Kemtron Ltd. is now part of

Electromagnetic Compatibility & Performance Considerations

Electromagnetic Compatibility (EMC) The ability of a device, equipment, or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbance to anything in that environment.

Here are some of the factors affecting Electromagnetic Compatibility:

Design for EMC: Consider EMC early in the design process, from careful layout of PCB's and components ensuring good signal integrity. Design with the accommodation of EMI gaskets for enclosure seams and covers, I/O connections, doors etc. Retrofit is expensive.

Mechanical: Closure forces of gaskets vary dependant on material, profile, and size. Enclosure panel rigidity will dictate the minimum number of fixings. Compression limits should be used to protect the gasket from damage caused by over compression/deflection.

RFI/EMI Shielding: The basis of RFI/EMI shielding to make a faraday cage of the enclosure and ensure good grounding, this can be at PCB level for discreet components, modular and the final enclosure. Enclosures can vary in size from small handheld devices up to large cabinets and architectural rooms/buildings.

Shielding Effectiveness: To ensure good shielding effectiveness, low contact resistance is required between the gasket and the mating surface of the enclosure. For optimum shielding it is best to ensure metal to metal contact by using gaskets in grooves or incorporate labyrinth designs.

Environmental: Dust and moisture sealing is often a requirement alongside the EMC needs. Electrically conductive elastomers provide this up to IP66 and above if the design is to achieve this. ECE Fluorosilicones will seal against fuels, oils etc. For very harsh environments non-conductive seals can be incorporated in the design.

Chemical or Galvanic compatibility: Two dissimilar metals in the presence of an electrolyte e.g. salt fog will act as a battery and create a flow of electric current. This effect can cause corrosion of the less noble material and will increase contact resistance between the gasket and enclosure causing a reduction in shielding effectiveness.

Electromagnetic Fields: When shielding magnetic fields generally the requirement is 10Khz and above, high permeability metal type gaskets are needed these gaskets have a high current carrying capacity and are suitable for EMP protection. High frequency electric field 1GHz and above require highly conductive more noble materials such as conductive elastomers with silver plated particles.

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