EPCI European Passive Components Institute

Automotive Passive Components News

6 Month News Collection – Q4 2015 / Q1 2016

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1. Market / Technology Trends

1.1. Automotive Cockpit Markets for Passive Electronic Components to Grow Substantially by 2020

source: TTI Europe Market Eye news. 14.01.2016 // Posted by: Dennis M. Zogbi

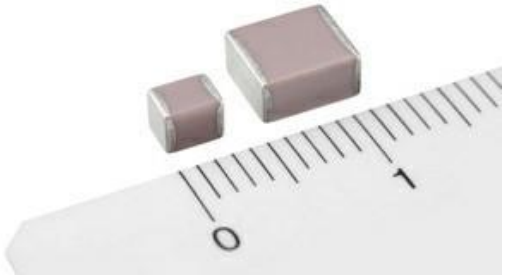
The global market for cockpit electronics is expected to grow from $34.4 billion USD in 2015 to $55.1 billion USD by 2020; a cumulative five year growth rate of 60% in value. The value proposition for electronic component suppliers is that demand will increase based on increased unit production forecasts for automobiles and light trucks which is expected to grow as a result of churn rates in industrialized economies and net new product demand in emerging economies; coupled with advances in electronic content and functionality in existing electronic subassemblies; and demand for components for consumption in new and emerging electronic subassemblies.

A Boom Market for Cockpit Electronics: 2015-2020
Double-digit cumulative growth rates are expected for automotive electronic subassemblies consumed in automobile cockpits over the next five years. Within that core market there are three emerging platforms that stand to propel growth rates faster than other sub-sets and vendors of electronic components should have clear indications as to where to invest their time and money. These are “connectivity", which is forecasted to grow at 900% cumulative between 2015 and 2020, and is expected to grow from $0.5 billion in sales globally in 2015 to $5.00 billion in sales by 2020; “Heads-Up-Display (or HUD)" which is growing from $0.4 billion USD in 2015 to an expected $1.2 billion USD in 2020- a 200% cumulative increase over five years; and “telematics" which is expected to grow from $1.4 billion in value for 2015 to $4.00 billion in 2020; which is a cumulative growth rate of 186% over five years. Here is a more granular description of each market opportunity

Automotive Connectivity
The automotive connectivity market is expected to include multiple platforms in the Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) radio communication frequencies that are used by vehicles to communicate with the highway infrastructure and to communicate with other vehicles. The initial phase will be to enhance driver safety and include such features as Emergency Electronic Brake Light Warning; Curve Speed Warning; Obstructed Stopped Vehicle Ahead Warning; Forward Collision Warning; Intersection Movement Assist; Lane Change Warning; Blind Spot Warning Traffic Jam Ahead Warning

2. Capacitors

2.1. TDK Expanded lineup of high voltage automotive MLCCs with world's widest capacitance range



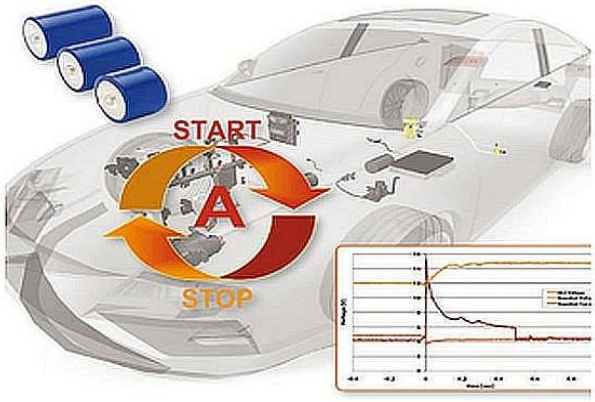
source: TDK news, 16.3.2016

TDK Corporation has expanded its CGA lineup of high-voltage MLCCs for automotive applications. The new CGA6 and CGA9 series of MLCCs, which have a rated voltage of 1000 V, feature types with capacitances ranging from 1 nF to 33 nF, the world's widest range.

The MLCCs are available with both C0G and NP0 temperature characteristics. They thus feature a temperature coefficient of 0 ±30 ppm/°C max. and temperature ranges of 55 °C to +125 °C and -55 °C to +150 °C, respectively. As a result, their capacitance drift over temperature is negligible. Moreover, the new capacitors exhibit nearly no drift over voltage and time, making them suitable for applications where high capacitance stability of the components is essential. The CGA6 and CGA9 MLCCs measure in with footprints of 3.2 mm x 2.5 mm (EIA 1210) and 5.7 mm x 5.0 mm (EIA 2220), respectively. Mass production began in March 2016.

Not only do the new MLCCs deliver an extremely constant capacitance under all conditions, their AC energy losses and heat generation are also extremely low. They are suited for use in the wireless charging units, DC-DC converters and onboard chargers in electric and plug-in hybrid vehicles, and wherever space savings and high performance are required.

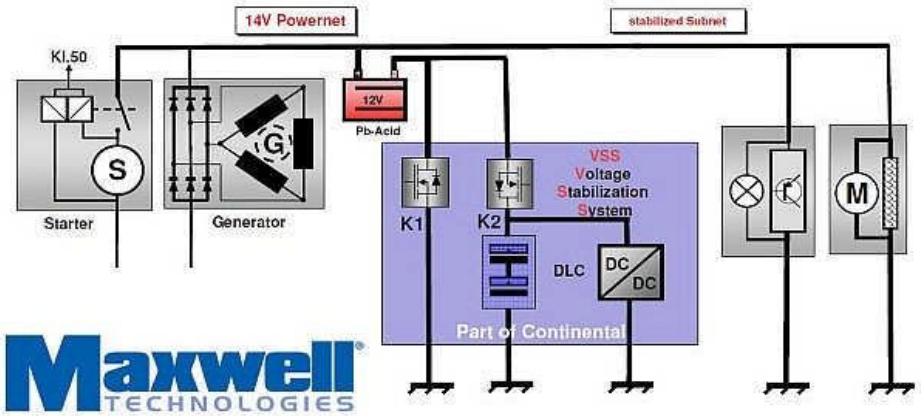
2.8. General Motors chooses ultracapacitors for start-stop



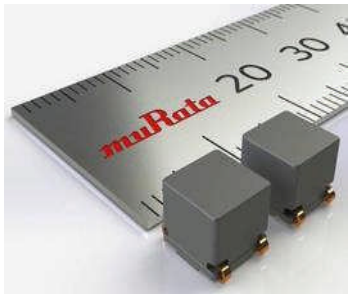
source: EDN article, Steve Taranovich -October 19, 2015

Automobile manufacturers will need to lower CO emissions to meet government standards over the next ten years. Plus, fuel efficiency is in demand by automobile owners. Ultracapacitors have found their way into the automotive ecosystem in areas such as regenerative braking, start-stop systems, active suspension systems, voltage stabilization, electric turbochargers, and more.

Maxwell Technologies, Inc. recently announced that Continental Automotive Systems' Maxwell-powered voltage stabilization system (VSS) will be a standard feature on 2016 Cadillac ATS and CTS sedans and ATS coupes, excluding the ATS-V, CTS-V, and CT6 models. General Motors is the first North American automotive original equipment manufacturer (OEM) to integrate the Continental ultracapacitor-based voltage stabilization as part of the enhanced start-stop system, which lowers fuel costs, improves performance and reduces emissions.



3.8. Power Line Common Mode Choke Coils serve automotive applications



source: Murata news, October 16, 2015

Capable of handling currents up to 5.6 A and operating temperature from -55 to +150°C, PLT5BPH Series AEC-Q200-compliant, wire wound-type, common mode choke coil targets automotive power line noise suppression. Case measures 5.0 x 5.0 mm, and common mode impedance ratings reach up to 500 Ω at 10 MHz. Due to benefits delivered to power line, this series is also suited for base station and set-top box applications.

Miniaturized Power Line Common Mode Choke Coils Designed for Automotive Applications; PLT5BPH Series Developed for Harsh Operating Environments

Smyrna, GA – Murata Americas today announced the release of the PLT5BPH Series of common mode choke coils for automotive noise suppression applications. In recent years, designers have placed a great deal of importance on improving efficiency and the ability to withstand severe environments. To achieve more precise control, many manufacturers are positioning electronic components closer to the engine or transmission in denser circuits. Murata developed this wire wound-type common mode choke coil for power line noise suppression capable of handling large currents (up to 5.6A) and wide operating temperature range (-55°C to 150°C) to meet this demand.

In addition to achieving high performance levels, the PLT5BPH Series is available in a small case size, measuring just 5.0 x 5.0mm (2020 in). Furthermore, with common mode impedance up to 500Ω (at 10MHz), substantial common mode, as well as normal mode noise suppression, can be expected. The PLT5BPH Series is also AEC-Q200 compliant.

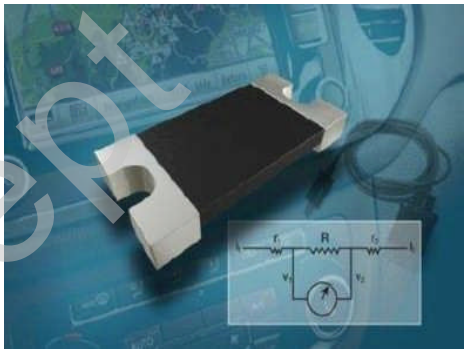
"With an increased number of mechanical and electrical components in an already limited mounting area, temperature and footprint management are very real challenges that can potentially lead to noise concerns. Murata's new series delivers a compact, high temperature rated solution to some of the most pressing performance issues that automotive design engineers face," said Peter Tiller, General Manager, Component Group, Murata Americas.

Because of the benefits delivered to the power line, the PLT5BPH Series is also well suited for base station and set-top box applications. Samples are available through Murata authorized distributors.

4. Resistors

4.1. Vishay Power Metal Strip ® Resistor New Features for Increased Measurement Accuracy and Reduced TCR

source: Vishay news, 8.2.2016



Vishay Intertechnology announces a new surface-mount Power Metal Strip current sense resistor in the compact 1206 case size that combines an extended power rating to 0.5 W with a Kelvin 4terminal connection that reduces TCR and enables tight tolerances down to 0.1 % for increased measurement accuracy. To minimize excess power dissipation, the Vishay Dale WSK1206...18 High Power offers low resistance values down to 0.01 Ω.

- Offers twice the power of standard resistors in the 1206 footprint
- Saves board space and reduces costs by allowing designers to utilize fewer and smaller components
- Reduces system errors while eliminating the need for system calibration during manufacturing or in the field
- Further reduces costs and improves end product performance
- Advanced construction incorporates a solid metal nickel chrome or manganese-copper resistive element with low TCR (< 20 ppm/°C)
- Proprietary processing technique produces extremely low resistance values

5.2. Internet-Connected Sensors Increase in Importance

source: Microwave & RF article, 3.3.2016

Jack Browne | Microwaves and RF

Sensors are being developed for a growing number of applications based on their capability to be accessed remotely for information via the Internet. The use of temperature, humidity, motion-detecting, and other kinds of sensors is making possible automated homes and buildings and “smart" cars. For effective and efficient connection to the Internet, these Internet of Things (IoT) or Internet of Everything (IoE) devices rely on the use of available wireless bandwidths and miniature antennas capable of receiving relatively high data rates at very low signal levels.

In previewing the requirements of future smart-sensor-driven automated homes, offices, and automobiles, researchers from the Department of Electrical and Computer Systems Engineering at Monash University in Clayton, Australia surveyed the different types of sensors currently being used for IoT and IoE applications. The researchers looked at how different active and passive sensors can be combined to perform a wide range of functions. The report includes details on a number of unconventional electromagnetic (EM) transduction-based sensors—including passive chipless radio-frequencyidentification (RFID), crack, and strain sensors—in addition to widely used varieties like pressure, temperature, and gas-detection sensors.

This wide range of chipless sensors can be fabricated on materials that can be formed into planar, lightweight, flexible shapes for ease of installation in factories, office buildings, and residences. The sensors can be readily printed for the low-cost mass production needed for such predicted large volumes for IoT/IoE wireless sensor applications.

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