



REVISED JUNE 2008

DC IN/OUT FILTER
FOR DC 5V, 12V, 15V, 24V
SYSTEM FILTER APPLICATION

**DC IN FILTER IS SUITAIBLE FOR PCB DC REGULATORS
IN OR OUT FILTER APPLICATION ESPECIALLY**

FEATURES

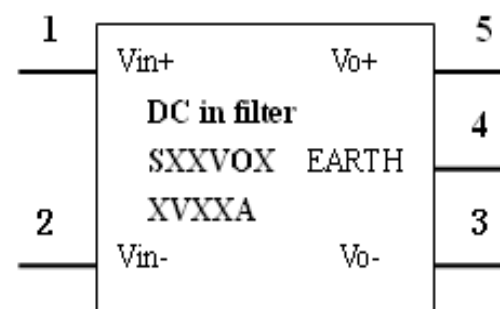
- Very High Insert Loss,Reach to 80DB in full power load
- Very Low Input DC Resistance,Maximum 300mΩ
- Absorb conductive and couple noise effectively
- Choke differential mode and common mode high frequency current noise effectively
- Transient suppressing,action time in ns grade
- Built_in prevent lightning surge component
- Built_in over-current protection resettable fuse
- High stabilty:<100ppm/°C
- High transfer efficiency:>98%
- Close to zero EMI(shield completely)
- Compact size: 2.5×2.5×1(cm)
- Operating temperature:-45°C ~85°C
- 5 PIN DIP package:standard through-hole pitch



PHYSICAL PIC

APPLICATIONS:

- Power communication system
- Satellite communication system
- Industrial testing instruments
- Grid connected solar inverter
- Power inverter and converter
- Switch mode power supply
- Medical equipments
- Automotive electronic



PIN CONFIG

DESCRIPTION

In order to describe easily,we describe DC input filter as EMC moules,these EMC modules are designed for getting a good EMC performance in electronic system.they are suitble for DC power supply input filter application on pcb particularly and integrate a differential mode and common mode noise suppression circuit,so they can remove differential mode and common mode noise and jamming effectively, remove conductive and couple noise on ground line especially. meanwhile,built-in a ripple rejection and controll circuit,be able to process ac ripple noise above 5khz or higher harmonics,the noise frequency is higher,the rejection and absorb effect are more obvious.they also built-in transient suppression circuit to absorb switch overshoot and high harmonics,as far as we know,most of SMPS work frequency are about 1K~3Mhz,so it is a good choice to use these components as output ripple rejection of SMPS,in some higher demand occasions,such as high-precision measuring instruments, medical equipment, high stability's automotive electronic control systems, high-quality inverter output,and so on,all these need have a

high performance DC regulator power supply that satisfied very low ripple, low harmonics, no overshoot, clean ground line, or ground plane, ground net and so technical target, to get such as high performance DC regulator, will take quite high cost. but, if you can use DC in filter in your electronic system, you can choose general purpose DC regulators as your system power supply, these EMC module series will help you take lower cost to get higher performance DC regulator output.

TYPICAL APPLICATION

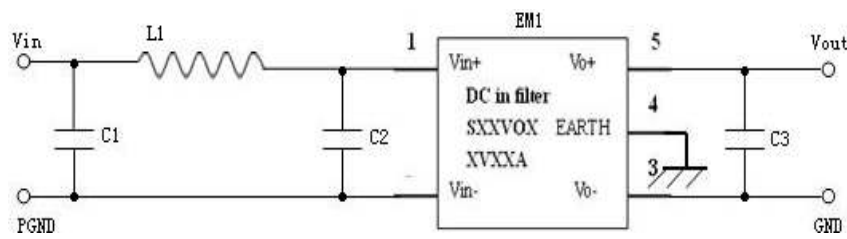


Figure 1 typical connection 1

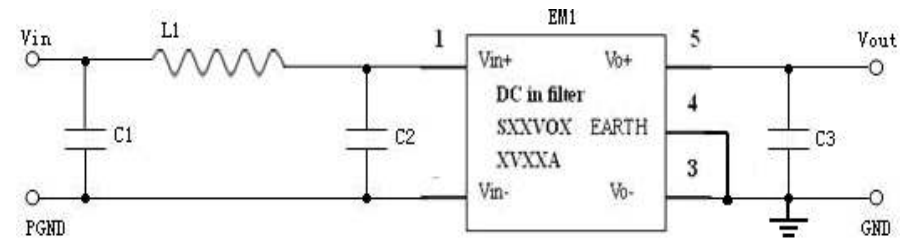


Figure 2 typical connection 2

The figure 1 and figure 2 are suitable for the circuit board there is no other DC-DC converter or other power conversion circuit applications, if the whole system has an earth connected loop, please use the figure 1 typical connection, connect the pin 4 of the module to Earth in order to constitute a discharge path to Earth, if no need to connect to Earth, such as a battery-powered system, please use the figure 2 typical connection to provide a discharge path to the internal discharge circuit. The above diagram is a general connection schematic, first, choose a corresponding module parameter according to the voltage and current of the load, then calculate the C3 value, second, know more features of input ripple, then calculate the C1, C2, L1 parameters.

$$V_{out} \approx I_{load} \times (DCR_{L1} + DCR_{EM1}) + I_{load} \times R_L;$$

V_{out}: output voltage of EMC module;

I_{load}: the current flowing through the load;

DCR_{L1}: DC resistance of L1;

DCR_{EM1}: DC resistance of EMC module;

R_L: output load;

So choosing a low DCR inductor L1 and low DCR EMC module can reduce voltage dropout.

The table 1 are recommended parameters above-mentioned two typical applications.

Table 1 recommended parameters (Figure 1 & Figure 2)

Part number	C1	L1	C2	C3
S05V005V3A /5A	22uF	33uH	22uF	100uF
S12V012V3A /5A	47uF	47uH	47uF	220uF
S15V015V3A /5A	68uF	68uH	68uF	220uF
S24V024V3A /5A	100uF	100uH	100uF	330uF
S28V028V3A /5A	220uF	220uH	220uF	470uF

* The parameters are adjustment results that based on a purely resistive load, you can debug C1, L1, C2, C3's value according to actual load characteristics, C3's value as large as possible.

In order to reach to an ideal filter performance, please use low ESR capacitors, for example, tantalum capacitor, solid capacitor, high voltage ceramic capacitor & bring them up in parallel, they can reduce ripple voltage effectively.

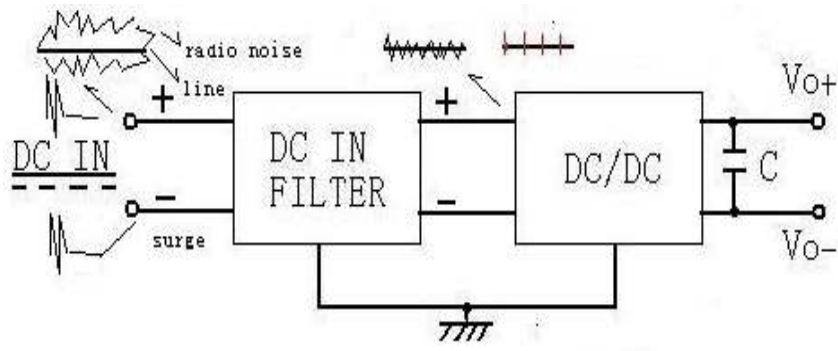


Figure 3 typical connection 3

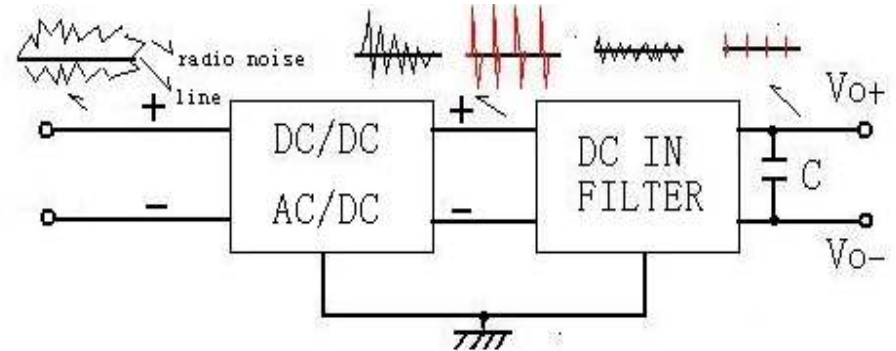


Figure 4 typical connection 4

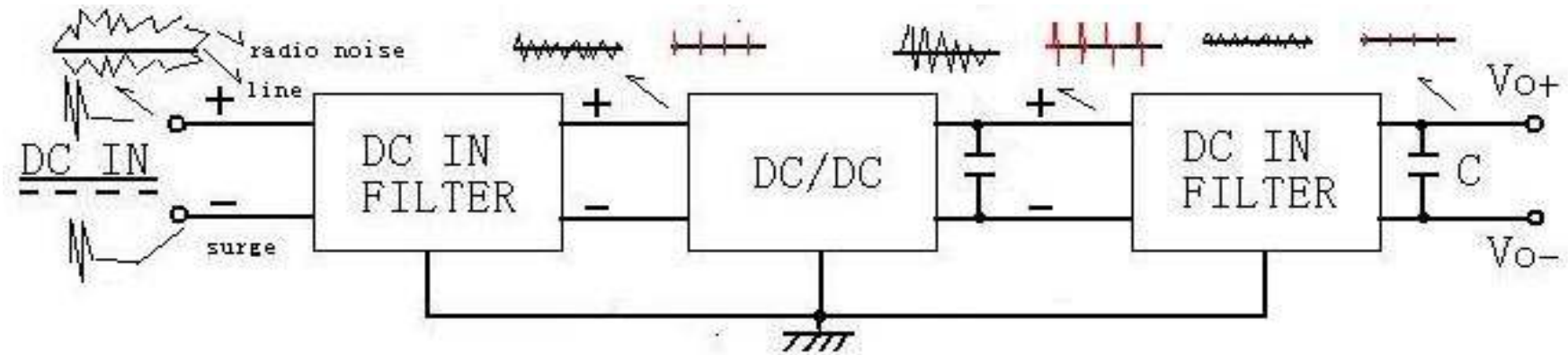
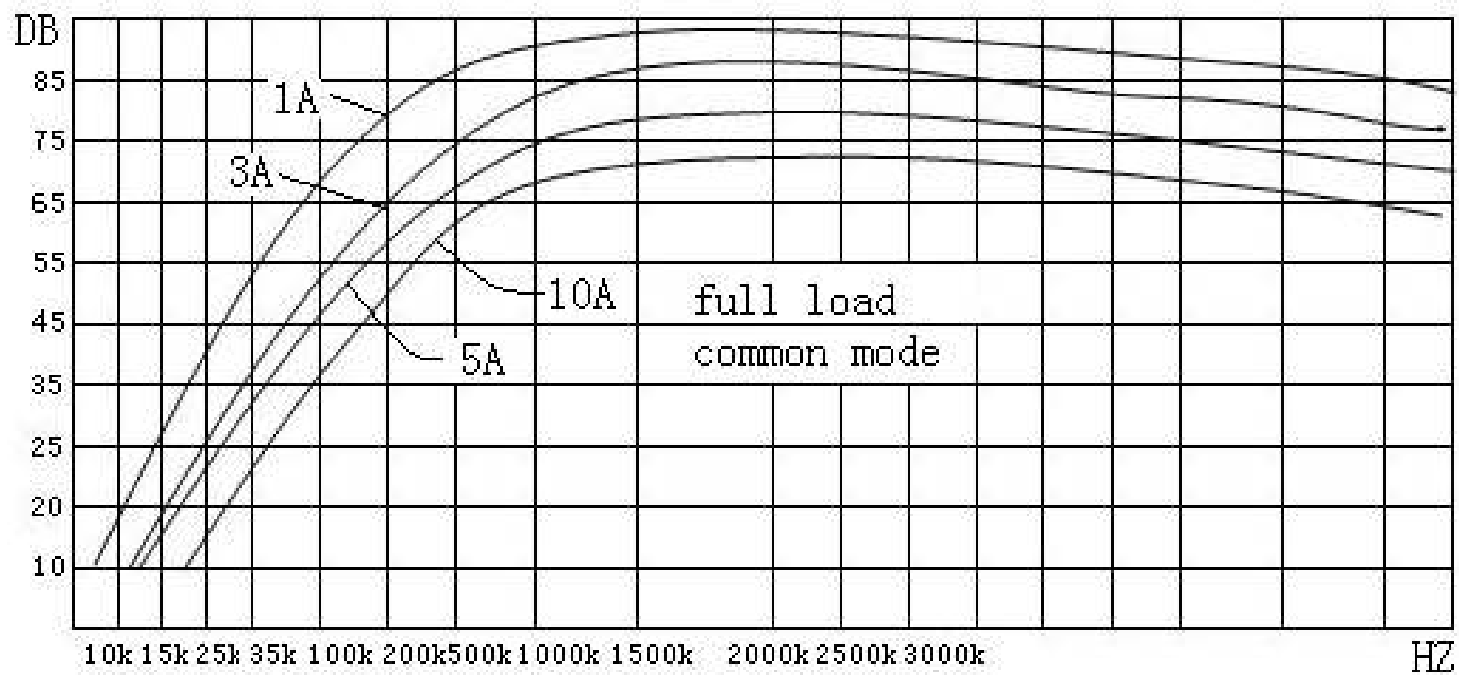
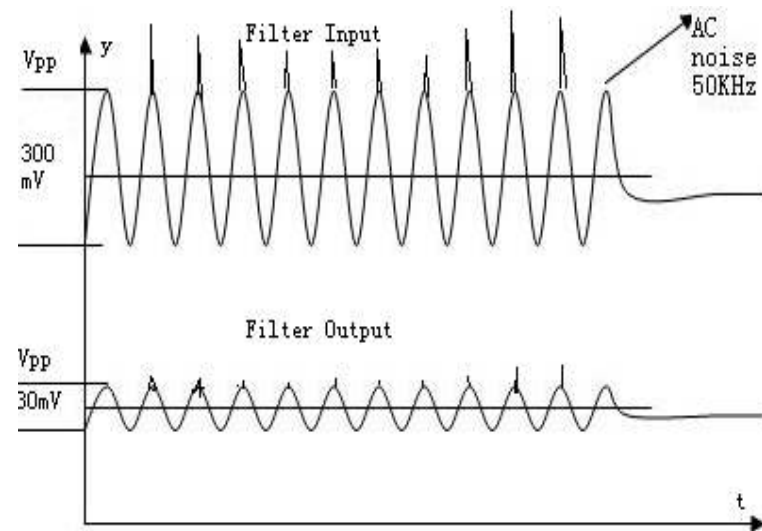
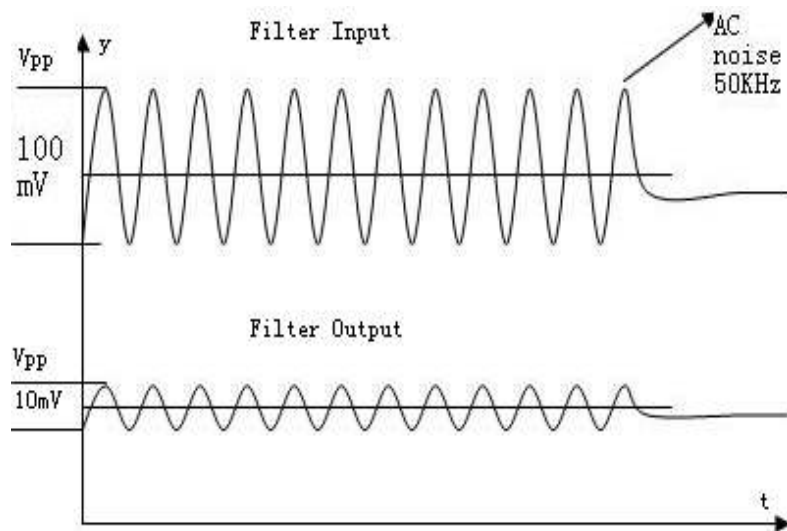


Figure 4 typical connection 5

If you want to get better filtering effect, you'd better use Figure 4 typical connection as your system power supply filter solution.

TYPICAL TEST GRAPH

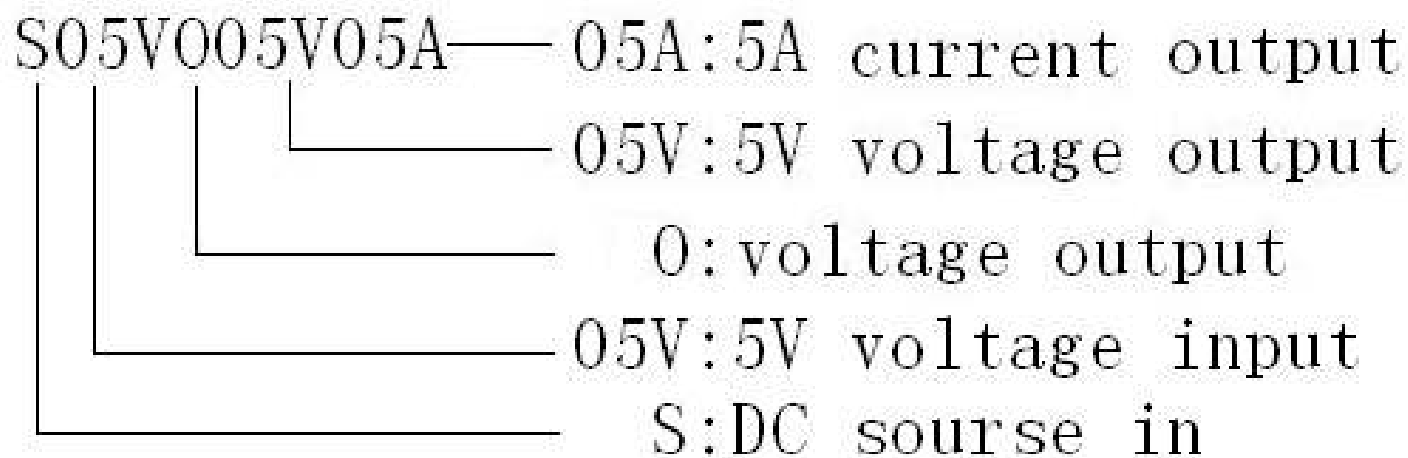


Part number	Input voltage	Output rate	DCR	Thermal characteristics
S05V005V3A	5V ± 10%	5V, 0~3A	80mΩ	Max 12°C/1W
S12V012V3A	12V ± 10%	12V, 0~3A	110mΩ	Max 15°C/1W
S15V015V3A	15V ± 10%	15V, 0~3A	130mΩ	Max 15°C/1W
S24V024V3A	24V ± 10%	24V, 0~3A	180mΩ	Max 20°C/1W
S28V028V5A	28V ± 10%	28V, 0~5A	240mΩ	Max 30°C/1W

MODULE SELECTION

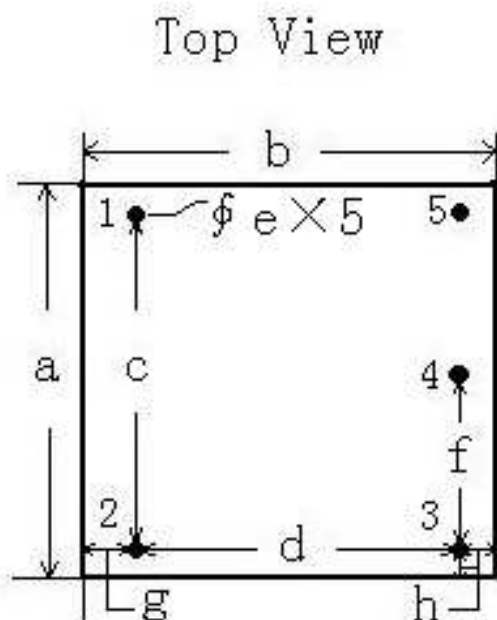
You can select the EMC module according to the circuit's input voltage range, don't exceed 10% of input voltage, this is very important parameter in the module selection, so please pay more attention to this parameter when you design the DC input filter using these EMC modules.

Naming rules example:



***We also accept custom-made by corresponding input and output parameters.**

PACKAGE INFORMATION



Units	inch	mm
a	1	25.4
b	1	25.4
c	0.8	20.32
d	0.8	20.32
e	0.032	0.8
f	0.4	10.16
g	0.118	3
h	0.079	2

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