Types of Noise Suppression Components | Helpful Trivia For Coil Users

Types of Noise Suppression Components

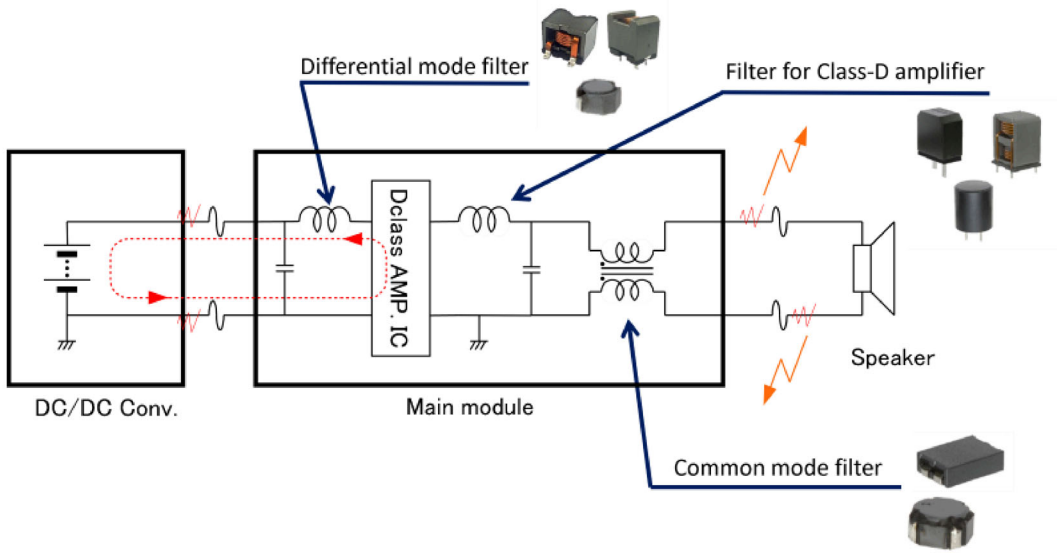
Capacitor Varistor Diode • • • Inductor

Our company manufactures and sells board-mount (SMD/PIN) type inductor components.

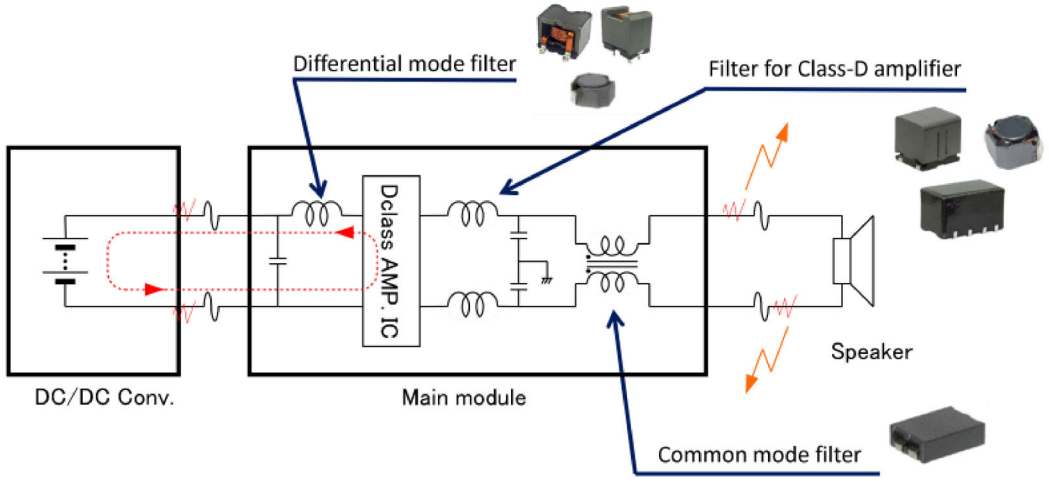
DC Line	Modes of noise	Key product categories	Main applicable frequency range
AV Equipment OA Equipment Digital home appliances White Goods Various power Module	Differential mode	CER/CBE/CVESeries 	Conducted Emission:：150kHz～108MHz Radiated Emission：30MHz～
		PRCG4036C PRBG4029C PRBG4036C 	Radiated Emission： Hundreds of MHz～
	Differential mode・Common mode	TDG5629C 	Radiated Emission：100MHz～
	Common mode	TDG6029C 	Radiated Emission：100MHz～
		TQR /TGQR /TJF Series (5～12mm) 	Conducted Emission：150kHz～108MHz Radiated Emission：30MHz～

Noise Filter Application Examples

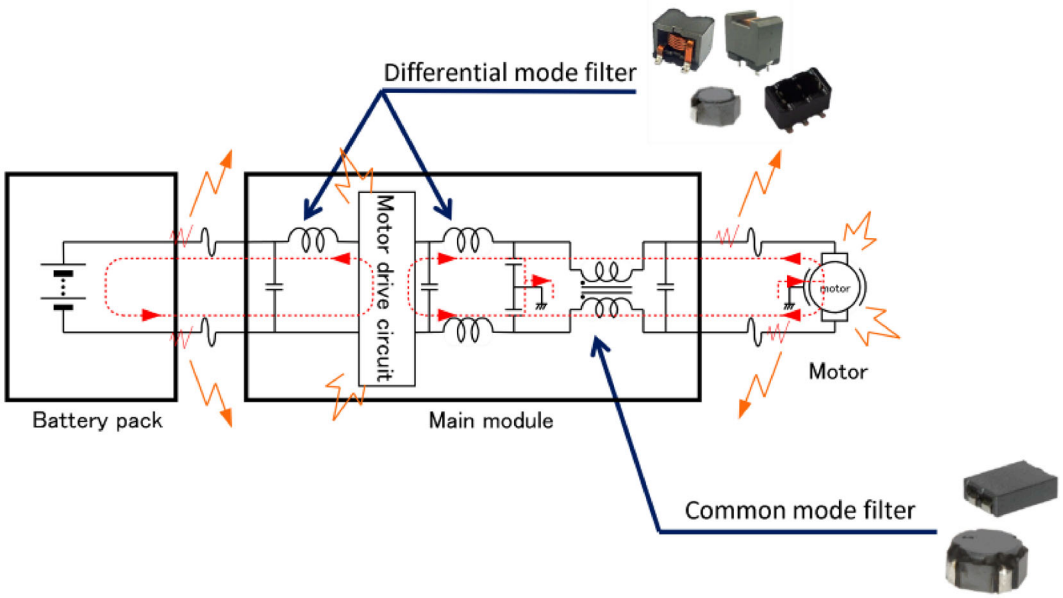
① Class-D Audio（Single）



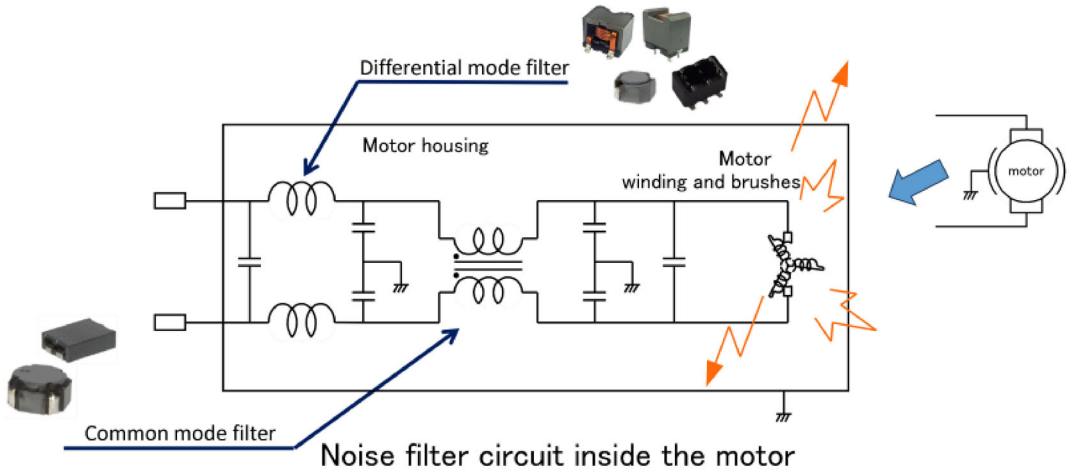
② Class-D Audio（BTL）



③ Electric mini vehicle



④ Electric mini vehicle

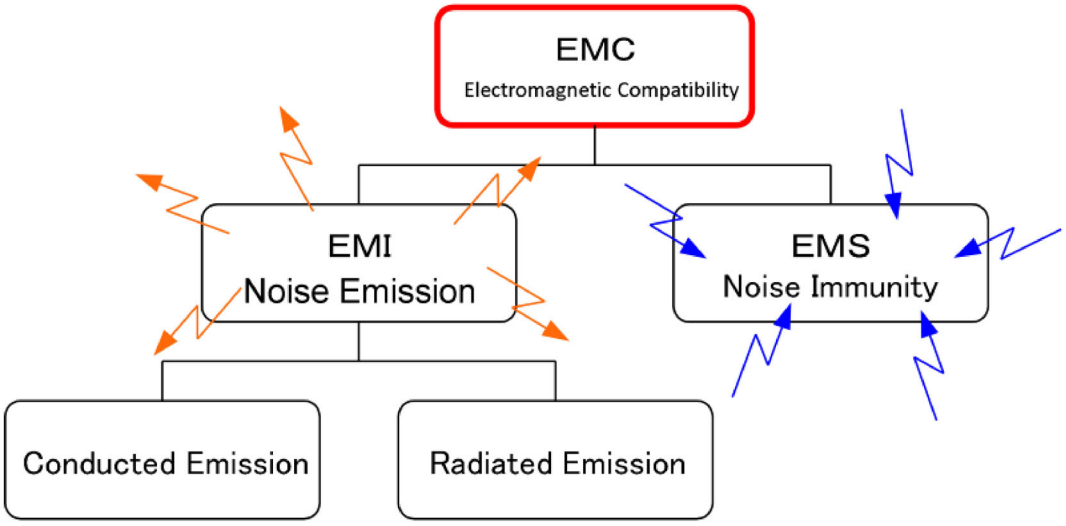


What is EMC?

EMC（Electromagnetic Compatibility）

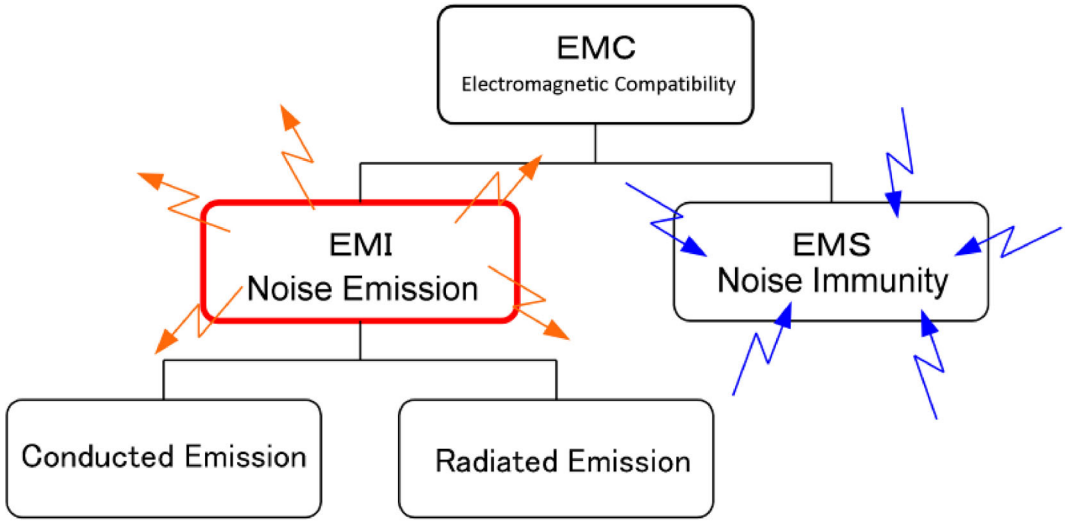
The design and manufacturing conditions of equipment to ensure electromagnetic compatibility.

1. Does not become a source of electromagnetic interference
2. Is not affected by electromagnetic interference
3. Continues to operate normally even when interference is present (ensures compatibility)



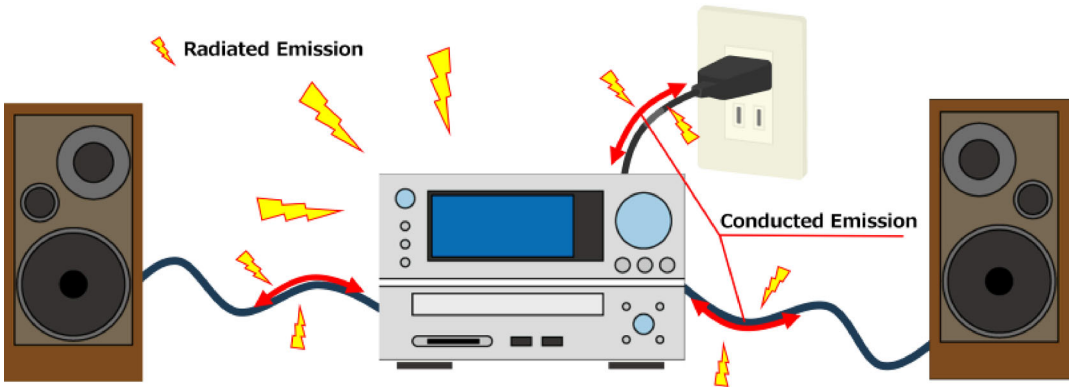
EMI（Electromagnetic Interference）

Emission: The release of unwanted electromagnetic noise from electrical equipment into its surroundings.



Conducted Emission and Radiated Emission

- **Conducted Emission**：Noise emitted through electrical wires or cables
- **Radiated Emission**：Noise emitted through space as electromagnetic waves



Noise Filtering

AM		FM	DAB	TV	Mobile Wi-Fi	
3MHz	30MHz		100MHz	200MHz	1GHz	2.5GHz

Filtering limit efficiently achieved using Mn-Zn cores		General filtering limit using Ni-Zn core power inductors with low inductance	 Typical range where high impedance can be achieved with single-layer wound Ni-Zn core power inductors

Common frequency range that can be filtered with power inductors

General limit achievable with large Ni-Zn core single-layer wound power inductors

Requirements for Noise Filter

- Impedance: The higher, the better
- ＳＲＦ：The higher, the better
- Core Loss: The higher, the better
- DC resistance: The lower, the better
- Temperature Rise: The lower, the better
- Magnetic saturation: The higher, the better
- Temperature characteristics: It does not matter

※Generally large current or DC with low-frequency is applied.

Trade-off Characteristics of Inductors

	Frequency		Impedance Inductance		Size		Rated current		(① xx)
	High	Low	High	Low	Large	Small	Large	Small	to make it more (② xx)
Frequency			Low	High	High	Low	Low	High	
Impedance Inductance	Low	High			High	Low	Low	High	
Size	Large	Small	Large	Small			Large	Small	
Rated current	Small	Large	Small	Large	Large	Small			
(③ xx)	becomes (④ xx)								

When trying to make (① xx) more (② xx), (③ xx) becomes (④ xx).

Author

Development Department

The Development Department is responsible for the entire process from inductor design, prototyping, and evaluation to mass production launch. Based on customer requirements, the team organizes conditions such as performance, size, cost, and reliability, and works to develop optimal products.

Notes

1. Some of the products listed in this document are no longer in production.
2. As some time has passed since the article was written, the information provided may still contain outdated content.

If you have anything, you can send e-mail by clicking here.

Current Characteristics of Inductor Catalog Values.

Helpful Trivia For Coil Users

- Choosing the Best Inductors for Phantom Power Supply Applications.
- Current Characteristics of Inductor Catalog Values.
- Types of Noise Suppression Components

Other columns.

- Tips for COIL users
- Ferrite vs. Metal
- Dear Rookie of the Coil