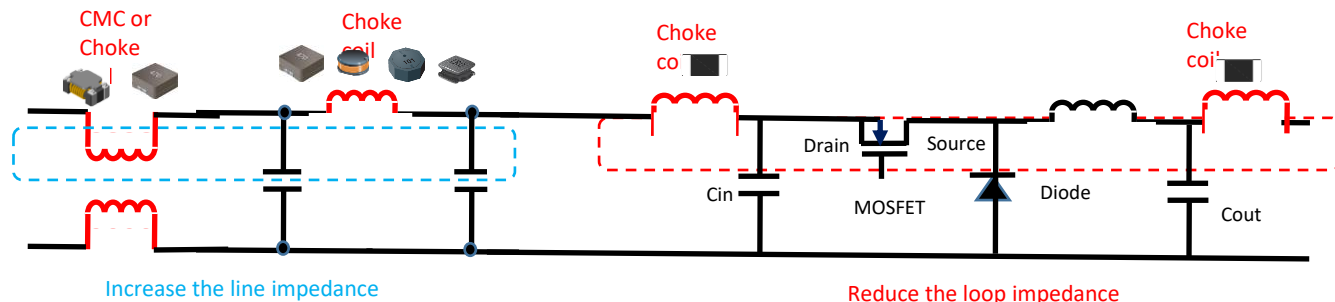


Automotive CMC Common parts Comparison & Recommended PAD layout

BOURNS®

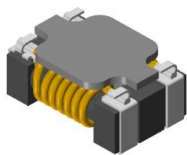
Auto Power EMI Noise Solution

Total Power EMI solution overview



	Bourns available part
CMC	SRF7038A-701Y (700Ω/4A) & 132Y(1300Ω/3A) cross to ACM70V SRF9045A-701Y (5A) cross to TDK ACM90V SRF1206A-701Y(8A) & SRF1206A-172Y(5.5A) cross to TDK ACM12V
Choke coil for common mode noise	SRP2512A-R33M SRP2512A-R47M SRP2512A-R68M SRP2512A-1R0M
Choke coil for differential mode noise	SRP series SDE series SRN series SRR series (inductance range 2.2uH-10uH)
Choke coil for loop impedance reducing	MH2029A-102Y SRP2512A-R33M SRP2512A-R47M SRP2512A-R68M

SRF7038A系列电源线用共模电感介绍



SRF7038A series

特点：

- ◆ 大电流（额定电流3A-15A），能满足大部分BMS电源的电流要求；
- ◆ 高阻抗（最高共模阻抗1300Ω@100MHz），帮助解决日益严格的EMI静噪要求

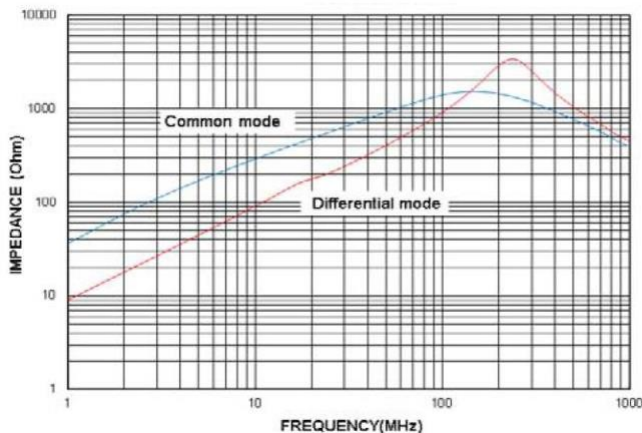
应用范围：

输入/输出电源线

尺寸：

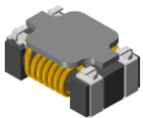
7.0x6.0x3.8

SRF7038A-132Y



较高的共模/差模阻抗，对解决电源线EMI噪声有非常大的帮助

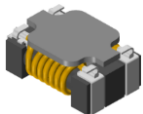
Power circuit (EMI noise filter for power line)



SRF7038A series

Features :

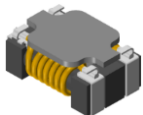
- ◆ High current (Rated current from 3A-15A)
- ◆ High common mode & differential mode impedance (Max1300Ω@100MHz)
- ◆ Size 7.0*6.0*3.8



SRF9045A series

Features :

- ◆ High current (Rated current 5A)
- ◆ High common mode & differential mode impedance (Max700Ω@100MHz)
- ◆ Size 9.0*7.0*4.5



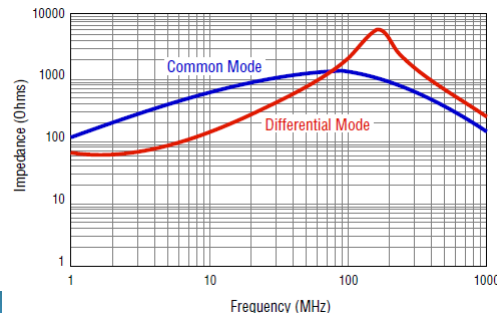
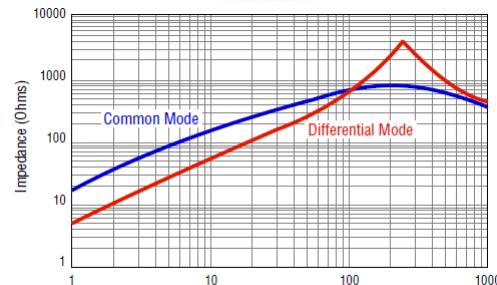
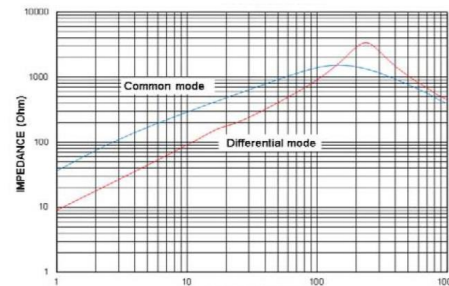
SRF1206A series

Features :

- ◆ High current (Rated current from 6A-8A)
- ◆ High common mode & differential mode impedance (Max1000Ω@100MHz)
- ◆ Size 12*11*6.0

High common mode & differential mode noise impedance to suppress the EMI noise on the power line.

SRF7038A-132Y



Magnetic products (CMC for power line)



SRF7038A
SRF9045A
SRF1206A

Comparison with competitor's

7*6mm size

Bourns SRF7038A-701Y	TDK ACM70V-701-2P
Rated current 4A	Rated current 4A
Common mode impedance 700ohm @ 100MHz	Common mode impedance 700ohm @ 100MHz
Cost Low	Cost High

12*11mm size

Bourns SRF1206A-701Y	TDK ACM12V-701-2P
Rated current 8A	Rated current 8A
Common mode impedance 700ohm @ 100MHz	Common mode impedance 700ohm @ 100MHz
Cost Low	Cost High

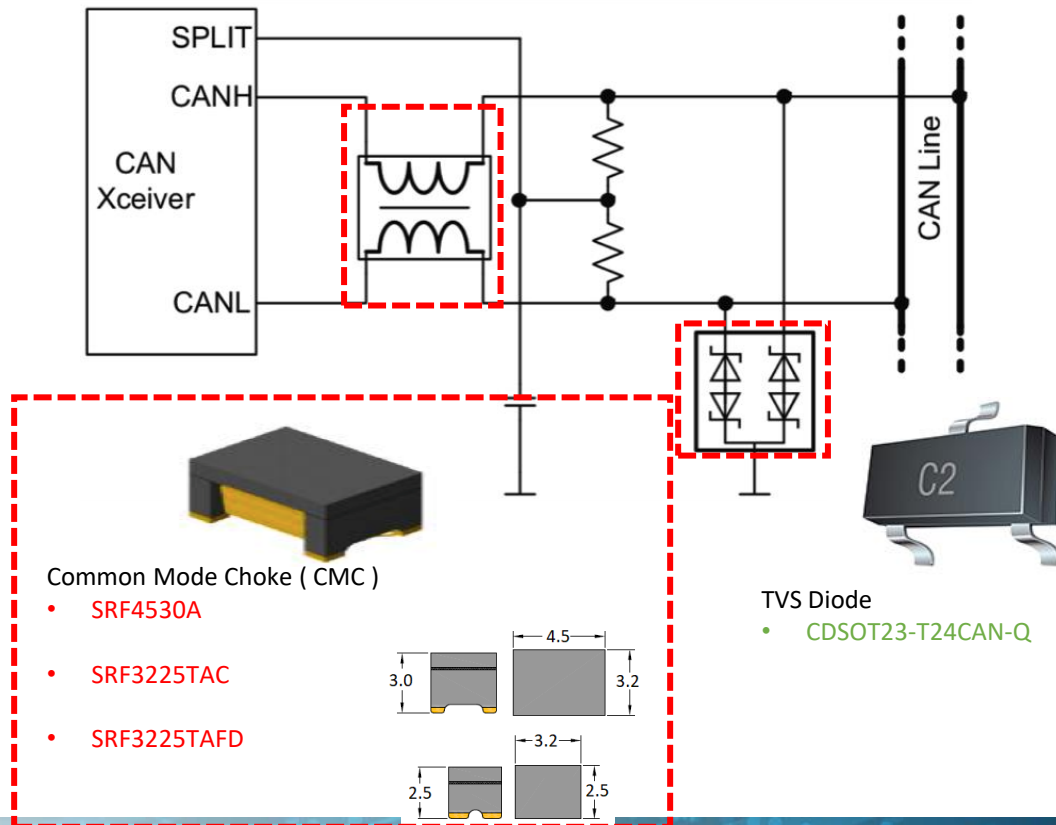
9*6.5mm size

Bourns SRF9045A-701Y	TDK ACM90V-701-2P
Rated current 5A	Rated current 5A
Common mode impedance 700ohm @ 100MHz	Common mode impedance 700ohm @ 100MHz
Cost Low	Cost High

12*11mm size

Bourns SRF1206A-172Y	TDK ACM12V-172-2P
Rated current 5.5A	Rated current 4.8A
Common mode impedance 1700ohm @ 100MHz	Common mode impedance 1700ohm @ 100MHz
Cost Low	Cost High

CANBUS/CANFD接口整体方案（共模扼流电感+TVS）



CANBUS/CANFD接口整体方案（共模扼流电感+TVS）

CANBUS（速率小于1Mbps）：

Bourns共模电感，满足IEC62228-3 Class1:

SRF4530A-510Y:

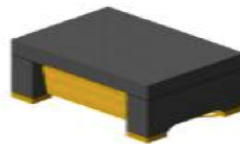
尺寸：4.5*3.2*3.0mm

感值：51uH

SRF3225TAC-510Y:

尺寸：3.2*2.5*2.0mm

感值：51uH

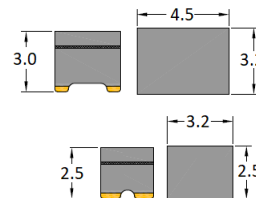


Common Mode Choke (CMC)

- SRF4530A

- SRF3225TAC

- SRF3225TAFD



CANFD（速率2Mbps）：

Bourns共模电感,满足IEC62228-3 Class2:

SRF4530A-101Y:

尺寸：34.5*3.2*3.0mm

感值：100uH

SRF3225TAC-101Y:

尺寸：3.2*2.5*2.0mm

感值：100uH

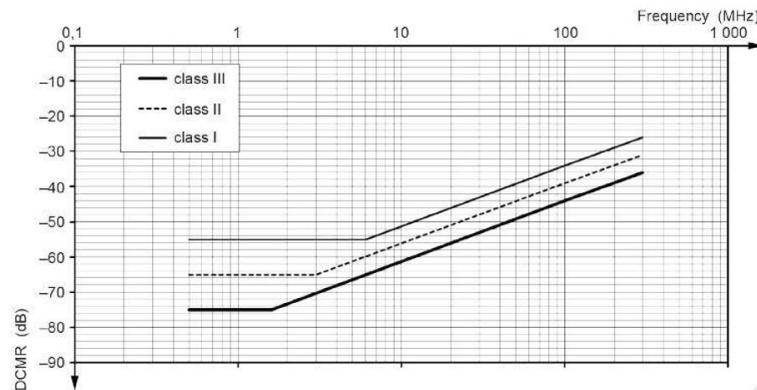
CANFD（速率5Mbps）：

Bourns共模电感,满足IEC62228-3 Class3:

SRF3225TAFD-101Y:

尺寸：3.2*2.5*2.0mm

感值：100uH



Eg. Criteria of Ssd21 of CMC by IEC.

IEC

Automotive CMC Common parts

CANBUS (速率1Mbps) , 51uH共模电感,满足IEC62228-3 Class1:

45*32*3.0mm size: SRF4530A-510Y (TDK ACT45B-510-2P-TL003)*

3.2*2.5*2.0mm size: SRF3225TAC-510Y (TDK ACT1210-510-2P-TL00)

CANFD (速率2Mbps) , 100uH共模电感,满足IEC62228-3 Class2:

45*32*3.0mm size: SRF4530A-101Y(TDK ACT45B-101-2P-TL003/ACT45R)*

3.2*2.5*2.0mm size: SRF3225TAC-101Y (TDK ACT1210-101-2P-TL00)*

CANFD (速率5Mbps) , 100uH共模电感,满足IEC62228-3 Class3:

3.2*2.5*2.0mm size: SRF3225TAFD-101Y (TDK ACT1210D-101-2P)

百兆以太网100M Base-T1的共模电感(Broad-Reach technology)

45*32*3.0mm size: SRF4530AB-201Y (Cross to TDK ACT45L-201-2P-TL000)

3.2*2.5*2.0mm size: SRF3225TABM-201Y (ACT1210L-201-2P-TL00)

千兆以太网1000BASE-T1的共模电感:

SRF3225TABG-101Y (TDK ACT1210G-800-2P) 3.2*2.5*2.0mm size

A2B(Automotive audio bus)车载音频总线的共模电感:

SRF3225AB-101Y (TDK ACT1210L-101-2P-TL00)3.2*2.5*2.0mm size

USB2.0 & USB3.0 (90ohm @ 100MHz)

SRF2012A-900YA (TDK ACM2012-900-2P)

SRF4530AF series for Flexray communication

USB2.0 & USB3.0 (90ohm @ 100MHz)

SRF7038A-701Y/132Y (TDK ACM70V-701 4A)*

SRF9045A-701Y(TDK ACM90V 5A) & SRF1206A-701Y(TDK ACM12V 8A)

Magnetic products (CMC for Canbus/CanFD)

Parameter comparison (51uH for Canbus)

4530 size

Bourns SRF4530A-510Y	TDK ACT45B-510-2P	Murata DLW43SH510XK2
Temperature 150C	Temperature 150C	Temperature 125C
Rated current 230mA	Rated current 200mA	Rated current 230mA
Cost Low	Cost High	Cost Mid

3225 size

Bourns SRF3225TAC-510Y	TDK ACT1210-510-2P	Murata DLW32SH510XK2
Temperature 150C	Temperature 150C	Temperature 125C
Rated current 200mA	Rated current 200mA	Rated current 200mA
Cost Low	Cost High	Cost Mid

Magnetic products (CMC for Canbus/CanFD)

Parameter comparison (100uH for CanFD)

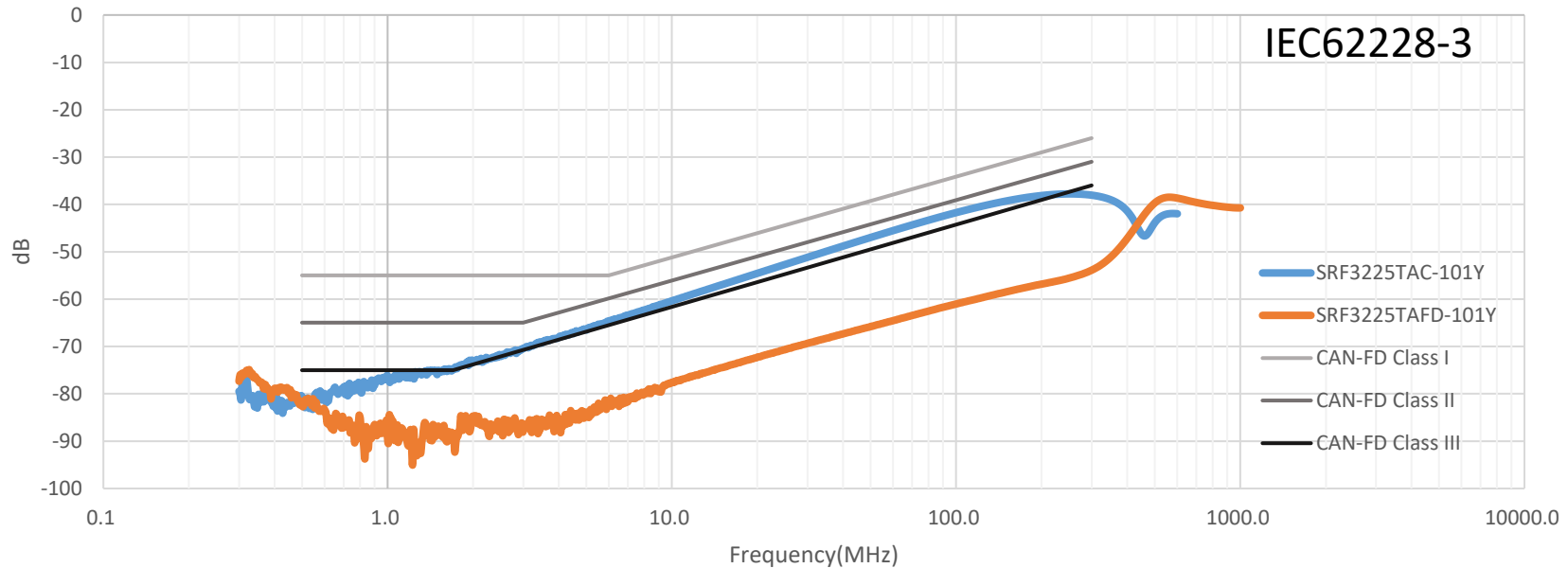
4530 size

Bourns SRF4530A-101Y	TDK ACT45B-101-2P	Murata DLW43SH101XK2
Temperature 150C	Temperature 150C	Temperature 125C
Rated current 200mA	Rated current 150mA	Rated current 200mA
Cost Low	Cost High	Cost Mid

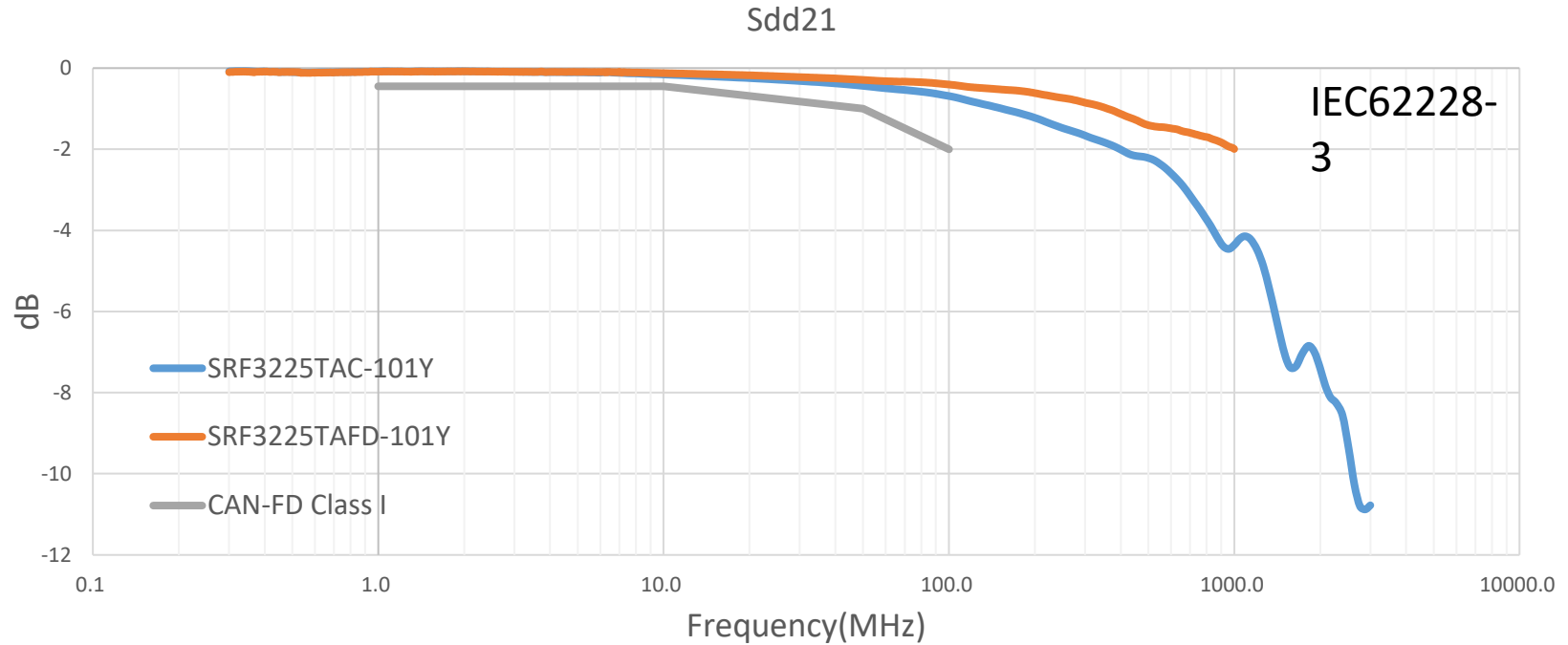
3225 size

Bourns SRF3225TAC-101Y	TDK ACT1210-101-2P	Murata DLW432SH101XK2
Temperature 150C	Temperature 150C	Temperature 125C
Rated current 150mA	Rated current 150mA	Rated current 150mA
Cost Low	Cost High	Cost Mid

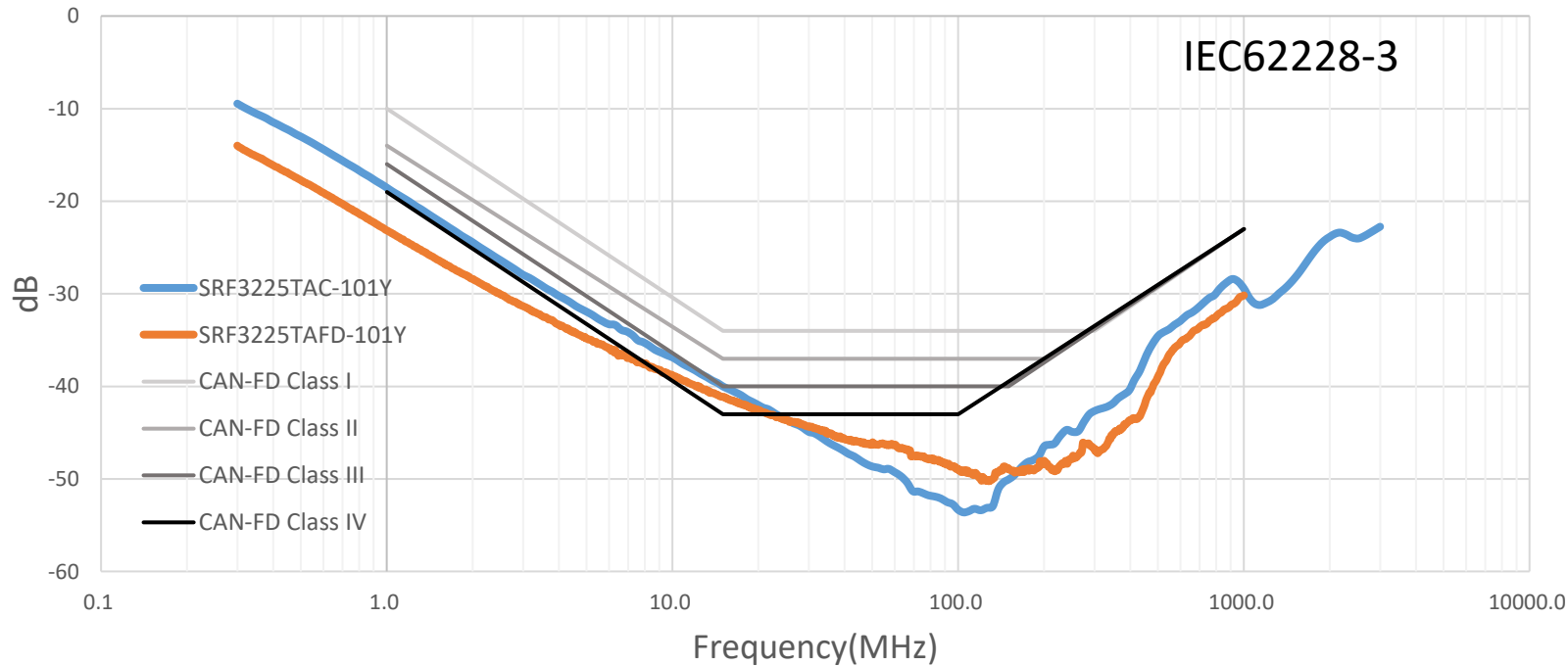
S-Parameters(S_{ds21})



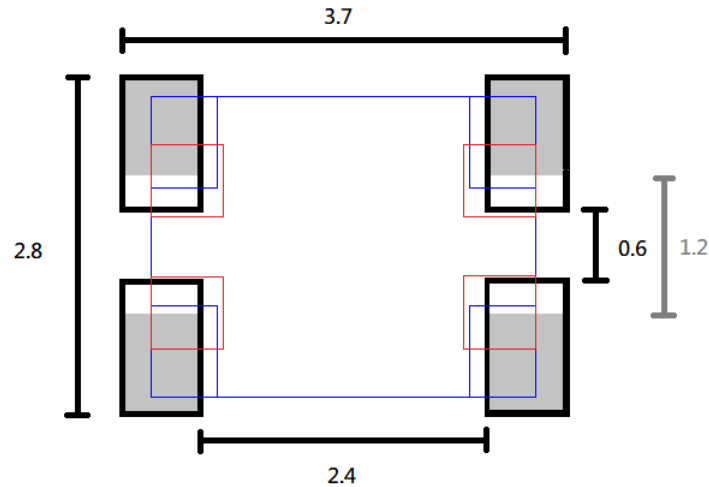
S-parameters (Sdd21)



S-parameters (Scc21)



SRF3225TAC



Grey: Bourns SRF3225TAC recommended PAD layout
(on datasheet)

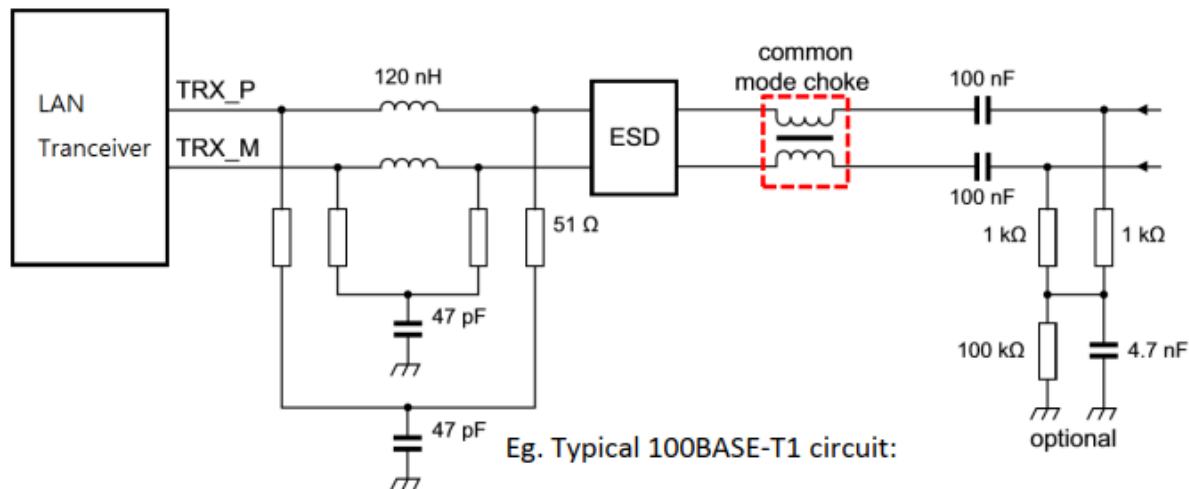
Black: Bourns recommended PAD layout (new)

Blue: Bourns SRF3225TABC Terminals

Red: TDK ACT1210 Terminals

Common Mode Coil for Signal line _ Ethernet

Bourns CMC for 100BASE-T1



Eg. Typical 100BASE-T1 circuit:

Common Mode Choke (CMC)

- **SRF4530AG-201Y** : Size 4530

IC Reference design: Broadcom, **BroadR-Reach**



- **SRF3225TABM-201Y** : Size 3225

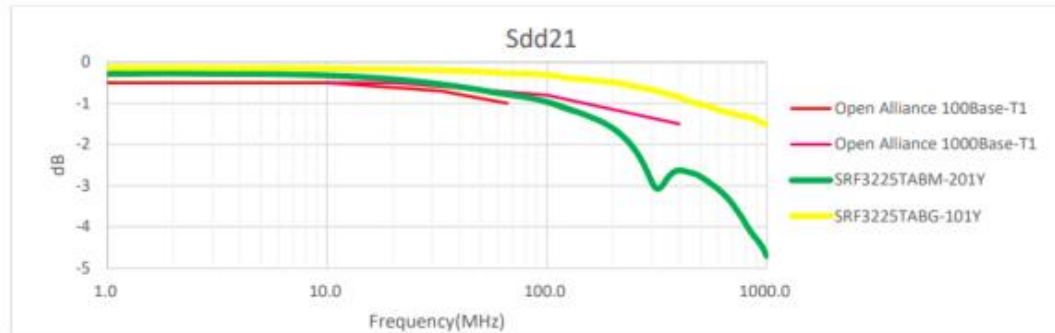
IC Reference design: **NXP**



Ethernet (BroadR-Reach)

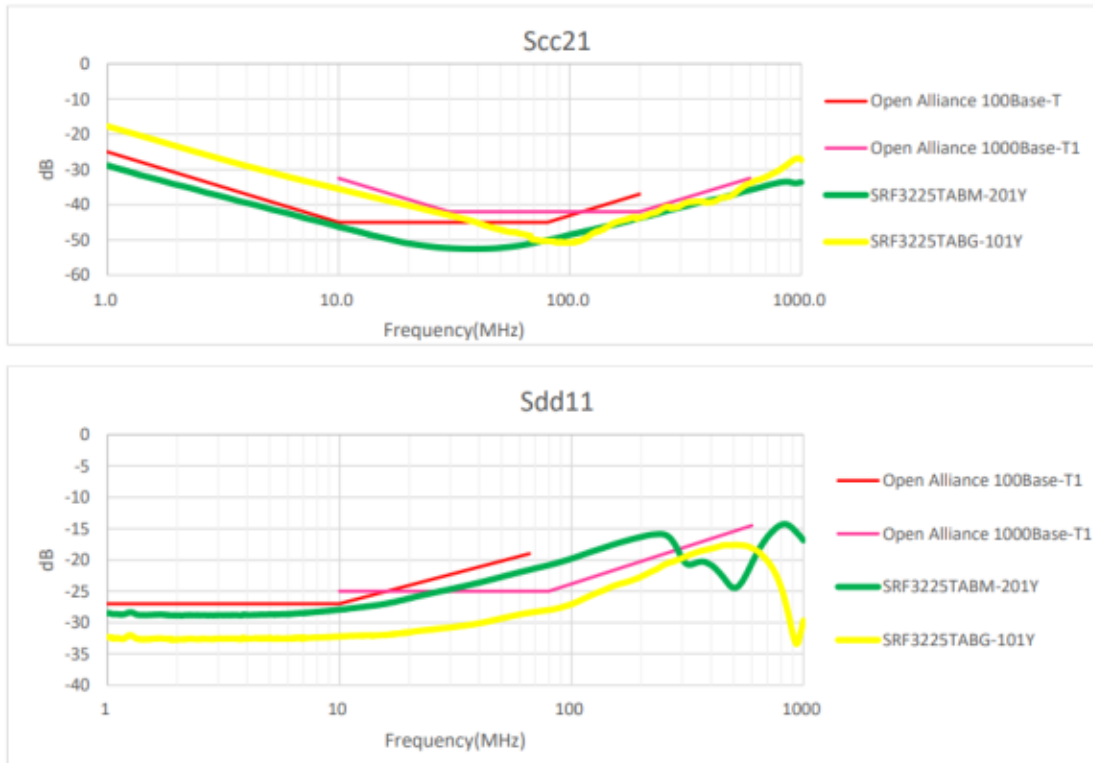
Bourns CMC vs OPEN Alliance limit:

OPEN ALLIANCE 100 & 1000BASE-T1

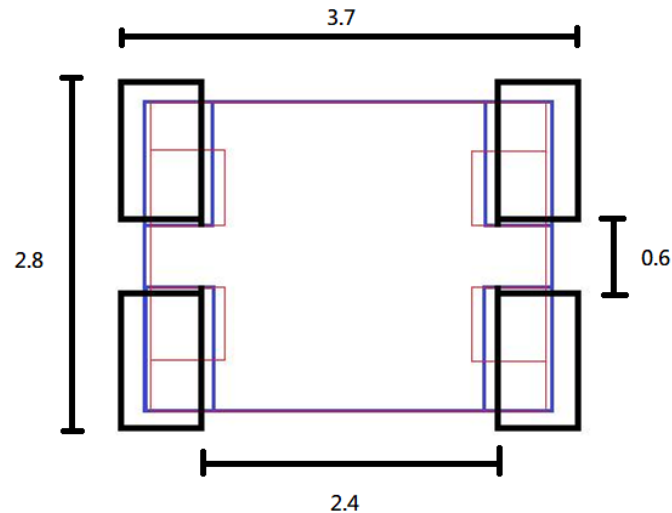


Ethernet (BroadR-Reach)

Bourns CMC vs OPEN Alliance limit:



SRF3225TABM / SRF3225TABG

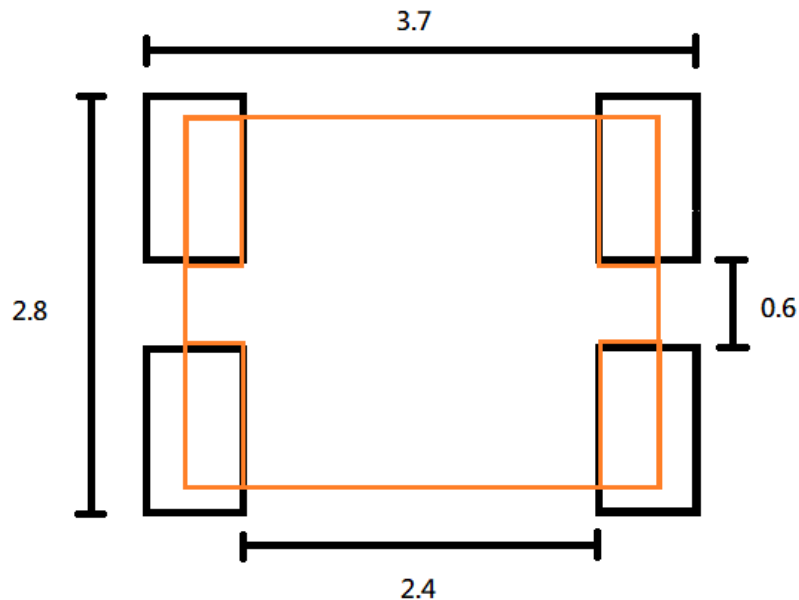


Black: Bourns SRF3225TABM/SRF3225TABG recommended PAD layout (on datasheet)

Blue: Bourns SRF3225TABM / SRF3225TABG Terminals

Red: TDK ACT1210L / ACT1210G Terminals

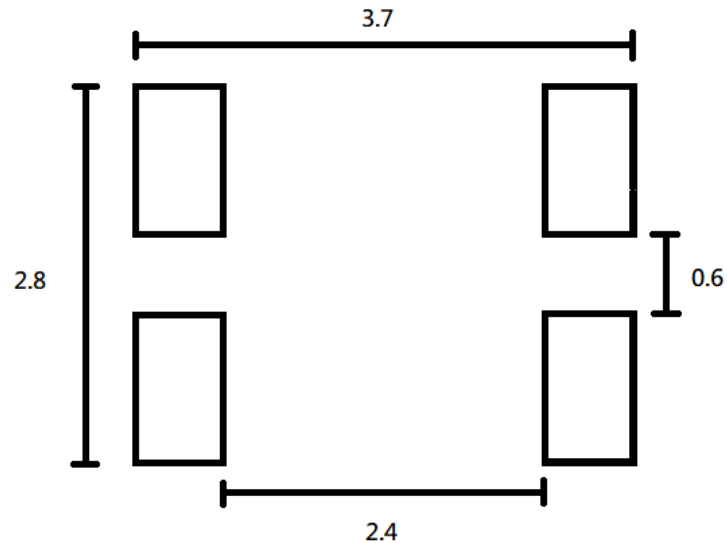
SRF3225TABG-101Y vs Murata DLW32MH101XT2



Black: Bourns SRF3225TABG recommended PAD layout (on datasheet)

Orange: DLW32MH101XT2 Terminals

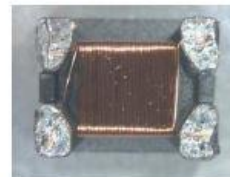
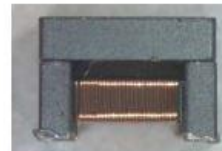
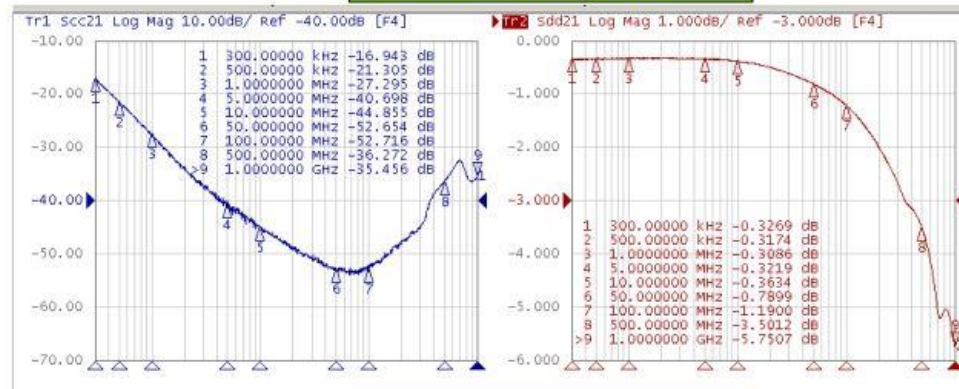
Summary



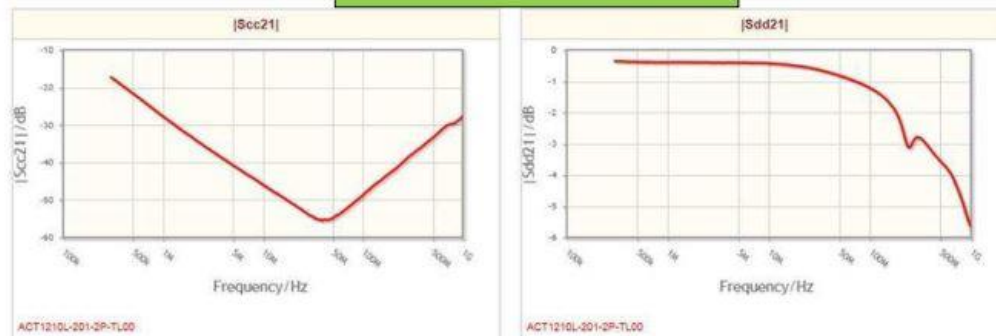
- This recommended PAD layout can be used for both **Bourns SRF3225TAC**, **SRF3225TABM**, **SRF3225TABG** and **TDK ACT1210**, **ACT1210L**, **ACT1210G**

S-Parameter & Winding Outline Comparing Between Bourns SRF3225TAB-201Y and TDK ACT1210L-201-2P-TL00

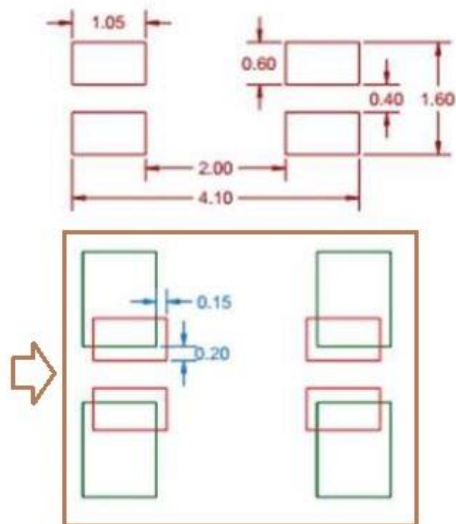
Bourns SRF3225TAB-201Y



TDK ACT1210L-201-2P-TL00

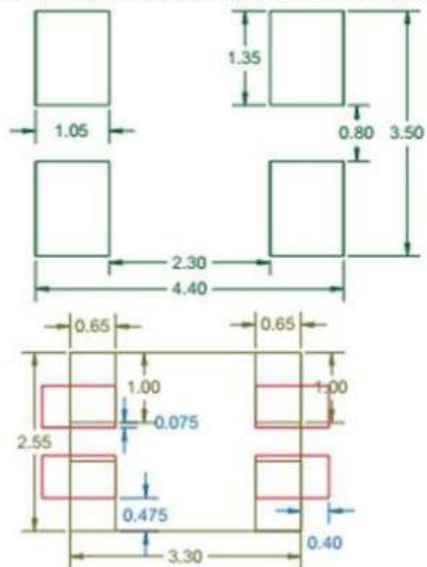


Foot-Print and PCB Pattern Recommended Comparing Between Bourns SRF3225TAB-201Y and TDK ACT1210L-201-2P-TL00



TDK ACT1210L-201-2P
Recommended PCB Pattern

Bourns SRF3225TAB-201Y
Recommended PCB Pattern



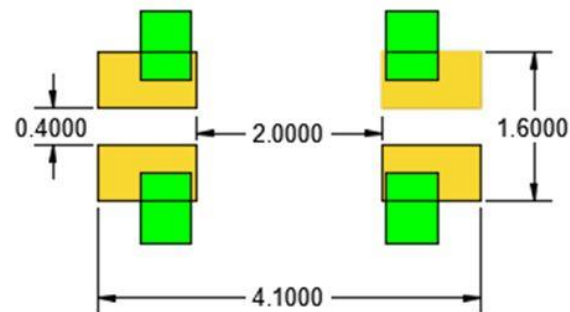
Unit: mm

Bourns SRF3225TAB-201Y
DR TOP VIEW

Recommended Co-layout

BOURNS:SRF3225TAC series (Green)

TDK ACT1210's PCB LAYOUT (Yellow)



Thank you!

BOURNS®