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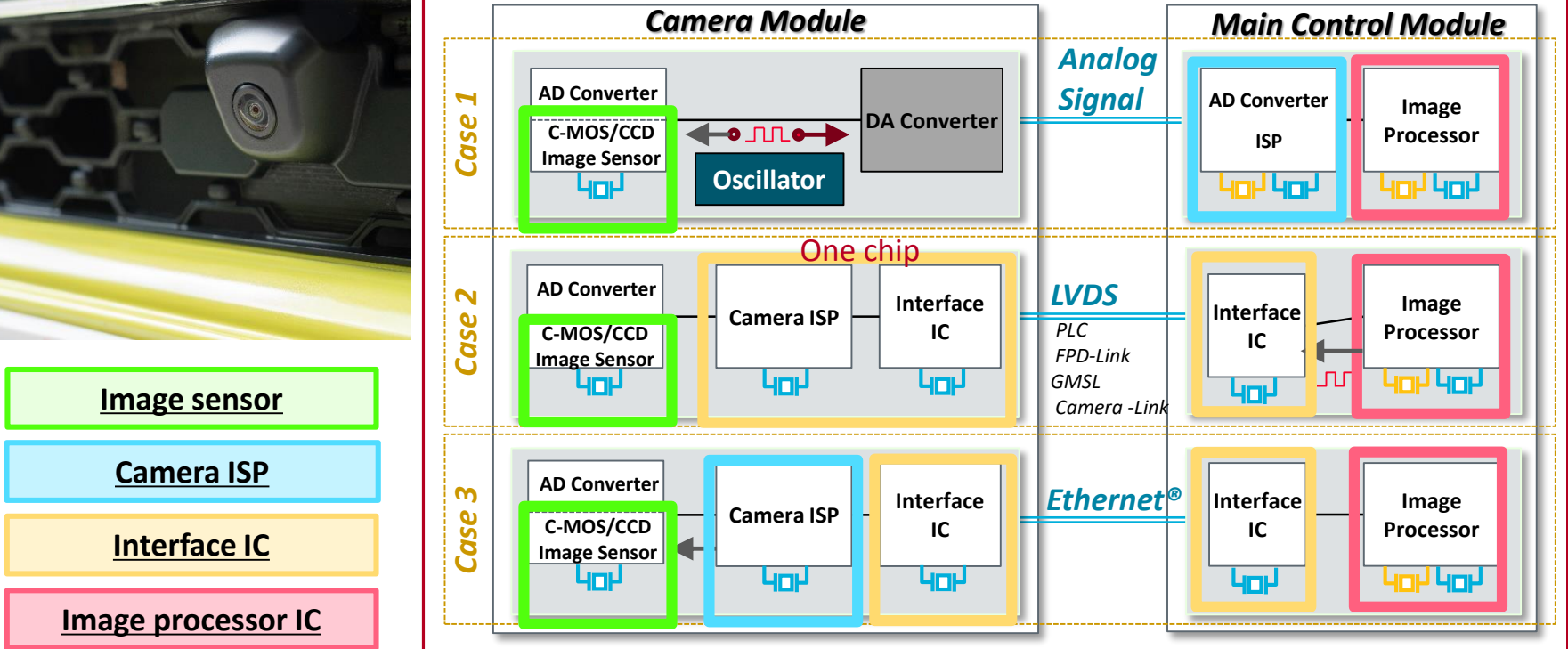


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Block Diagram for ADAS Camera



Block Diagram



Appearance	Type	Series P/N	SPEC
	Ceramic Resonator	CSTNR-G-C series (4MHz to 7.99MHz) CSTNE-G-C series (8MHz to 13.99MHz) CSTNE-V-C series (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm
	Crystal Unit	XRCGB24M000F3A00R0 XRCGB27M000F3A00R0	Frequency Tolerance : +/-85ppm, +/-135ppm
		XRCGB25M000F3A00R0	
		XRCGB30M000F5A00R0	

Murata proposal parts list for ADAS Camera

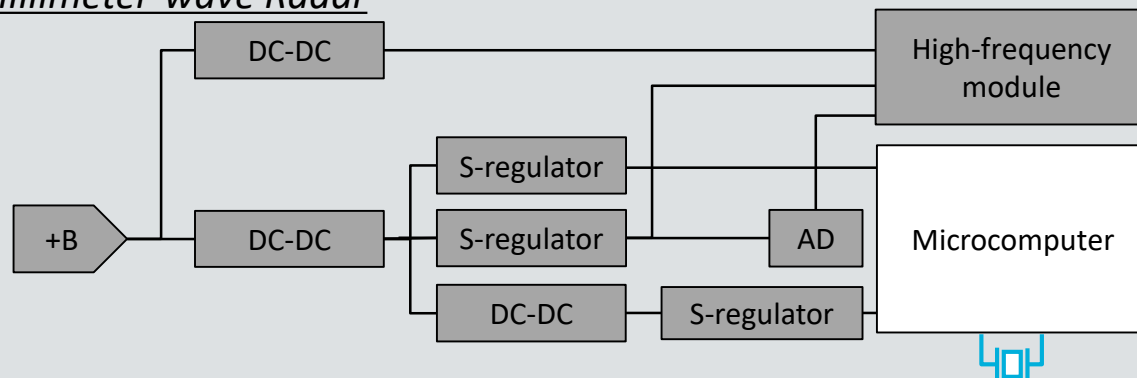
IC information			Murata product information		
IC Function	IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
IS(Image sensor)	Pixelplus	PC7080D PCB030K PV3109K	<u>XRCGB27M000F3A00R0</u>	27.0000	2.0 x 1.6 x 0.7
ISP (Image Signal Processor) ISP+IS	OVT OmniVision Technologies	OV495	<u>XRCGB24M000F3A00R0</u>	24.0000	2.0 x 1.6 x 0.7
	Fullhan Microelectronics	FH8310	<u>XRCGE27M000F2A1AR0</u>	27.0000	2.0 x 1.6 x 0.7
	ON Semiconductor	AP0202AT	<u>XRCGB27M000F3A00R0</u>	27.0000	2.0 x 1.6 x 0.7
	Pixelplus	PI6008K	<u>XRCGB27M000F3A00R0</u>	27.0000	2.0 x 1.6 x 0.7
	GEO Semiconductor	GW4100	<u>XRCGB27M000F3A00R0</u>	27.0000	2.0 x 1.6 x 0.7
	Ambarella	CV25	<u>XRCGB24M000F3A00R0</u>	24.0000	2.0 x 1.6 x 0.7
	Sony	ISX016	<u>XRCGB27M000F3A00R0</u>	27.0000	2.0 x 1.6 x 0.7
Interface/FPD link III/ Deserializer	Texas Instruments	DS90UB954	<u>XRCGB25M000F3A00R0</u>	25.0000	2.0 x 1.6 x 0.7
Interface/GMSL2	Maxim Integrated	MAX9295 MAX9296	<u>XRCGB25M000F3A01R0</u>	25.0000	2.0 x 1.6 x 0.7
Interface/Ethernet®	Refer to Ethernet®				
Image Processor	Horizon Robotics	Journey2	<u>XRCGB24M000F2A01R0</u>	24.0000	2.0 x 1.6 x 0.7

Block Diagram for Millimeter-wave Radar & Laser Radar

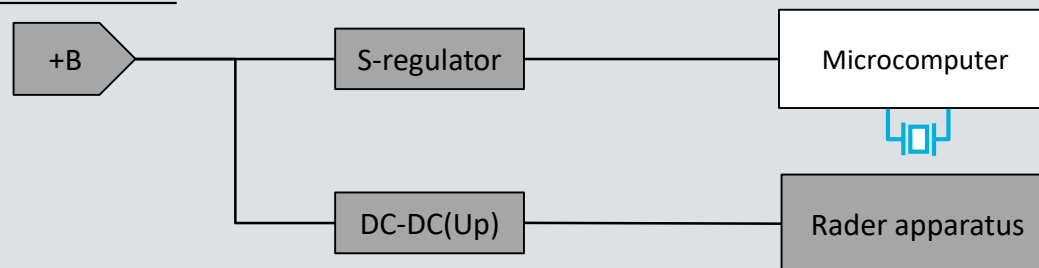


Block Diagram


Millimeter-wave Radar



Laser Radar

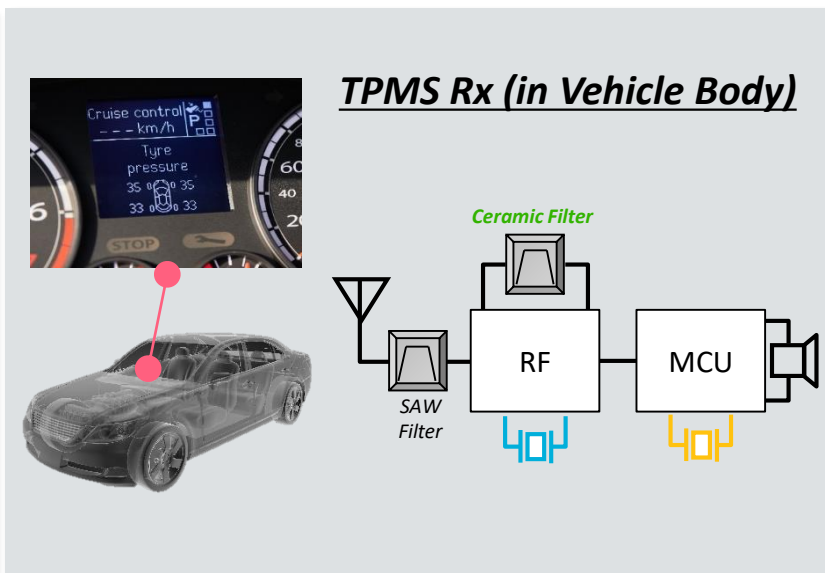
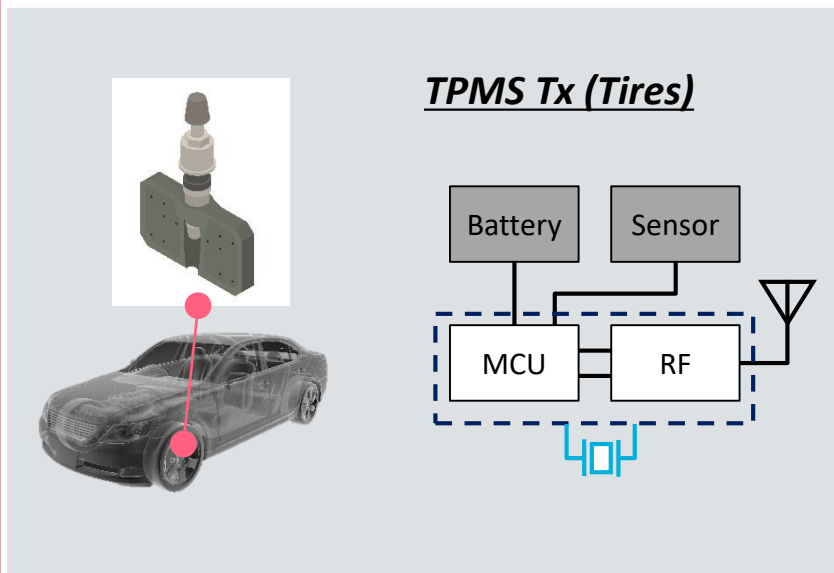


Timing device





Appearance	Type	Series P/N	SPEC
	Crystal Unit	Representative P/N XRCGB30M000F5A00R0 (for MCU) XRCGB40M000F5A00R0 (for MCU)	Frequency Tolerance : +/-135ppm

Block Diagram for TPMS

Block Diagram



Timing device

Appearance	Type	Series P/N	SPEC
 	Ceramic Resonator	CSTNR-G-C series (4MHz to 7.99MHz) CSTNE-G-C series (8MHz to 13.99MHz) CSTNE-V-C series (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm
 	Crystal Unit	Representative P/N XRCGB26M000F3A00R0 (for TPMS_Tx/Rx)	Frequency Tolerance : +/-85ppm



Murata proposal parts list for TPMS



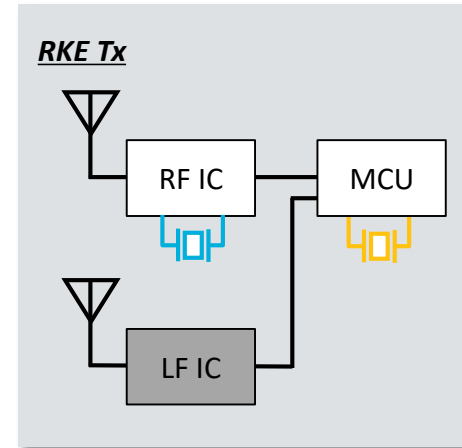
IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
Infineon Technologies	SP40 SP47	<u>XRCGE26M000FBA2AR0</u>	26.0000	2.0 x 1.6 x 0.7
NXP Semiconductors	FXTH87xxx	<u>XRCGB26M000F3A00R0</u>	26.0000	2.0 x 1.6 x 0.7
Melexis	MLX91804	<u>XRCGB26M000F3A00R0</u>	26.0000	2.0 x 1.6 x 0.7
Senasic	SNP601 SNP701 SNP705H SNP729 SNP739	<u>XRCGB24M000F3A00R0</u>	24.0000	2.0 x 1.6 x 0.7
AutoChips	AC5111 AC51xx	<u>XRCGE26M000FBA1BR0</u>	26.0000	2.0 x 1.6 x 0.7







Block Diagram for Remote Keyless Entry Tx



Block Diagram



Timing Device

Appearance	Type	Series P/N	SPEC
 	Ceramic Resonator	<u>CSTNR-G-C</u> series (4MHz to 7.99MHz) <u>CSTNE-G-C</u> series (8MHz to 13.99MHz) <u>CSTNE-V-C</u> series (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm
 	Crystal Unit	Representative P/N <u>XRCGB27M600F2C00RO</u> (for RF control)	Frequency Tolerance : +/-60ppm (-30 to 85 °C)



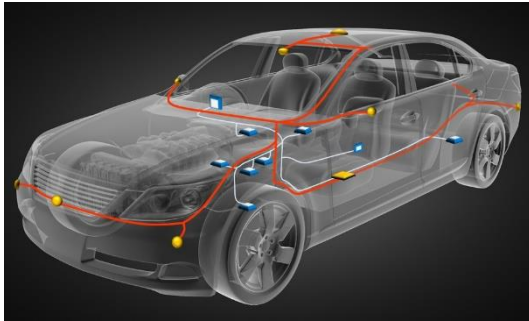
Murata proposal parts list for RKE



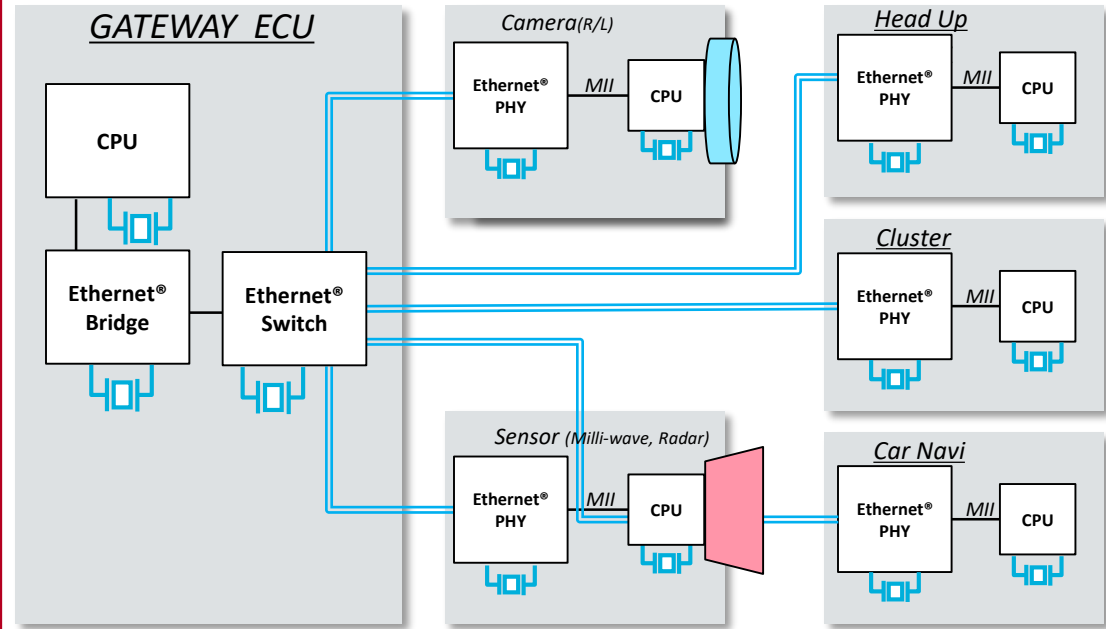
IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
NXP Semiconductors	NCF2961	<u>XRCGE27M600FBA1AR0</u>	27.6000	2.0 x 1.6 x 0.7
Microchip Technology	ATA5835	<u>XRCGB24M305F3A12R0</u>	24.3050	2.0 x 1.6 x 0.7




Block Diagram for Ethernet®



Block Diagram



Timing device

Appearance	Type	Series P/N	SPEC
	Crystal Unit	<u>XRCGB25M000F3A00R0</u> (for Ethernet® PHY) <u>XRCGB-F-A series</u> (24MHz to 48MHz, for CPU)	Frequency Tolerance : +/-85ppm

Murata proposal parts list for Ethernet®

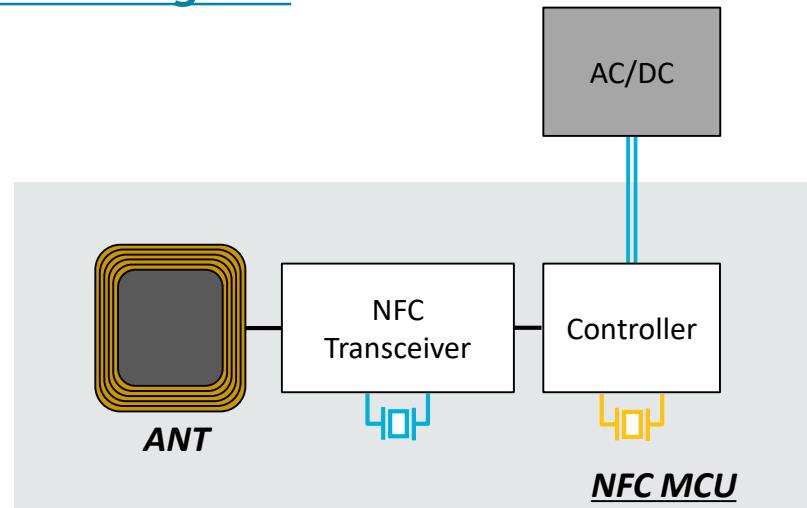
IC information			Murata product information		
IC Function	IC Maker	IC Part Number	Crystal Part number	Frequency [MHz]	Size [mm]
PHY	Marvell Semiconductor	88Q1010 88Q2110 88Q2112	XRCGB25M000F3A00R0	25.0000	2.0 x 1.6 x 0.7
	Microchip Technology	KSZ8061 LAN8770 LAN8672	XRCGB25M000F3A00R0	25.0000	2.0 x 1.6 x 0.7
	Broadcom	BCM89083 BCM89103 BCM89107	XRCGB25M000F3A16R0	25.0000	2.0 x 1.6 x 0.7
	NXP Semiconductors	TJA1100 TJA1102	XRCGB25M000F3A01R0	25.0000	2.0 x 1.6 x 0.7
	Realtek	RTL9000A	XRCGB25M000F3A1AR0	25.0000	2.0 x 1.6 x 0.7
	Texas Instruments	DP83TC811	XRCGB25M000F3A00R0	25.0000	2.0 x 1.6 x 0.7
SWITCH	Marvell Semiconductor	88Q5050 88Q5054 88Q5040 88Q5072 88Q6113	XRCGB25M000F3A00R0	25.0000	2.0 x 1.6 x 0.7
	NXP Semiconductors	SJA1105	XRCGB25M000F3A01R0	25.0000	2.0 x 1.6 x 0.7
Ethernet® BRIDGE	Toshiba Electronic Devices & Storage Corporation	TC9560	XRCGE20M000F3A1BR0	20.0000	2.0 x 1.6 x 0.7
		TC9562	XRCGB25M000F3A00R0	25.0000	2.0 x 1.6 x 0.7





Block Diagram for Wireless charger



Block Diagram



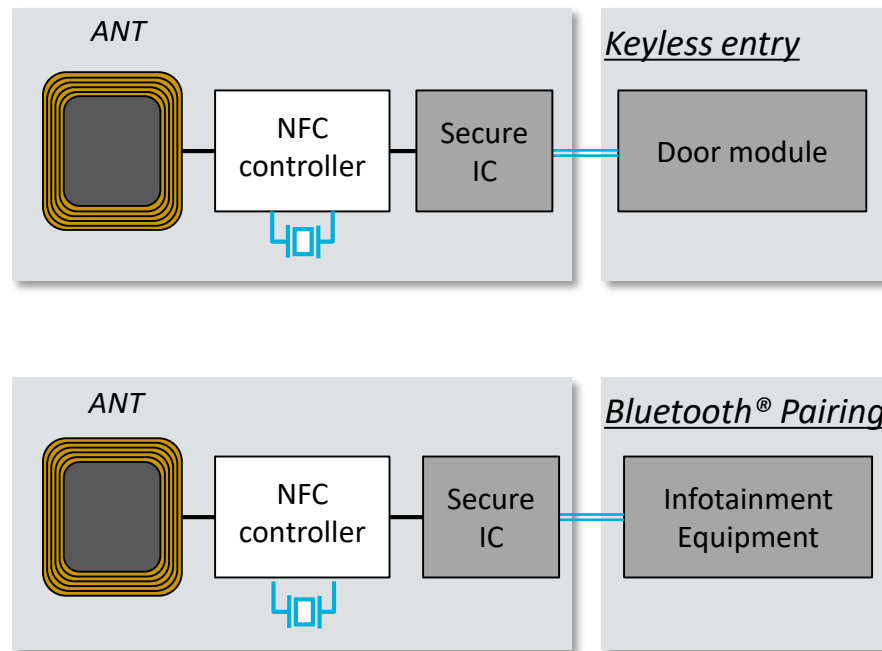
Timing device

Appearance	Type	Series P/N	SPEC
	Ceramic Resonator	<u>CSTNE8M00G55A000R0</u>	Frequency Tolerance : +/-8000ppm
	Crystal Unit	Representative P/N <u>XRCGB27M120F3A00R0</u> (for NFC Transceiver)	Frequency Tolerance : +/-85ppm


Block Diagram for NFC pairing



Block Diagram



Timing device

Appearance	Type	Series P/N	SPEC
	Crystal Unit	<u>XRCGB27M120F3A00R0</u>	Frequency Tolerance : +/-85ppm



Murata proposal parts list for NFC/Wireless charger



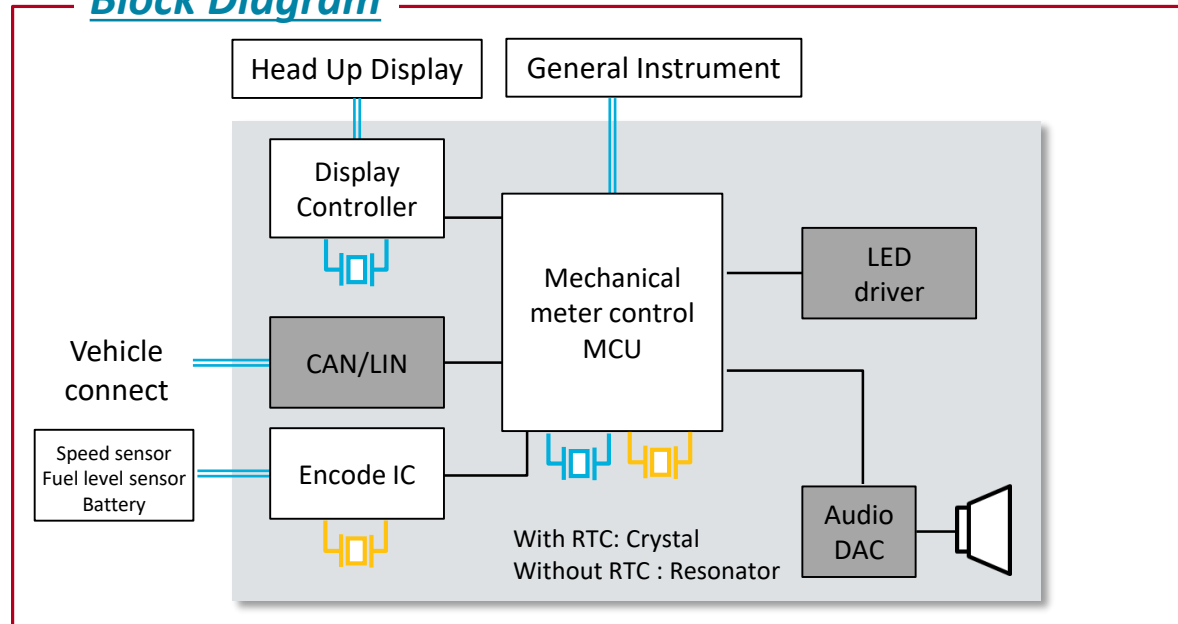
IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
NXP Semiconductors	MCF3340	<u>XRCGB27M120F3A00R0</u>	27.1200	2.0 x 1.6 x 0.7

Block Diagram for General Instrument Cluster





General Instrument Cluster



Block Diagram



Timing device

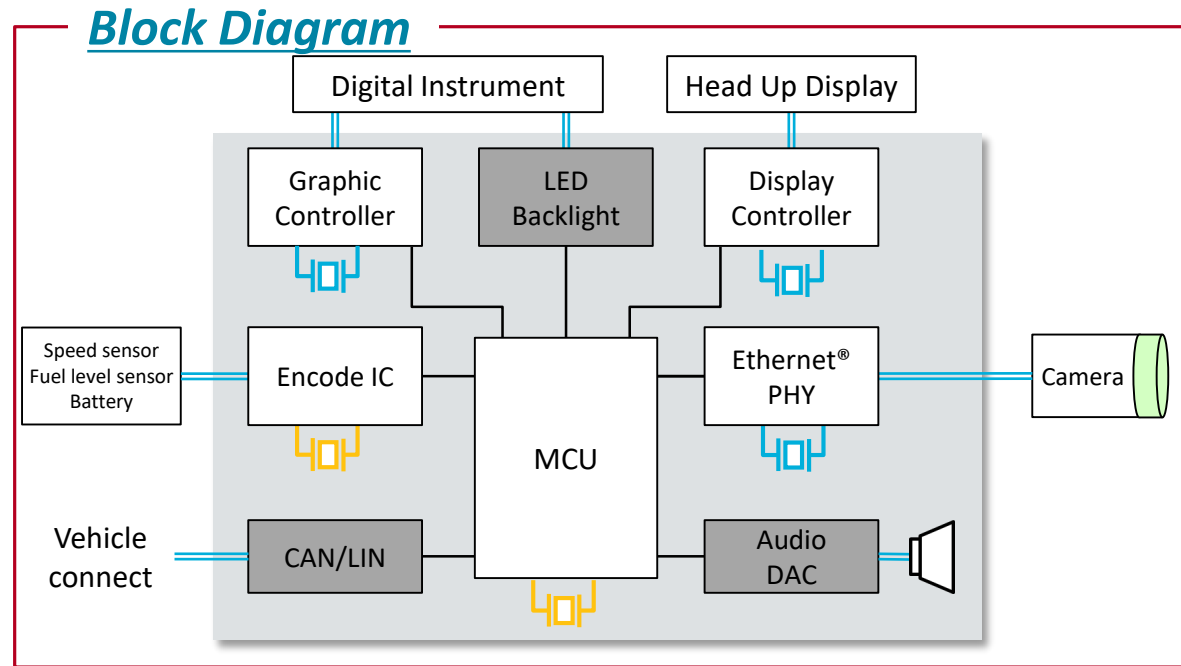
Appearance	Type	Series P/N	SPEC
	Ceramic Resonator	<u>CSTNR-G-C series</u> (4MHz to 7.99MHz) <u>CSTNE-G-C series</u> (8MHz to 13.99MHz) <u>CSTNE-V-C series</u> (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm
	Crystal Unit	<u>XRCGB-F-A series</u> (24MHz to 48MHz)	Frequency Tolerance : +/-85ppm, +/-135ppm
	Piezoelectric Sounders	<u>PKLCS1212E24A0-R1</u> <u>PKLCS1212E40A1-R1</u>	SPL 80dB(Typ.) @10cm, ±1.5Vo-p square wave SPL 84dB(Typ.) @10cm, ±1.5Vo-p square wave
	Piezoelectric Sounders	<u>PKMCS1818E20A0-R1</u>	SPL 100dB(Typ.) @10cm, +12Vo-p square wave





Block Diagram for Digital Instrument Cluster

Digital Instrument Cluster



Timing device

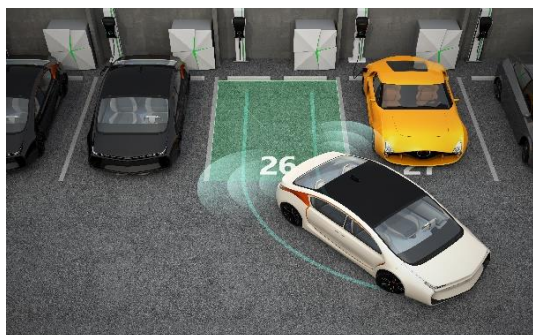


Appearance	Type	Series P/N	SPEC
	Ceramic Resonator	<u>CSTNR-G-C series (4MHz to 7.99MHz)</u> <u>CSTNE-G-C series (8MHz to 13.99MHz)</u> <u>CSTNE-V-C series (14MHz to 20MHz)</u>	Frequency Tolerance : +/-2700ppm
	Crystal Unit	<u>XRCGB-F-A series (24MHz to 48MHz)</u>	Frequency Tolerance : +/-85ppm, +/-135ppm
	Piezoelectric Sounders	<u>PKLCS1212E24A0-R1</u> <u>PKLCS1212E40A1-R1</u>	SPL 80dB(Typ.) @10cm, ±1.5Vo-p square wave SPL 84dB(Typ.) @10cm, ±1.5Vo-p square wave
	Piezoelectric Sounders	<u>PKMCS1818E20A0-R1</u>	SPL 100dB(Typ.) @10cm, +12Vo-p square wave

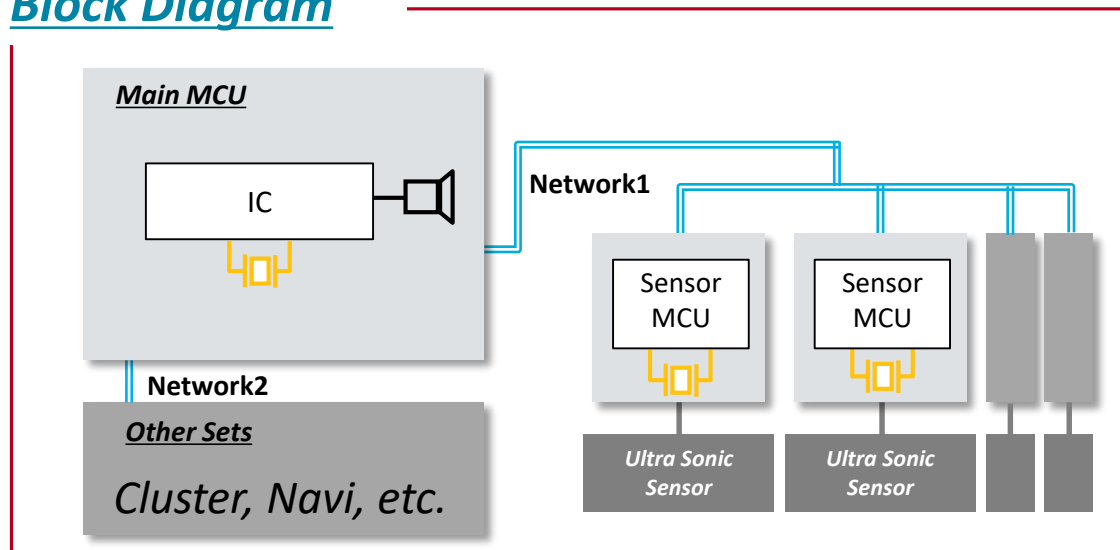
Murata proposal parts list for Digital Instrument Cluster

IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
NXP Semiconductors	i.MX8QXP8QM	<u>XRCGB24M000F3A00R0</u>	24.0000	2.0 x 1.6 x 0.7


Block Diagram for Parking Assist System



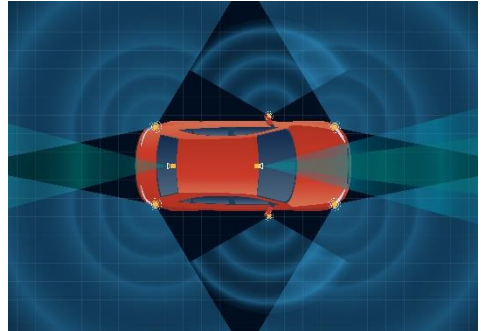
Block Diagram



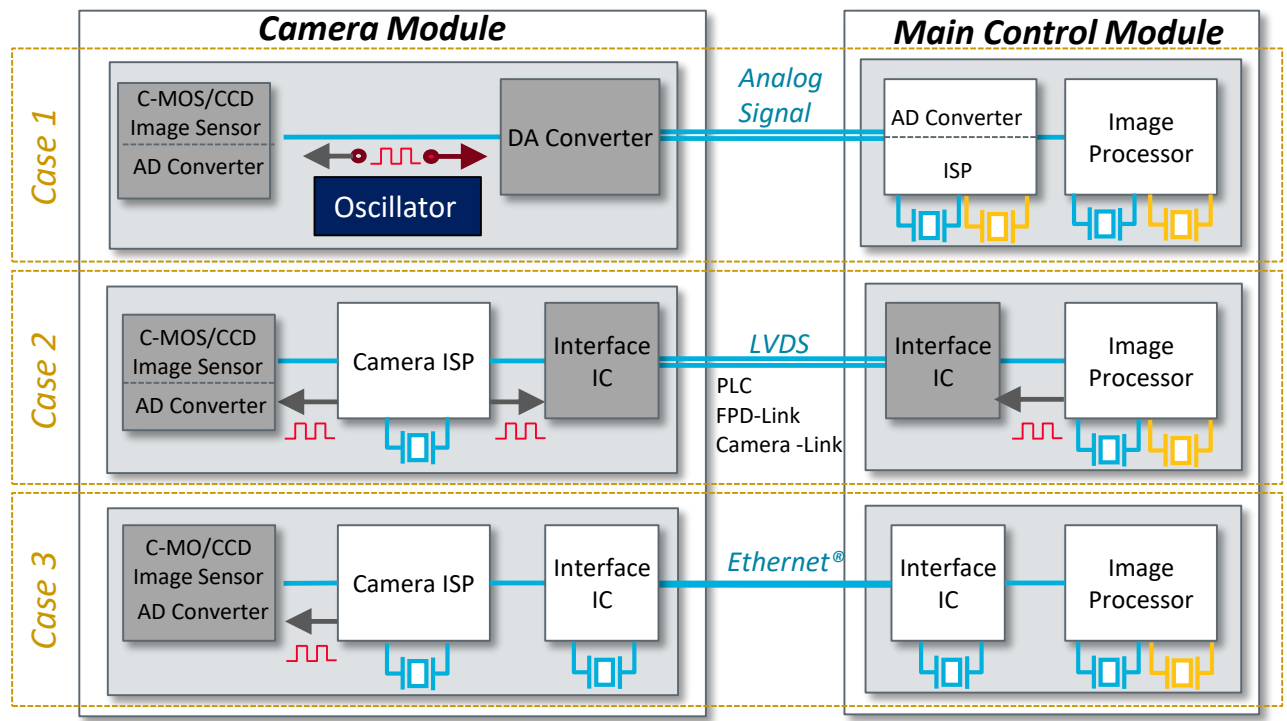
Timing device

Appearance	Type	Series P/N	SPEC
	Ceramic Resonator (Standard Tol.)	<u>CSTCR-G-B</u> series (4MHz to 7.99MHz) <u>CSTNE-G-A</u> series (8MHz to 13.99MHz) <u>CSTNE-V-C</u> series (14MHz to 20MHz)	Frequency Tolerance : +/-8000ppm
	Ceramic Resonator (Tight Tol.)	<u>CSTNR-G-C</u> series (4MHz to 7.99MHz) <u>CSTNE-G-C</u> series (8MHz to 13.99MHz) <u>CSTNE-V-C</u> series (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm



Block Diagram for Surround View Camera System



Block Diagram



Timing device

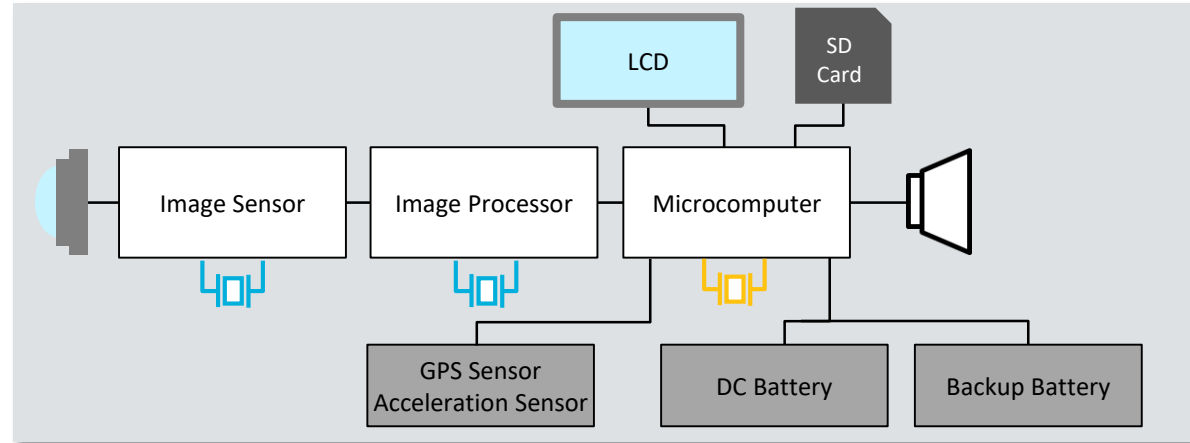
Appearance	Type	Series P/N	SPEC
	Ceramic Resonator	<u>CSTNR-G-C series (4MHz to 7.99MHz)</u> <u>CSTNE-G-C series (8MHz to 13.99MHz)</u> <u>CSTNE-V-C series (14MHz to 20MHz)</u>	Frequency Tolerance : +/-2700ppm
	Crystal Unit	Representative P/N <u>XRCGB25M000F3A00R0 (for Ethernet®)</u> <u>XRCGB27M000F3A00R0 (for Camera ISP)</u>	Frequency Tolerance : +/-85ppm











Block Diagram for Drive Recorder



Block Diagram



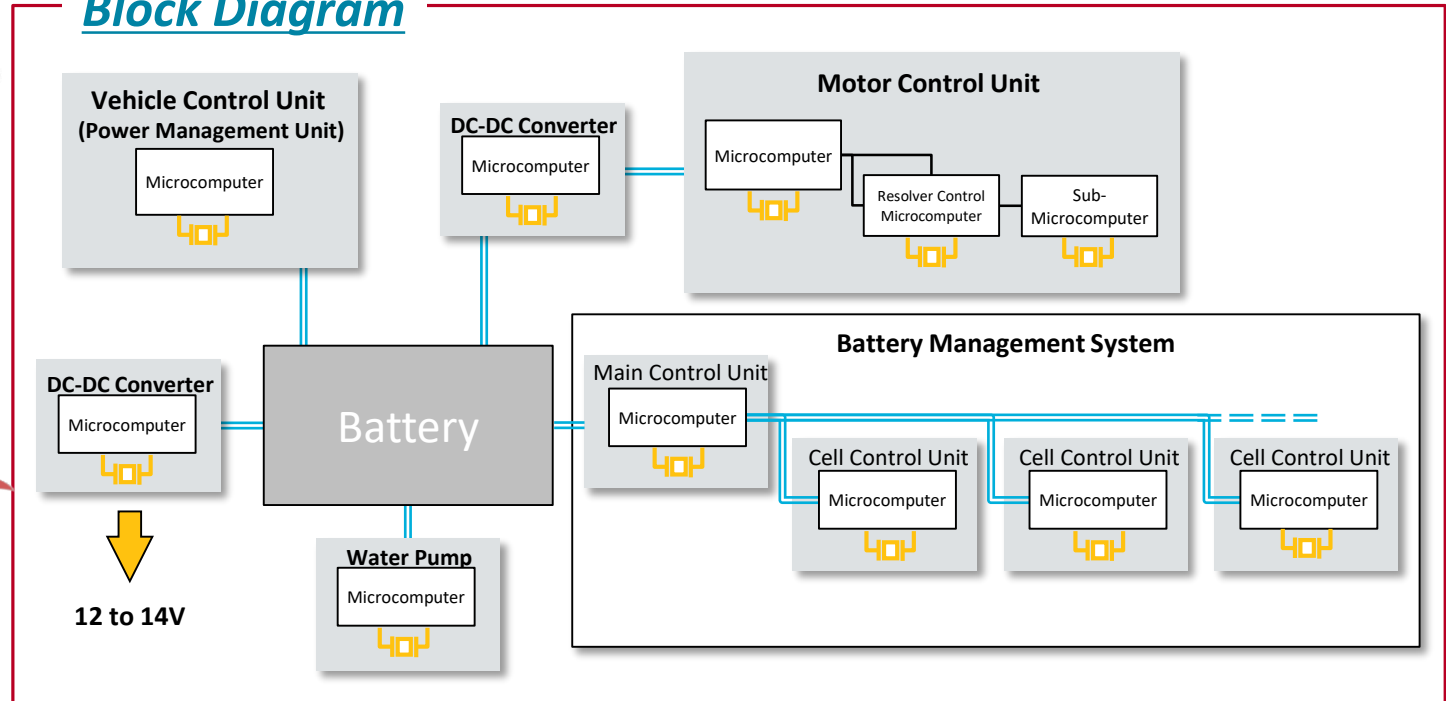
Timing device

Appearance	Type	Series P/N	SPEC
 	Ceramic Resonator	CSTNR-G-C series (4MHz to 7.99MHz) CSTNE-G-C series (8MHz to 13.99MHz) CSTNE-V-C series (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm
 	Crystal Unit	Representative P/N XRCGB24M000F3A00R0 XRCGB27M000F3A00R0 (for Image Sensor/Processor)	Frequency Tolerance : +/-85ppm
 	Piezoelectric Sounders (SMD Type)	PKLCS1212E24A0-R1 (Sound Freq.: 2.4kHz) PKLCS1212E40A1-R1 (Sound Freq.: 4kHz)	Sound Pressure Level: 75dBmin (@+/-1.5Vo-p, Square wave, 10cm)
 	Piezoelectric Sounders (Pin Type)	Representative P/N PKM13EPYH4000-A0 (Sound Freq.: 4kHz)	Sound Pressure Level: 70dBmin (@+/-1.5Vo-p, Square wave, 10cm)

Block Diagram for EV/HEV



Block Diagram



Timing Device

Appearance	Type	Series P/N	SPEC
	Ceramic Resonator	CSTNR-G-C series (4MHz to 7.99MHz) CSTNE-G-C series (8MHz to 13.99MHz) CSTNE-V-C series (14MHz to 20MHz)	Frequency Tolerance : +/-2700ppm