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Guidelines to be Followed while Choosing EMI Filters by James Blee

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EMI filters or Electromagnetic Interference Filters are extremely useful to prevent noise creation in electrical circuits. Electromagnetic interference is the main reason for causing any unwanted noise in an electrical device and these filters are used to minimize them as much as possible. Thereâ€™s a huge difference between these filters of varied versions. The filters which are created using passive devices like resistor, capacitor and inductor are called the passive filters while the active filters are those which are created using the semiconductor tools like diodes, transistors, amplifiers.

There are various different Passive EMI filters and the commonest of them is the C-filters. Used to soothe high frequencies, they consist of a three terminal feed-thru capacitor. Theyâ€™re cheap and thereâ€™s no chance of any performance degradation. No other filter in this category is more reliable than this one. L-filter contains one inductive element and one capacitor. Circuits using a high impedance load and low impedance source or the reverse find the maximum use of this filter. In the Pi-filters, we find two capacitors and one inductive element. Both the source and the load have low impedance. As there is one more capacitor present in this filter, it provides much better action attenuation than either of the C or F-filters of equivalent capacitance. The case is slightly different in the T-filter where the combination is just the reverse of Pi-filters. Thus in this case, high impedance to both load and source is seen.

Just like their passive counterparts, the Active emi filter also vary considerably. They are more useful than the passive ones as theyâ€™re built by combining different passive filters and even all of them can be found in one active filter. To attenuate the frequencies below their cut-off points, we use the High-pass filters and Low-pass filters. It may be noted that filters are the types allowing the entry of certain frequencies while restricting that of the others.

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