Chip Common Mode Choke Coils Supporting USB3.0 SuperSpeed Signals

Murata Manufacturing Co., Ltd. has launched the DLP11TB series of 1210 size chip-type common mode choke coils, which are designed to reduce undesirable radiation noise in electronic products and equipment.

The company's unique high-precision film inductor forming technology was utlized to successfully attain an improved cut-off frequency*1 in the transmission characteristics of these new choke coils compared with previous series and support USB*2 3.0 SuperSpeed signals.

In the field of USB interfaces, which connect peripheral devices to personal computers, chip common mode choke coils have been frequently used at the bases of connectors to minimize the noise which is radiated from the cables used in these connections. The recent debut of SSD*3 and other high-speed peripheral devices has led to the formulation of the USB3.0 standard under which the data transmission speed is increased from the 480 Mbps of its predecessor, the USB2.0 standard.

The new USB3.0 standard has added the SuperSpeed mode, enabling data to be transmitted at speeds up to 5 Gbps, representing a 10-fold increase over the speed provided by the previous standard.

However, along with the increased data transmission speed provided by USB3.0, the frequencies of the signals transmitted to the signal lines have now become higher such that the common mode choke coils used in the past now find it difficult to deal with noise issues while maintaining a satisfactory signal quality.

In order to resolve this issue, Murata Manufacturing developed the DLP11TB series of chip common mode choke coils that support the SuperSpeed mode of the USB3.0 standard. By utlizing its micromachining technology using thin film processes, the company successfully boosted the cut-off frequency in the transmission characteristics (Sdd21) of the choke coils from the cut-off frequency featured by previous series to a high 8 GHz or more, enabling SuperSpeed signals to be transmitted.

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