

# Bourns Application notes For Automotive market

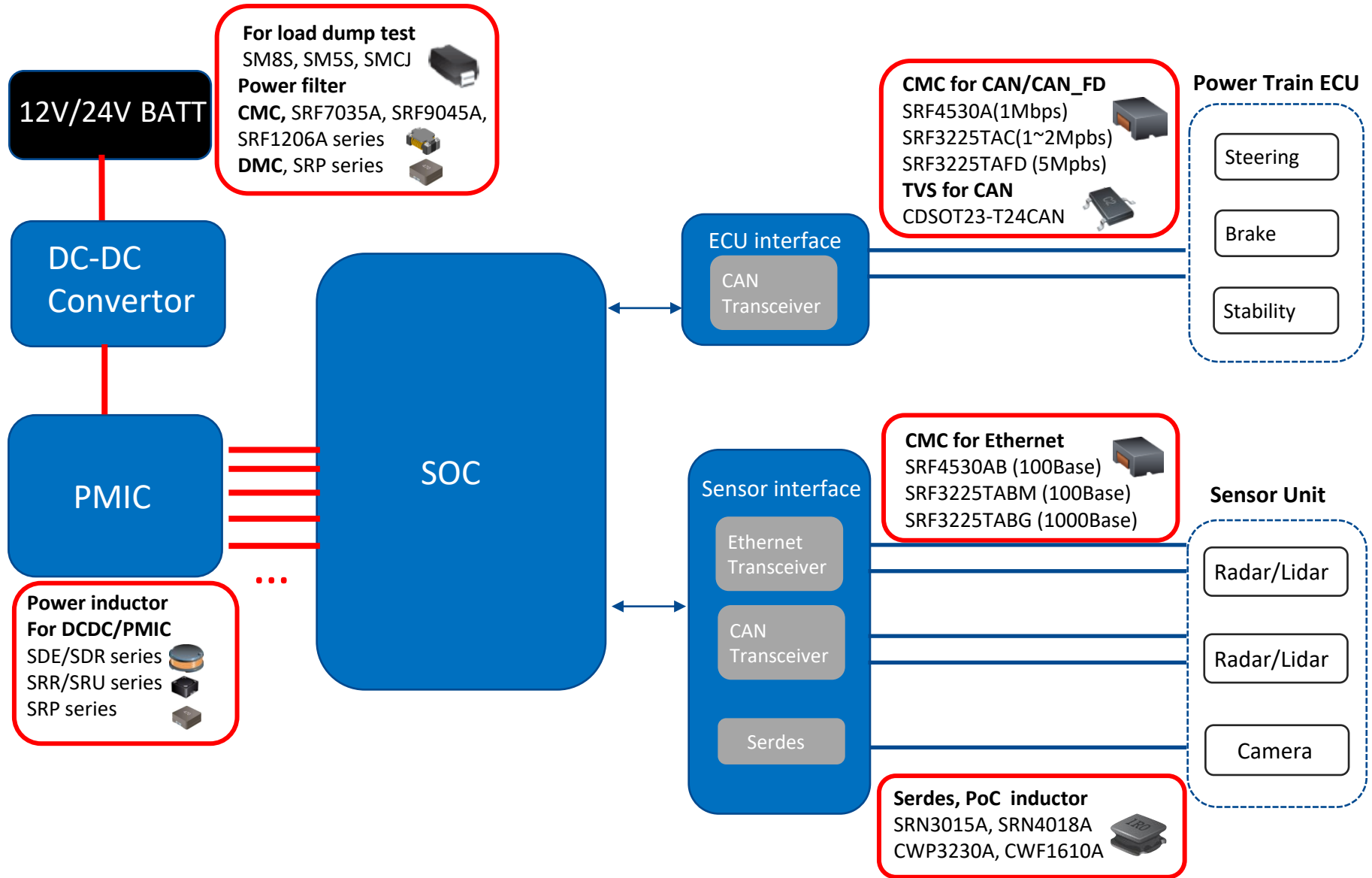
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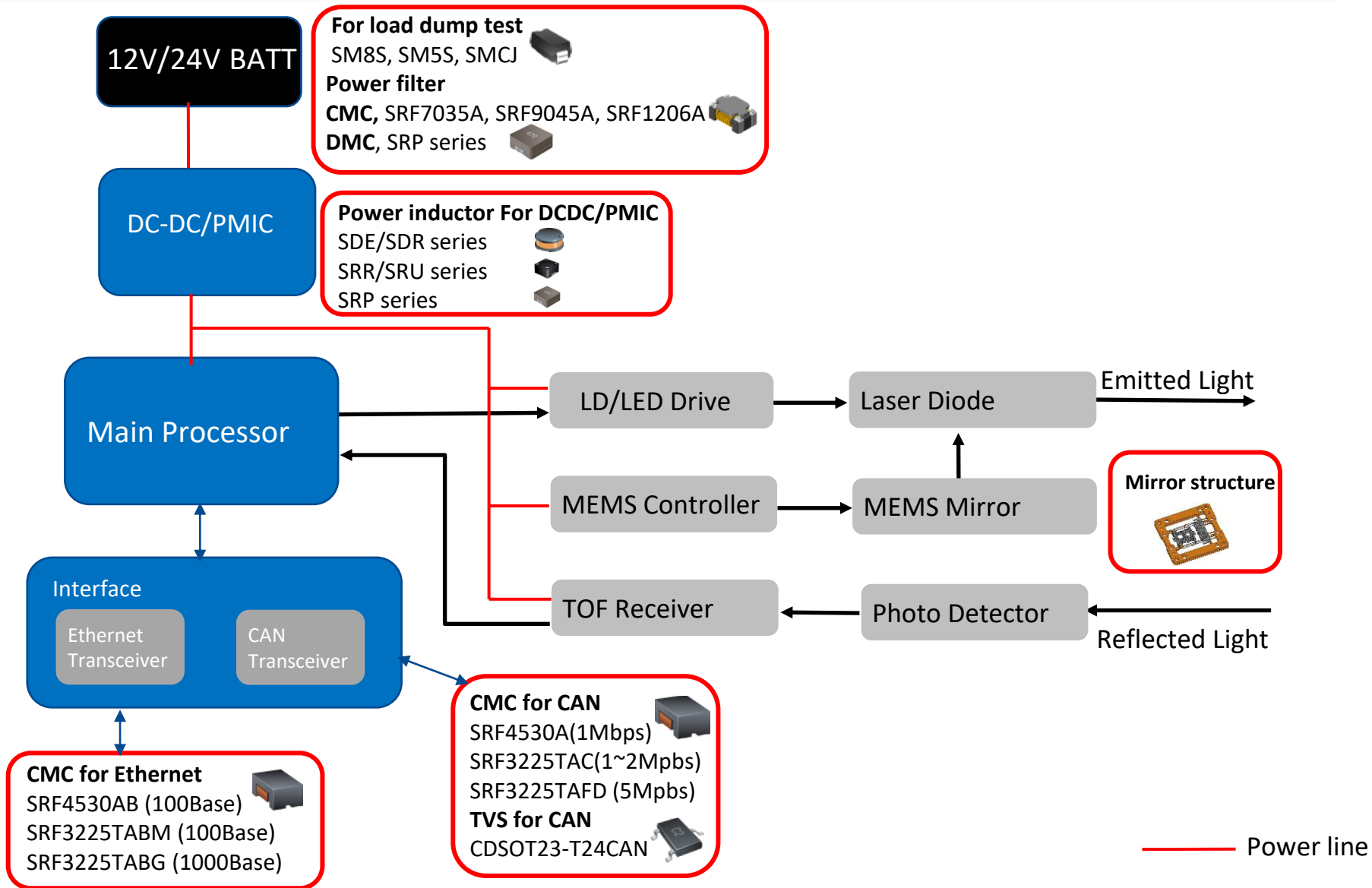
# ADAS\_ECU System Overview



# ADAS\_ECU demand

Product	Circuit
<p><b>TVS: SM8S-Q; SM5S-Q; SMCJ-Q</b>            P5a, 12V, SM8S24CA_Q (6.6kW), SM5S24CA-Q(3.6kW)            P5a, 12V, SM8S36CA_Q (6.6kW), SM5S36CA-Q(3.6kW)            P5b, 12V, SMCJ24CA-Q(1.5kW); 24V, SMCJ36CA-Q(1.5kW)</p>	For dump load test
<p><b>Common mode choke, SRF series for power line</b>            SRF7035A, SRF9045A, SRF1206A</p>	Power input line filter
<p><b>Power inductor: SRP series</b>            Like SPR1038A, SRP7028A, SRP5030CA, etc.</p>	DCDC converter
<p><b>Power inductor: SRP smaller size</b>            SRP2010TMA, SRP2510A, SRP3212A, SRP4020TA, etc.</p>	PMIC
<p><b>Common mode choke, SRF series</b>            SRF4530A(1Mbps),            SRF3225TAC(1~2Mbps)            SRF3225TAFD(5Mbps)  <b>TVS, CDSOT23</b> CDSOT23-T24CAN-Q</p>	CAN/CAN_FD
<p><b>Common mode choke, SRF series</b>            SRF4530AB-201Y, SRF3225TABM-201Y (100BaseT1)            SRF3225TABG-101Y (1000BaseT1)</p>	Ethernet 100Base-T1/1000Base-T1
<p><b>PoC inductor, SRN, CWF series</b>            SRN6045TA, SRN4018TA, SRN3015TA, etc.            CWF1610A-R56M, CWP3230A, etc.</p>	PoC Bias-T circuit

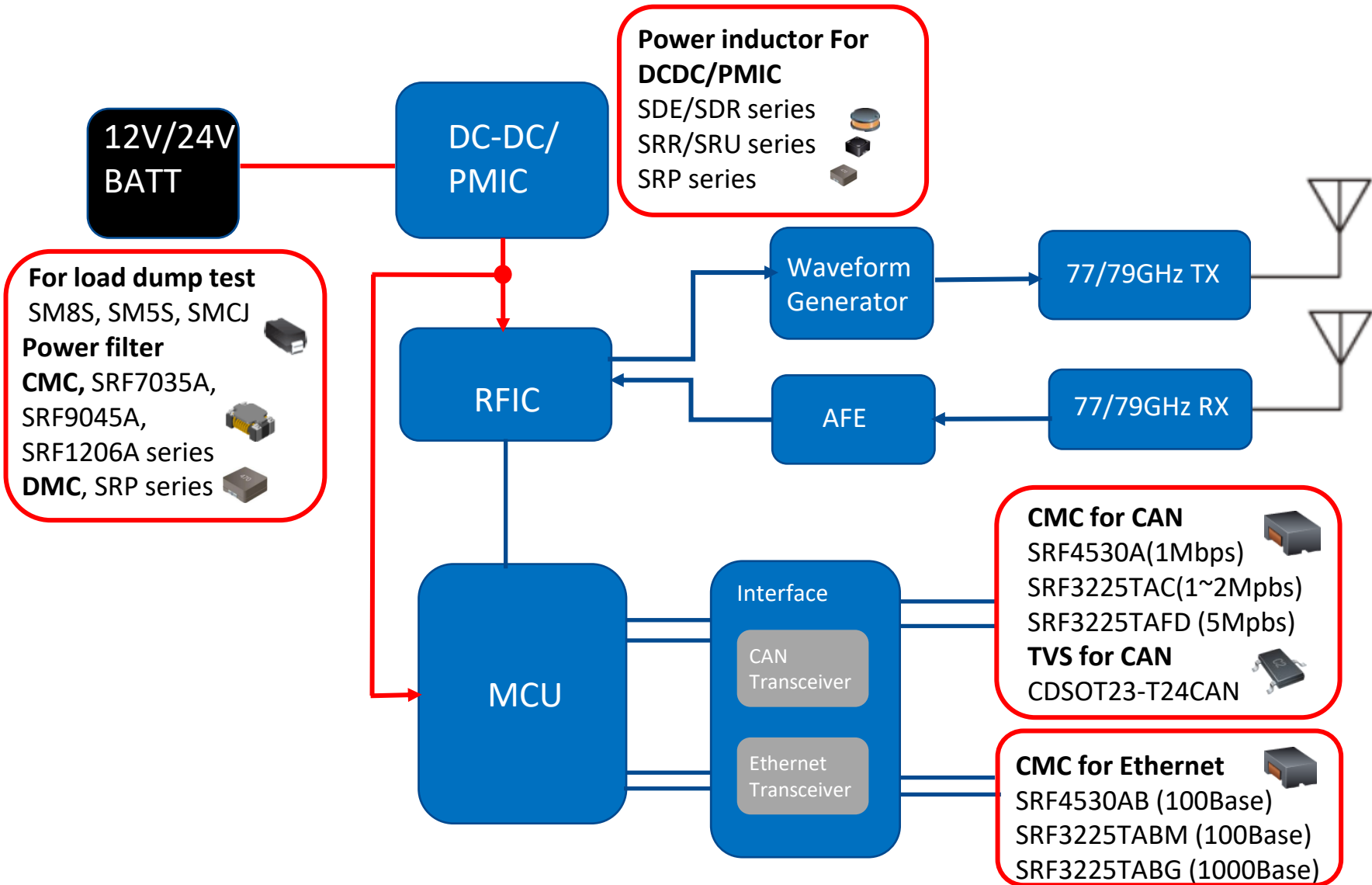
# Lidar System Overview



# Lidar demand

Product	Circuit
<b>TVS: SM8S-Q; SM5S-Q; SMCJ-Q</b> P5a, 12V, SM8S24CA_Q (6.6kW), SM5S24CA-Q(3.6kW) P5a, 12V, SM8S36CA_Q (6.6kW), SM5S36CA-Q(3.6kW) P5b, 12V, SMCJ24CA-Q(1.5kW); 24V, SMCJ36CA-Q(1.5kW)	For dump load test
<b>Power inductor: SRP series</b> Like SPR1038A, SRP7028A, SRP5030CA, etc.	DCDC converter
<b>Power inductor: SRP smaller size</b> SRP2010TMA, SRP2510A, SRP3212A, SRP4020TA, etc.	PMIC
<b>Common mode choke, SRF series for power line</b> SRF7035A, SRF9045A, SRF1206A	Power input line filter
<b>Common mode choke, SRF series</b> SRF4530A(1Mbps), SRF3225TAC(1~2Mbps) SRF3225TAFD(5Mbps) <b>TVS, CDSOT23</b> CDSOT23-T24CAN-Q	CAN/CAN_FD
<b>Common mode choke, SRF series</b> SRF4530AB-201Y, SRF3225TABM-201Y (100BaseT1) SRF3225TABG-101Y (1000BaseT1)	Ethernet 100Base-T1/1000Base-T1
<b>Please check with customer about Mirror structure, This is customized type product.</b>	Mems Lidar Mirror

# mmW Radar System Overview



# mmW Radar demand

Product	Circuit
<p><b>TVS: SM8S-Q; SM5S-Q; SMCJ-Q</b>            P5a, 12V, SM8S24CA_Q (6.6kW), SM5S24CA-Q(3.6kW)            P5a, 12V, SM8S36CA_Q (6.6kW), SM5S36CA-Q(3.6kW)            P5b, 12V, SMCJ24CA-Q(1.5kW); 24V, SMCJ36CA-Q(1.5kW)</p>	For dump load test
<p><b>Common mode choke, SRF series for power line</b>            SRF7035A, SRF9045A, SRF1206A</p>	Power input line filter
<p><b>Power inductor: SRP series</b>            Like SPR1038A, SRP7028A, SRP5030CA, etc.</p>	DCDC converter
<p><b>Power inductor: SRP smaller size</b>            SRP2010TMA, SRP2510A, SRP3212A, SRP4020TA, etc.</p>	PMIC
<p><b>Common mode choke, SRF series</b>            SRF4530A(1Mbps)            SRF3225TAC(1~2Mbps)            SRF3225TAFD(5Mbps)  <b>TVS, CDSOT23</b>  <b>CDSOT23-T24CAN-Q</b></p>	CAN/CAN_FD
<p><b>Common mode choke, SRF series</b>            SRF4530AB-201Y, SRF3225TABM-201Y (100BaseT1)            SRF3225TABG-101Y (1000BaseT1)</p>	Ethernet 100Base-T1/1000Base-T1

# Camera Overview

## Power inductor

For DCDC convertor

SRN series 


SRR/SRU series 

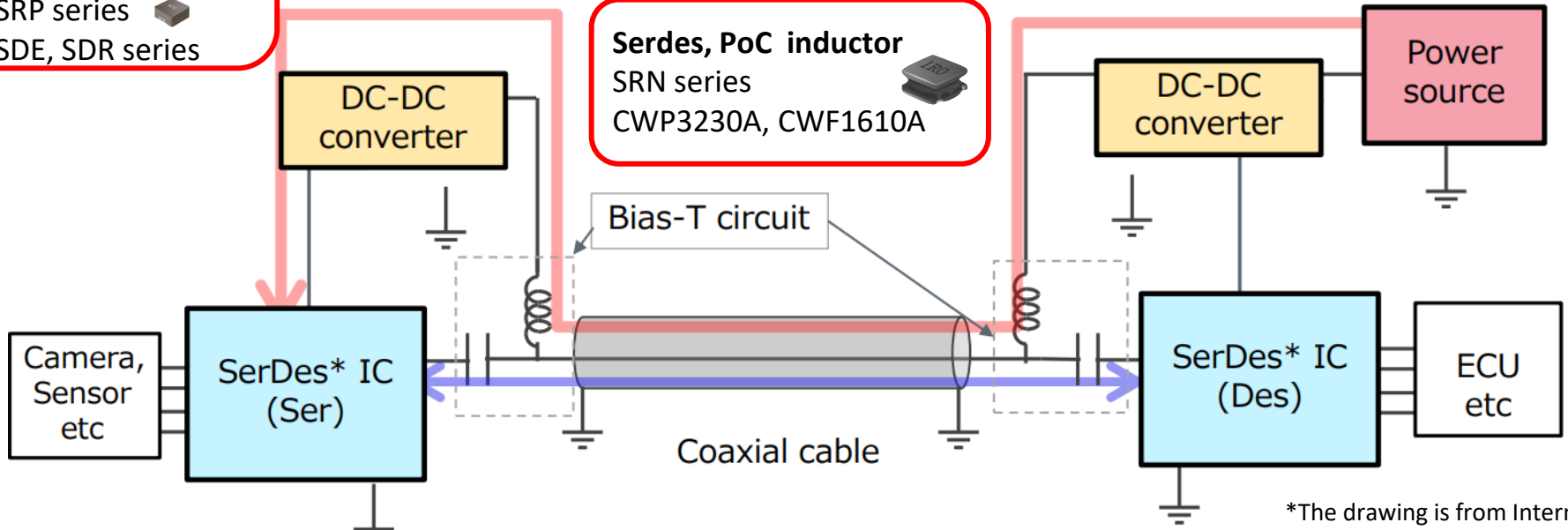
SRP series 

SDE, SDR series

## Serdes, PoC inductor

SRN series

CWP3230A, CWF1610A 



\*The drawing is from Internet.

## Product

### Power inductor: SRP series

Like SPR series, SRN series, SRR/SRU series, SDE/SDR, etc.

### PoC inductor, SRN, CWF series

SRN2010TA, SRN4018TA, SRN5020TA, SRN6045TA series.

CWF1610A-R56M, CWP3230A, etc.

## Circuit

DCDC convertor

PoC Bias-T circuit



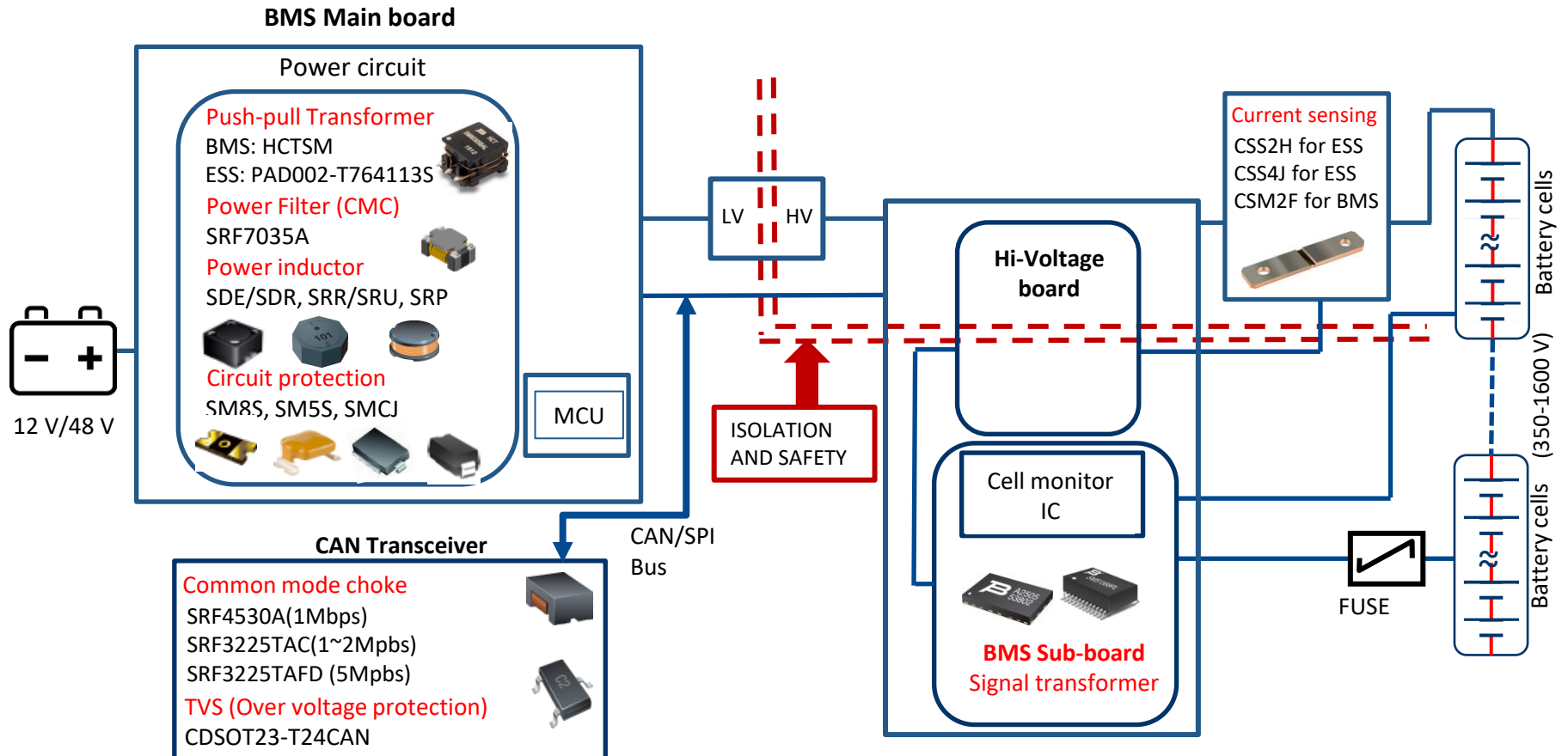
# Camera demand\_ Maxim GMSL2 solution

Circuit name	Current Rating at Maximum Insertion Loss for 6Gbps/187Mbps Data rates	Bourns Solution
RC-Remote Camera	300mA@105C	CWF1610A-R56M CWP3230A-220M
**BC-RC-Backwards compatibility- Remote Camera	280mA@105C	CWF1610A-R56M CWP3230A-220M SRN4018TA-151M
HPC-High Power Camera	500mA@105C	CWF1610A-R56M CWP3230A-220M
PS-Power Sensor	1000mA@85C 800mA@105C 600mA@125C	SRN2010TA-R47Y SRN2010TA-R47Y CWP3230A-6R8M SRN6045TA-6R8M
*High Power Camera	800mA@125C 1000mA@105C	CWP3230A-2R2M CWP3230A-2R2M SRN5020TA-220M
* Power Sensor	600mA@125C	CWP3230A-2R2M CWP3230A-2R2M CWP3230A-220M

It's requirement to select a POC solution that can ensure signal quality.

Bours is testing S21, S11, S21/11 parameters that ensure SI are set by Maxim or customers.

# BMS/ESS Overview



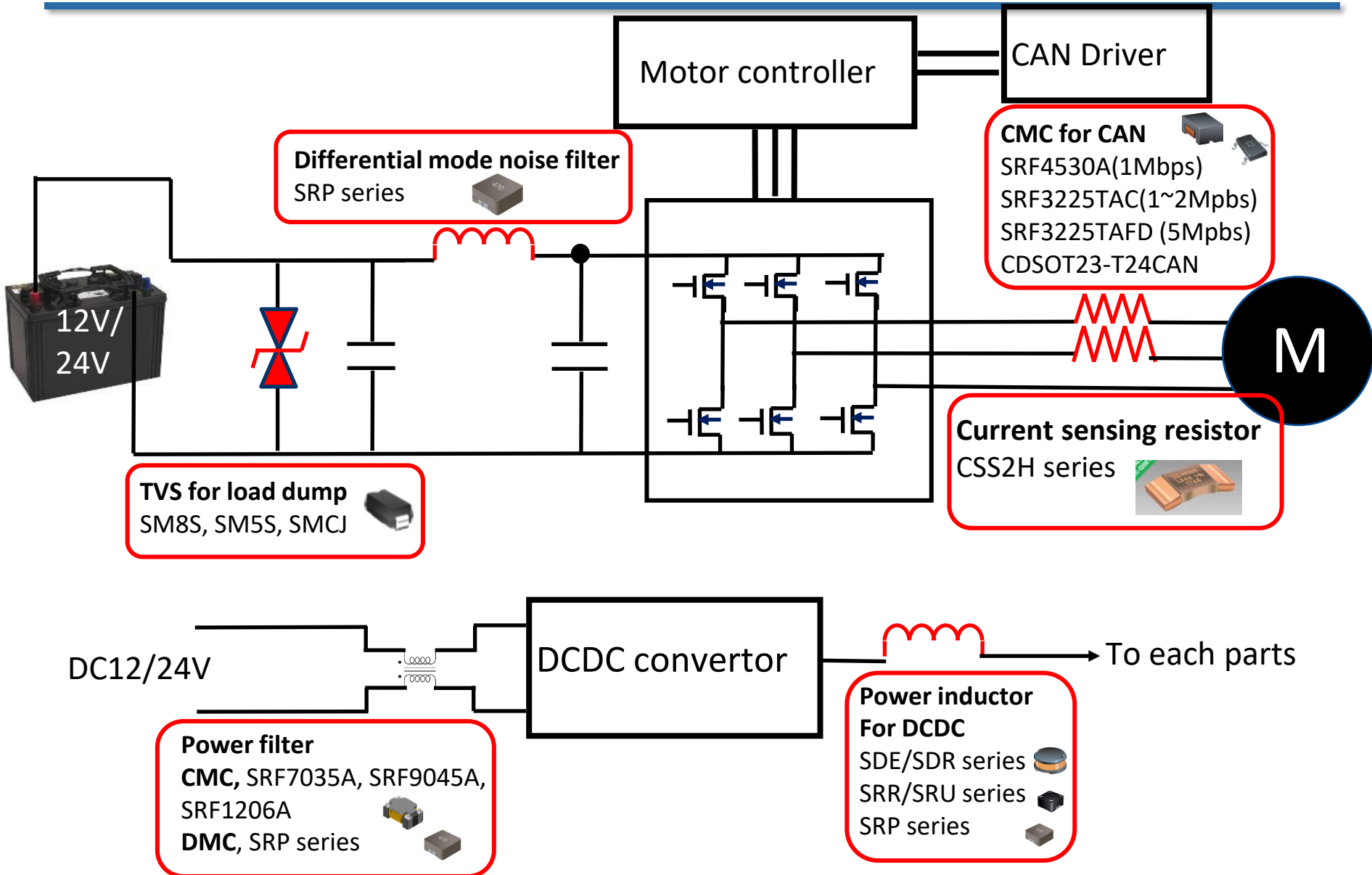
BMS: SM91501ALO, SM91502ALA, SM91509AL, etc.

ESS: SM91519L, SM91534AL, etc.

# BMS/ESS demand

Product	Circuit
<p><b>TVS: SM8S-Q; SM5S-Q; SMCJ-Q</b>            P5a, 12V, SM8S24CA_Q (6.6kW), SM5S24CA-Q(3.6kW)            P5a, 12V, SM8S36CA_Q (6.6kW), SM5S36CA-Q(3.6kW)            P5b, 12V, SMCJ24CA-Q(1.5kW); 24V, SMCJ36CA-Q(1.5kW)</p>	For dump load test
<p><b>Common mode choke, SRF series for power line</b>            SRF7035A</p>	Power input line filter
<p><b>Power inductor: SRP series</b>            Like SPR1038A, SRP7028A, SRP5030CA, etc.</p>	DCDC converter
<p><b>Push-pull Transformer</b>            HCTSM series.            PAD002-T764113S for ESS.</p>	Push-pull Transformer for isolated DCDC convertor, power supply for CAN/SPI/I2C
<p><b>Daisy chain Transformer</b>            SM91501ALO, SM91502ALA, SM91509AL, etc. for BMS            SM91519L, SM91534AL for ESS</p>	Daisy chain transformer
<p><b>Common mode choke, SRF series</b>            SRF4530A(1Mbps), SRF3225TAC(1~2Mbps), SRF3225TAFD(5Mbps)  <b>TVS, CDSOT23</b> CDSOT23-T24CAN-Q</p>	CAN/CAN_FD
<p><b>Current sensing resistor</b>            CSS2H,CSS4J for ESS; CSM2F for BMS            Customized product</p>	Current sensing

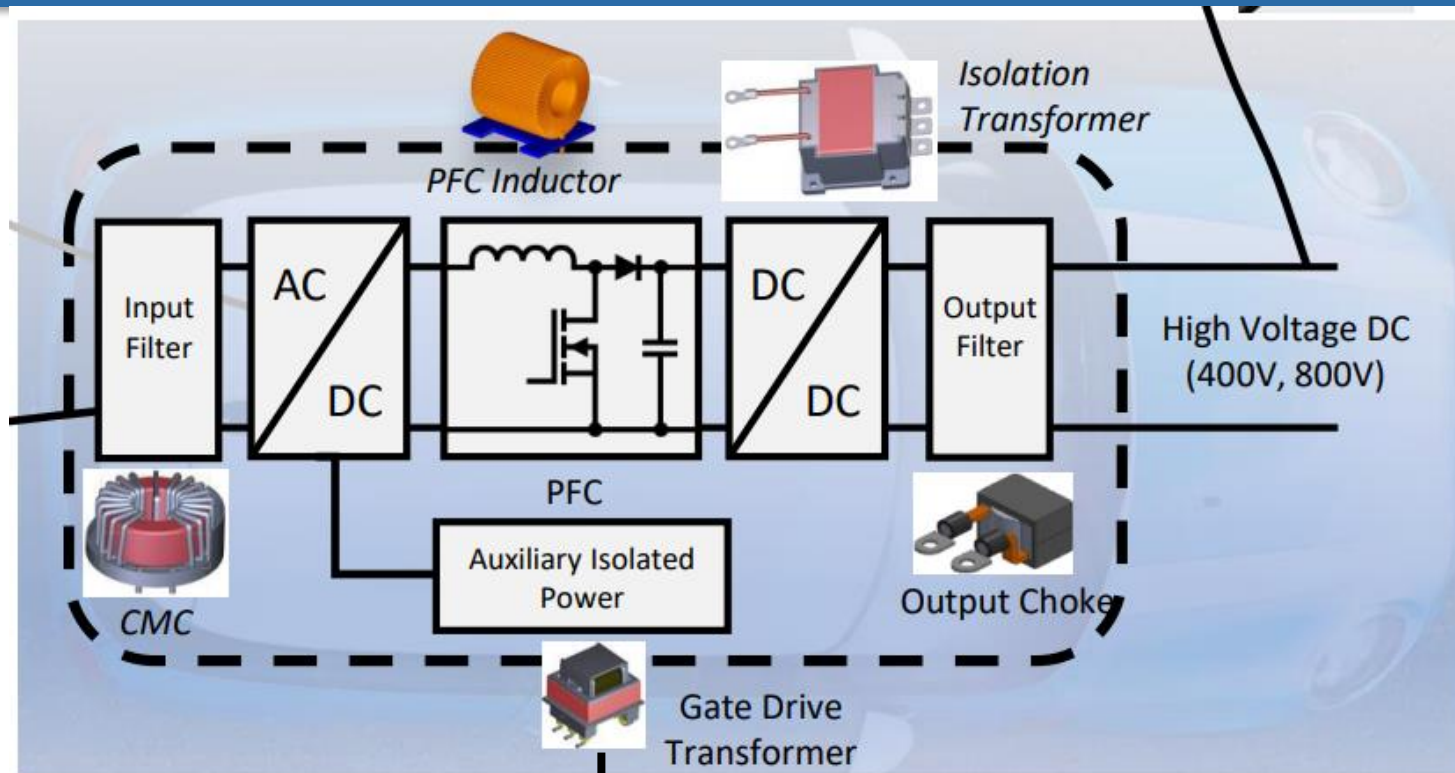
# Motor Controller Overview



# Motor Controller demand

Product	Circuit
<b>TVS: SM8S-Q; SM5S-Q; SMCJ-Q</b> P5a, 12V, SM8S24CA_Q (6.6kW), SM5S24CA-Q(3.6kW) P5a, 12V, SM8S36CA_Q (6.6kW), SM5S36CA-Q(3.6kW) P5b, 12V, SMCJ24CA-Q(1.5kW); 24V, SMCJ36CA-Q(1.5kW)	For dump load test
<b>Power inductor: SRP series</b> <b>Standard inductor:</b> SRP1038A, SRP1265A, SRP1770TA, SPR2313AA, etc. <b>High temp 180° inductor (oil pump):</b> SRP6030VA, SPR1040VA <b>High vibration inductor (oil pump, water pump):</b> SRP1038WA, SRP1265WA (average: 15g; peak: 30g)	Differential mode noise filter
<b>Current sensing resistor</b> CSS2H-2512, CSS2H-3920 CSS2H-5930, CSS2H-4026	Current sensing
<b>Common mode choke, SRF series</b> SRF4530A(1Mbps), SRF3225TAC(1~2Mbps), SRF3225TAFD(5Mbps) <b>TVS, CDSOT23</b> CDSOT23-T24CAN-Q	CAN/CAN_FD
<b>Common mode choke, SRF series for power line</b> SRF7035A, SRF9045A, SRF1206A	Power input line filter
<b>Power inductor: SRP series</b> Like SRP1038A, SRP7028A, SRP5030CA, etc.	DCDC converter

# OBC Overview



## Power filter

CMC, SRF7035A, SRF9045A, SRF1206A  
DMC, SRP series



## CMC for CAN

SRF4530A(1Mbps)  
SRF3225TAC(1~2Mbps)  
SRF3225TAFD (5Mbps)



## TVS for CAN

CDSOT23-T24CAN



12V/24V

DCDC convertor

Power inductor For DCDC

SDE/SDR, SRR/SRU, SRP series



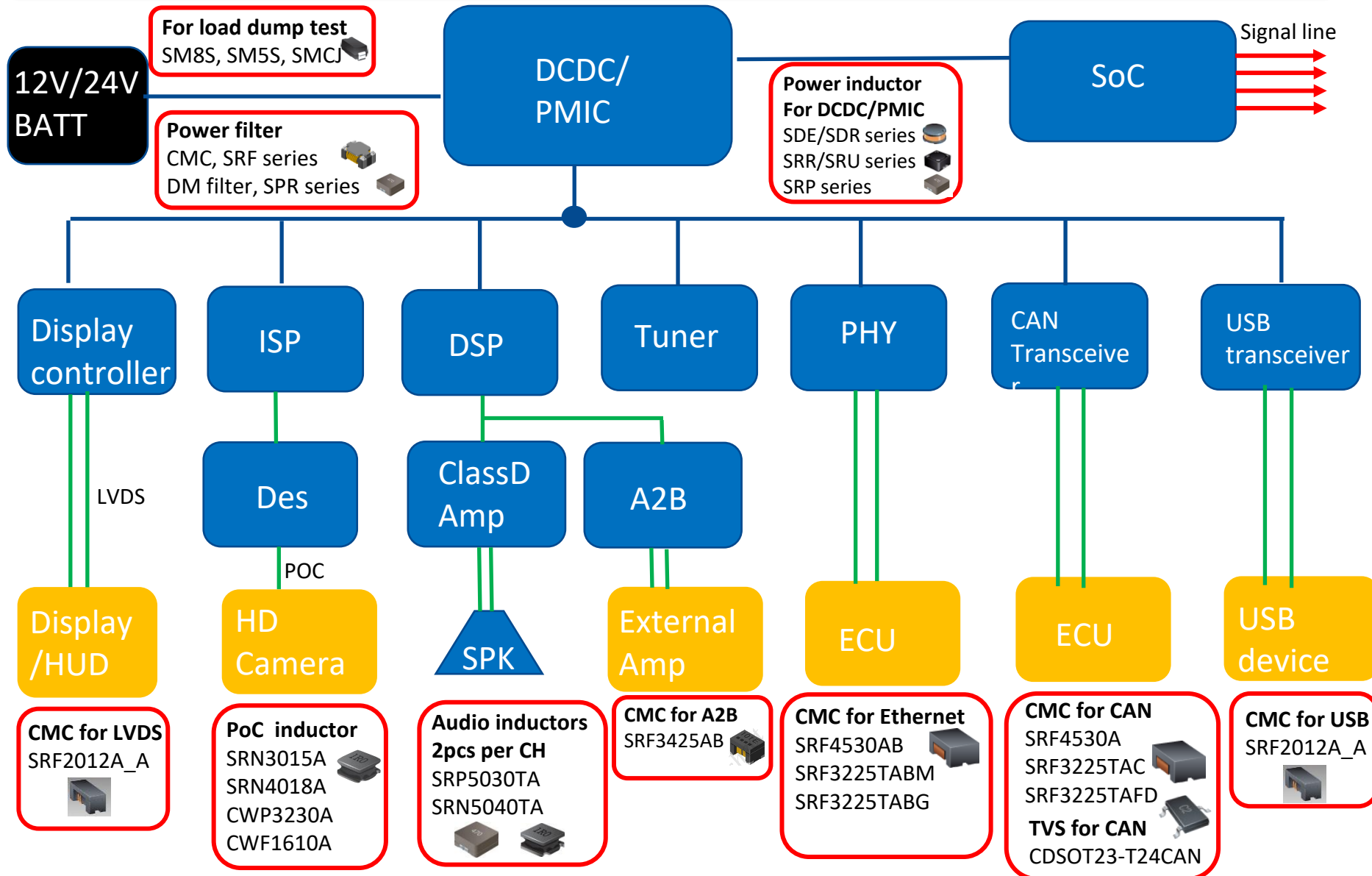
MCU

CAN Driver

# OBC demand

Product	Circuit
<p><b>Customized product.</b>  <b>Please check parameters and contact us.</b></p>	Common mode choke for high voltage circuit
	Main Transformer/Gate drive Transformer Integrated Transformer +Filter inductor
	PFC inductor
	Output choke for high voltage circuit
<p><b>Power inductor: SRP series</b></p>	DCDC converter for low voltage circuit
<p><b>Common mode choke, SRF series for power line</b>  SRF7035A, SRF9045A, SRF1206A</p>	Power input line filter for 12/24V
<p><b>Common mode choke, SRF series</b>  SRF4530A(1Mbps)  SRF3225TAC(1~2Mbps)  SRF3225TAFD(5Mbps)  <b>TVS, CDSOT23</b> CDSOT23-T24CAN-Q</p>	CAN/CAN_FD

# IVI System Overview





# IVI System demand

Product	Circuit
<b>TVS: SM8S-Q; SM5S-Q; SMCJ-Q</b> P5a, 12V, SM8S24CA_Q (6.6kW), SM5S24CA-Q(3.6kW) P5a, 12V, SM8S36CA_Q (6.6kW), SM5S36CA-Q(3.6kW) P5b, 12V, SMCJ24CA-Q(1.5kW); 24V, SMCJ36CA-Q(1.5kW)	For dump load test
<b>Power inductor: SRP series</b> Like SPR1038A, SRP7028A, SRP5030CA, etc.	DCDC converter
<b>Power inductor: SRP smaller size</b> SRP2010TMA, SRP2510A, SRP3212A, SRP4020TA, etc.	PMIC
<b>Common mode choke, SRF series for power line</b> SRF7035A, SRF9045A, SRF1206A	Power input line filter
<b>Common mode choke, SRF series</b> SRF4530A(1Mbps), SRF3225TAC(1~2Mbps), SRF3225TAFD(5Mbps) <b>TVS, CDSOT23, CDSOT23-T24CAN-Q</b>	CAN/CAN_FD
<b>Common mode choke, SRF series</b> SRF4530AB-201Y, SRF3225TABM-201Y (100Base T1) SRF3225TABG-101Y (1000Base T1)	Ethernet 100Base-T1/1000Base-T1
<b>Common mode choke, SRF3425AB-101Y</b>	A2B
<b>Audio inductor, SRP5030TA/SRN5040TA series</b>	Filter for Class D Amplifier
<b>PoC inductor, SRN, CWF series</b> SRN6045TA, SRN4018TA, SRN3015TA, etc. CWF1610A-R56M, CWP3230A, etc.	PoC Bias-T circuit
<b>Common mode choke, SRF2012A_A, SRF2012A_900YA (commonly used for USB)</b>	LVDS /USB2.0, USB3.0

# A2B demand

A2B (Automotive Audio Bus 汽车音频总线) 是 ADI (Analog Devices) 公司推出的数字网络化技术。它专为连接车辆中的音频设备和元件而设计。A2B 的连接通过一条两芯非屏蔽双绞线实现。这大大减轻了重量以及安装难度。速度为50Mbps。

IC:汽车音频总线 A<sup>2</sup>B 收发器 ADI AD243x

应用：汽车音频设备，如MIC,功放,多媒体主机,智能座舱等

A<sup>2</sup>B 收发器

CMC for A<sup>2</sup>B  
SRF3425AB-101Y.



## Parameter comparison

Bourns SRF3425AB-101Y	TDK ACT1210L-101-2P-TL00	Murata DLW32MH101XK2
Temperature 125C	Temperature 125C	Temperature 125C
Rated current 100mA	Rated current 150mA	Rated current 100mA
Cost <b>Low</b>	Cost Mid	Cost Mid

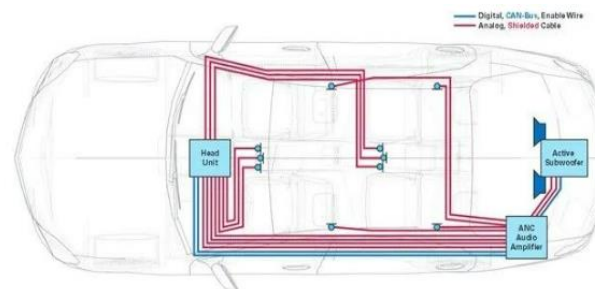


图1：传统的车内音频系统线缆

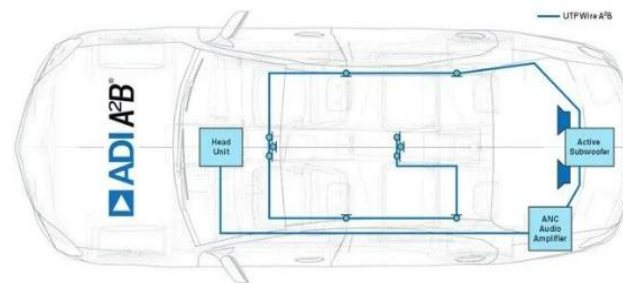


图2：被A2B技术简化过的车内音频系统线缆

Thank you!

**BOURNS®**