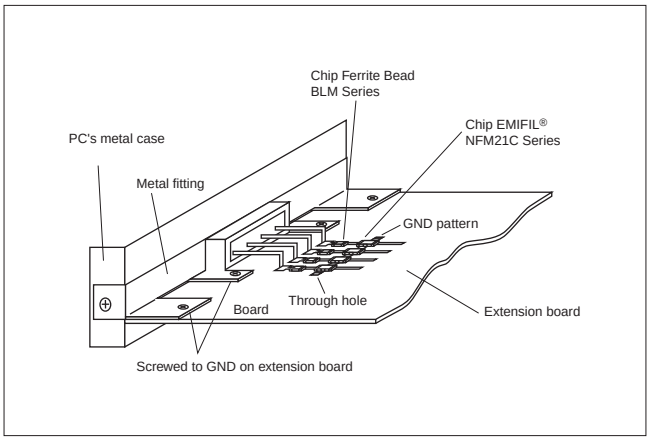
1 Example of Noise Suppression in Desktop PCs

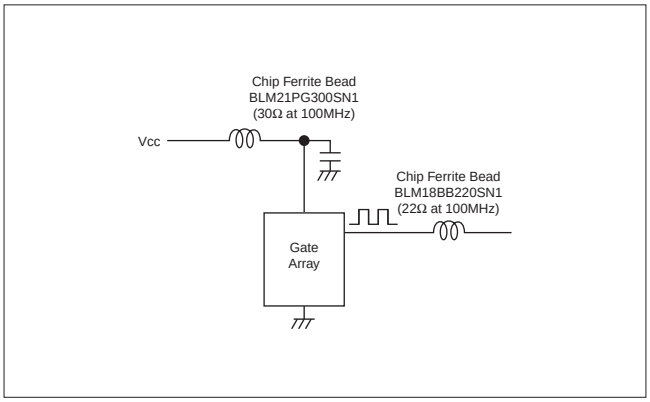
Improving the GND on Extension Boards

In case of installing an extension board with a cable, noise may conduct to the cable when GND noise level is high. This results in high-level noise radiation from the cable. Therefore, the board's GND must be stabilized by connecting the GND with the metal fitting (which is connected to the metal case of the personal computer) with screws so that high frequency impedance is low. In addition, EMI filters are installed on the cable connector port.



Installing EMI filters on the Clock Lines

High frequency clock signals generate high frequency noise. Noise and signal frequencies may be close to each other. Therefore, an EMI filter with high and steep attenuation is used such as the NFW31S series (Chip EMIFIL® for signal lines), or the BLM□□B series (Chip Ferrite Bead for high-speed signal lines).
Noise caused by transient currents is also generated on the power supply line. Therefore, a chip ferrite bead is installed, as well as a by-pass capacitor, to suppress noise on the power supply line.



Installing EMI filters on Bus Lines

Bus lines contain many lines that switch on and off simultaneously. Especially on data and address bus lines, an instantaneous large current flows into the GND and power supply lines. Therefore, it is necessary to suppress the current flow on the signal lines. The BLM series (Chip Ferrite Bead) is generally used for this purpose.
On the control bus line, especially at high operating speeds and high noise levels, a filter with resistance components is used, such as the NFR21G series (Chip EMIFIL®).