

準ミリ波帯域まで伸びた「電源デカップリング・デバイス」の開発

The Development Of D.C. Power Decoupling Devices In Consideration Up To Quasi-Millimeter Wave Band.

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あらまし:

D.C.

. GH -10 B . GH -20 B

キーワード

Keywords: decoupling device, quasi-millimeter wave, harmonics, electromagnetic wave, isolation, passive component

1. まえがき

EMC

コイフィル

1

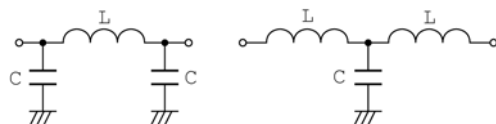
TM

Low

Temperature Co-fired Ceramic

2. 従来部品によるフィルタ試作実験

Discrete ,

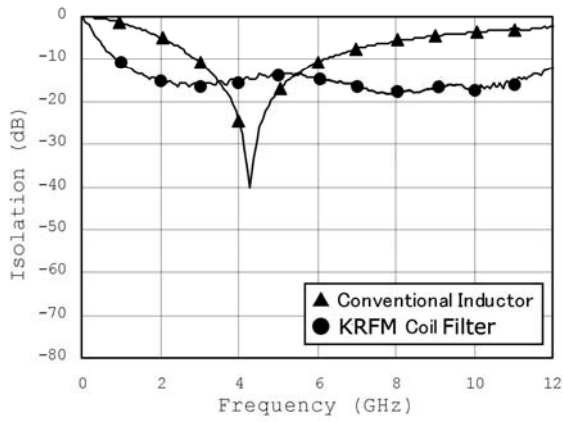


(a) π - section (b) T- section

μ

Fig.1 Schematic of Filters

Agilent 8720D
Agilent
8753D
Agilent 8510B



KRFM

Fig.2 Comparison of Frequency Characteristics with COILFIL & Conventional Inductor

2.1

discrete コイフィ
ル High Frequency

GND

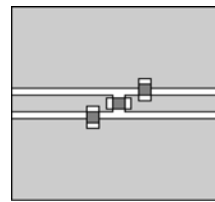
mm

2.2

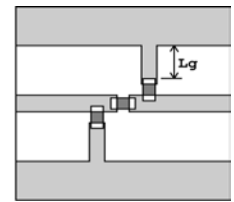
discrete

μ

μ



(a) $L_g=0$ mm



(b) $L_g=3$ mm

Fig.3 Parts Layout of π -section Filter

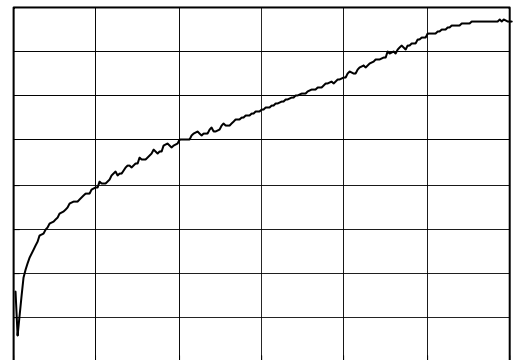


Fig. 4 Frequency Characteristics of π -section Filter, using Conventional L, C Parts

Inductance

Equivalent Series

2.3

discrete

T

μ

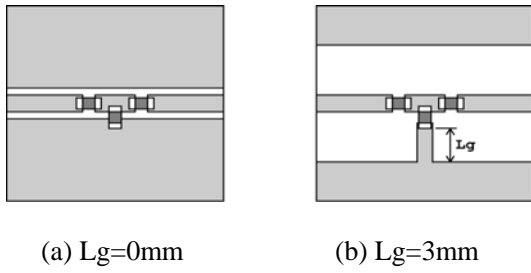


Fig.5 Parts Layout of T- Filter

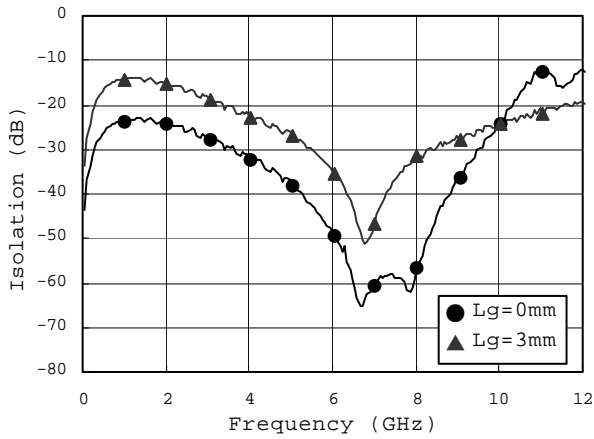
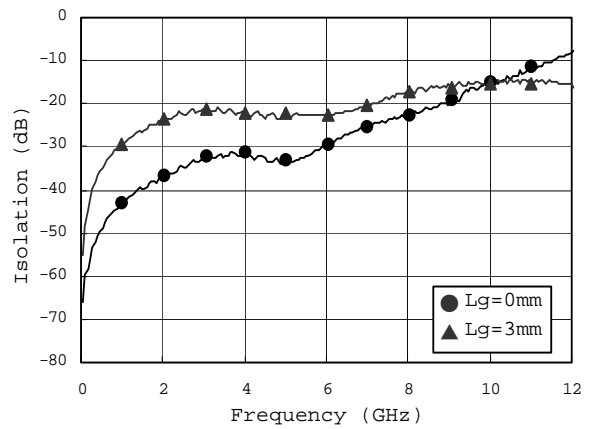


Fig.6 Frequency Characteristics of T- Filter, using Conventional L, C Parts

discrete

3. コイフィルによるフィルタ試作実験

3.1



コイフィル

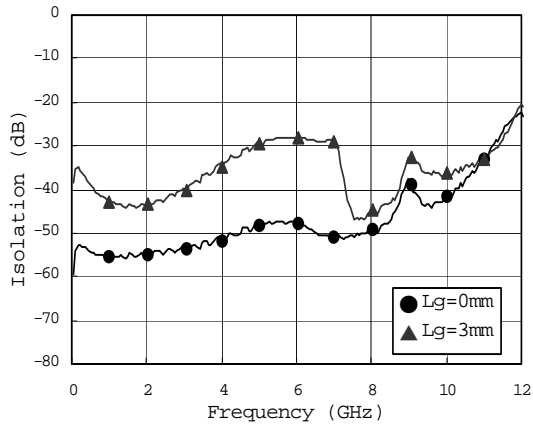
Fig. 7 Frequency Characteristics of T-section Filter, using COILFIL

コイフィル

2.4 discrete

3.2

T



4. コイフィル の 特性改善

4.1

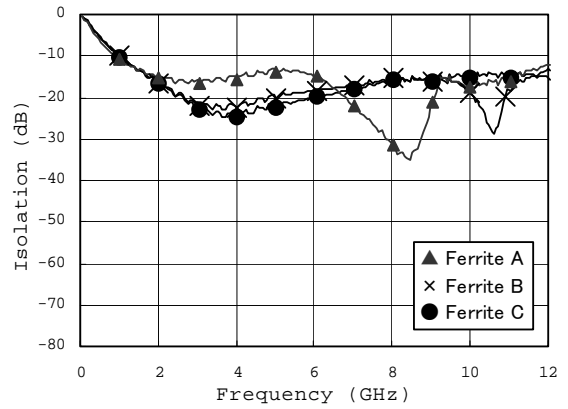
コイフィル

GHz

コイフィル

Fig.8 Frequency Characteristics of T-section Filter, using COILFIL

コイフィル



コイフィル

Fig.9 Comparison of Frequency Characteristics with Different Ferrite Materials

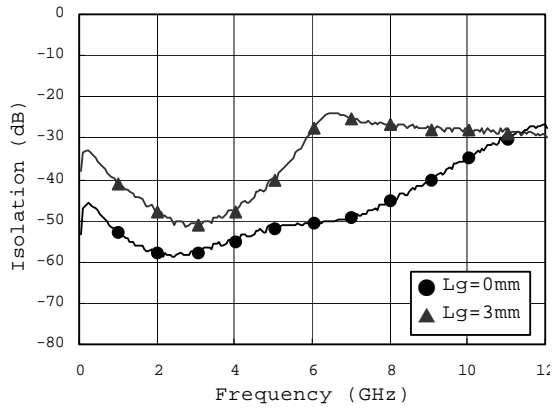
3.3

4.2

()
コイフィル

コイフィル

コイフィル



コイフィル

Fig.10 Characteristics of T-section Filter using COILFIL with Improved Ferrite Material

5. モジュール構造への改良

5.1

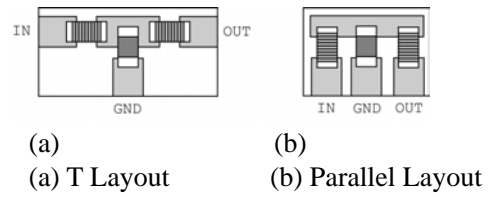
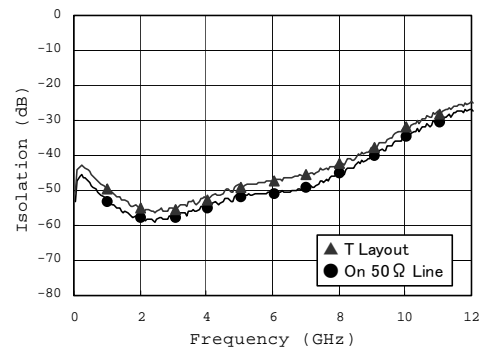
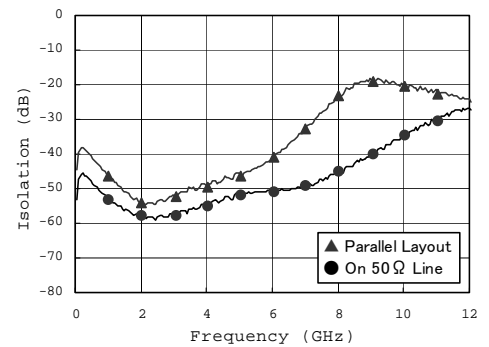


Fig.11 Parts Layouts of Trial Filter Module



(a)
(a) T Layout



(b)
(b) Parallel Layout

Fig.12 Characteristic of Filter Module

5.3

(b)

. × . × .

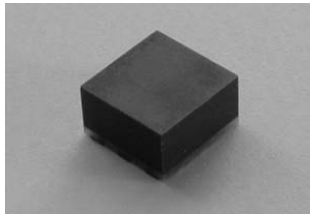
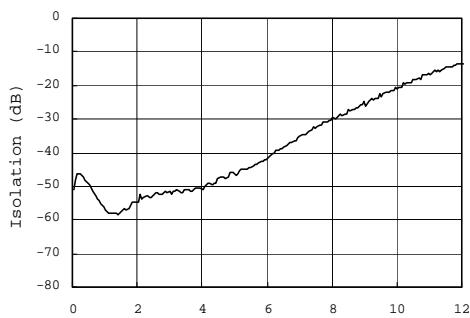


Photo View of Wideband Decoupling Filter



Fig.14 Frequency Characteristics of Coaxial connector type filter



(a)
(a) High Frequency Characteristic

Fig.13 Frequency Characteristics of Modified Resin Mold



Photo 2 Coaxial connector type filter

6. 準ミリ波帯域へのチャレンジ

7. まとめ

コイフィル

H

a
コイフィル

H

参考文献

1 K. Masuda, M. Satoh, H. Tohya: "A Line Structure Component Using a Conducting Polymer", IEICE Trans. C Vol.J85-C No.12 pp.1113- 1120 (2002)

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