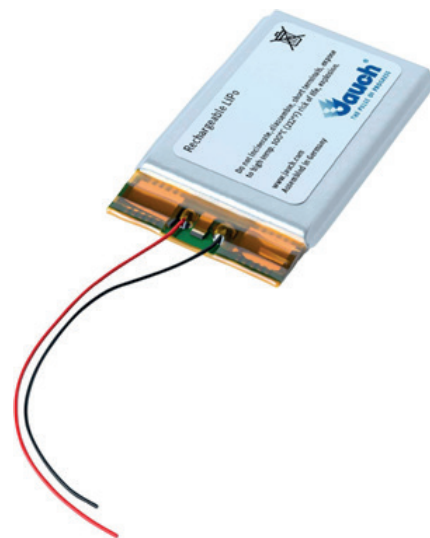
## LITHIUM-POLYMER-BATTERIES (LiPo)

### Powerful, versatile and flexible in use

**Lithium polymer batteries are the ideal solution for flexible designs.** The mode of operation of LiPo batteries is identical to that of lithium-ion batteries. Therefore, the same statements apply to lithium-polymer batteries as to lithium-ion batteries. The advantage is the almost infinite number of sizes due to the absence of a stable steel housing. Instead of a solid housing, a plastic-coated aluminum foil is used. This means that very thin battery designs can be realized.

Lithium polymer cells are therefore also lighter. In addition, the large number of different sizes leads to great design freedom for the end application. Individual dimensions are possible in relatively small quantities, so that the space available for the battery can be optimally utilized. The disadvantage is that the battery is more sensitive to mechanical influences due to the lack of a fixed housing.

In addition, the lithium polymer cells react critically to overcharging. LiPo batteries are therefore equipped with protective electronics that protect this rechargeable battery from overcharging. When charging, only chargers for this battery chemistry should be used. LiPo batteries are also known as soft/pouch cells.



### APPLICATIONS

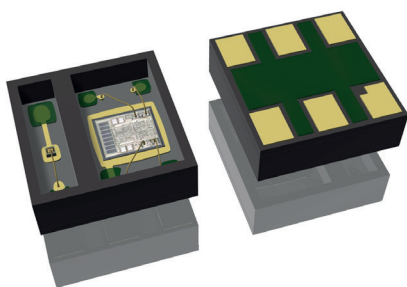
- Battery-operated tools (e.g. cordless screwdrivers etc.)
- Smoke/fire detectors
- RFID and mobile radio systems
- Electronic atomizers
- Autonomous lighting
- IoT applications (smart meters)

### FEATURES

- Very high energy density compared to other non-lithium batteries
- Low self-discharge of the cells
- Long-life rechargeable battery with a high number of cycles
- Versatile design and very thin versions possible
- In terms of weight, a very light rechargeable battery
- Integrated protection electronics (must be observed due to battery swelling)
- Individual connections possible
- Approvable with various standards

## TWO OPTICAL ROTARY ENCODER ICs

### NJL5821 & NJL5822 series



#### Rotary encoders

The NJL5821R and NJL5822R are miniature optical encoders designed to determine an object's position, direction or movement in relation to a reference point. It provides feedback to control systems, ensuring precise movements and operations in a variety of devices.

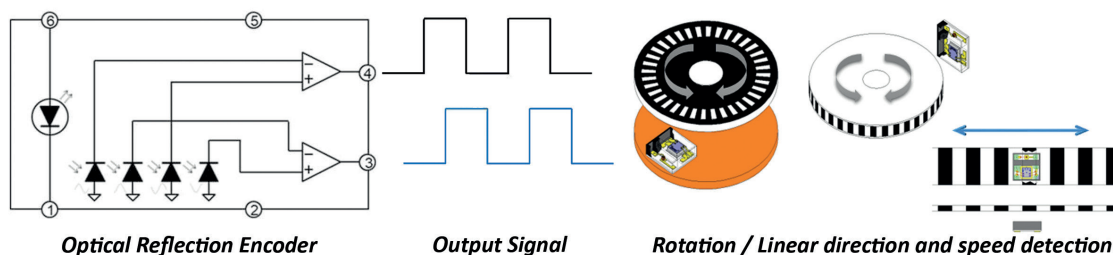
The core of the NJL5821R and NJL5822R is a high-brightness infrared LED, four photodiode detectors, and a signal processing unit. These encoders are particularly useful in applications such as a rotation detection, making them valuable in devices like consumer electronics and industrial controls. The main difference between the two encoder ICs is just the level of resolution, the NJL5821 can detect up to 150 LPI and the NJL5822R to 180 LPI. The products are assembled in a compact package measuring just 2.6 x 2.5 x 0.8 mm, making them well-suited for modern applications demanding miniaturization.

#### How does it work?

To perform the motion measurement, a disk or strip with a linear reflective/non-reflective pattern is assembled to the motor shaft or other moving part of the device. As the disk rotates or the strip moves, it reflects the light emitted by the LED back to the photodiode sensors. The reflected light pulses are detected and converted by internal circuitry into electrical signals, and finally provided on two individual out-of-phase outputs channels (A and B phases).

Each channel produces a series of equally spaced pulses per revolution (PPR), further processing is done by an external microcontroller to determine the rotation or movement characteristics by analyzing the phase relationship between both channels. Both the direction and speed can be detected, making the encoders ideal for applications where both parameters are required.

The advantage of optical encoders is that they have no physical contact to the moving part. This design minimizes wear and tear, resulting in a longer lifespan, a higher reliability, and provide high-resolution measurements. This is crucial for applications requiring precise control, such as robotics, industrial automation, and computer peripherals.



# NEWS

## Application example

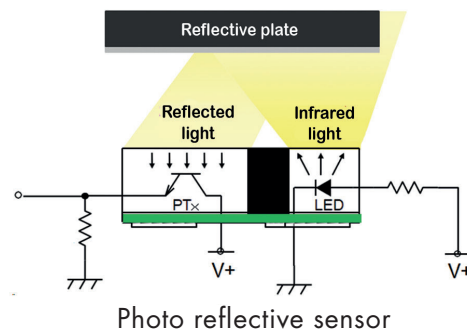
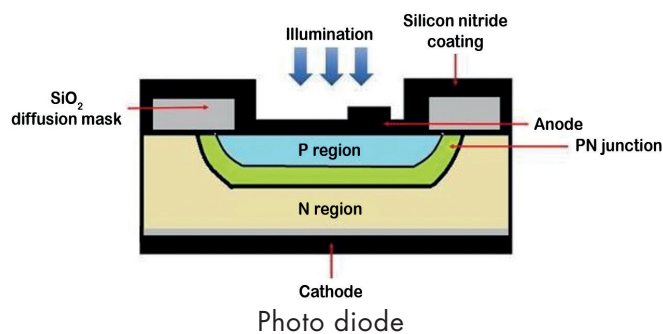
The rotary encoders can be used in various industrial and consumer systems, here are some practical examples: robotic arms: to measure joint angles to ensure precise positioning and control. Conveyor systems: to track the rotation of conveyor rollers to monitor speed and position.

CNC machines: to provide feedback on tool position for precise machining. Volume and input dials: in audio equipment or other devices, encoders track

the rotation of control knobs for user input. Camera gimbals: optical encoders track motor positions for stabilized camera movements.

## Conclusion

In conclusion, photo sensors are a vital component in modern technology, playing a pivotal role in driving innovation across industries. Nisshinbo micro devices has many years of experience developing optoelectronic devices and has a comprehensive portfolio of solutions available.



## APPLICATIONS

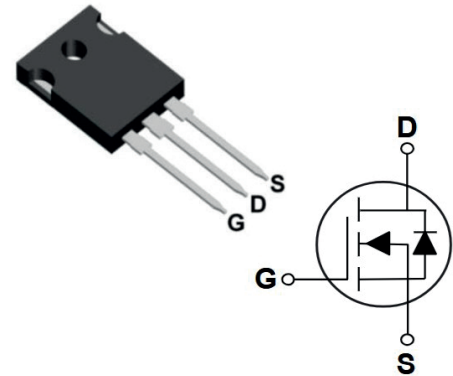
- Robotic arms
- Conveyor systems
- CNC machines
- Volume and input dials
- Camera gimbals
- Solar trackers
- Machine vision systems
- Fitness equipment

## FEATURES

- Miniature, thin package: L2.6 x W2.5 x H0.8 mm
- Digital two outputs type: A, B phases
- Incremental output type
- Operating temperature range: -30 °C to +105 °C
- Resolution NJL5821R / NJL5822R: 150 LPI / 180 LPI
- Pb free soldering re-flowing permitted: 255 °C, 2 times
- Halogen and lead free
- RoHS compliant

## 1700V SiC MOSFETs

The 1700V SiC MOSFETs has been especially tailored to minimize on-state resistance, provide superior switching performance, higher system efficiency, and faster operating frequency. These devices are well suited for high efficiency fast switching applications.



Maximum ratings  $T_c=25^\circ\text{C}$  unless otherwise noted

SYMBOL	PARAMETER	RATING	UNITS
$V_{DS}$	Drain-source voltage	1700	V
$V_{GS(MAX)}$	Gate-source voltage	-10 / +25	V
$V_{GS(OP)}$	Gate-source voltage (recommended operational values)	-5 / +20	V
$I_D$	Drain current - continuous ( $T_c=25^\circ\text{C}$ )	70	A
	Drain current - continuous ( $T_c=100^\circ\text{C}$ )	45	A
$I_{DM}$	Drain current - pulsed (NOTE 1)	140	A
$T_j$	Operating junction temperature range	-55 to 150	$^\circ\text{C}$
$T_{STG}$	Storage temperature range	-55 to 150	$^\circ\text{C}$
MARKING CODE		SNAR070	

### APPLICATIONS AREAS

- Solar inverters
- Switch mode power supplies, UPS
- High voltage DC/DC converters
- Motor drives

### KEY FEATURES OF THE T3SNAR070

- $R_{DS(ON)} \leq 70\text{m}\Omega @ V_{GS}=20\text{V}$
- Low on-resistance
- High speed switching
- Green device available
- Lower capacitance
- Higher system efficiency
- Easy to parallel



Contact for information: Mr. Kinn · phone: +49 7452 6007-21 · e-mail: d.kinn@endrich.com



### HEADQUARTERS

endrich Bauelemente Vertriebs GmbH  
P.O.Box 1251 · 72192 Nagold,  
Germany  
T +49 7452 6007-0  
E endrichnews@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  
**Hungary**  
Budapest:  
T +36 1 2974191  
hungary@endrich.com

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

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

Publisher: endrich Bauelemente Vertriebs GmbH, Hauptstr. 56, 72202 Nagold, Germany, Tel: +49 7452 6007 0, Fax: +49 7452 6007 70, Mail: endrich@endrich.com, Web: www.endrich.com, Managing Director: Dr. Christiane Endrich, Registered office: Nagold, HRB Stuttgart 340213, VAT identification number: DE144367280, Concept: endrich Bauelemente Vertriebs GmbH, Reprints, including extracts, only with the written permission of endrich Bauelemente Vertriebs GmbH. All information and details in this brochure have been compiled to the best of our knowledge and belief, but without guarantee. Subject to price changes, errors, typesetting and printing errors. Status 05.10.2023

If you no longer wish to receive endrich news by mail, please send an e-mail to newsletter@endrich.com

Certified acc. to ISO 9001:2015 / 14001:2015

