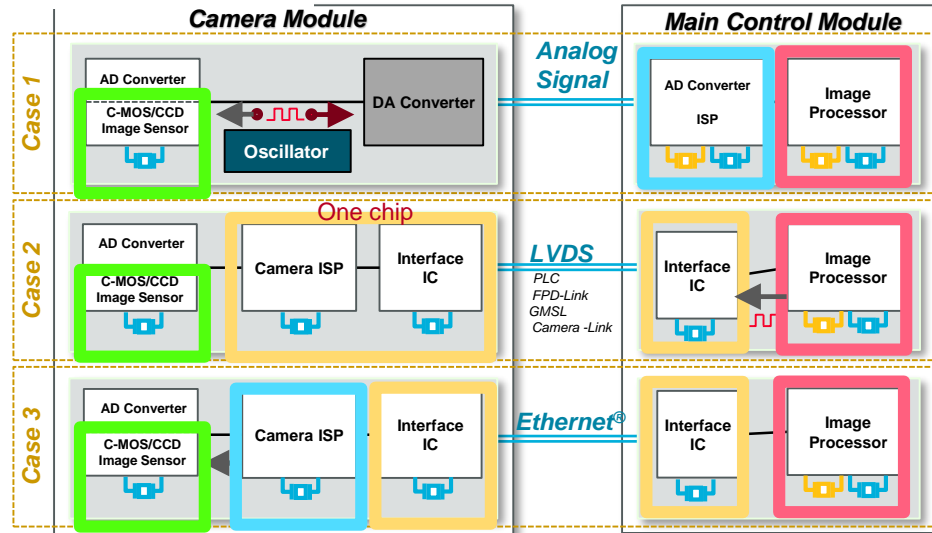
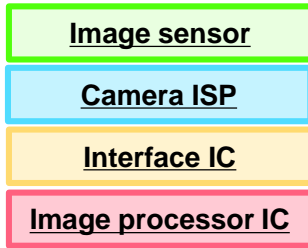


<b><u>ADAS (Camera)</u></b>	<b><u>ADAS (Rader)</u></b>	<b><u>TPMS</u></b>	<b><u>Remote Keyless Entry (RKE)</u></b>	<b><u>Ethernet<sup>®</sup></u></b>
<b><u>Wireless Charger</u></b>	<b><u>NFC (Key)</u></b>	<b><u>Instrument Cluster (General)</u></b>	<b><u>Instrument Cluster (Digital)</u></b>	<b><u>Parking Assist System</u></b>
<b><u>Surround View Camera System</u></b>	<b><u>Drive Recorder</u></b>	<b><u>EV/HEV</u></b>		



# Block Diagram for ADAS Camera



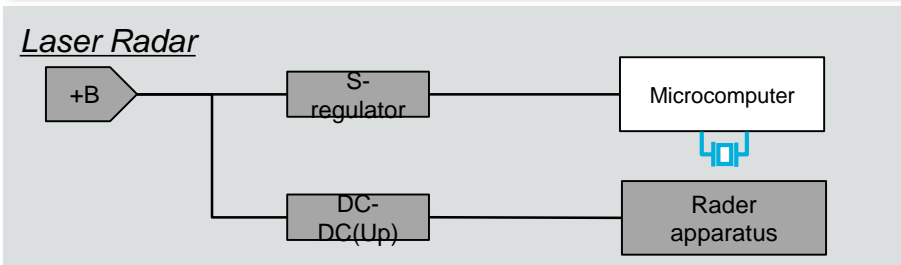
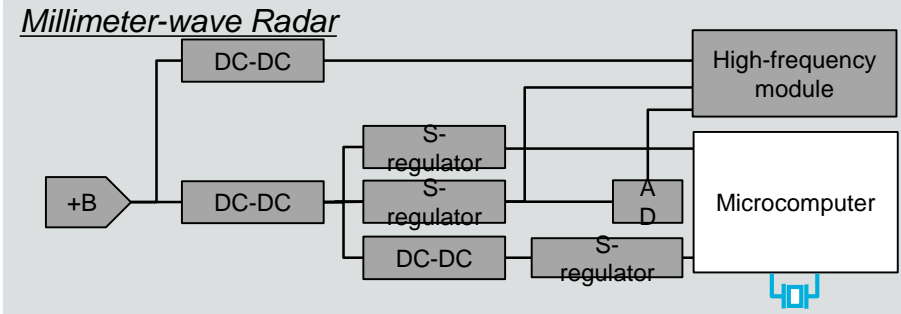
Appearance	Device	Series P/N	SPEC
	Ceramic Resonator	CSTNR-G-C series (4MHz to 7.99MHz) CSTNE-G-C series (8MHz to 13.99MHz) CSTNE-V-C series (14MHz to 20MHz) CSTNE-V-T series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
	Crystal Unit	XRCGB24M000F3A00R0 XRCGB27M000F3A00R0	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]
<b>IS</b> (Image sensor)	Pixelplus	PC7080D PCB030K PV3109K	<a href="#">XRCGB27M000F3A00R0</a>	27.0000	2.0 x 1.6 x 0.7
<b>ISP</b> (Image Signal Processor)  <b>ISP+IS</b>	OVT OmniVision Technologies	OV495	<a href="#">XRCGB24M000F3A00R0</a>	24.0000	2.0 x 1.6 x 0.7
	Fullhan Microelectronics	FH8310	<a href="#">XRCGE27M000F2A1AR0</a>	27.0000	2.0 x 1.6 x 0.7
	ON Semiconductor	AP0202AT	<a href="#">XRCGB27M000F3A00R0</a>	27.0000	2.0 x 1.6 x 0.7
	Pixelplus	PI6008K	<a href="#">XRCGB27M000F3A00R0</a>	27.0000	2.0 x 1.6 x 0.7
	GEO Semiconductor	GW4100	<a href="#">XRCGB27M000F3A00R0</a>	27.0000	2.0 x 1.6 x 0.7
	Ambarella	CV25	<a href="#">XRCGB24M000F3A00R0</a>	24.0000	2.0 x 1.6 x 0.7
	Sony	ISX016	<a href="#">XRCGB27M000F3A00R0</a>	27.0000	2.0 x 1.6 x 0.7
<b>Interface/FPD link III/ Deserializer</b>	Texas Instruments	DS90UB954	<a href="#">XRCGB25M000F3A00R0</a>	25.0000	2.0 x 1.6 x 0.7
<b>Interface/GMSL2</b>	Maxim Integrated	MAX9295 MAX9296 MAX96716 MAX96717	<a href="#">XRCGB25M000F3A01R0</a>	25.0000	2.0 x 1.6 x 0.7
<b>Interface/Ethernet®</b>	<a href="#">Link to Ethernet® page</a>				
<b>Image Processor</b>	Horizon Robotics	Journey2	<a href="#">XRCGB24M000F2A01R0</a>	24.0000	2.0 x 1.6 x 0.7



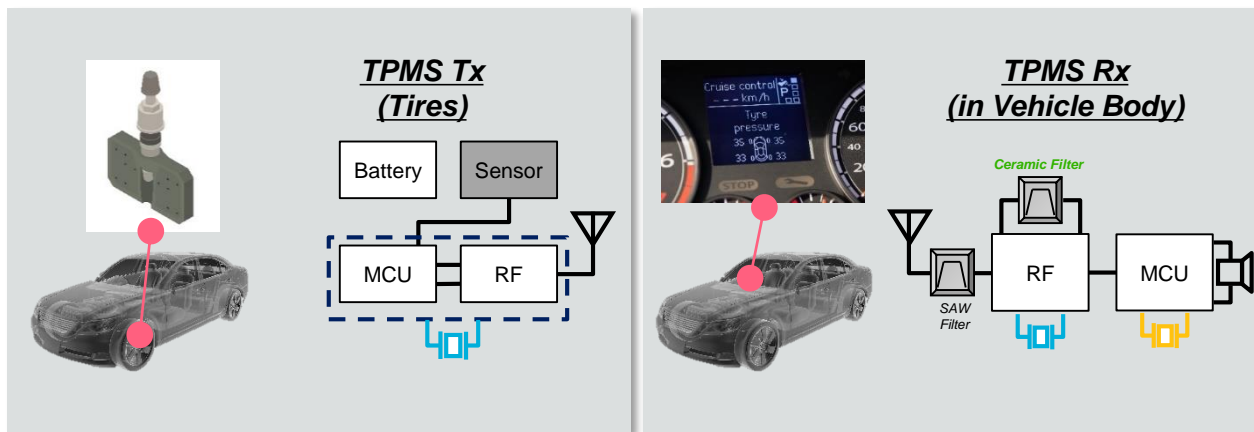
# Block Diagram for Millimeter-wave Radar & Laser Radar








Appearance	Device	Series P/N	SPEC
	Crystal Unit	<b>Representative P/N</b> <a href="#">XRCGB30M000F5A00R0</a> ( for MCU ) <a href="#">XRCGB40M000F5A00R0</a> ( for MCU )	Frequency Tolerance : +/-135ppm



# Block Diagram for TPMS



Appearance	Device	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) <u>CSTNE-V-T</u> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
	 Crystal Unit	Representative P/N <u>XRCGB26M000F3A00R0</u> (for TPMS_Tx/Rx)	Frequency Tolerance : +/-85ppm
	Battery	<u>CR Heat-resistant (W)</u> series	Operating Temperature Range : -40°C to 125°C

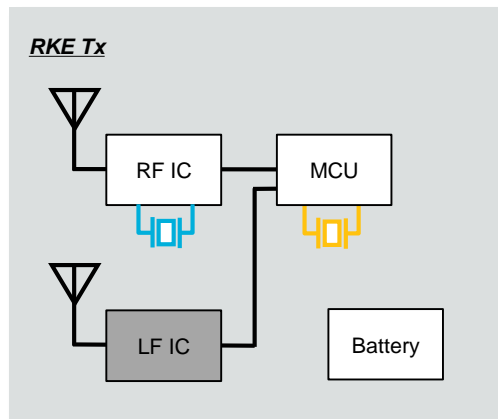







# Murata proposal parts list for TPMS



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



Appearance	Device	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) CSTNE-V-T series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
 	Crystal Unit	Representative P/N <a href="#">XRCGB27M600F2C00R0</a> (for RF control)	Frequency Tolerance : +/-60ppm (-30 to 85 °C)
	Battery	<a href="#">CR Standard</a> series	Operating Temperature Range : Standard series : -30°C to 75°C



# Murata proposal parts list for RKE

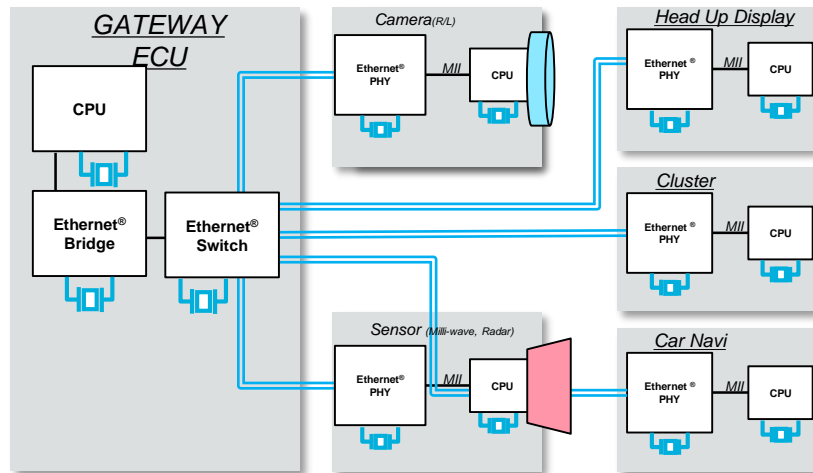
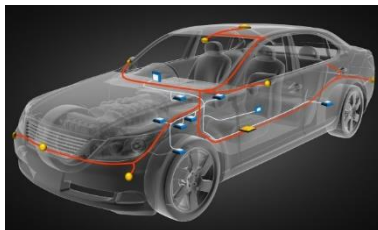



IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
NXP Semiconductors	NCF2961	<a href="#">XRCGE27M600FBA1AR0</a>	27.6000	2.0 x 1.6 x 0.7
Microchip Technology	ATA5835	<a href="#">XRCGB24M305F3A12R0</a>	24.3050	2.0 x 1.6 x 0.7





# Block Diagram for Ethernet®



Appearance	Device	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



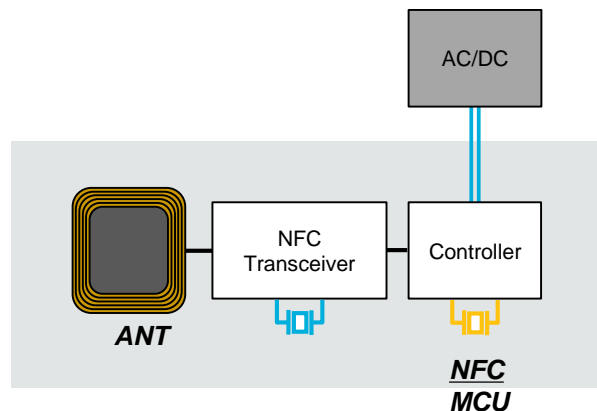
# Murata proposal parts list for Ethernet®





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	<a href="#">XRCGB25M000F3A00R0</a>	25.0000	2.0 x 1.6 x 0.7
	Microchip Technology	KSZ8061 LAN8770 LAN8672	<a href="#">XRCGB25M000F3A00R0</a>	25.0000	2.0 x 1.6 x 0.7
	Broadcom	BCM89083 BCM89103 BCM89107	<a href="#">XRCGB25M000F3A16R0</a>	25.0000	2.0 x 1.6 x 0.7
	NXP Semiconductors	TJA1100 TJA1102	<a href="#">XRCGB25M000F3A01R0</a>	25.0000	2.0 x 1.6 x 0.7
	Realtek	RTL9000A	<a href="#">XRCGB25M000F3A1AR0</a>	25.0000	2.0 x 1.6 x 0.7
	Texas Instruments	DP83TC811	<a href="#">XRCGB25M000F3A00R0</a>	25.0000	2.0 x 1.6 x 0.7
SWITCH	Marvell Semiconductor	88Q5050 88Q5054 88Q5040 88Q5072 88Q6113	<a href="#">XRCGB25M000F3A00R0</a>	25.0000	2.0 x 1.6 x 0.7
	NXP Semiconductors	SJA1105	<a href="#">XRCGB25M000F3A01R0</a>	25.0000	2.0 x 1.6 x 0.7
Ethernet® BRIDGE	Toshiba Electronic Devices & Storage Corporation	TC9560	<a href="#">XRCGE20M000F3A1BR0</a>	20.0000	2.0 x 1.6 x 0.7
		TC9562	<a href="#">XRCGB25M000F3A00R0</a>	25.0000	2.0 x 1.6 x 0.7



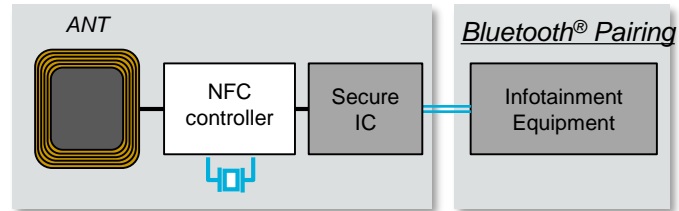
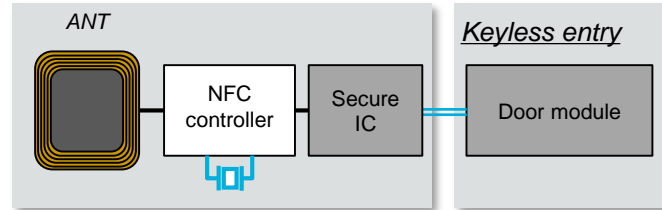
# Block Diagram for Wireless charger




Appearance	Device	Series P/N	SPEC
	Ceramic Resonator	<a href="#">CSTNE8M00G55A000R0</a>	Frequency Tolerance : +/-8000ppm
	Crystal Unit	<b>Representative P/N</b> <a href="#">XRCGB27M120F3A00R0</a> ( for NFC Transceiver)	Frequency Tolerance : +/-85ppm



# Block Diagram for NFC pairing



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



# Murata proposal parts list for NFC/Wireless charger

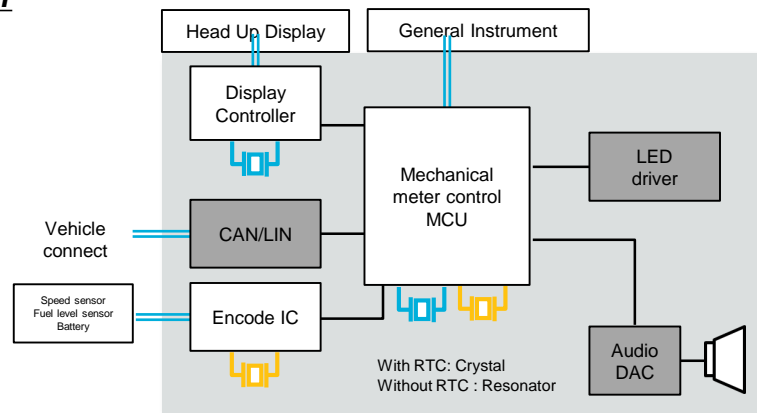






IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
NXP Semiconductors	MCF3340	<a href="#">XRCGB27M120F3A00R0</a>	27.1200	2.0 x 1.6 x 0.7



# Block Diagram for General Instrument Cluster

## General Instrument Cluster

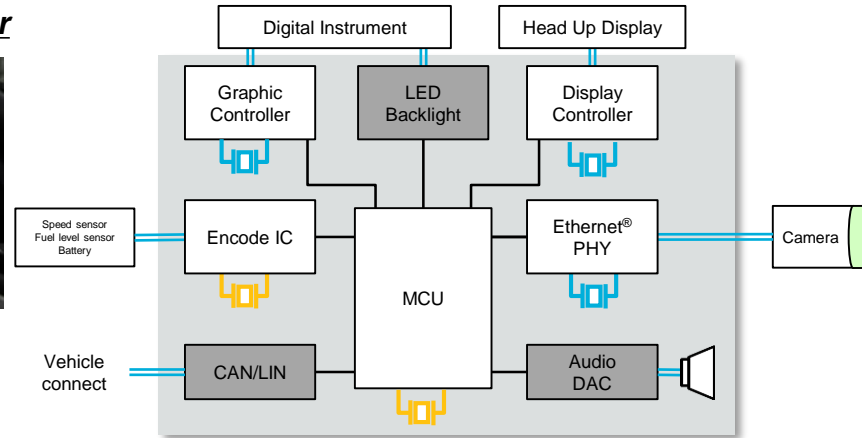


Appearance	Device	Series P/N	SPEC
	Ceramic Resonator	<u>CSTNR-G-C</u> series (4MHz to 7.99MHz) <u>CSTNE-G-C</u> series (8MHz to 13.99MHz) <u>CSTNE-V-C</u> series (14MHz to 20MHz) <u>CSTNE-V-T</u> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
	Crystal Unit	<u>XRCGB-F-A</u> series (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



Appearance	Device	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) <u>CSTNE-V-T</u> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
	Crystal Unit	<u>XRCGB-F-A</u> series (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



# Murata proposal parts list for Digital Instrument Cluster

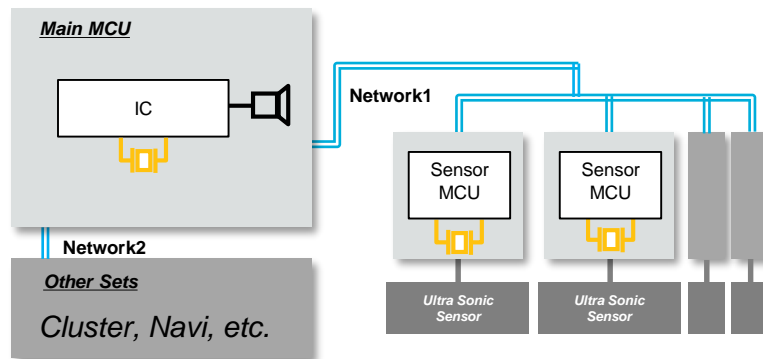
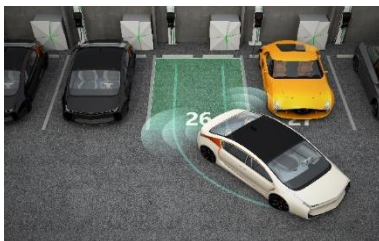


IC information		Murata product information		
IC Maker	IC Part Number	Crystal unit Part Number	Frequency [MHz]	Size [mm]
NXP Semiconductors	i.MX8QXP8QM	<a href="#">XRCGB24M000F3A00R0</a>	24.0000	2.0 x 1.6 x 0.7





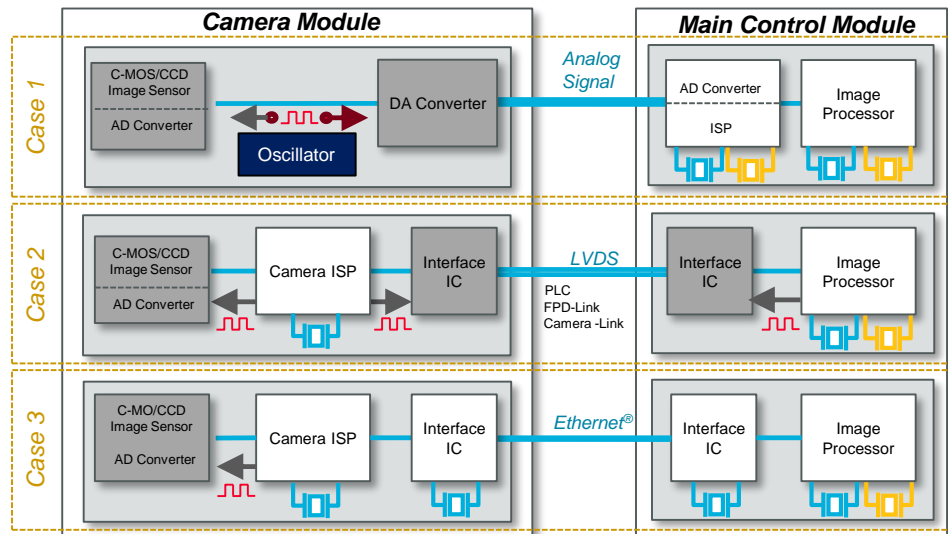
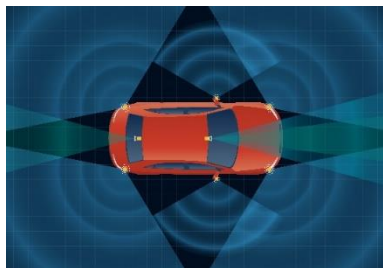
# Block Diagram for Parking Assist System



Appearance	Device	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) <u>CSTNE-V-T</u> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)



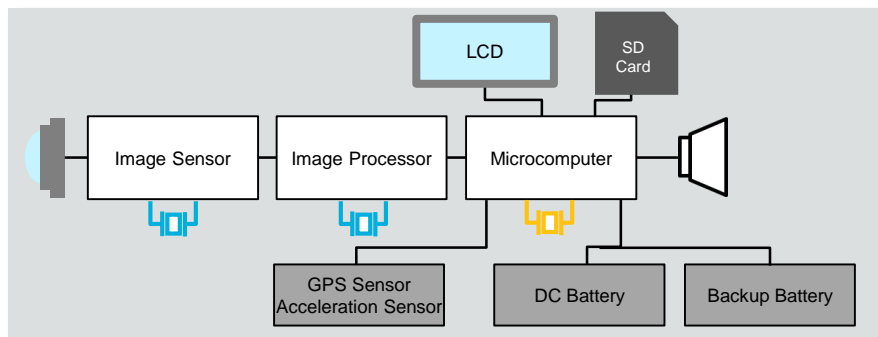
# Block Diagram for Surround View Camera System



Appearance	Device	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) <u>CSTNE-V-T</u> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
	Crystal Unit	<b>Representative P/N</b> <u>XRCGB25M000F3A00R0</u> (for Ethernet®) <u>XRCGB27M000F3A00R0</u> (for Camera ISP)	Frequency Tolerance : +/-85ppm



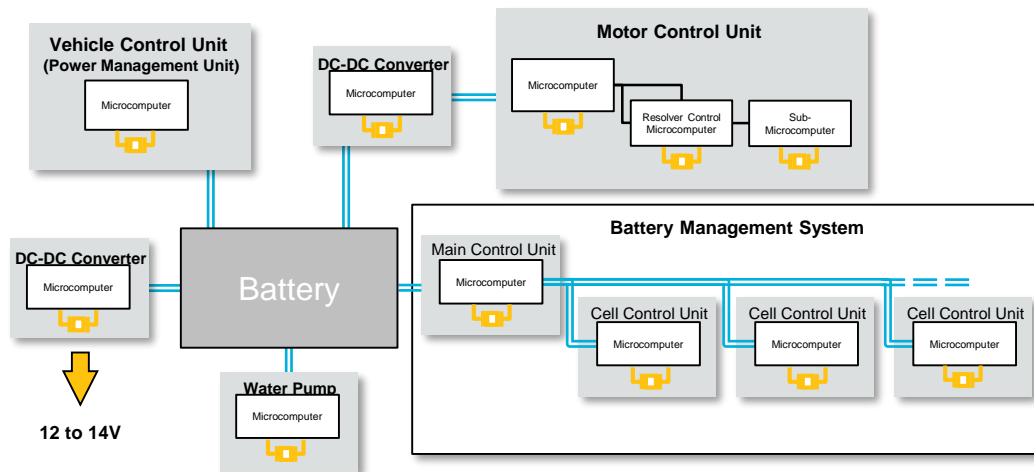
# Block Diagram for Drive Recorder



Appearance	Device	Series P/N	SPEC
	Ceramic Resonator	<a href="#">CSTNR-G-C</a> series (4MHz to 7.99MHz) <a href="#">CSTNE-G-C</a> series (8MHz to 13.99MHz) <a href="#">CSTNE-V-C</a> series (14MHz to 20MHz) <a href="#">CSTNE-V-T</a> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)
	Crystal Unit	Representative P/N <a href="#">XRCGB24M000F3A00R0</a> <a href="#">XRCGB27M000F3A00R0</a> (for Image Sensor/Processor)	Frequency Tolerance : +/-85ppm
	Piezoelectric Sounders (SMD Type)	<a href="#">PKLCS1212E24A0-R1</a> (Sound Freq.: 2.4kHz) <a href="#">PKLCS1212E40A1-R1</a> (Sound Freq.: 4kHz)	Sound Pressure Level: 75dBmin (@ +/-1.5Vo-p, Square wave, 10cm)
	Piezoelectric Sounders (Pin Type)	Representative P/N <a href="#">PKM13EPYH4000-A0</a> (Sound Freq.: 4kHz)	Sound Pressure Level: 70dBmin (@ +/-1.5Vo-p, Square wave, 10cm)



# Block Diagram for EV/HEV



Appearance	Device	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) <u>CSTNE-V-T</u> series (16MHz, 20MHz, 24MHz)	Frequency Tolerance : +/-2700ppm (C series) +/-2300ppm (T series)