Building Automation
ENERGY MANAGEMENT SOLUTIONS

Wireless Modules
Passive and Electromechanical Components
Our mission: Enable energy saving and higher comfort for everyone

The way we generate and use energy is changing drastically.

Just connecting to the grid is a thing of the past. Today we all have to be part of the new energy infrastructure and contribute to energy saving. Panasonic has been supporting the change for years and offers components and modules for efficient, ecological and economical energy management solutions.
WIRELESS MODULES
High Reliability with Additional Crystal

Low-cost embedded Wi-Fi solution enables fast time-to-market!

The PAN9520 combines a high-performance CPU and a 2.4 GHz high-sensitivity radio in one small solution, making it possible to also run any application code directly on the module. Additionally, the integrated crystal ensures connection performance over a full temperature range and lifetime. Next to the evaluation board, a huge number of preprogrammed software elements can be used as a starting point for development. The small size and latest Wi-Fi security features qualify the low-cost solution as an ideal choice for building automation applications. The PAN9520 can be easily integrated into an existing (W)LAN network at home, where controlling the smart devices or usage data can be displayed via a webinterface.

» Xtensa® single-core 32-bit LX7 microprocessor, up to 240 MHz
» Chip internal 128kB ROM, 320kB SRAM, and 16kB low-power SRAM
» Integrated QSPI flash and PSRAM (a variety of memory densities are available)
» All security features required for WPA2 and WPA3-Personal
» Espressif Integrated Development Framework (ESP-IDF) with a multitude of examples available for software development
» Surface mount type (SMT): 24 mm × 13 mm × 3.1 mm
» Industrial temperature range from -40°C to 85°C
HYBRID CAPACITORS
For DCDC Converters or Smart Meter Control Boards

Tough against humidity and extreme temperature, longer lifetime, perfect for outdoor usage.

Hybrid capacitors combine a conductive polymer and electrolyte liquid to enable high performance and high reliability. As features of both technologies, large ripple current (low equivalent series resistance - ESR), low leakage current and high reliability all contribute to downsizing and the high reliability of the equipment. In addition, hybrid has a long lifetime thanks to polymer technology, and its ESR shows little change, even at low temperatures, and high humidity resistance performance. This makes it perfect for use with smart meters that are installed outdoors or exposed to low temperatures.

Temperature Characteristics

Impact from temperature is small. Low ESR even at low temperatures.

- Higher ripple (up to 5.8 Arms)
- Small case size (down to 5 x 5.8 mm)
- Super-low leakage current
- AEC-Q200 compliant
- Anti-vibration type available for all standard type (Φ6~)
FILM CAPACITORS

Safety and Reliability Guaranteed for Optimized Solar Inverter Design

Zero safety risk and high resistance against moisture.

The outstanding feature of Panasonic’s film capacitors is the integrated safety function. An original in-house patterned metallization process is the basis of a special structure which performs as a fuse mechanism that prevents the capacitor from experiencing short mode failure. Additionally, it achieves a very stable capacitance level over the capacitor’s lifetime and therefore guarantees high reliability. Furthermore, a long lifetime is realized by high temperature and moisture resistance using an originally developed sealing technology.

» Rated voltage 275VAC to 310VAC (EMI suppression safety class X2), 250VAC to 600VAC (output AC filter), 450VDC to 1100VDC (input DC filter and snubber)
» 0.0082μF to 10μF (EMI suppression safety class X2), 0.1μF to 110μF (input/output filter and snubber)
» -40°C to 110°C
» Built-in fuse function
» High moisture resistance
» Flame-retardant plastic (case and sealing resin)
OS-CON is an aluminum solid capacitor with high conductive polymer. OS-CON acquires low equivalent series resistance (ESR), excellent noise reduction capability and frequency characteristics. In addition, OS-CON has a long life span and its ESR shows little change, even at low temperatures, which makes it perfect use in security, surveillance cameras and any applications that are installed outdoors or exposed to low temperatures. Low temperatures and long usage can deteriorate capacitance and ESR of capacitors that contain liquid, but OS-CON, due to its solid material, is not affected by these factors.

ESR Temperature Characteristics
OS-CON vs. other types

- A wide voltage range from 2 to 100 volts
- High capacitance up to 2700μF
- Low ESR down to 5mΩ
- Long lifetime
- High ripple current

* ESR is not dependent on temperature, showing hardly any changes.
Downsizing and component saving with high-power, anti-surge resistors.

Panasonic offers a wide range of high-power, anti-surge resistors, designed and tested to be used in a variety of applications. The Anti-Surge Thick Film Chip Resistors ERJP series has a unique trimming shape for surge distribution, as well as proven small size and high power and overload characteristics. Excellent heat dissipation with optimized resistance pattern and resistance material, and the electrode design enables downsizing and a high-power rating.

**Other company**

**Panasonic**

Unique "double-C-shaped trimming" for surge distribution
 Achieved small size and high power and overload characteristics
POWER CHOKE COILS

Metal Composite Magnetic Core Technology for High Current Capability and Outstanding Reliability

“Downsize your application to invisibility.”

With the ETQP series, Panasonic offers metal composite power inductors with best-in-class reliability and efficiency. The unique magnetic core material provides no hard saturation characteristics against DC bias current and allows for very low power loss and reduced DC resistance. It has a much higher energy density compared with ferrite inductors, which in turn leads to 30% to 50% smaller case sizes and therefore perfectly supports the ongoing trend of downsizing electronic systems with high current capabilities. In addition, the inductance value does not vary over temperature, which further helps to ease the development of electronic systems. Together with its high heat resistance, it is the perfect power inductor to guarantee the highest reliability in energy management systems.

Downsize: Volume/Weight Reduction Effect

- Variety of inductance ranges: from 0.33uH to 100uH
- Package size from 5 x 5 mm to 12 x 12 mm
- Up to 85A saturation, 53A rated / 0.33µH
- Operation temp. -55°C to +155°C, up to +180°C in short time
- Miniaturization: -50% space saving vs. ferrite inductor
- Vibration resistance from 10G to 30G
A mechanical sliding spring design ensures consistent signal output.

When it comes to building automation systems, detector switches are mainly used in safety or security applications. One example is lid-opening detection: Unauthorized opening of housings can result in injuries because of high voltage or system failure. By detecting the opening, the system can switch off and shut down to avoid any accidental contact or manipulation.

For physical user-interface applications, a large variety of tactile (light touch) switches is available. Each switch is engineered for low contact resistance, small bounce noise, high contact reliability and a sharp tactile feel.