

Ensuring a safe passage through the minefield

MPE's EMC filters for specialist equipment to meet the latest defence challenges have included threat detection and protection technologies to deal with explosives such as roadside IEDs and mines. To quote an example, high-performance feedthrough capacitors from MPE are installed in the power supply unit of the Self-Protection Adaptive Roller Kit, known as SPARK.



MPE feedthrough capacitors (such as the model DS15302 shown) are designed for through-bulkhead mounting to provide high-frequency EMC filtering in line-to-ground applications

MPE has been designing and manufacturing feedthrough capacitors in military vehicle applications for some 30 years, with a negligible returns rate. The company's standard range includes compact and robust, single- and multi-line, dc and ac, high-performance feedthrough units. These high-frequency EMI/RFI suppression products have no major resonance since they have no lead inductance, and hence their performance increases in step with frequency.

The MPE filter used in SPARK (part number DS15302) is rated 200A at 150Vdc, and has a capacitance value of 1.5µF. The filter body is 32mm di-

ameter by 41mm long, while the flange is of 49mm diameter and features four 4mm diameter holes on 29.5mm centres for through-bulkhead mounting. A hollow metal tube runs down the centre of the filter with an internal diameter of 10mm, through which a brass 3/8in threaded bar is passed.

MPE feedthrough capacitors are designed for through-bulkhead mounting to provide high-frequency EMC filtering in line-to-ground applications. The metal bulkhead mounting surface needs to be clean and unpainted in order to offer a low impedance path from the filter to the equipment chassis. Poor earth bonding would limit the performance of the product and might compromise safety.

Accordingly, SPARK equipment is fitted as an IED countermeasure system to many of the Mine-Resistant, Ambush-Protected (MRAP) all-terrain armoured vehicles deployed by the US Army in Afghanistan as a lighter, multi-functional alternative to armoured bulldozers.

Fixed to the front of the vehicle, SPARK takes the full brunt of the blast. Soldiers are protected from injury, and their vehicle is left intact, so they can drive away from the 'hit zone' rather than suffer further attacks by insurgents.



Feature: Electromagnetic Compatibility

All MPE feedthrough capacitor designs incorporate self-healing, metallised plastic film capacitor material and utilise a solderless capacitor assembly technique to avoid heat damage to the plastic dielectric material, which would reduce its life and reliability.

Cases are made of nickel-plated brass (as for model DS15302) or of stainless steel; the terminals are nickel-plated brass for superior conductivity and tarnish resistance, whilst the potting is a fully RoHS compliant epoxy resin rated to burn specification UL 94V-0.

These and other MPE products suppress noise interference from motors, pumps and thermal

switches on military vehicles to US EMC suppression standard MIL-STD-461 and the UK MOD's DEF STAN 59-411 Land Class A and B, whether for specific mechanisms or as an overarching specification across the whole apparatus.

MPE offers a rapid custom design service to meet demands for single and multiple lines, special packaging, mounting or terminations. In fact, more than half the feedthrough capacitor and filter products manufactured by the company consist of tailored designs, providing solutions that are both versatile and cost-effective, whatever the environment.

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