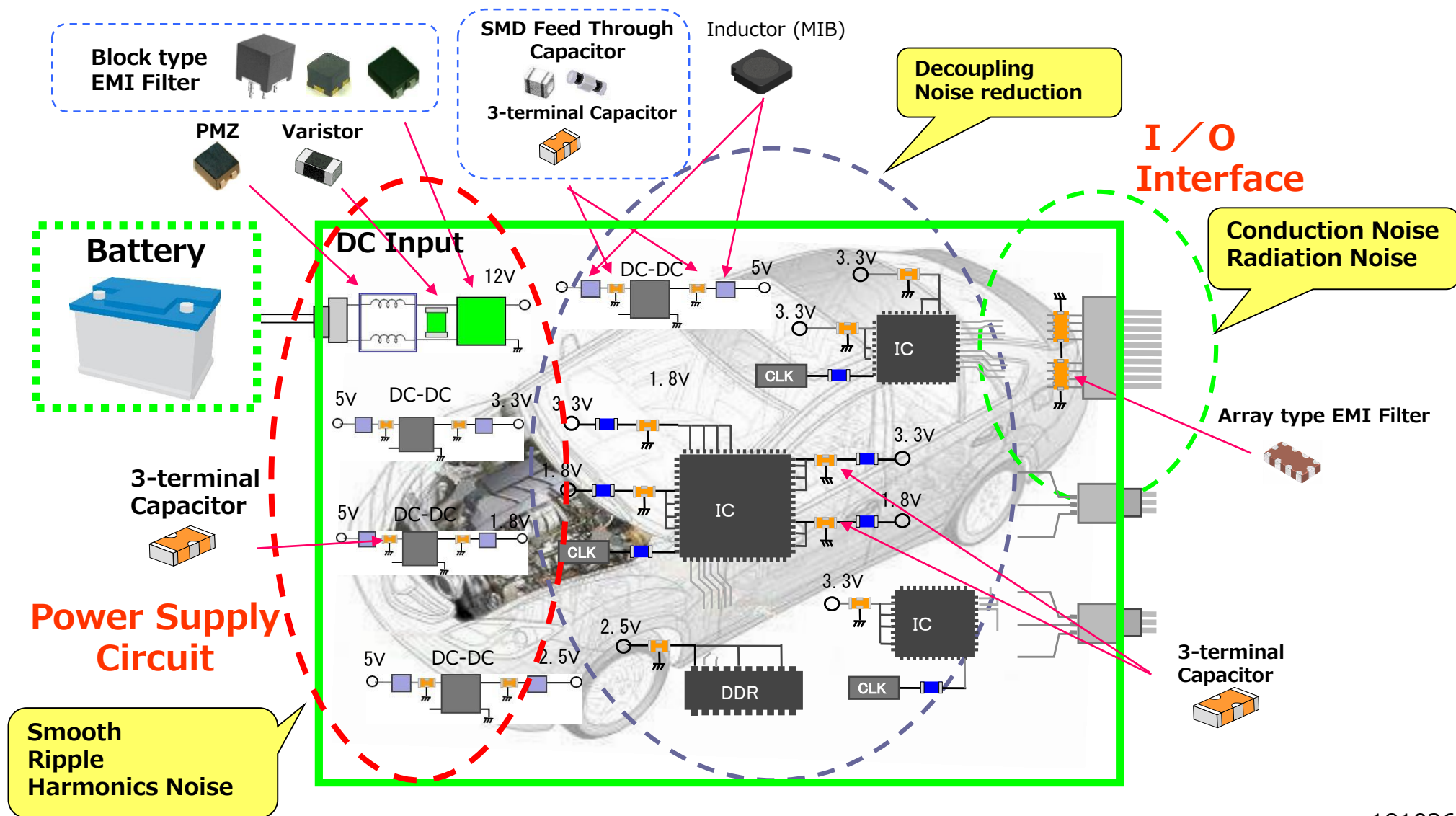


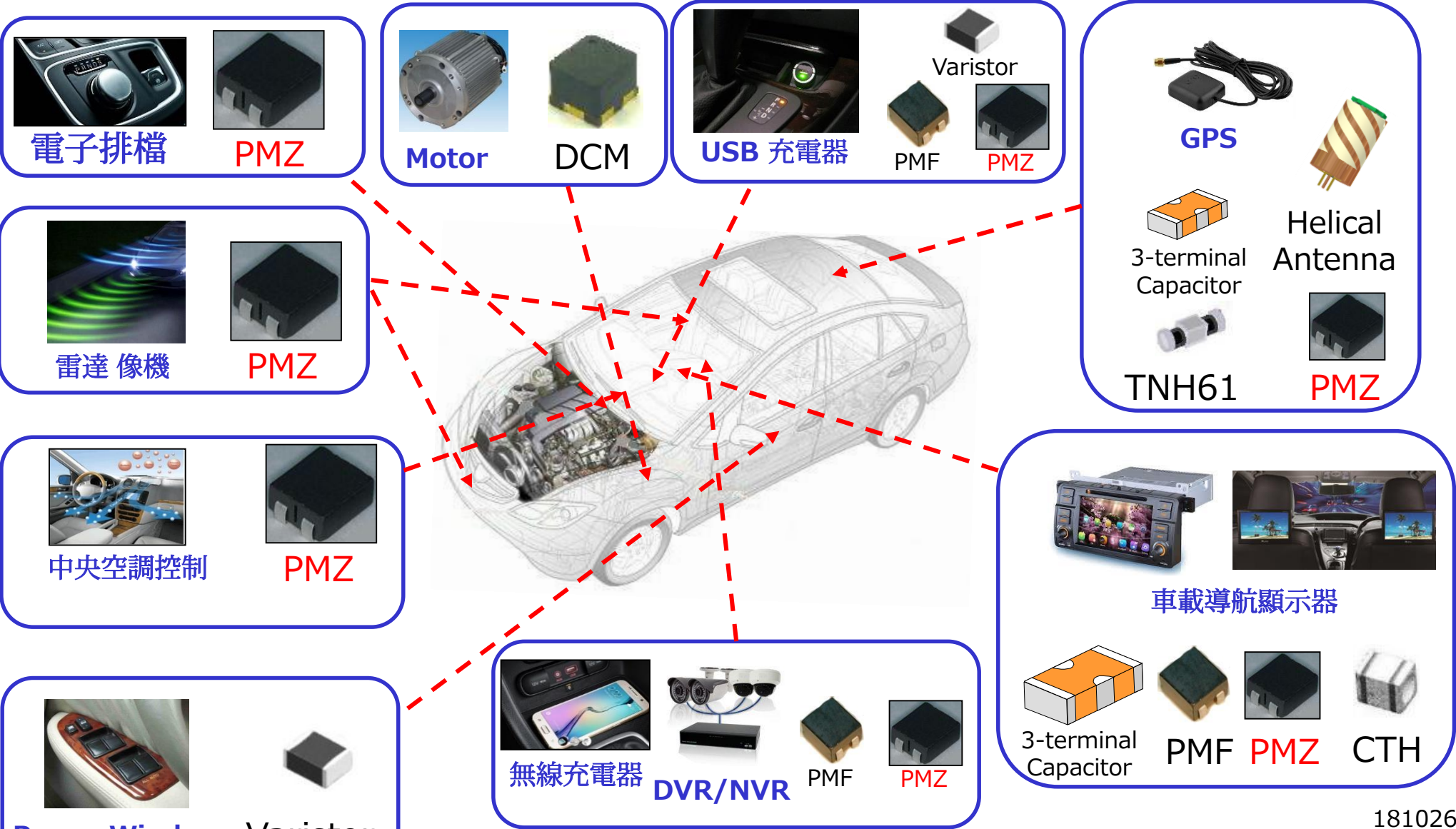
PMZ系列擴販資料

(共模濾波器替代方案)

OMARUWA EMC COMPONENTS APPLICATION



OMARUWA COMPONENTS

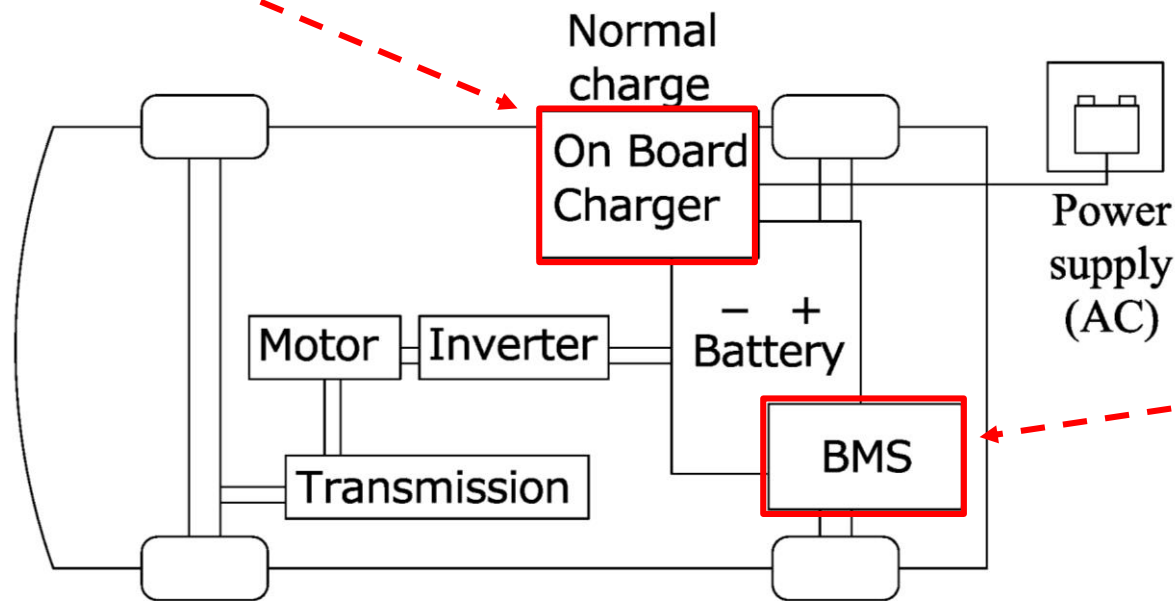
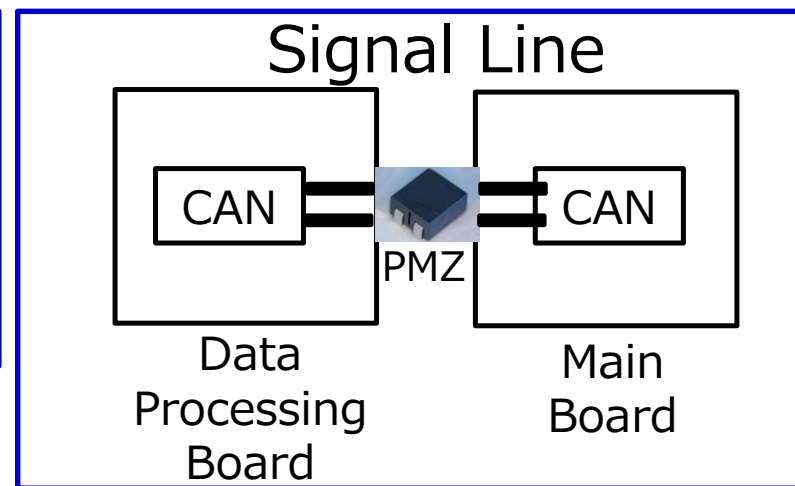
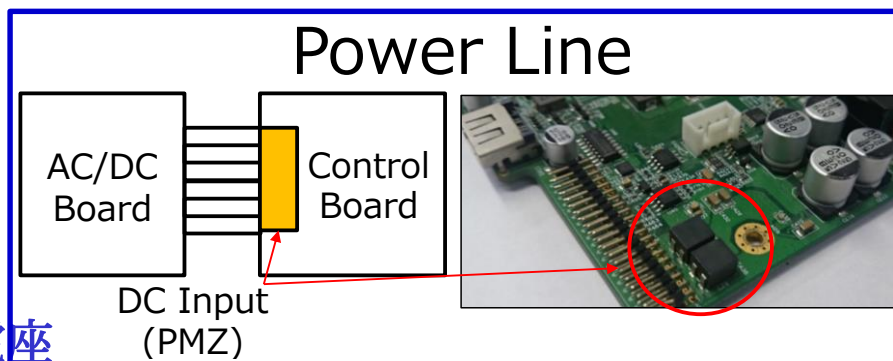


OMARUWA COMPONENTS Automotive Result②(EV+PHV)



PMZ

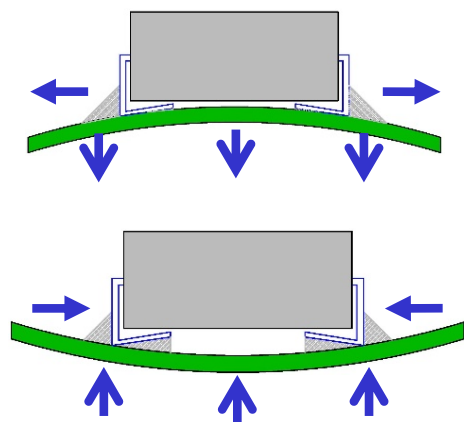
OBC充電座



PMZ

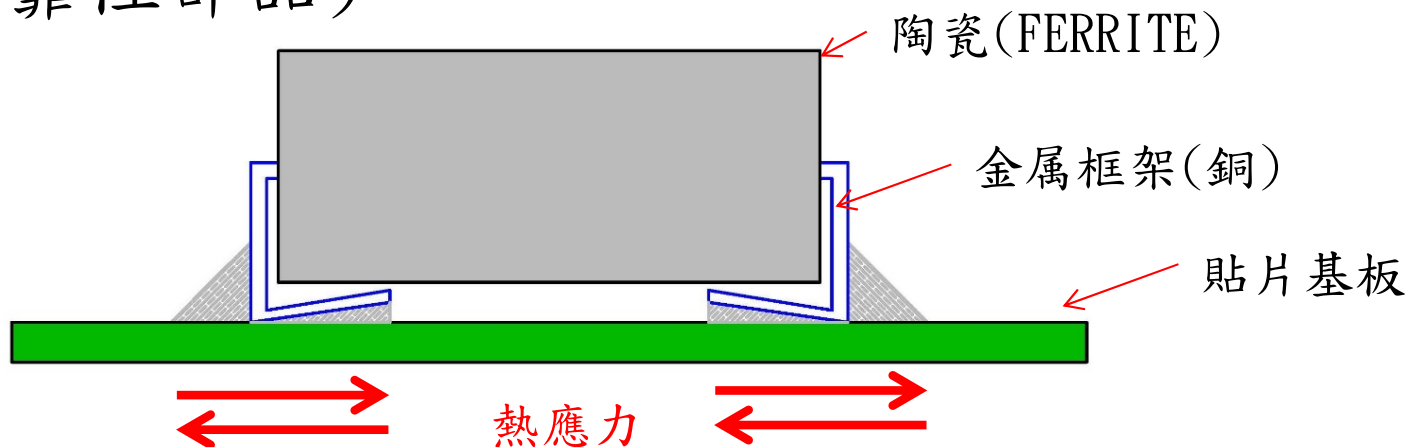
BMS電池管理

□PMZ結構有關(高可靠性部品)



柔性端子(減少受壓力)

基板彎曲承受力增強



陶瓷(FERRITE)

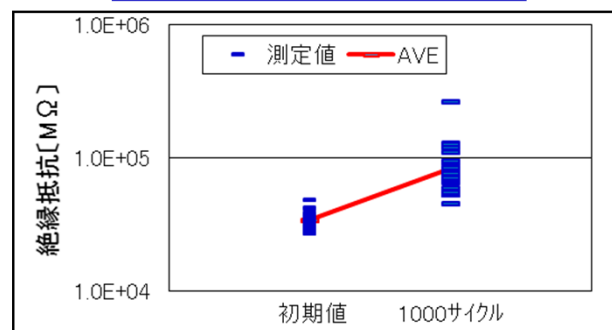
金屬框架(銅)

貼片基板

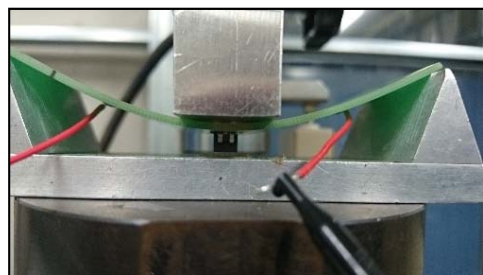
熱應力

使用溫度範圍-40~+150℃對應

溫度循環測試
(AEC-Q200對應)



※目前溫度循環測1000次完成(未見IR劣化)
→3000次溫度循環測試繼續測試中。

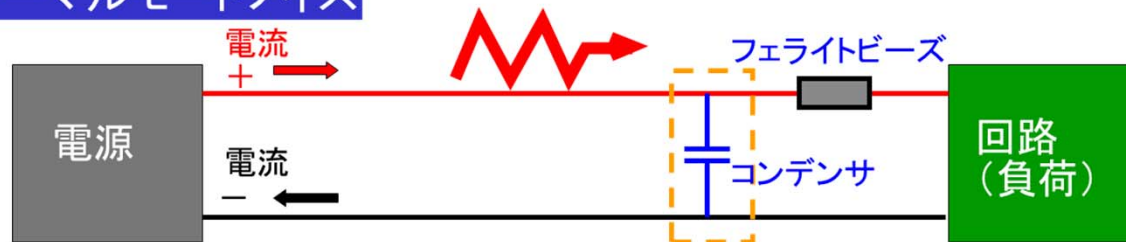


圖片：彎曲實驗16mm(參考)

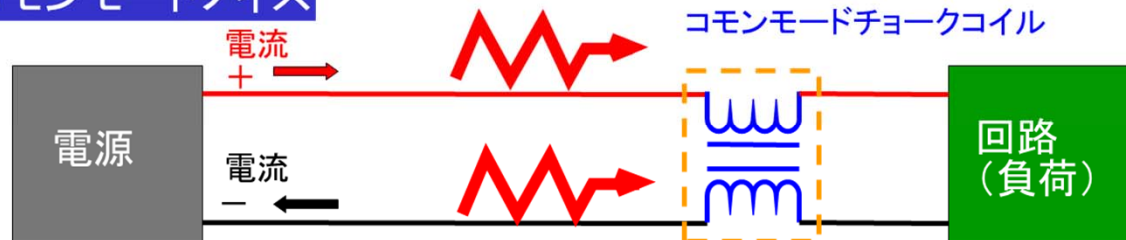
□ 噪声抑制効果

◇ 各種噪声模式相关

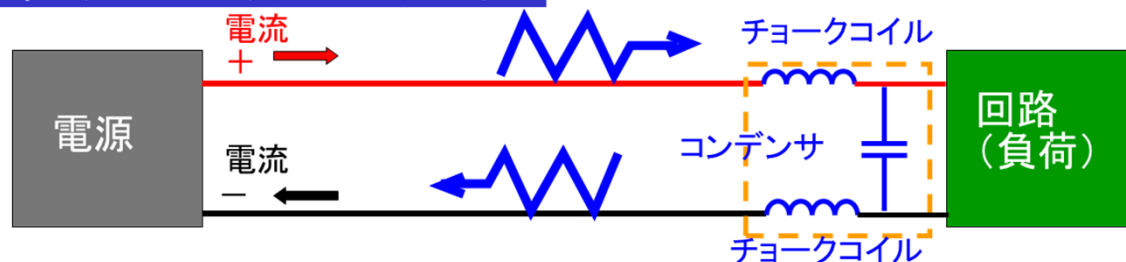
■ ノーマルモードノイズ



■ コモンモードノイズ



■ ディファレンシャルモードノイズ

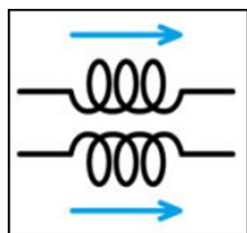
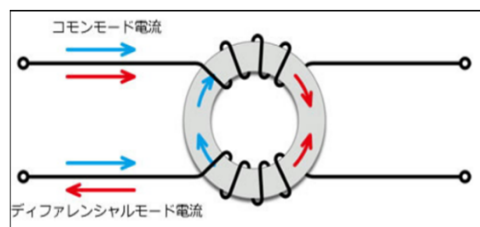
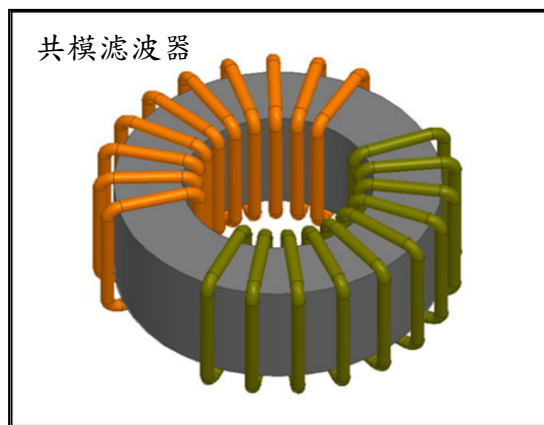


對此3種噪音模式對策有效果
1)Normal mode,
2)Differential mode
3)Common mode

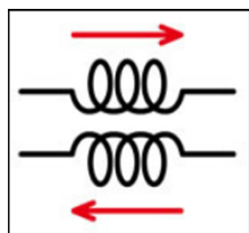
實際電路中是三種噪音模式
較複雜，混在一起

□ 噪音抑制效果

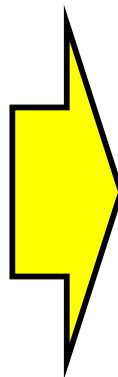
◇ PMZ/共模濾波器的構造



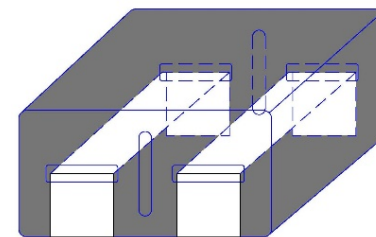
共模電流
磁通加強同時
線圈會工作



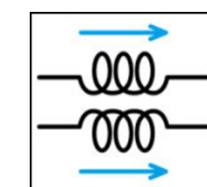
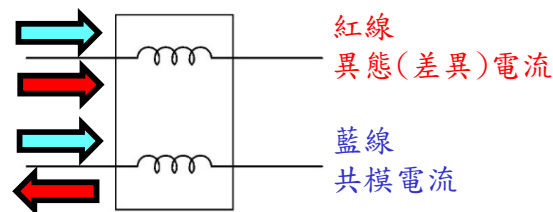
差模電流
磁通消失
線圈停止工作



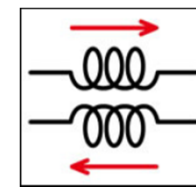
PMZ



- ①COM/DIF模式噪音兩種都有效
- ②非繞線結構、對應大電流



共模電流
非繞線結構不需要線圈
也可工作

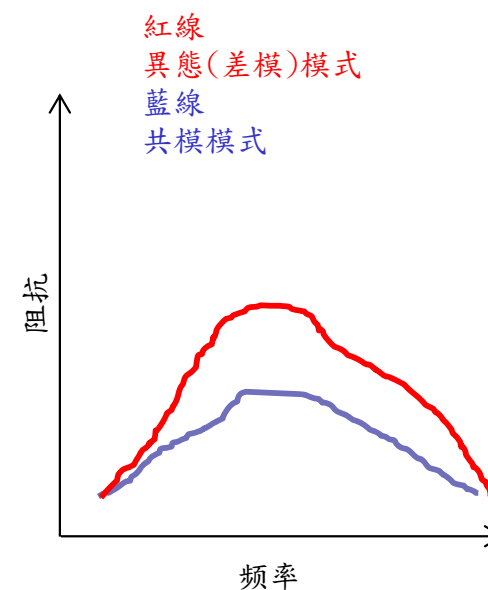
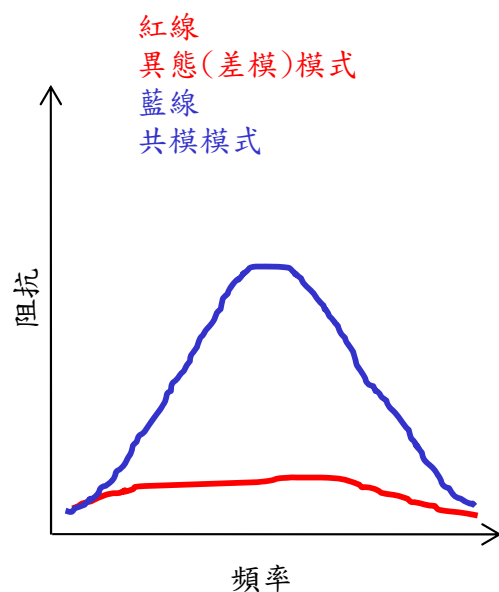
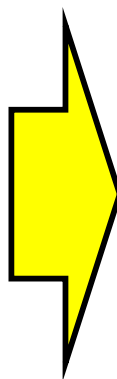
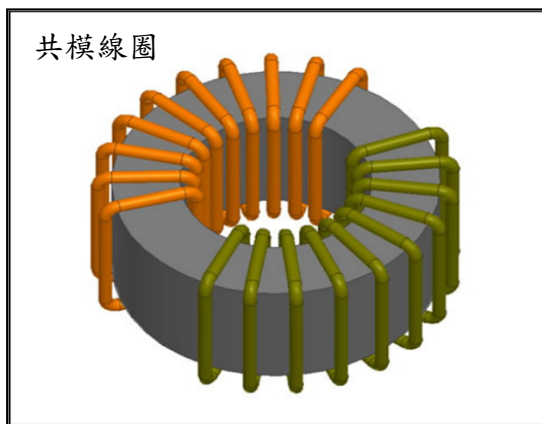


差異(異態)電流
磁通加強同時
線圈工作

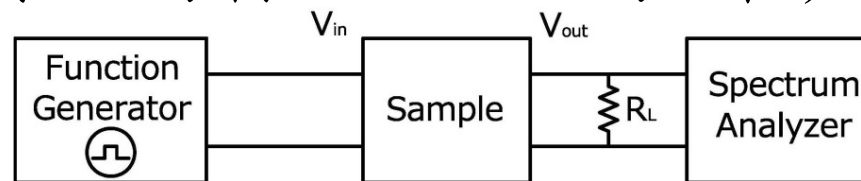
□ 噪音抑制效果

◇ 共模線圈特性差印象

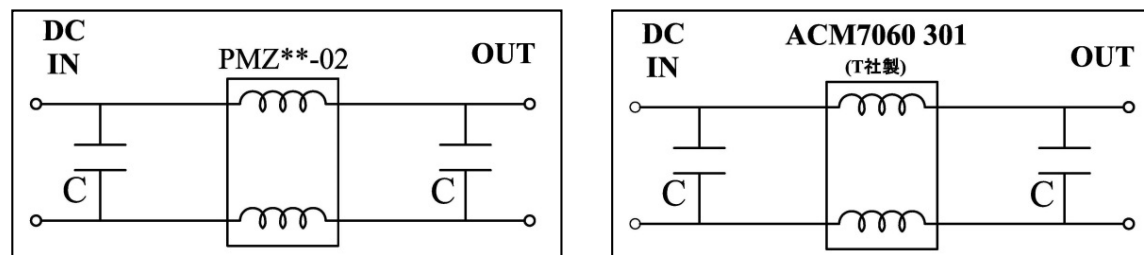
PMZ對應COM/DIF兩種模式都有效果



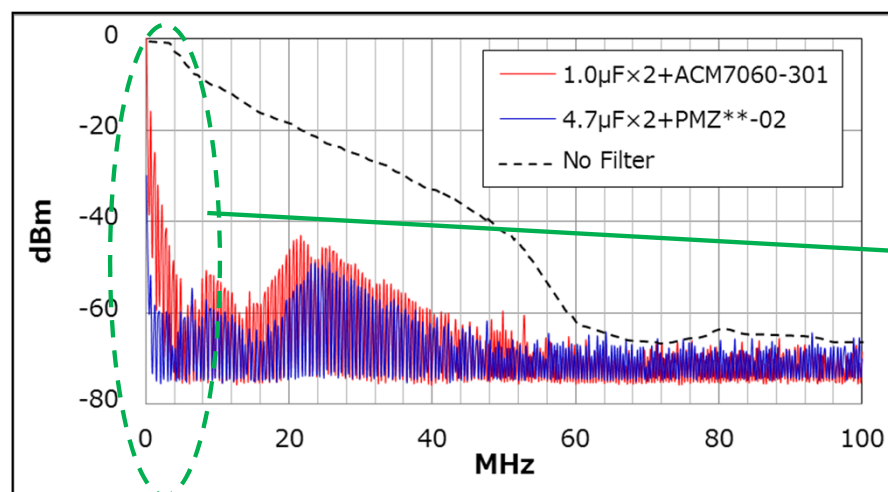
□ 噪音抑制效果(與T公司制品ACM7060的比較)



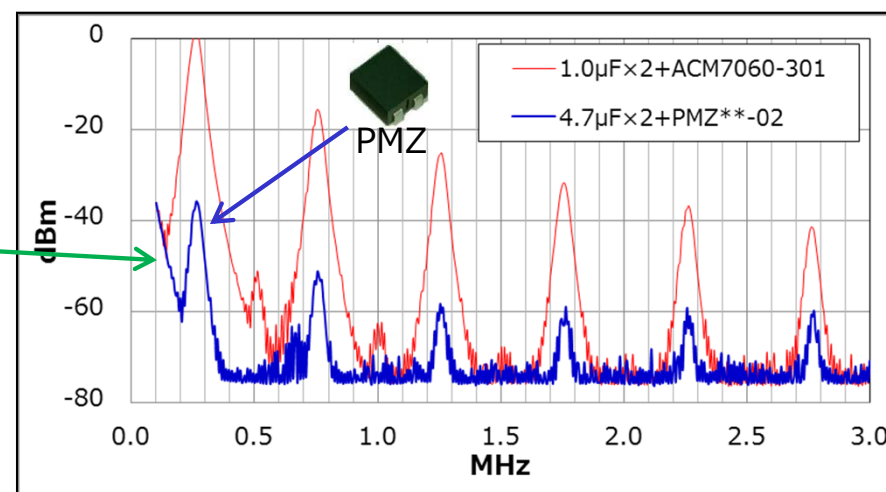
※SWF=250kHz, $V_{in}=5V$, $R_L=4\Omega$



Sample Circuit



高次諧波噪音
(100kHz~100MHz)



高次諧波噪音
(100kHz~3MHz)

□ 應用



防盜監視器



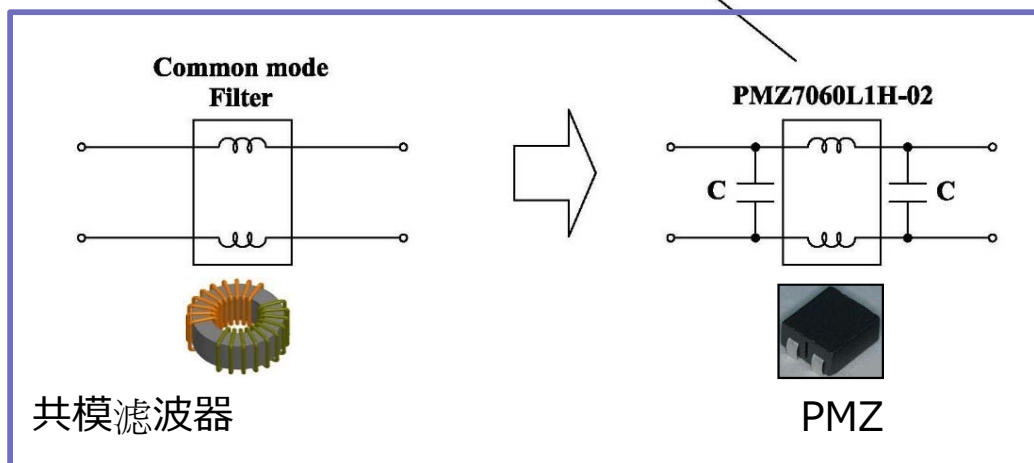
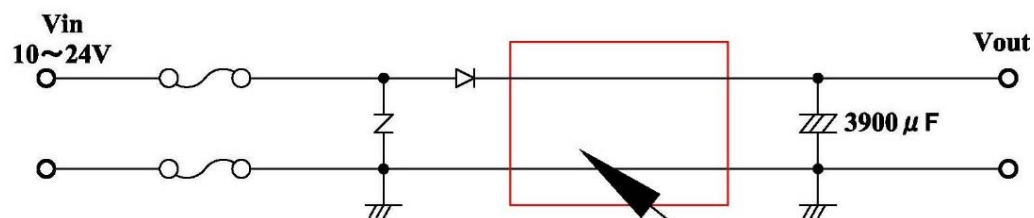
行車紀錄器



汽車音響/GPS導航



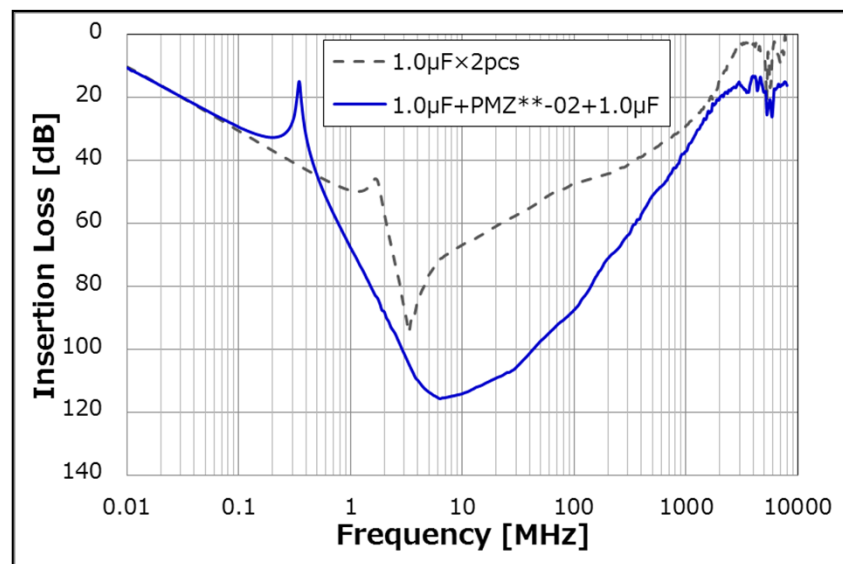
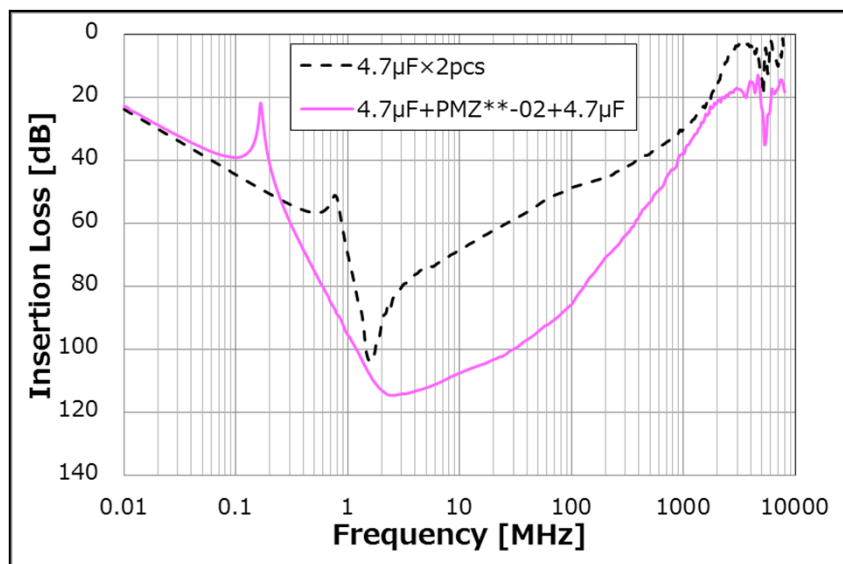
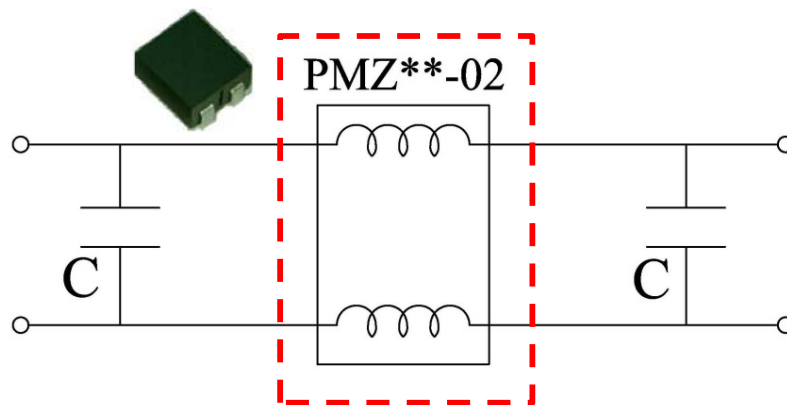
基地台



二次電源的共模濾波器可以用PMZ
替換(安裝面積可減少減小，成本降低)

□PMZ系列與電容組合的噪音對策

如下：2顆電容與PMZ**-02組合對應寬頻噪音對策對策
(額定電流10A可對應)



插入損失特性對比

○Spec of the product(PMZ)

■ Feature

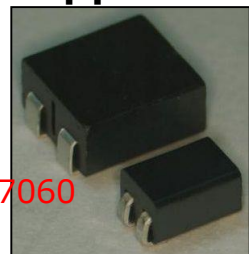
- It is applicable with the +155°C environment.
- Because the terminal has flexibility, it becomes the structure which is strong in the temperature cycle.

■ Part Number List and Rating

Part Number	Impedance (Ω at 100MHz)	Rated Voltage DC(V)	Rated Current DC(A)	DC Resistance (m Ω max.)	Operating Temp. (°C.)
PMZ7060L2AAMV-01	100	100	15	5	-55~+155°C
PMZ7060L2AAMV-02	65	100	15	5	-55~+155°C
PMZ4532L2AAMV-01	70	100	10	5	-55~+155°C

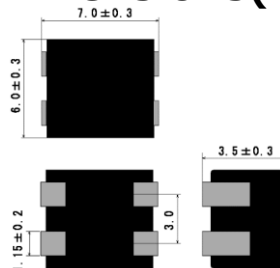
※Include self-heating temperature

■ Appearance

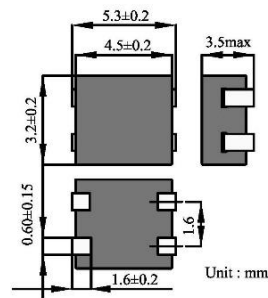


4532

■ Dimensions(mm)



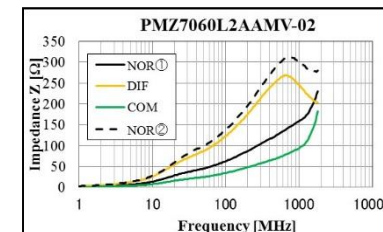
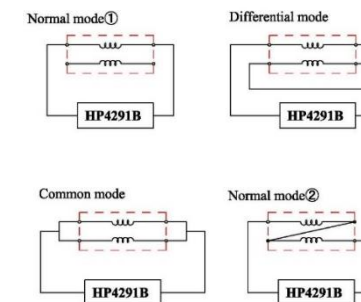
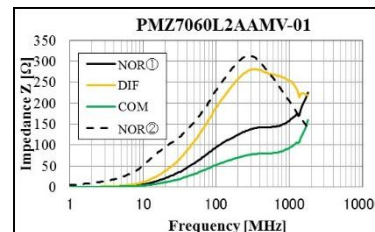
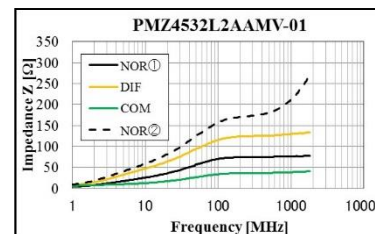
7060



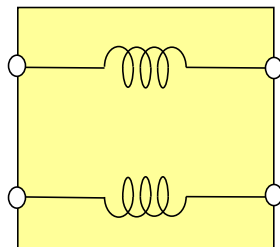
4532



■ Impedance Freq. Characteristics



■ Equivalent circuit



181026

MARUWA Co.,Ltd.
Screw-EMI Production

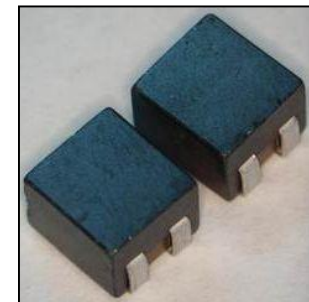
○Spec of the product(PMF)

PMF series has a cost performance ratio as the compound -shaped EMI filter by improving ripple removal effect on the side of the low frequency substantially and simplifying structure.

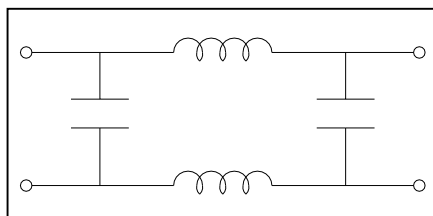
■Part Number List and Rating

Part Number	Rated voltage DC(V)	Rated Current DC(A)	DC Resistance (mΩ max.)	Operating temp (°C)
PMF7060C1E-01	25	10	5	-55~+125
PMF7060C1H-01	50	10	5	-55~+125
PMF7060C2A-01	100	10	5	-55~+125

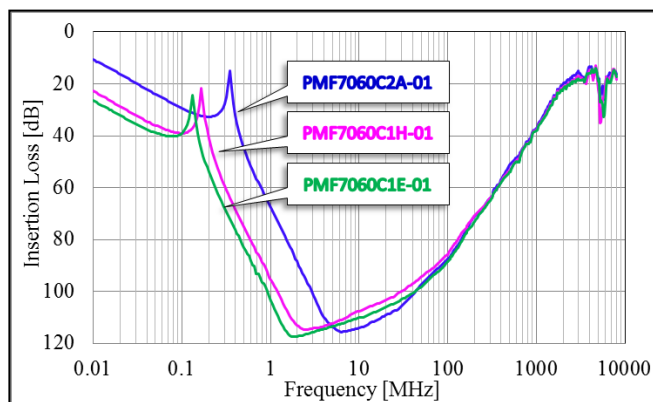
■Appearance



■Equivalent circuit

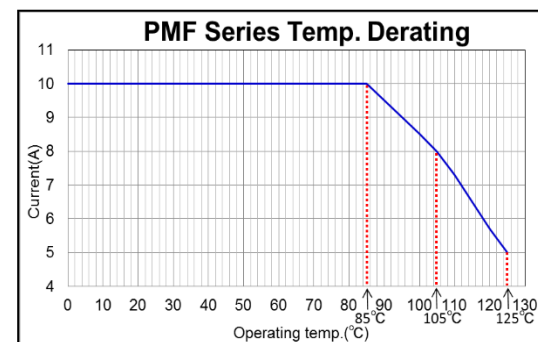


■Insertion Loss Data



■Precautions

In operating temperature exceeding +85°C, derating of current is necessary for PMF series. Please apply the derating curve shown in chart according to the operating temperature.

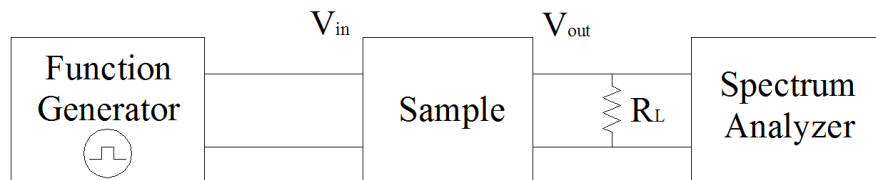


■ Higher Harmonic Noise

There is a noise depression-effect which is excellent with the low band to ACM7060+MLCC which is made by the T Inc. in our company PMF.

(High band is an equal effect.)

It proposes the reduction of the number of parts and the component side product.



※SWF=250kHz, V_{in} =5V, R_L =4 Ω

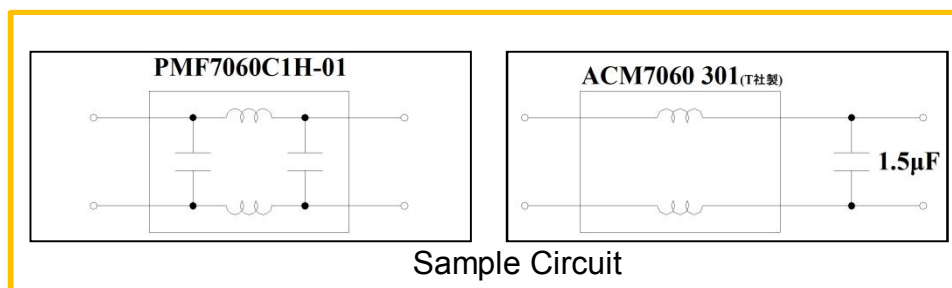


Fig1 : Measuring Circuit Figure

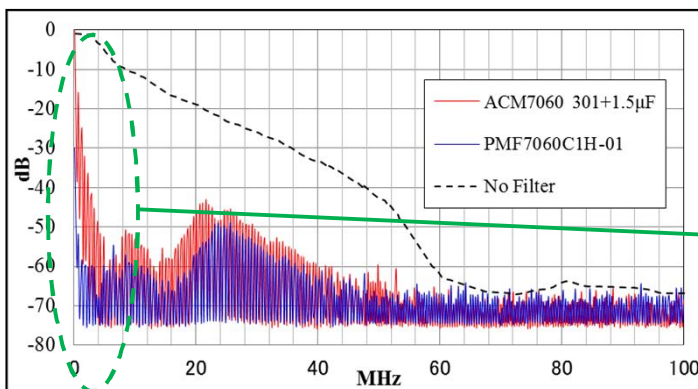


Fig2 : Higher Harmonic Noise
(100kHz~100MHz)

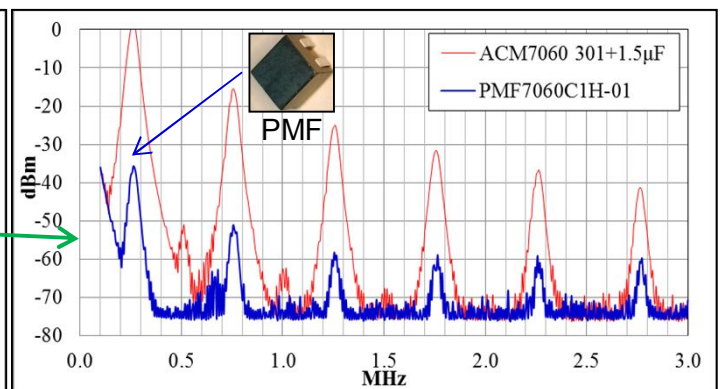


Fig3 : Higher Harmonic Noise
(100kHz~3MHz)

Number of parts and the component side product reduction
(Measure is possible with one PMF of it)

END