

Press Release

High performance in compact design- Power resistors on steel for intelligent drive- and converter systems

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Power resistors on steel in thick-film technology offering high performance, coupled with compact design, are superbly suited for intelligent invertors, frequency converters, drive- and control systems.

For many years now, Metallux AG manufactured quality resistors are used in intelligent drive-and converter systems. Exclusively manufactured in Germany, thick film power resistors with their compact design offer a higher performance potential with lower inductivity compared to wire power resistors. The extremely flat design with a substrate thickness of only one millimetre, together with an optimised utilisation of space as well as low heat transmission resistance, distinguish these power resistors and are particularly appreciated in sectors like drive control, automation technology and also in renewable energy generation.

Design and operating mode of power resistors in thick film on steel

A defined electrical energy is through interrelation of resistance value, voltage and electrical current imprinted into the resistor material and transformed into heat. In thick film resistors this is a 20 to 25µm thick layer consisting of various metallic components as well as adhesive agents and ceramics. Onto a substrate of stainless steel, layers for insulation, contact and resistance are applied, followed by a final coating of a glass layer protecting against environmental influences. Optimal heat exchange is achieved due to low heat conduction, discharging the resistor film. The system of various materials is based on a harmonious thermal expansion. A large percentage of heat is initially absorbed through the stainless steel substrate, whilst on the surface, heat exchange with surrounding medium, normally air, takes place. By exclusively operating in air, a balanced status between introduced electrical energy and dissipated heat is quickly achieved. The heat balance improves by installing the substrate onto a heat sink. Power resistors in thick film technology offer the advantage of an extremely low inductivity as well as space saving design, compared to conventional wire resistors. Beside being a good heat conductor, the use of steel ensures furthermore a high mechanical stability.

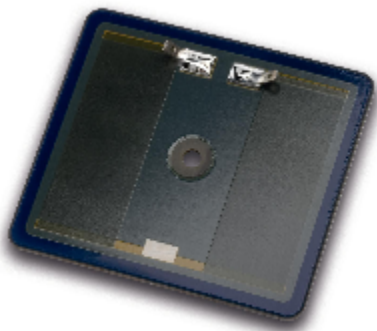
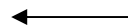
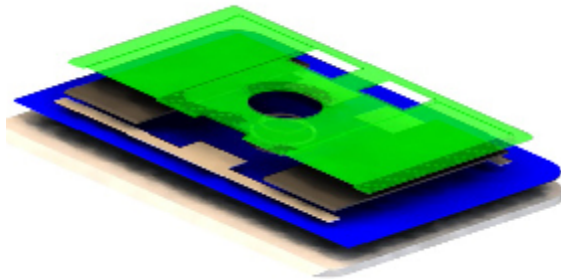


Photo 1: Metallux-PLR

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Assembly flat resistor PLR
- glass layer
- resistor material
- contact layer
- insulation layer
- steel substrate

Photo 2: Metallux PLR layer composition

Integration of Metallux power resistor PLR into a system

The structural components coupled with the manufacturing method, allow for a flexible integration of the Metallux power resistors in thick film on steel, into existing or available system solutions. The space saving design allows easy incorporation into existing structures, e.g. aluminium heat sinks.

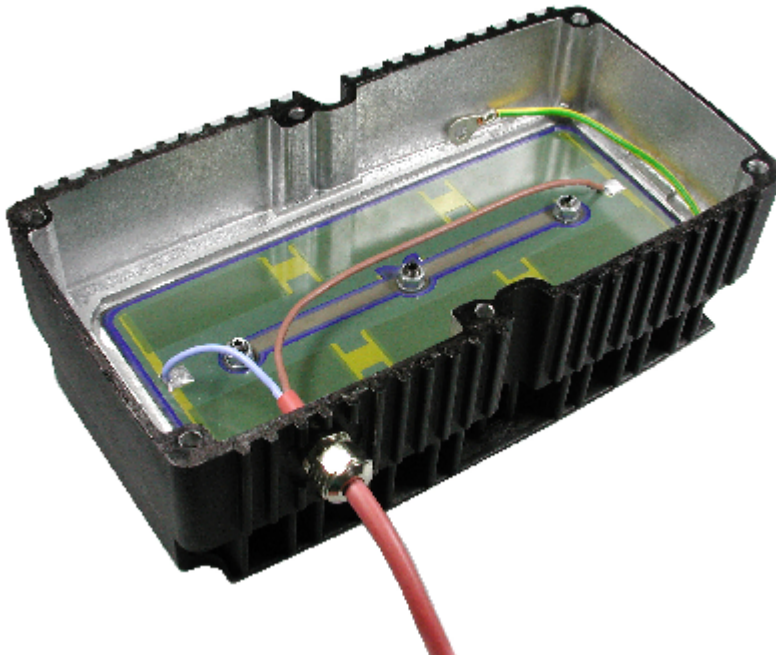


Photo 3: Metallux PLR in housing

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Metallux AG

Metallux AG is a competent manufacturer of electronic devices in thick film technology and is a leading developer of new technologies. Numerous well known customers in the fields of automotive, electro static, medical- and industrial electronic, as well as sensor systems, rely and trust for more than 22 years the company, located near Stuttgart.

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