

Audio Product Application Guide



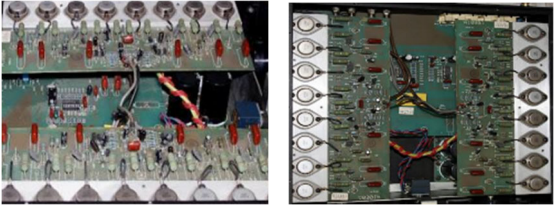
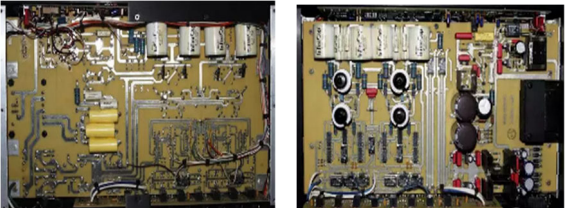
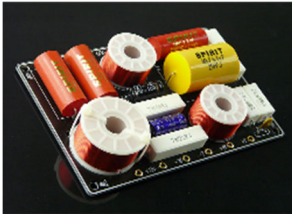
Since the end customers in the audio industry pursue the purity and mellow sound quality, in addition to the design and research of the circuit by the audio factory, the requirements for the components are also very unique. Chiefcon offers designers a variety of options.

In the audio industry, the conversion of audio is mainly based on A/D D/A, so once the conversion is distorted

The output audio may change from beautiful music to noise. Through scientific analysis and the improvement of design capabilities, Chiefcon uses a more scientific way to make the sound truly present. Through the following description, the user can better understand why they should use the Chiefcon series. , Of course, we still look forward to bringing newer and better products through more technical exchanges.

Feature :

- A complete selection of series
- Low impedance design is ideal for audio selection
- Film Foil structure for fuller audio
- Focus on material research and development, and use it in the process

Application	Chiefcon Series		Schematic
Filter	DC CKX X	Safety Capacitor X	
	DC CKX Y	Safety Capacitor Y	
Power supply	CKX X	Safety Capacitor X	
	CKX Y	Safety Capacitor Y	
	DCLINK DMP	Metallized Polypropylene Film Capacitor	
	Resonant PMD	Double Metallized Polypropylene Film	
	PFC MMP	Metallized Polypropylene Film Capacitor	
Audio amplifier	Decoupling PPN	Polypropylene Film AL Foil Capacitor	
	*Decoupling PSA	*Polystyrene Film	
	*Decoupling PSR	*Polystyrene Film	
Preamplifier	*Coupling capacitors PPTC	*Copper Foil and Polypropylene base Film Capacitors	
	Coupling capacitors MPT	Metallized Polypropylene Film Capacitor	
	Coupling capacitors PPNT	Polypropylene Film AL Foil Capacitor	
Audio crossover	*PPTC	*Copper Foil and Polypropylene base Film Capacitors	
	MPT	Metallized Polypropylene Film Capacitor	
	PPNT	Polypropylene Film AL Foil Capacitor	

* Customization

In the audio application, we control several indicators :

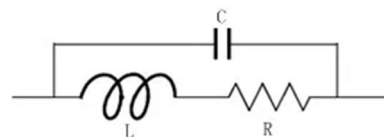
Dielectric absorption :

Dielectric absorption is the name given to the effect by which a capacitor, that has been charged for a long time, discharges only incompletely when briefly discharged. Although an ideal capacitor would remain at zero volts after being discharged, real capacitors will develop a small voltage from time-delayed dipole discharging, a phenomenon that is also called dielectric relaxation, "soakage", or "battery action". For some dielectrics, such as many polymer films, the resulting voltage may be less than 1–2% of the original voltage, but it can be as much as 15% for electrolytic capacitors. From the table below, it can be compared that the PP material currently selected by Chiefcon is the best choice.

Type of capacitor	Dielectric absorption
Polypropylene film capacitors (PP)	0.05 to 0.1%
Polyester film capacitors (PET)	0.2 to 0.5%
Aluminium electrolytic capacitors with non-solid electrolyte	10 to 15%
Class-1 ceramic capacitors , NPO	0.6%

Dissipation factor :

In the capacitor, the equivalent impedance and self-inductance will be generated due to the high-frequency signal of the AC signal. Although the discussion is about



capacitors, but a capacitor looks like this...

In general use, these data have little effect, but if placed under high frequency signals or need to consider the phase angle shift of the audio signal, these data have a profound impact on the quality of the designed product ! Is there any way to control this data?

In fact, the D.F. value in the capacitor gives us a good indicator to observe. It is calculated as follows :

$$D.F. = \tan \delta = ESR / X_c = (2\pi fC) (ESR)$$

We can see that D.F. is equivalent to $\tan \delta$, when the angle is larger and the phase shift is more serious, it will be distorted. Of course, the D.F. value is also directly related to the equivalent series resistance (ESR). Therefore, when the ESR of the capacitor is higher, the D.F. of the capacitor also increases. Therefore, in addition to material control, Chiefcon focuses more on the control of the capacitor process to reduce D.F. It is more suitable for the use of audio products.

Structur :

According to the above, in addition to reducing the D.F. value with materials, how can Chiefcon be optimized by what process method? That is to reduce the ESR of capacitors through various structural designs. Chiefcon provides users with more choices with a complete structural design.

For example :

General metallized PP design can produce high volume products of MPP, MPT



Film Foil structure of PPN, PPNT, PSA, PSA, PPTC



Double sided Metallized of PMD



These are designed to overcome the audio distortion caused by the capacitors. So as long as customers are willing to discuss, Chiefcon is willing to make better choices for customers through experience, such as shortening the distance to increase dV/dt , shortening the lead to lower ESL, etc.

Chiefcon never pursues mass-produced products on the market but does not pay attention to details for use in the audio market. In this industry, we hope that through the completeness of products and design capabilities, customers can have a good experience in selection.