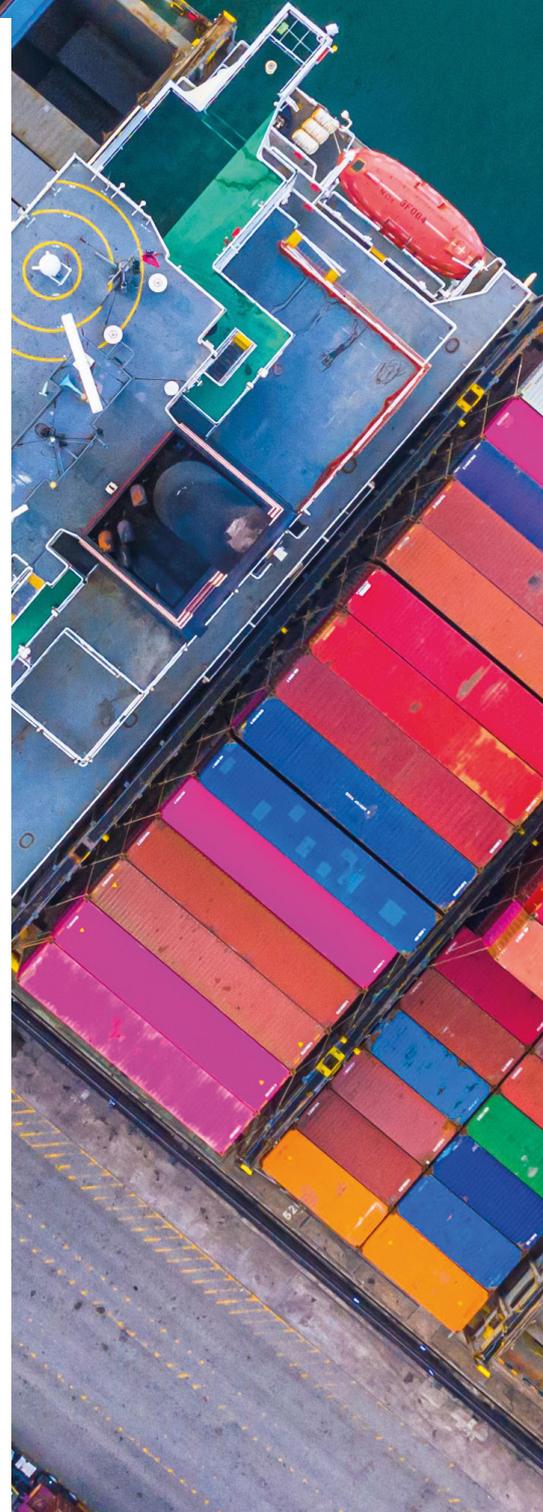


# IP&E News

3<sup>rd</sup> Quarter 2021



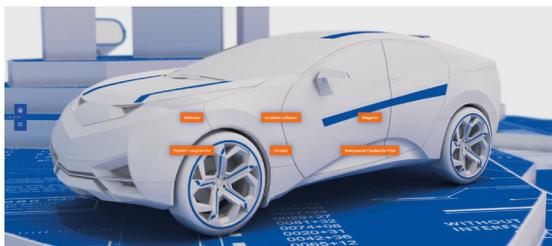
# TDK solutions for growth markets of digital & energy transformation



## Digital TDK World

In order to stay in contact with customers during the pandemic, TDK created an effective marketing tool with universal appeal: the Digital TDK World

This interactive website provides multimedia information about TDK Group products and technologies across the following product brands: TDK, EPCOS, Micronas, InvenSense, Chirp, Relyon Plasma, Tronics, TDK-Lambda and ATL.



The start screen depicts an animated, computer-generated 3D world built around TDK's seven fast-growing target markets in the DX and EX world: Mobility, Energy, Connections, IoT, Wellness, Experience and Robotics. More than 70 product themes are currently on display, featuring videos, animated sequences, and detailed presentations.

## Highlights include

- Passive components such as MLCCs, multilayer RF inductors and power inductors, haptic actuators and piezoelectric speaker, thin film RF components, active leakage current filters (LeaXield®), ultrasonic sensor modules, ferrite cores with distributed air gaps, aluminum electrolytic capacitors for DC link, high-performance TVS diodes, low-profile pressure transmitter as well as ceramic capacitor (CeraLink®) and cold plasma technologies.
- Sensors such as temperature and pressure sensors, MEMS microphones and MEMS sensors, Hall and TMR angle sensors, ultrasonic ToF range sensors
- Power Supplies such as AC-DC Power Supplies,  $\mu$ POL™ Embedded DC-DC Converters and DC-DC Converters



Scan QR-Code for more information:  
<https://www.tdk.com/world>

During its 85-year history, TDK has always aimed to follow our corporate motto "Contribute to culture and industry through creativity". Essentially, we try to remain a venture company that challenges itself and constantly offers new solutions to our customers around the globe. TDK's original innovations include the first ever commercialization of ferrite, magnetic tape technology for audio cassettes, multilayer technology and magnetic head technology. At their time, each innovation created

value to the end consumer, as well as to the electronics industry. TDK continues to explore these innovations by optimizing our five core technologies: materials, process, evaluation and simulation, product design and production technology.

In the recent 15 years, many new companies joined the TDK Group. We have actively expanded our product portfolio with the target to provide an innovative broad range of electronic components

and systems. We challenge ourselves by addressing the market needs for upcoming applications that are derived from the digital transformation (DX) and the energy transformation (EX) of our societies. TDK stays competitive through continuous and close collaboration with our customers and development partners, which enables us to deeply understand their current and future requirements.

# IP&E by Arrow

## Providing components for success

### Components – EMEA

#### Content

4	<b>Amphenol ICC</b> Battery Management Systems
5	<b>AVX</b> Market Leading Polymers
6	<b>Belden</b> LioN-X® Power Products
7	<b>Bourns</b> Automotive Grade Fuses
8	<b>koa</b> High Precision & High Reliability Chip Resistors
9	<b>Molex</b> Watch the BittWare 385A FPGA Unboxing
10	<b>Murata</b> Micro Batteries with Extended Temperature
10	<b>Welwyn</b> Robust Metal Element Current Sense Resistor
11	<b>Nichicon</b> Rechargeable Batteries SLB Series LTO
12	<b>Panasonic Industry</b> SFM Relay with Forcibly Guided Contacts
13	<b>Panduit</b> Innovative Abrasion Protection Solutions
14	<b>TDK</b> µ-POL Power Modules: for Tight DC-DC Design
15	<b>TE Connectivity</b> 2.5 mm Signal Double Lock Connectors

# Battery Management Systems

All electric vehicles (EVs) are equipped with a Battery Management Systems (BMS) that intelligently controls the battery charge and protects it from operations beyond the safe limits. It consistently monitors the battery pack during charging and discharging sessions and optimizes the performance by balancing the cells inside the pack, thus improving the battery life and capacity. Amphenol offers a range of compact, flexible high performing automotive grade connectors for these power circuit designs.

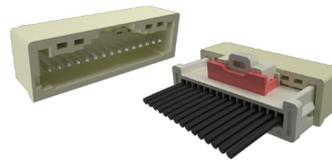
## WireLock®

WireLock® is a 1.80 mm pitch wire-to-board solution for space saving automotive-grade applications. It has nominal current carrying capacity of 3 A and supports cable wire gauge from 22 AWG to 26 AWG and is available in 10 to 40 positions in double row with vertical and horizontal TH and SMT configurations.



## Minitek® Multipitch 1.25 & 1.50 mm

Minitek® Multipitch 1.25 & 1.50 mm connectors come in single and double row with active latching, TPA and CPA features are optional. They have a current carrying capacity of 2 A and cable external diameter from 24 AWG to 28 AWG. The 1.25 mm single row is available in 2 to 15 positions with horizontal configurations. Double row is available in 10 to 30 positions. 1.5 mm single row is available in 2 to 15 positions with horizontal configurations.



## Minitek MicroSpaceXS™

Minitek MicroSpaceXS™ Waterproof & 1.27 mm Crimp-to-Wire solution is compatible to LV214 Severity-3 and USCAR-T2V2 specifications. These 1.27 mm pitch connectors in waterproof and non-waterproof have a current rating up to 3 A per contact for waterproof and 4 A per contact for non-waterproof. They are available in staggered vertical and horizontal configuration with, PIP soldering, and tin or gold plating.



## Minitek MicroSpace™

Minitek MicroSpace™ Crimp-to-Wire Connectors enable LV214 Severity-2 and performs at 1.5 and 1.27 mm pitches. Available in single and double row versions, with top and side latch configurations. Rated up to 100 mating cycles on Gold/GXT® contacts with current ratings up to 4A per contact. Moreover, this vibration-tolerant product is marked by its high connector locking strength of more than 75 N.





# Market Leading Polymers



AVX offers a broad range of conductive polymer solid electrolytic capacitors, targeting general and specific market requirements. Typical features like high capacitance in small and low profile, low ESR or stability of performance in time make them a good choice for commercial, industrial, automotive or defense and aerospace segments. Conductive polymer capacitors are available in a wide variety of technologies like low profile, high CV, high energy, low ESR in both J-lead and facedown (undertab) designs.

## AVX Market Leading Polymers

- Highest voltage polymer
- J Cap highest energy polymer
- Smallest 0402 F38 polymer
- 125 °C SMD polymer, 10 k hrs (hermetic)
- Low profile sub 0.9 mm SMD

## DC/DC Converters for

- Telecommunication
- Industrial
- Avionics

## Standard TCJ/TCN/TCM Series

- Very good reliability with failure rate 1%/1000 hrs at 85 C and rated voltage
- Low ESR and low voltage derating rules allow usage in applications up to 100 V
- Primary applications: computers, telecommunication devices, DC/DC convertors, and LED drivers

## COTS+ TCB/TCS Series

- Basic reliability 0.5 %/1000 hours at 85 C
- Withstand 85 C /85 RH for  $\geq$  500 hours
- Operating range 55 °C to 125 °C
- Optional surge screening at 55 °C and 85 °C
- SnPb plating option
- 10 to 470 uf
- Low case inductance

## Space Level TCH Series

- Aerospace & Hi Rel applications
- Low ESR conductive polymer electrode
- Endurance up to 10,000 hours on selected codes
- 100 % surge current tested
- Ceramic case hermetic packaging
- Stability under humidity and ambient atmosphere exposure

## Miniature F38 Series

- Innovative undertab construction offers maximum cap and low ESR/ESL
- 0805 and 0603 case sizes allow drop in replacement of MLCC to address the DC Bias and noise issues of the ceramic dielectric.
- CV range: 2.2 10 0 $\mu$ F / 4 10 V
- Primary applications: tablet PC, smart phones, DC/DC convertors, wireless modules, and portable game machines

## Automotive TCQ Series

- Robust design for automotive applications
- Reliability of 1%/1000 hrs
- 85/85 °C/85 %RH, Ur 1000 and 500 hours
- 55 to +105 105 °C/125 125 °C operation temperature
- Full voltage range: 2.5 35 V
- DCL 0.1 CV

# LioN-X<sup>®</sup> Power Products

The new, innovative LioN-X portfolio, based on the successful LioN-Power product family, combines IO-Link master and I/O modules with completely new features such as OPC UA, Security and up to 2A output current per port and offers:

- Versatile integration options thanks to four implemented fieldbus protocols as well as different IIoT protocols.
- Simple configuration of various IO-Link devices using the IODD interpreter in the LioN Management Suite (LMS) V2.0, Belden's configuration tool.
- Innovative security functions – ACHILLES-tested, Syslog available for collecting, storing and processing log messages.

**Key features**

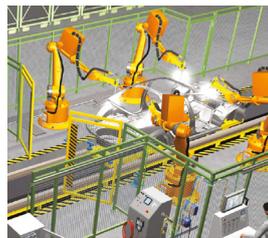
- Output current up to 2A per port
- Parallel communication via fieldbus (PROFINET, EtherNet/IP, EtherCAT, Modbus TCP) and simultaneously via the IIoT protocols OPC UA, MQTT, REST and CoAP
- Min. cycle time ~1 ms
- Compact and robust housing design (IP67, IP69K)
- Expanded temperature range (-40°C to +70°C)
- Cost-effective LioN-Xlight single protocol variants available

The LioN-X system is suitable for almost all industrial applications, especially for those that involve harsh environmental conditions such as robotics, material handling and mechanical engineering, as well as for transportation, wastewater treatment and wind energy.

**IO-Link**



**LioN-X<sup>®</sup>**  
IO-Link Master



Orderable at [arrow.com](http://arrow.com)

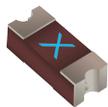
- 0942 UEM 601

Accessories			
	Item Number	Type	Function
	-	LioN Management Suite	Configuration tool for LioN-X for parameterization of any IO-Link device
	30088	RST 5-RKT 5-228/5 M	Sensor/actuator cable
	934849076	RKT 5L-949/5 M	Power supply cable
	12121	0985 342 104/5 M	Ethernet cable

# Automotive Grade Fuses



SF-2410FA-W Series



SF-2410FPA-W Series



SF-1206SA-W Series



SF-0603HIA-M Series



SF-0603SA-M Series



SF-1206HIA-M Series



SF-1206SA-M Series

## Where Automotive grade fuses make a difference

Automotive designs have more embedded electronics than ever before. Along with the rapid growth predicted in the electric vehicle (EV) market, circuit protection solutions must advance to meet a growing list of dynamic design requirements. The number of electronic components used in hybrid and electric vehicles is increasing, and the corresponding number of potential fault conditions is increasing as well. As electrification in the automotive sector continues to rise, so will the need for high reliability automotive grade overcurrent protection.

## Protection by Design

Fuses such as Bourns® SinglFuse™ SMD fuses work to protect a load based on the current flowing through the fuse. The fuse will trip when its rated parameters are exceeded. As a single blow fuse, Bourns® SinglFuse™ SMD fuses become a true open circuit when the device trips, allowing no current to flow through to downstream components on the other side of the surge.

The SinglFuse™ SF-0603SA-M, SF-0603HIA-M, SF-1206SA-M and SF-1206HIA-M model families were developed using Bourns' advanced multilayer ceramic design that enables enhanced voltage and current handling capabilities. Offered in small 0603 and 1206 package sizes, these models feature high inrush current withstand capabilities and slow-blow fusing speeds.

Utilizing Bourns' innovative PCB wire core and ceramic multilayer designs, the latest AEC-200 equivalent compliant model families deliver enhanced voltage and current handling capabilities with more precise hot spot control along the fuse element. They also provide improved arcing suppression and inrush current withstand capability, and superior structural integrity when blown compared to traditional ceramic tube fuse designs. Furthermore, their precision fusing characteristics also permit

easy customization, allowing designers to meet application-specific fusing requirements.

## Selecting the right fuse

When selecting an automotive grade fuse, current and voltage ratings and fusing speed are important considerations. Bourns' automotive grade SMD fuse portfolio currently offers rated currents from 0.5 A to 20 A, with a wide range of rated voltages from 24 V to 250 V. Available package sizes currently range from EIA 2410 down to 0603, with models available in four different fusing speed options including fast acting, fast acting precision, slow blow, and high inrush withstand.

New Bourns® SinglFuse™ AEC-200 compliant models are ideal protection solutions for a variety of harsh environment applications. The seven new model families are fully compliant with Bourns' internal AEC-Q200 equivalent test procedures to help ensure rugged performance in a broad range of high stress applications.

## Application Examples

### USB I/O Ports

Designed to offer optimized voltage and current ratings for automotive systems that utilize DC/DC converters such as 48 V – 12 V, specific Bourns® SinglFuse™ models provide the necessary fusing speeds to support USB I/O port protection.

### Battery Management Systems

In Battery management systems, designers can utilize automotive grade SinglFuse™ SMD fuses as both primary overcurrent protection on the BMS controller board and for battery cell overcurrent protection.

### On-Board Chargers

For On-Board Charger (OBC) applications, an automotive grade SinglFuse™ SMD fuse can be used as primary overcurrent protection between the power grid and the DC-DC converter.

# High Precision & High Reliability Chip Resistors

## Thin Film Technology – RN73R/RN73H-Series

KOA's RN73H-series thin-film chip resistors have been designed to offer highest precision resistor solutions for tough environments, especially in automotive and industrial applications. Tolerances are available to  $\pm 0.05\%$  and TCR to as low as  $\pm 5$  ppm/K. A special protection layer in combination with a high heat resistant epoxy coating on top of the enhanced resistive element yields superior moisture stability.

### Features and Benefits

- $\pm 0.05\%$ ,  $\pm 0.1\%$ ,  $\pm 0.25\%$ ,  $\pm 0.5\%$  or  $\pm 1\%$
- T.C.R.:  $\pm 5$ ,  $\pm 10$ ,  $\pm 25$ ,  $\pm 50$  or  $\pm 100$  ppm/K
- $\pm 0.1\%$  ~ Long term stability
- 10  $\Omega$  to 1.5 M $\Omega$
- 0402, 0603, 0805, 1206, 1210 inch
- Ni/Cr metal thin film resistive element
- Excellent heat resistance, high power rating
- RN73R: **NEW** standard thin film version
- RN73H: for automotive with improved moisture resistance by additional inner SiO<sub>2</sub> protection
- EU-RoHS compliant, AEC-Q200 tested

### Applications

- Automotive
- Motor controls
- AC adapters
- A/D signal conversion
- Switching boards
- Industrial equipment and measurement
- Medical equipment



### Orderable at arrow.com

- RN73R (High Precision, High Heat Resistance, High Reliability)
- RN73H (High Precision, High Heat Resistance, High Reliability, Automotive)

## Thick Film Technology – RS73-Series

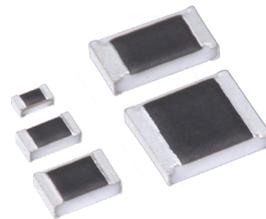
KOA's new RS73-series are ESD transient tolerant high precision and high reliability resistors using thick film technology. The RS73-series is ideal for precision designs such as high-accuracy sensing or voltage detection circuits, where ESD sensitivity is an issue. This new series also features excellent long term stability. It is an ideal alternative in applications where thin film precision devices cannot be used.

### Features and Benefits

- $\pm 0.1\%$ ,  $\pm 0.25\%$ ,  $\pm 0.5\%$  or  $\pm 1\%$
- T.C.R.:  $\pm 25$  or  $\pm 50$  ppm/K
- $\pm 0.2\%$  ~ Long term stability
- 10  $\Omega$  to 10 M $\Omega$
- 0402, 0603, 0805, 1206 inch
- Ideal for applications where thin film is not suitable
- Anti-Sulfuration type also available (RS73-RT)
- EU-RoHS compliant, AEC-Q200 tested

### Applications

- High precision circuits for automotive and industrial
- Motor controls
- AC adapters
- A/D signal conversion
- Switching boards
- Industrial equipment & measurement
- Medical equipment



### Orderable at arrow.com

- RS73F: T.C.R.  $\pm 25$  ppm/K, 0402, 0603, 0805, 1206
- RS73G: T.C.R.  $\pm 50$  ppm/K, 0402, 0603, 0805, 1206
- RS73F\_RT: Anti-sulfuration, T.C.R.  $\pm 25$  ppm/K, 0402, 0603, 0805, 1206
- RS73G\_RT: Anti-sulfuration, T.C.R.  $\pm 50$  ppm/K, 0402, 0603, 0805, 1206

# Watch the BittWare 385A FPGA Unboxing



BittWare, a Molex company, continually innovates its well-known FPGA acceleration platforms, based on Intel, Xilinx and Achronix, to offer a variety of enterprise-class hardware and solutions that enable customers to deploy quickly and with low risk. These products are designed for a number of application areas, including Compute, Network, Storage, and Sensor Processing. What's more, there are numerous possible use cases to support many design challenges, such as voice recognition/search or image recognition, or fraud detection and analytics.

Arrow and BittWare have joined forces to provide Arrow customers with the ability to borrow an FPGA card, free of charge, in order to allow customers to evaluate the products themselves. You can find out more about BittWare, the products available for review and how to access the TestDrive program here:



Scan QR-Code for  
more information.

Furthermore, the Arrow Tech Video series is pleased to present a short demonstration of the BittWare 385A FPGA Accelerator Card, featuring an Intel Arria 10 FPGA, this card is a Low-Profile PCIe form factor with Dual QSFP+ and DDR3 memory. The 385A low profile accelerator card provides a powerful PCIe computing and I/O platform for FPGA development and deployment across a range of application areas including high performance computing, image processing, and network analytics. The video includes a detailed view of the architecture of the board and the various product features. Plus, this brief video runs through the steps necessary to experience the card's capabilities as part of the TestDrive program. Learn how to perform a fast and accurate evaluation of the product performance, including face detection, image recognition, and a number of OpenCL benchmarking use cases.



Watch the BittWare  
385A FPGA Unboxing:  
<https://youtu.be/p-AMcCc-3WI>  
or scan CQ-Code

# Micro Batteries with Extended Temperature



Murata offers a wide range of small batteries with high performance and reliability, taking advantage of the state-of-the-art material and process technologies. Especially extended temperature lithium coin batteries are getting popular for outdoor IoT system like smart meters, sever environment condition devices like FA control systems and automotive devices.

**Wide operating temperature range from -40 °C to 85 °C**

This supports electronic components and IC of which operating temperature range is up to 85 °C in many cases. Also, the excellent storage characteristics minimize the voltage drop compared with the standard even when the extended temperature is stored for 100 days or more at 85 °C.

**Maximum capacity (2000 mAh) with coin lithium battery**

The largest capacity “CR3677X” in the extended temperature has a nominal capacity higher than the CR123A battery and CR2 battery, and contributes to downsizing and slimming of electronic devices.

---

Orderable at [arrow.com](http://arrow.com)

– CR Series



# Robust Metal Element Current Sense Resistor

With one of the largest current sense resistor portfolios in the industry, TT Electronics is well placed to help you select the right part for your design.

**AEC-Q200 certified series ULR – Features**

- Robust metal strip is able to withstand high temperature and high current.
- Low TCR and Inductance
- Resistance Range from 0.1 mΩ to 10 mΩ
- Includes anti-sulphur types
- AEC-Q200 certified
- Higher wattage devices feature PCB clearance gap to maximize thermal performance



AEC-Q200 certified series ULR

---

Orderable at [arrow.com](http://arrow.com)

– ULR Series (29 PN's)

# Rechargeable Batteries SLB Series LTO



Nichicon Corporation has launched the SLB series of small Li-Ion rechargeable batteries that has been designed to meet the growing demand from the latest portable devices such as wearables and IoT devices safely and reliably. It was developed to achieve both high power and energy density using the LTO technology. These devices function as a rechargeable battery for IoT, wearable and other applications.

Safety is extremely important when working with Li-Ion batteries, especially so when these batteries are used in devices which will be worn on a person's body. The SLB series Li-Ion batteries have very low risk of fire or explosion. During safety testing performed by Nichicon the batteries were exposed to a number of extreme fault conditions including crushing, piercing, external short circuit, over charging and discharging, during these tests the batteries exhibited no explosion or ignition.



Scan QR-Code to read  
article on [arrow.com](https://arrow.com)

## Features

- High-rate rapid charge/discharge performance
- High-density input/output that is approaching that of capacitors
- Long life of up to 25,000 charge discharge cycles
- Charge / Discharge rate of up to 20 C
- Low temperature characteristics enabling operation even at -30 °C
- Highest safety

## Application

- IoT devices
- Industrial sensors
- Machine-monitoring
- Wearable devices
- Wireless earbuds
- Backup power supply
- Stylus pens
- Toys

---

## Orderable at [arrow.com](https://arrow.com)

- SLB08115L1401PM
- SLB12400L1511CV
- SLB03070LR351BS

# SFM Relay with Forcibly Guided Contacts

## Relay safety, nonstop

Circuits, uninterruptedly safe: The SFM relay uses forcibly guided contacts according to EN 61810-3 that are monitoring each other for any kind of safety control or safety application. This enables the safe operation of machinery and other automation, building or transportation equipment – and prevents people from being hurt and assets from being damaged.

## Super Flat Housing

It is the first time that 1NO and 1NC power contacts are available in a super flat housing with a height of only 7.8 mm. This makes it possible to miniaturize all kinds of safety modules by being able to switch high loads on both contacts.

Another good news for the the global market would be the SFM's reflow soldering capability, including the availability of tape & reel processing.

The power contacts can switch 6 A on the NO and 4A on the NC side – that means SFM can handle loads like valves directly without any other additional relay employed in between. For signaling, on the other hand, the silver alloy contacts can handle low level loads down to 10 V 1 mA as well. This is important, not only in a vast field of railway applications, but also increasingly also in industrial contexts.



ASFMO in a flat housing

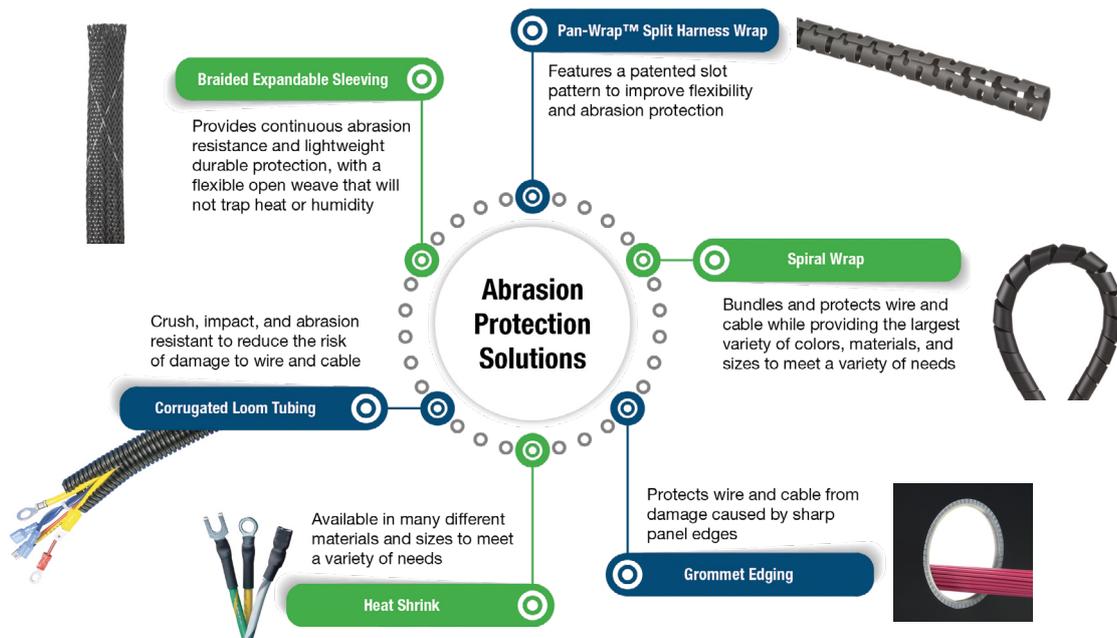
With a permanent magnet coil system contained even in the miniaturized body, SFM guarantees a very high shock and vibration resistance  $\geq 20$  g and a low coil holding power of 100 mW. Furthermore, an ambient temperature of  $-40$  to  $85$  °C and reinforced insulation  $\geq 5.5$  mm (V=230 V overvoltage category III, 6 KV) on NO side render the SFM safety relays from Panasonic an ideal choice where operational safety is an essential prerequisite.

---

## Orderable at [arrow.com](https://arrow.com)

- ASFMO\*

# Innovative Abrasion Protection Solutions



Panduit™ abrasion protection products provide an economical and easy way to insulate, protect, bundle and color-code components and cable. The products are designed and manufactured to meet applicable quality standards including International, UL, Military, ISO, and Aerospace.

## **Pan-Wrap™ Split Harness Wrap**

- Patented slot pattern provides improved flexibility & abrasion protection in any application
- Unique wall design provides for easy cable breakouts
- Considerably reduces installation time
- Large overlap accommodates a wide range of bundle diameters

## **Spiral Wrap**

- General purpose Abrasion Protection product for Wire Harness and bundling applications
- Allows breakouts of single/multiple cables
- Multiple colors allow for easy identification of cable bundles
- Available in multiple materials
- Simple installation tool supplied in each package

## **Non-Shrink PVC Tubing**

- Provides insulation and protection for lead wires, wire harness assemblies, soldered joints and components in electrical and electronic equipment
- Resistant to heat and moisture

## **Corrugated Loom Tubing**

- Economical protection for cables in wire harness applications
- Solid wall product allows complete protection of cable bundle

## **Braided Sleeving**

- Provides continuous abrasion protection for wires, cables, hoses & tubing. - Highly flexible open weave will not trap heat or humidity
- Lightweight, durable protection
- Compliant with US and European passenger rail standards

# μ-POL Power Modules: for Tight DC-DC Design

TDK's chip embedded power modules for 3 A-6 A and soon 12 A. Fast design tools on Ultra Librarian to schematics and layout available. UltraThin Power Modules come with only 1.5 mm highth.

## Features

- 3 A, 4 A, 6 A – FS1403, FS1404, FS1406:  
3.3 mm x 3.3 mm x 1.5 mm height
- Coming soon: 12 A – FS1412:  
4.9 mm x 5.8 mm x 1.6 mm height
- Industrial Temp: -40 C to +125 C
- 4.5 V to 16 V input, 0.6 to 5 V Vout
- No external compensation
- Minimum BOM and Cap load with Fast Transient DC-DC engine
- Pass Vibration and Drop Test
- Excellent Thermal Performance
- Light weight: 50 milligrams
- Analog DC-DC or I<sup>2</sup>C / PMBus options

## Applications

- FPGA/SoC, ASICs, AI, and multi-ARM Power: Xilinx, Intel/Altera, Microsemi, NXP, Cavium, MIPs, Nvidia
- Comms Chips: Broadcomm, Marvell
- System on Modules, PCIe, ACTA and other tight form-factors requiring high density power
- Comms, Computing and Industrial & Instrumentation, Medical Applications
- Embedded & Machine Vision, Security/ Surveillance, Robotics, Machine Learning

## Tools

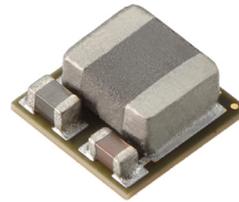
- Fast Starter Design for multi-modules downloadable for FREE at Arrow and Ultra Librarian for FS1412, FS1406, FS1404 and FS1403, both schematics and PCB layout in OrCAD/Allegro, Altium, Mentor, KiCAD, Eagle and DesignSpark.



5 W to 40 W  
starter design



Video on Fast  
Design Tools



- FPGA Design Examples attached: Intel Cyclone 10GX, Xilinx Zynq UltraScale+
- General Information: [www.tdk.com/pol](http://www.tdk.com/pol)

---

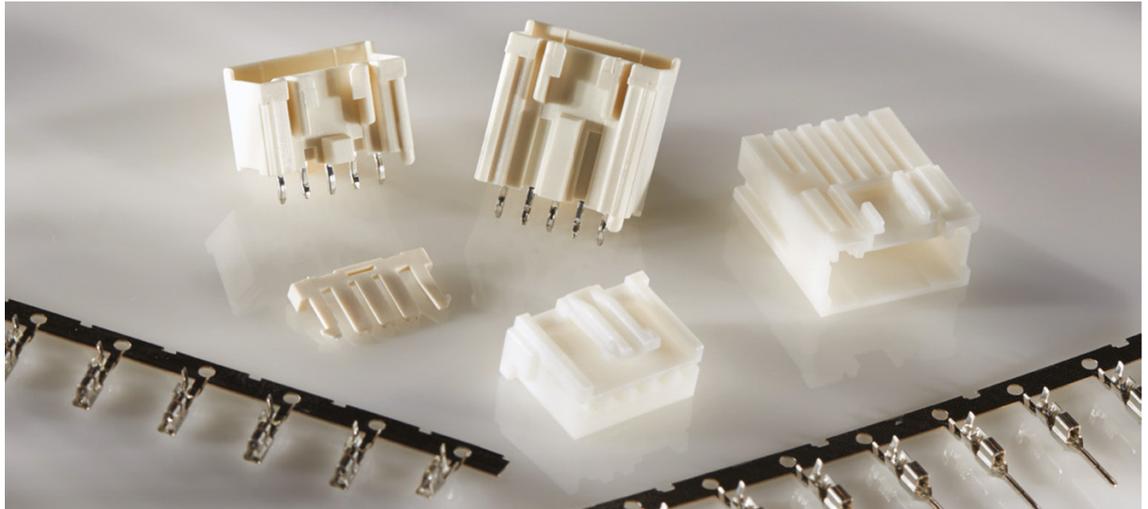
## Orderable at arrow.com

- FS1403-3300-AL FS1403-3300-AS
- FS1403-5000-AL FS1403-5000-AS
- FS1404-2500-AL FS1404-2500-AS
- FS1404-3300-AL FS1404-3300-AS
- FS1406-0600-AL FS1406-0600-AS
- FS1406-0700-AL FS1406-0700-AS
- FS1406-0750-AL FS1406-0750-AS
- FS1406-0800-AL FS1406-0800-AS
- FS1406-0900-AL FS1406-0900-AS
- FS1406-1000-AL FS1406-1000-AS
- FS1406-1050-AL FS1406-1050-AS
- FS1406-1100-AL FS1406-1100-AS
- FS1406-1200-AL FS1406-1200-AS
- FS1406-1800-AL FS1406-1800-AS
- FS1406-2500-AL FS1406-2500-AS



AUTHORIZED DISTRIBUTOR

# 2.5 mm Signal Double Lock Connectors



The 2.5 mm Signal Double Lock [NL1] connectors are compact, single row connectors available in both wire-to-wire and wire-to-board configurations. The Signal Double Lock connector system consists of plug and cap housings for wire termination, optional double lock plates, crimp contacts and PC board pin headers in both standard and high profile versions. The Signal Double Lock connectors accept 26–20 AWG wire with insulation diameters up to 1.8 mm and is rated up to 3 Amps per line. The connector solution is now available in materials meeting the Glow Wire test according to IEC 60335-1 5th Edition: Household and Similar Appliances – Safety (750 °C, no flame) and UL 94 V-0.

TE Connectivity's (TE) newest addition to the portfolio, 2.5 mm Sealed Signal Double Lock connectors, offer an IP67 rated water and dust proof option for use in water related or high humidity environments.

## 2.5 mm Signal Double Lock Connectors Product Features and Benefits

- Discrete wire interconnect available in 2–13 position wire-to-board and 2–10 position wire-to-wire

- Audible click when contact is fully inserted into the housing
- Polarizing ribs on plug housing allows proper mating
- Solder tail kink along with the polarization peg (boss) feature, secures the header on the board during the solder process
- Board-mounted headers are compatible with resin or conformal coatings – no drain holes
- Multiple colors available for ease of connector identification during assembly and maintenance
- UL recognized, CSA certified and TUV approved
- Choice of V-0 rated material or GWT and V-0 rated material

## Applications

- Major home appliances and small home appliances
- Gaming
- Vending
- Garage door openers
- Security systems
- Industrial controls
- HVAC system controls
- Fan modules
- Business equipment

TE Connectivity, TE connectivity (logo), and TE are trademarks.



**Arrow Electronics, Inc.**  
**Components**  
**Frankfurter Straße 211**  
**63263 Neu-Isenburg, Germany**

In Person  
+49 (0) 6102 5030 0  
Call to talk or set up a face-to-face  
meeting with one of our knowledgeable  
representatives.

Online  
[arrow.com](http://arrow.com)  
Visit our website for everything from the  
latest news to line card information.

©2021 Arrow Electronics, Inc.  
Arrow and the Arrow logo are registered trademarks of  
Arrow Electronics, Inc. Other trademarks and product  
information are the property of their respective owners.  
ARR\_Broschuere\_IP&E-News-Q3\_07/21

**ARROW**  
**Five Years Out**