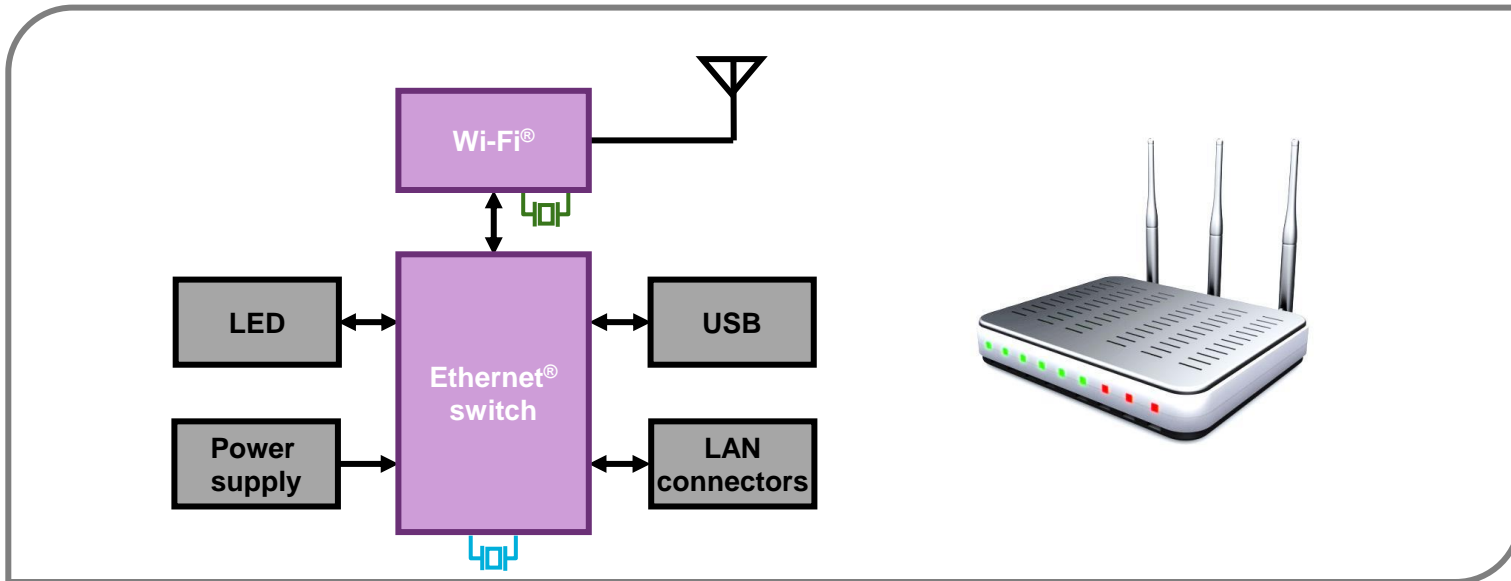




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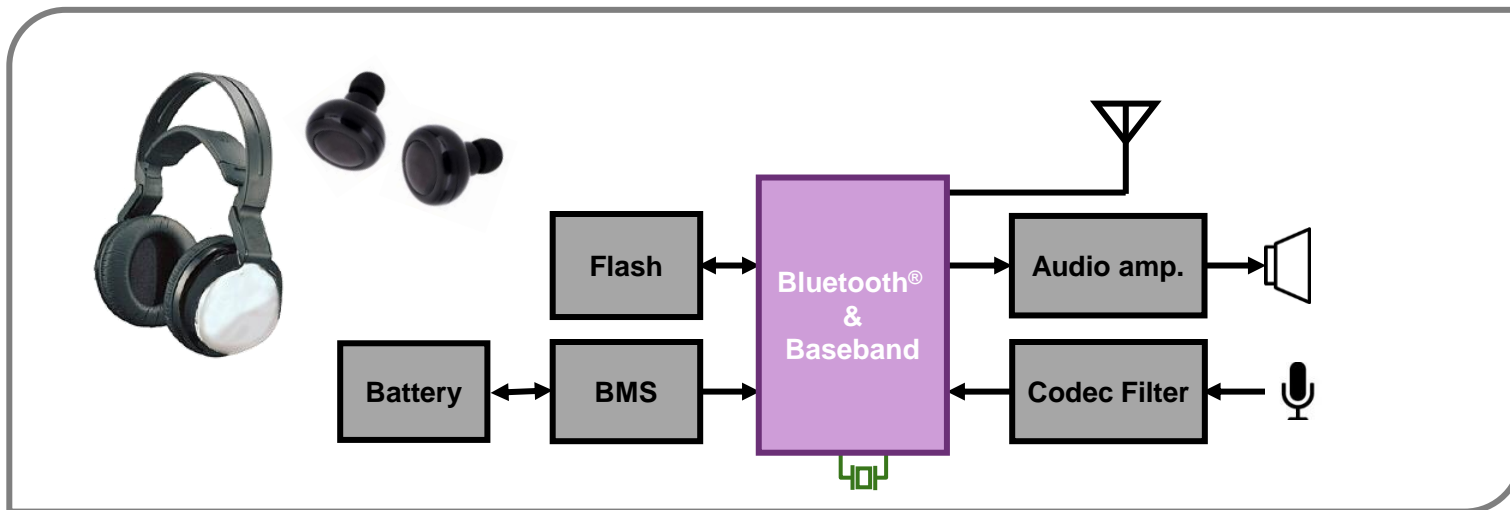
Block Diagram for Wi-Fi® AP Router




| Device | Size | Series / Spec. | Function | |
|---|----------------|----------------------------------|------------|---------------|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 25 MHz | For Ethernet® |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For Wi-Fi® |



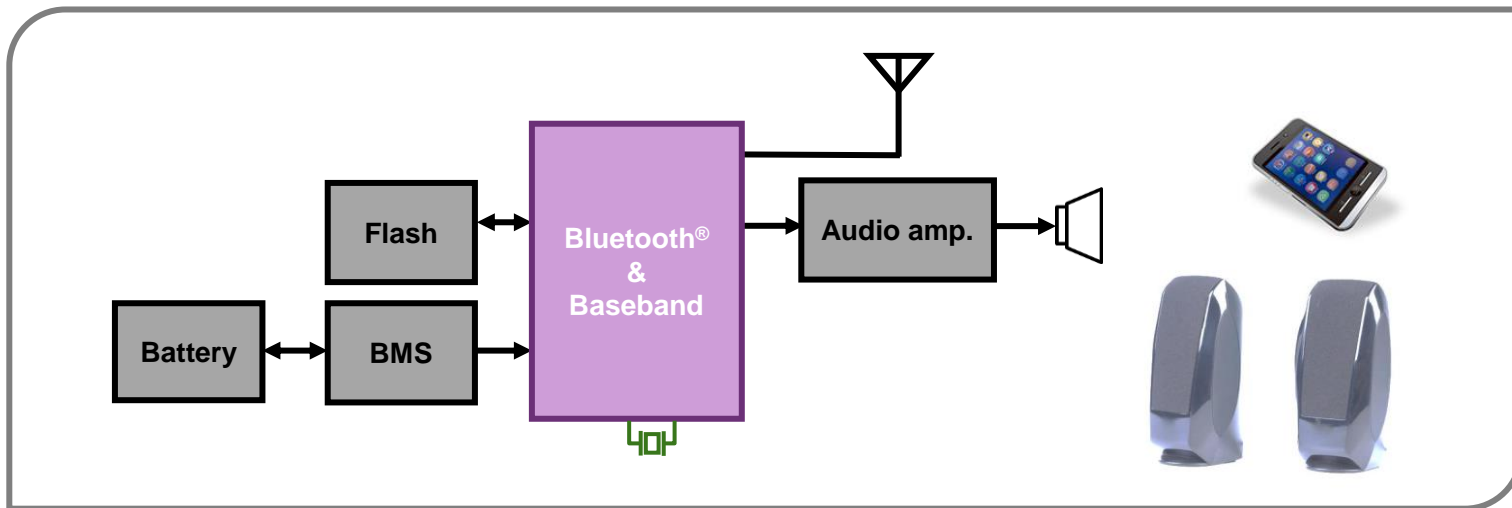
Block Diagram for Bluetooth® Headphone



| Device | Size | Series / Spec. | Function |
|---|----------------|----------------------------|----------------|
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series 32.768 kHz | For Bluetooth® |

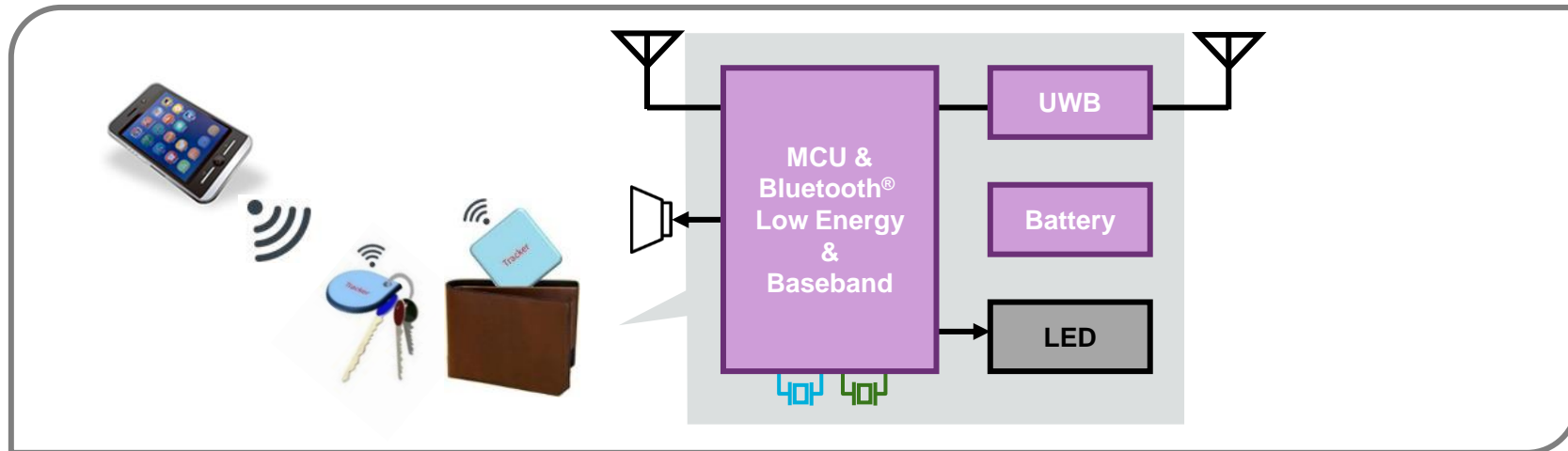





Block Diagram for Bluetooth® Speaker



| Device | Size | Series / Spec. | Function |
|---|----------------|----------------|----------------|
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | For Bluetooth® |

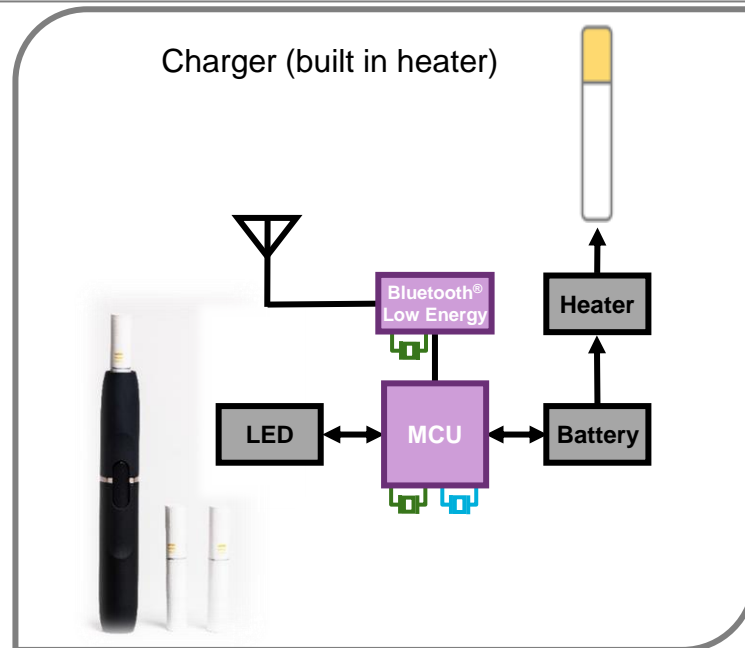
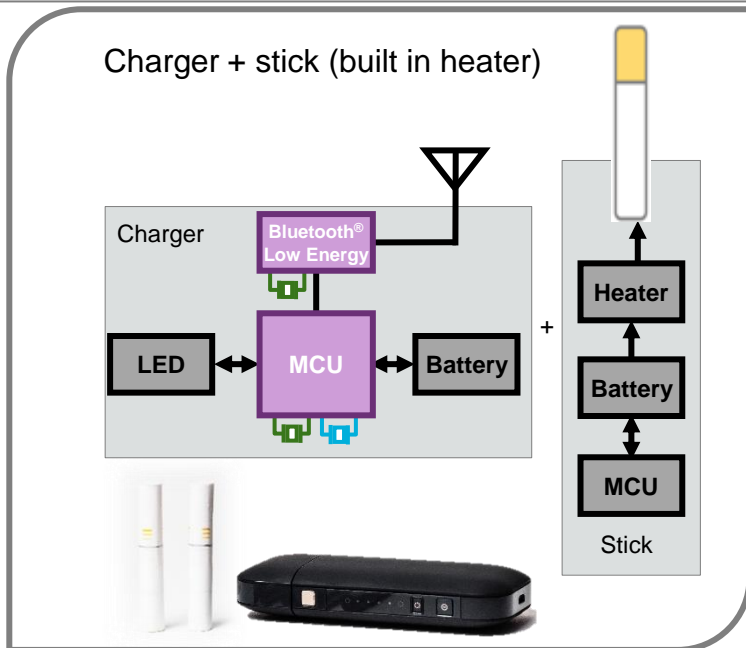
Block Diagram for Bluetooth® Tracker





| Device | Size | Series / Spec. | | Function |
|---|---------------------------------|--|---|---------------------------|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 16 MHz / 24 MHz / 32 MHz | For Bluetooth® Low Energy |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For UWB |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8 kHz | |
| Battery | 12.5 to 36.5 x 1.6 to 7.7 mm | CR Standard series CR Heat-resistant (X) series | Capacity : 30 to 2000 mAh Operating Temperature Range : Standard Series : -30°C to 70°C X Series : -40°C to 85°C | For Power supply |



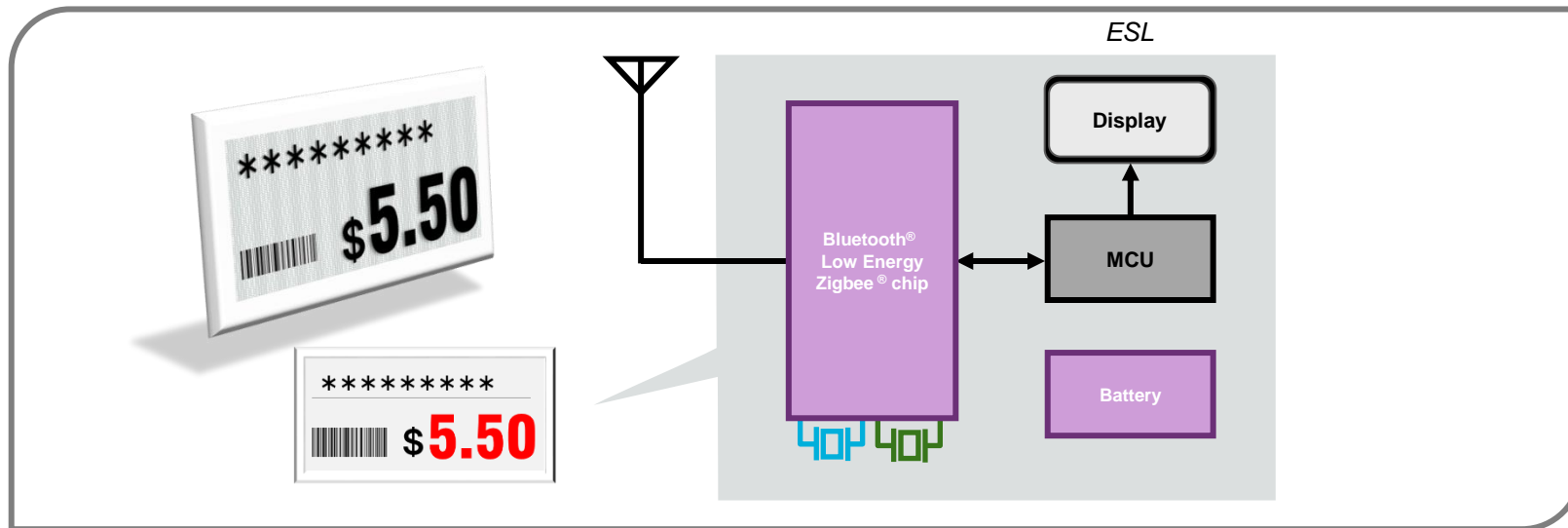
Block Diagram for E-cigarette (heater type)





| Device | Size | Series / Spec. | Function |
|---|----------------|--|--|
|  Crystal unit | 2.0 x 1.6 mm | XRCGB-F-L series XRCGB-F-M series | 16 to 48 MHz For MCU |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz For MCU, Bluetooth® Low Energy |

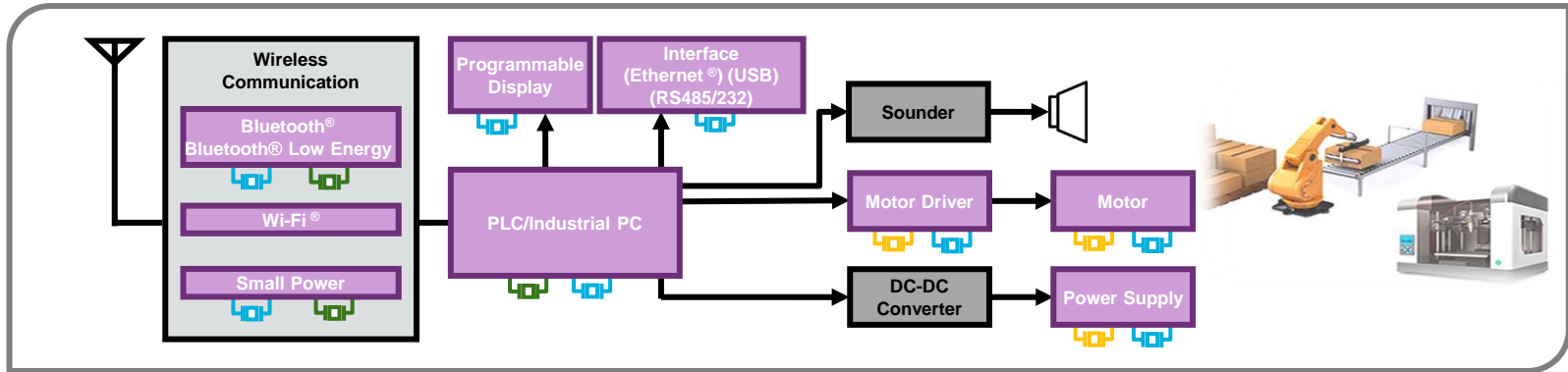






Block Diagram for ESL (Electronic Shelf Label)



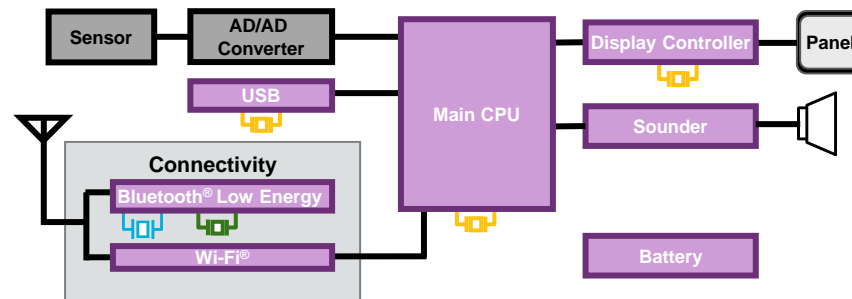
| Device | Size | Series / Spec. | Function |
|---|-------------------------------|------------------------------------|--|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 16 MHz / 24 MHz / 32 MHz |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz |
| Battery | 12.5 to 24.5 x 1.6 to 5 mm | CR Standard series | Capacity : 30 to 610 mAh Operating Temperature Range : -30°C to 70°C |

Block Diagram for Industry Automation







| Device | Size | Series / Spec. | Function |
|---|----------------|---|--|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series 4 to 7.999 MHz | For Power supply |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series 8 to 20 MHz | For Motor |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series 16 to 50 MHz | For Ethernet®, USB, PLC, Display, Motor driver, Motor, Power Supply |
| | | XRCGB-F-P series 16 MHz / 24 MHz / 32 MHz | For Bluetooth® Low Energy |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series 32.768 kHz | For Bluetooth® Low Energy, LPWA ,PLC |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | Φ12.6 × 9.4 mm | PKHPS series 4 kHz | |

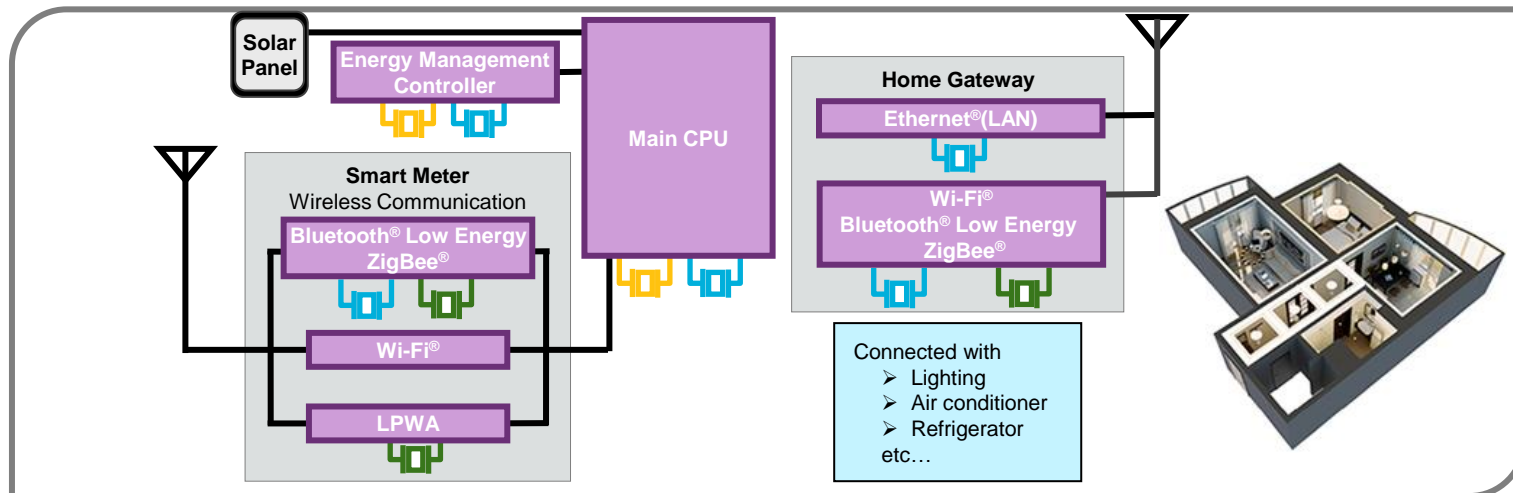
Block Diagram for Healthcare applications






Ex. Blood Glucose Meter

| Device | Size | Series / Spec. | | Function |
|--|---|---|---|-----------------------------------|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series | 4 to 7.999 MHz | For Main CPU |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series | 8 to 20 MHz | For USB For Display Controller |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 16 MHz / 24 MHz / 32 MHz | For Bluetooth® Low Energy |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For Bluetooth® Low Energy |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8kHz | |
| Battery | (SR/LR)6.8 to 11.6 x 2.05 to 5.4 mm (CR)12.5 to 24.5 x 1.6 to 5 mm | SR Standard series SR/LR High Drain series CR Standard series | Capacity : (SR/LR) 20 to 150 mAh (CR) 30 to 610 mAh Operating Temperature Range : (SR/LR) -10°C to 60°C | For Power supply |

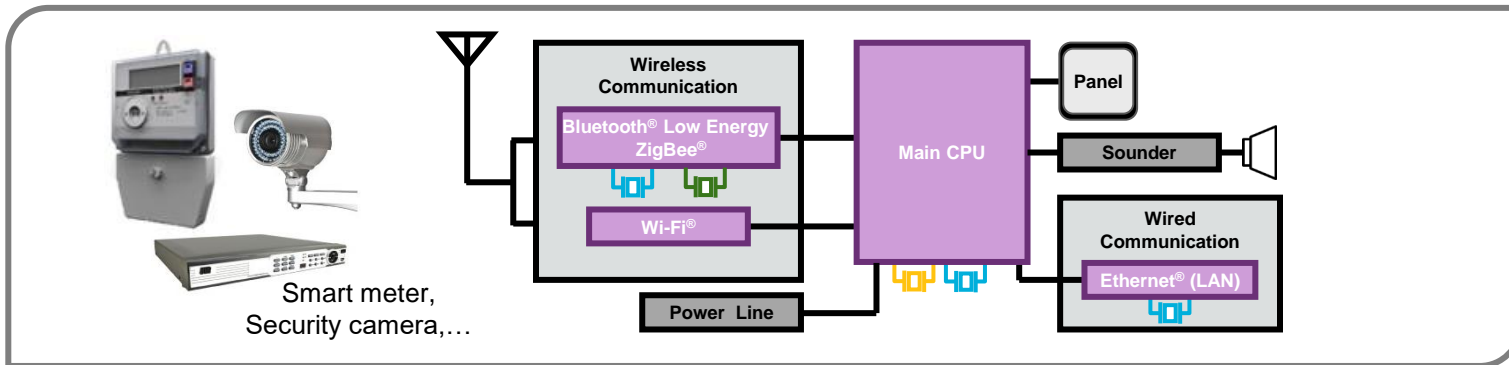
Block Diagram for Home Energy Management System (HEMS)







| Device | Size | Series / Spec. | Function |
|--|----------------|--|--------------------------|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series | 4 to 7.999 MHz |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series | 8 to 20 MHz |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 25 MHz |
| | | XRCGB-F-P series | 16 MHz / 24 MHz / 32 MHz |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz |



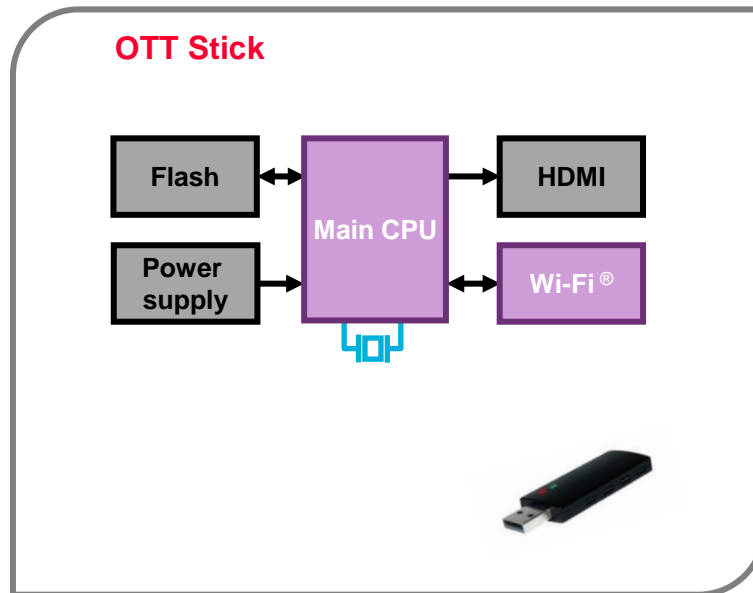
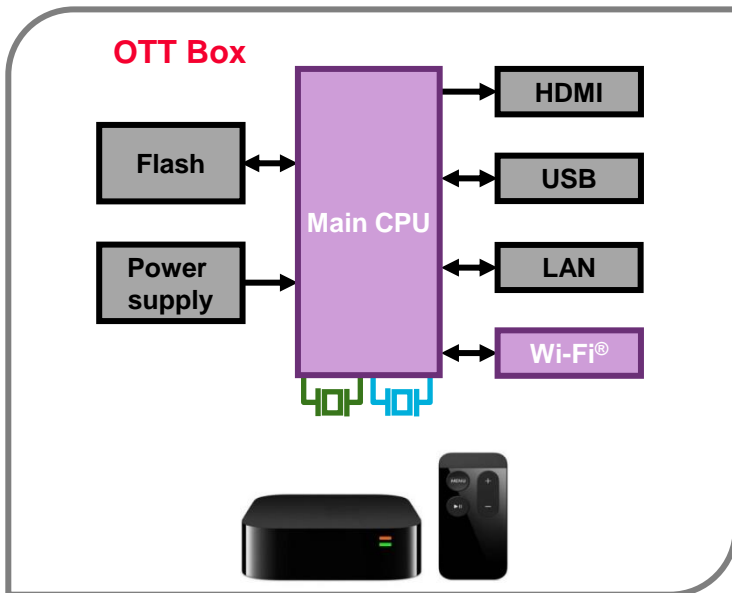
Block Diagram for M2M



| Device | Size | Series / Spec. | Function |
|---|----------------|--|--|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series 4 to 7.999 MHz | For Main CPU |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series 8 to 20 MHz | |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series 25 MHz | For Ethernet® |
| | | XRCGB-F-P series 16 MHz / 24 MHz / 32 MHz | For Bluetooth® Low Energy, ZigBee® |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series 32.768 kHz | For Bluetooth® Low Energy, ZigBee®, LPWA |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | 9.0 x 9.0 mm | PKMCS series 4 kHz / 4.8kHz | |
| | Φ12.6 × 9.4 mm | PKHPS series 4 kHz | |



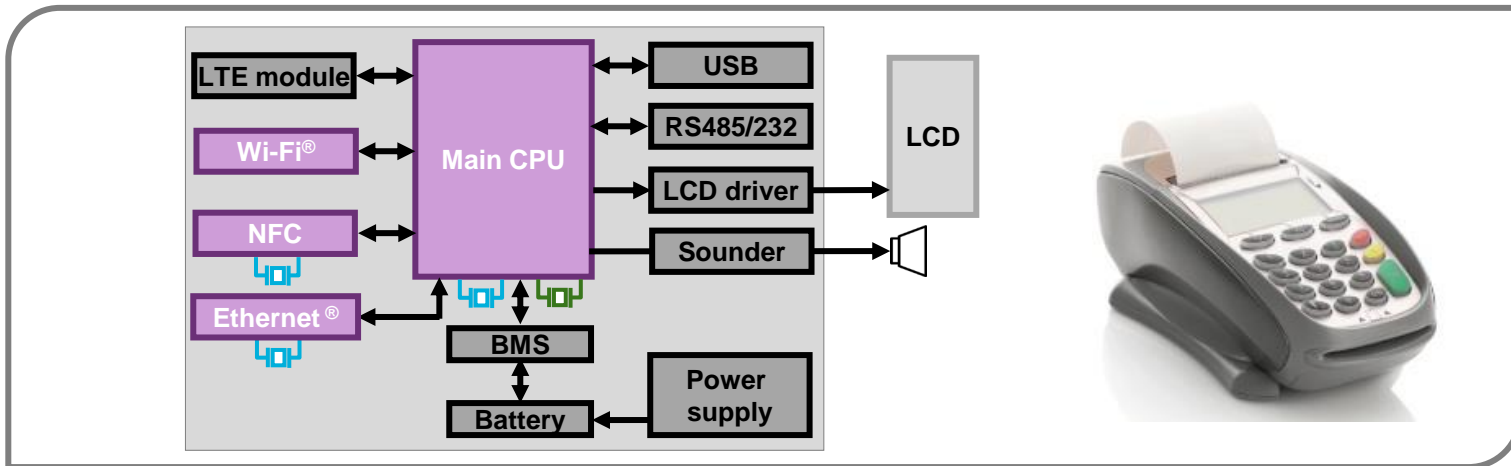
Block Diagram for OTT (Over The Top)






| Device | Size | Series / Spec. | Function |
|-----------------------|----------------|--|--------------|
| Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series 24 MHz | For Main CPU |
| MEMS Resonator | 0.95 x 0.60 mm | WMRAG series 32.768 kHz | For Main CPU |



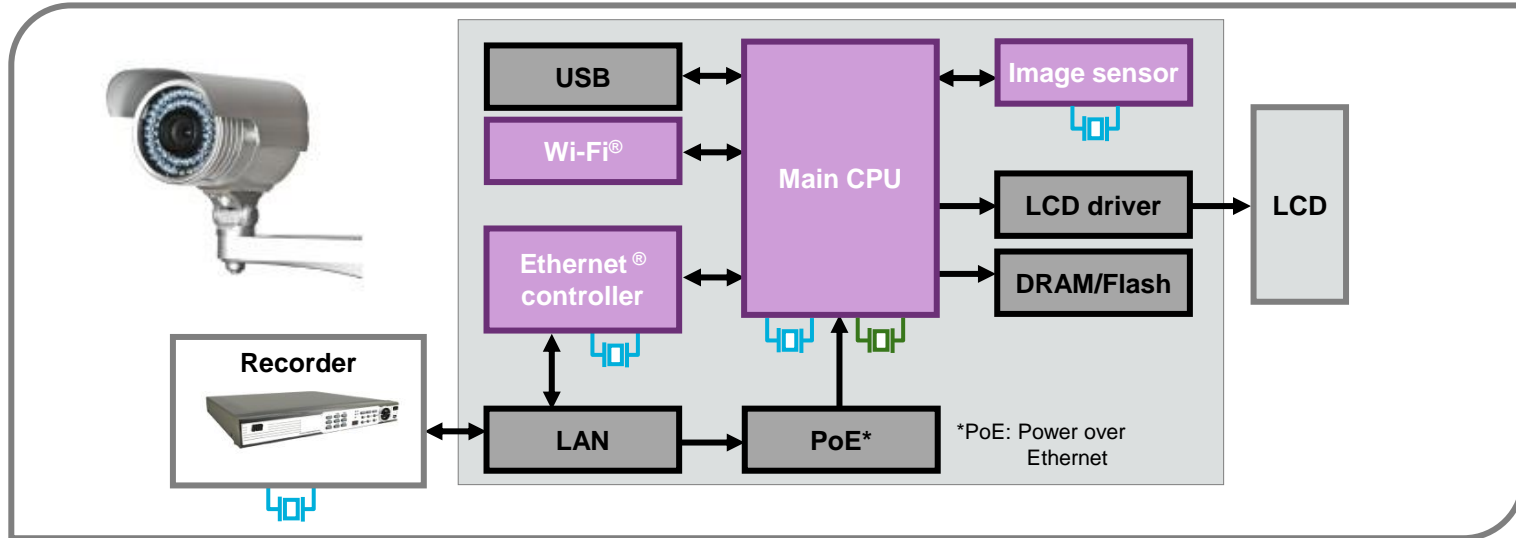
Block Diagram for Payment Terminal





| Device | Size | Series / Spec. | | Function |
|---|--|----------------------------------|-------------------------|---------------|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 24 MHz | For Main CPU |
| | | XRCGB-F-M series | 25 MHz | For Ethernet® |
| | | | 27.12 MHz | For NFC |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For Main CPU |
|  Piezoelectric Sounders | 12.0 x 12.0 mm 9.0 x 9.0 mm Φ12.6 x 9.4 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | | PKMCS series | 4 kHz / 4.8kHz | |
| | | PKHPS series | 4 kHz | |



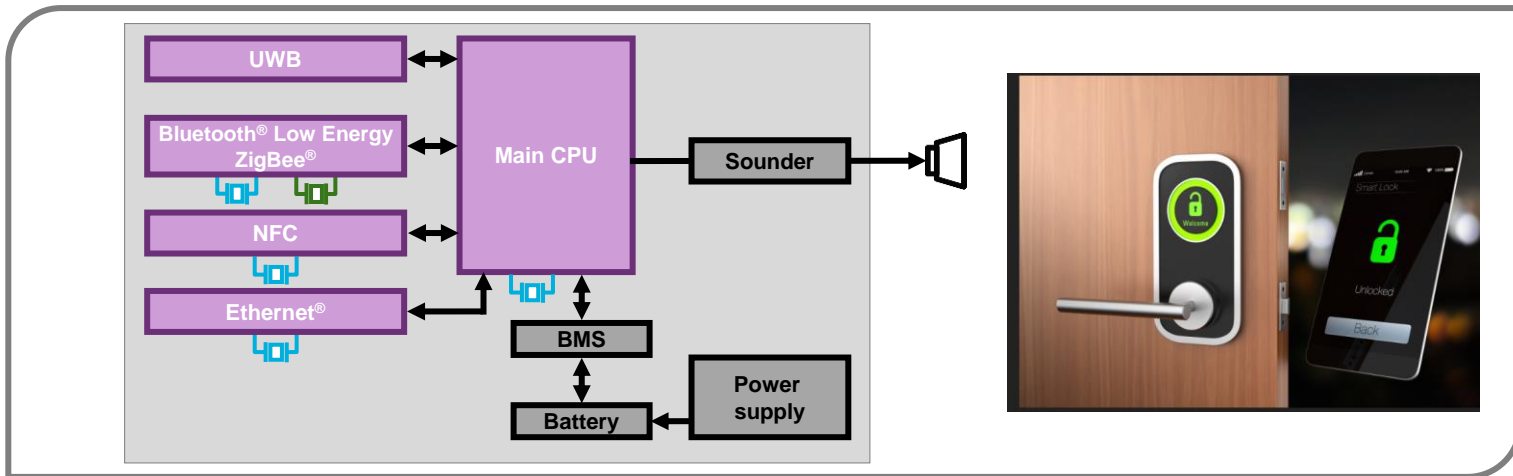
Block Diagram for Security Camera






| Device | Size | Series / Spec. | | Function |
|---|----------------|-------------------------|-----------------|----------------------------------|
|  Crystal Units | 2.0 x 1.6 mm | <u>XRCGB-F-P series</u> | 24 MHz / 27 MHz | For Main CPU For Image Sensor |
| | | <u>XRCGB-F-M series</u> | 25 MHz | For Ethernet® |
|  MEMS Resonator | 0.95 x 0.60 mm | <u>WMRAG series</u> | 32.768 kHz | For Main CPU |



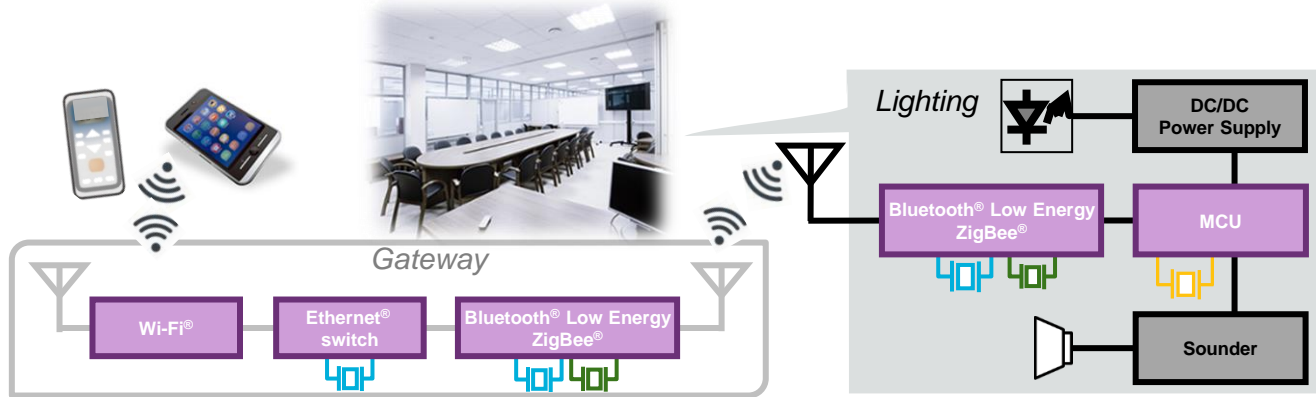
Block Diagram for Smart Door Lock







| Device | Size | Series / Spec. | | Function |
|---|----------------|----------------------------------|-------------------------|--|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 16 MHz / 24 MHz/ 32 MHz | For Main CPU, Bluetooth® Low Energy, ZigBee® |
| | | XRCGB-F-M series | 25.000 MHz | For Ethernet® |
|  MEMS Timing Device | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For Bluetooth® Low Energy, ZigBee® |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8 kHz | |



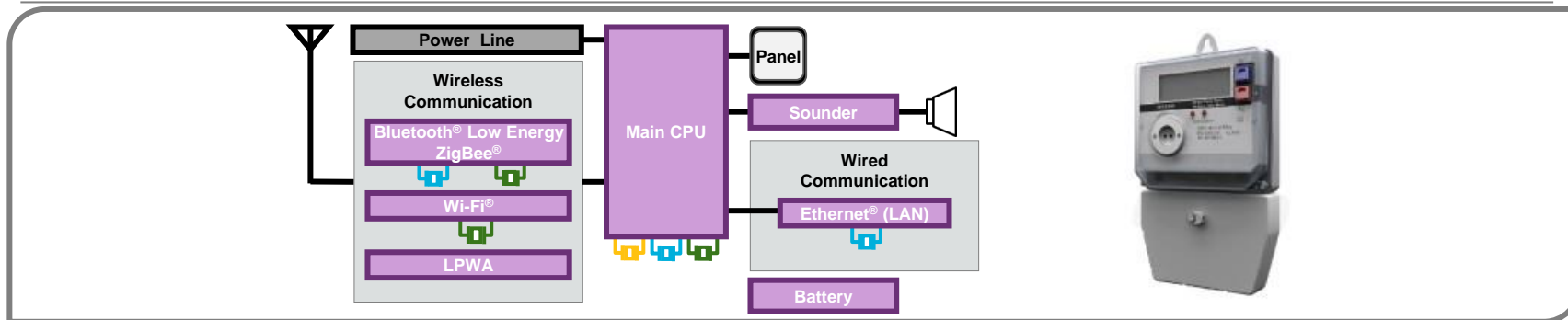
Block Diagram for Smart Lighting







| Device | Size | Series / Spec. | Function |
|---|------------------------------|---|---|
|  Ceramic Resonators | 4.5 x 2.0 mm 3.2 x 1.3 mm | CSTCR-G series 4 MHz CSTNE-G series 8 MHz / 12 MHz CSTNE-V series 16 MHz / 20 MHz | For Main CPU |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series 25 MHz XRCGB-F-P series 16 MHz / 24 MHz / 32 MHz | For Ethernet® For Bluetooth® Low Energy, ZigBee® |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series 32.768 kHz | For Bluetooth® Low Energy, ZigBee® |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series 2 kHz / 2.4 kHz / 4 kHz | For Beeper |



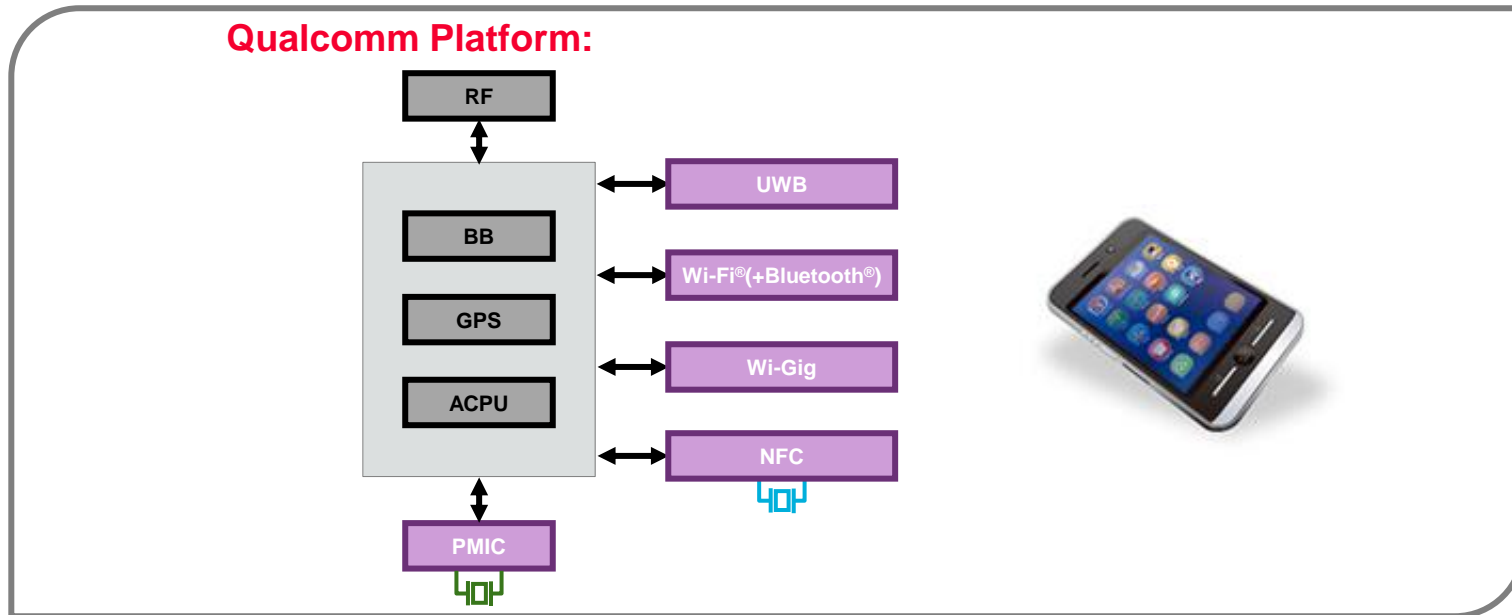
Block Diagram for Smart Meter





| Device | Size | Series / Spec. | Function |
|---|-------------------------------|--|--|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series | 4 to 7.999 MHz |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series | 8 to 20 MHz |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 25 MHz |
| | | XRCGB-F-P series | 16 MHz / 24 MHz / 32 MHz |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz |
| | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8 kHz |
| | Φ12.6 x 9.4 mm | PKHPS series | 4 kHz |
| Battery | 20 to 36.5 x 3.2 to 7.7 mm | CR Heat-resistant (X) series | Capacity : 220 to 2000 mAh Operating Temperature Range : -40°C to 85°C |



Block Diagram for Smart Phone

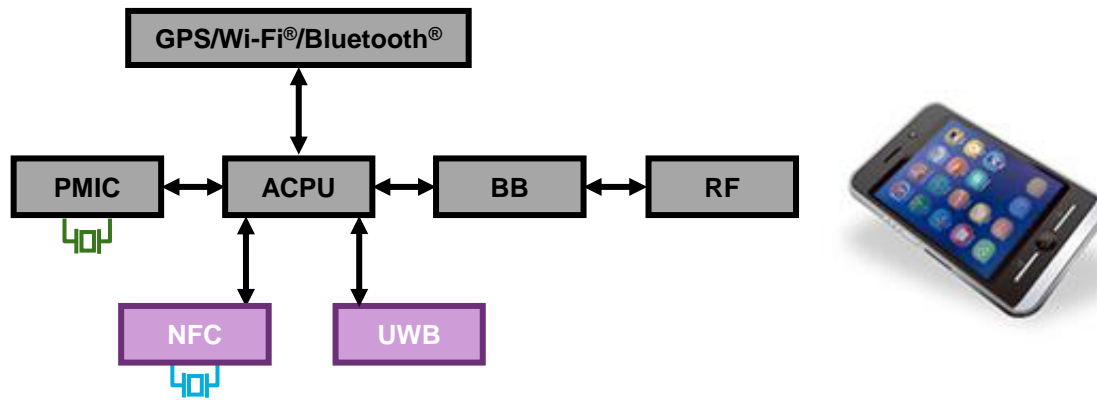




| Device | Size | Series / Spec. | | Function |
|---|----------------|------------------|------------|----------|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 27.12 MHz | For NFC |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For PMIC |



Block Diagram for Smart Phone

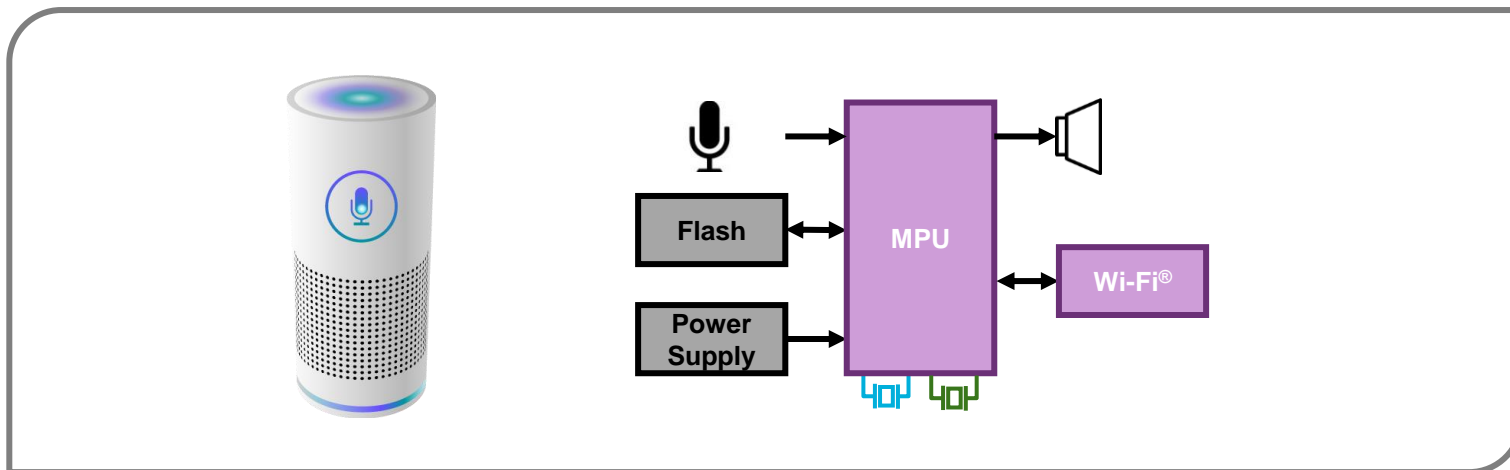
Mediatek Platform:



| Device | Size | Series / Spec. | Function |
|---|----------------|----------------------------------|------------------------|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 27.12 MHz For NFC |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz For PMIC |



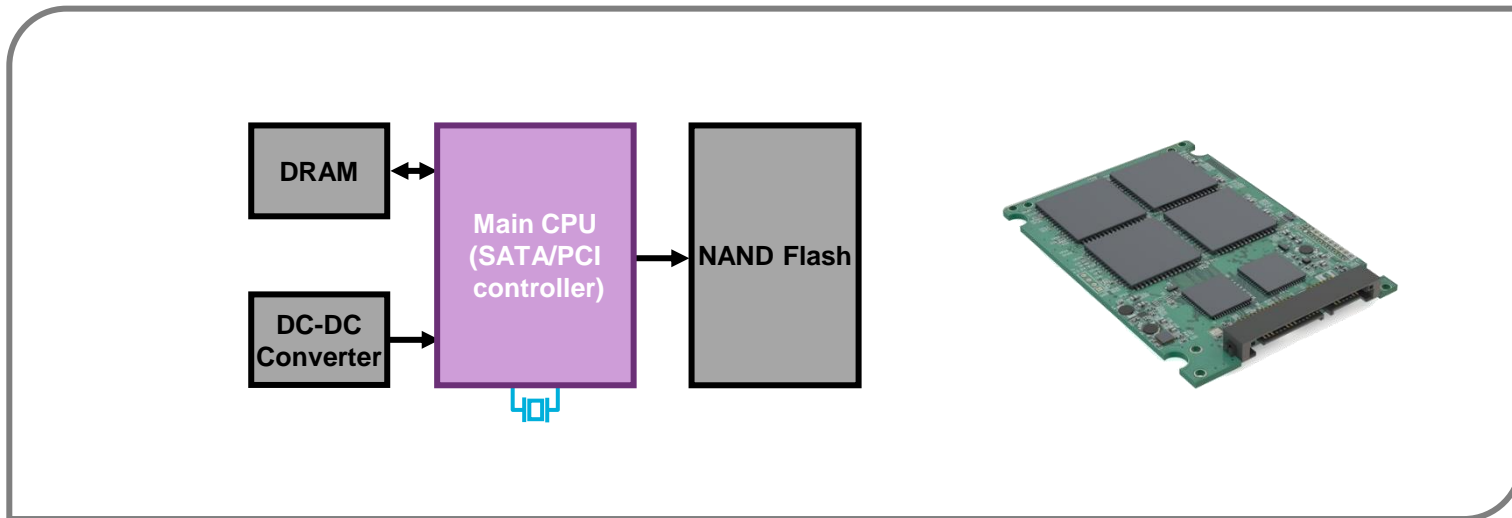
Block Diagram for Smart Speaker




| Device | Size | Series / Spec. | | Function |
|---|----------------|-------------------------|--------------|----------|
|  Crystal Units | 2.0 x 1.6 mm | <u>XRCGB-F-M series</u> | 16 to 50 MHz | For MPU |
|  MEMS Resonator | 0.95 x 0.60 mm | <u>WMRAG series</u> | 32.768 kHz | For MPU |



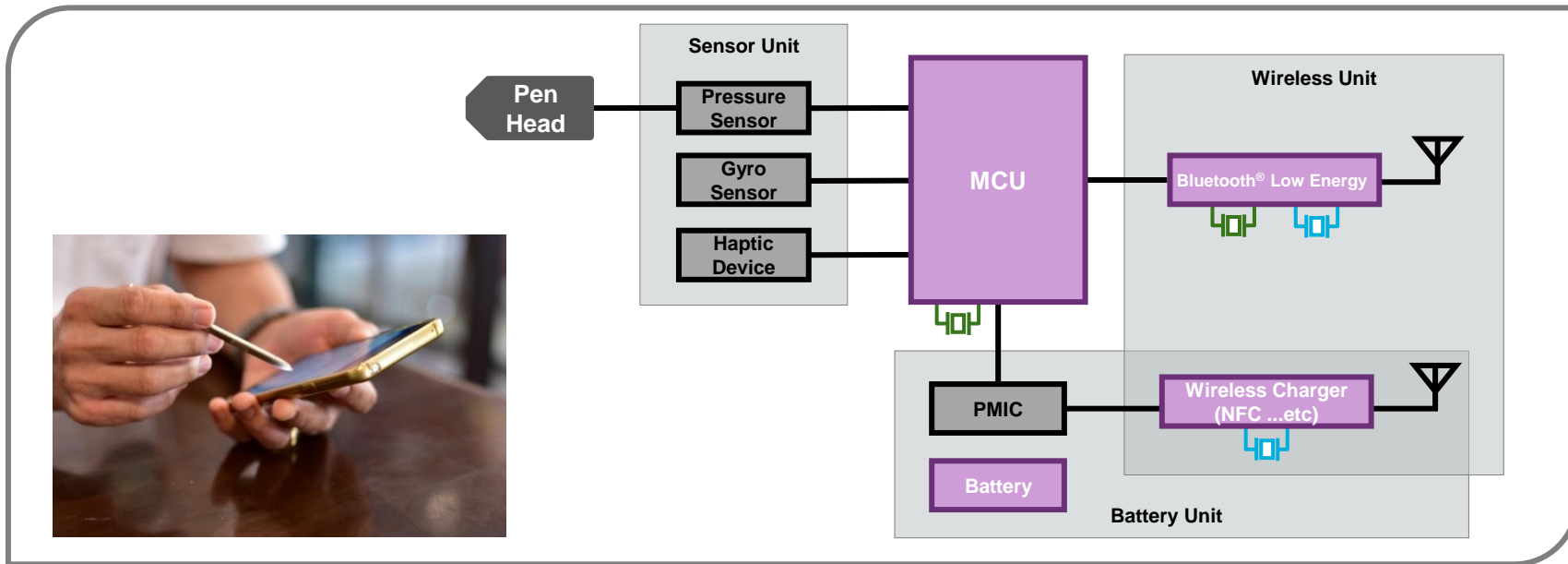
Block Diagram for SSD





| Device | Size | Series / Spec. | Function |
|--|--------------|--|------------------------------|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series XRCGB-F-L series | 25 to 50 MHz For Main CPU |



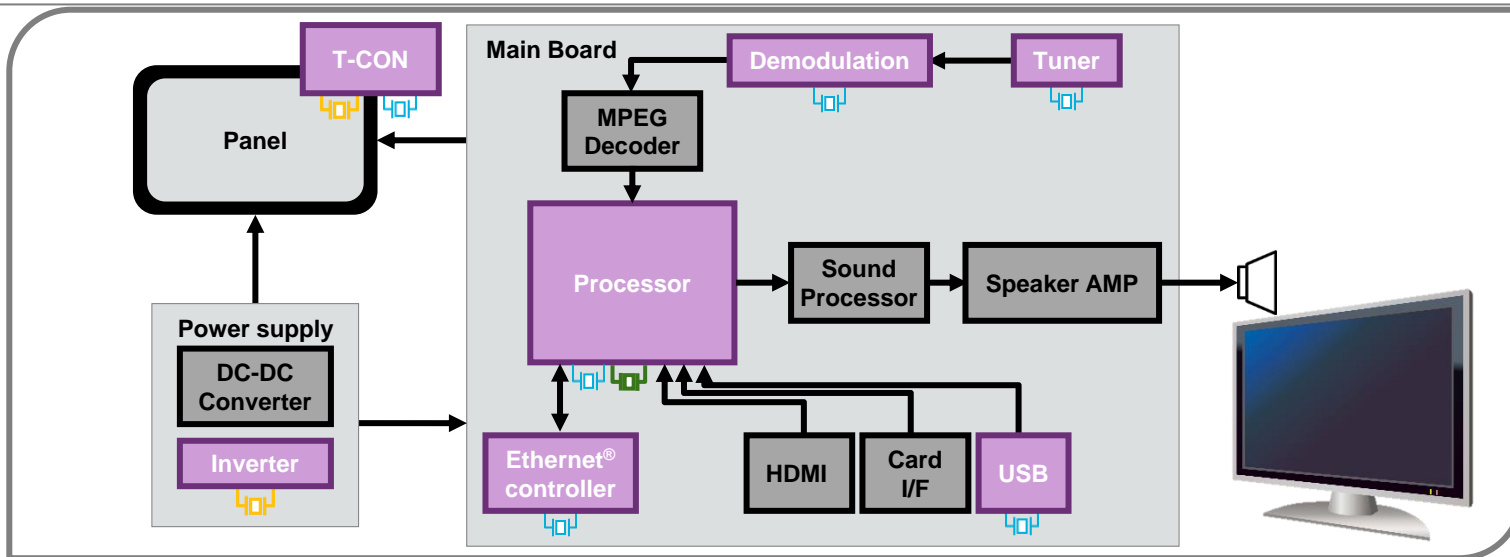
Block Diagram for Stylus Pen






| Device | Size | Series / Spec. | | Function |
|---|----------------|----------------------------------|------------------|--|
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 27.12 MHz | For NFC (Wireless Charger) |
| | | XRCGB-F-P series | 32 MHz | For Bluetooth® Low Energy* |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For MCU, Bluetooth® Low Energy* |
| Battery | Φ4 × 12 mm | CT04120 | Capacity : 3 mAh | Operating Temperature Range : -20°C to 70°C |

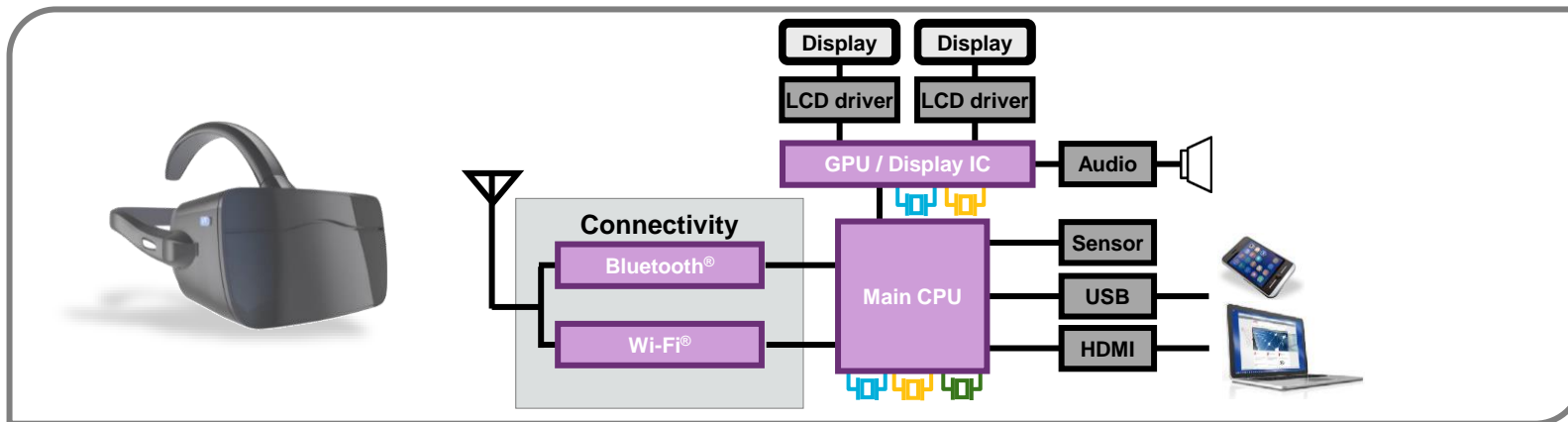
*This product doesn't have a Bluetooth® function.





Block Diagram for Digital TV



| Device | Size | Series / Spec. | | Function |
|---|----------------|--|--------------------------|----------------------------|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series | 4 to 7.999 MHz | For Inverter, T-CON |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series | 8 to 20 MHz | |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 16 MHz / 24 MHz / 27 MHz | For Processor, Tuner, etc. |
| | | XRCGB-F-M series | 25 MHz | For Ethernet® |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For Processor |

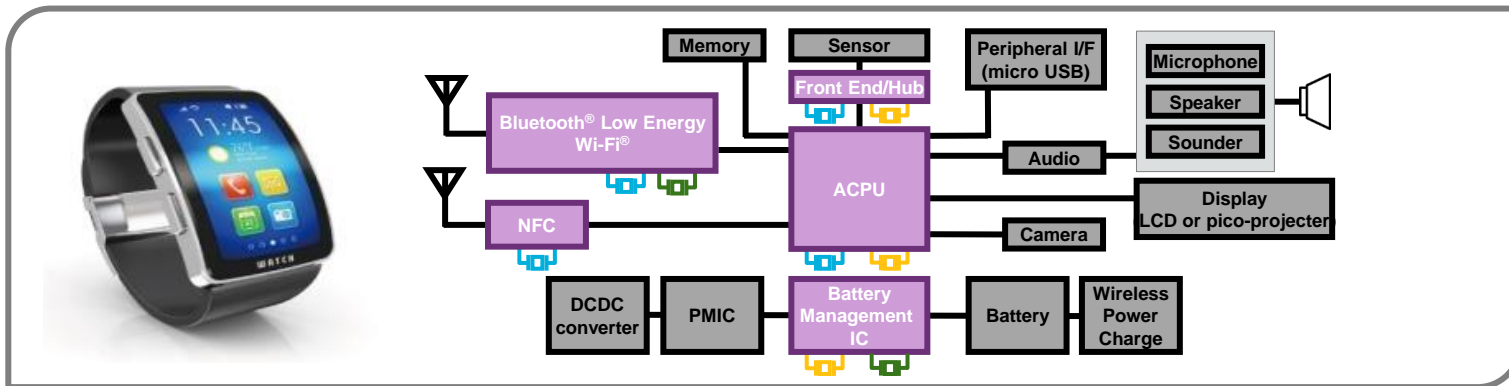
Block Diagram for VR(Virtual Reality), AR(Augmented Reality)







| Device | Size | Series / Spec. | | Function |
|---|----------------|----------------------------------|-------------------------|--------------------------|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series | 4 to 7.999 MHz | For Main CPU, Display IC |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series | 8 to 20 MHz | |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 16 to 32 MHz | For Main CPU, Display IC |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz | For Main CPU |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz | For Beeper |
| | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8kHz | |



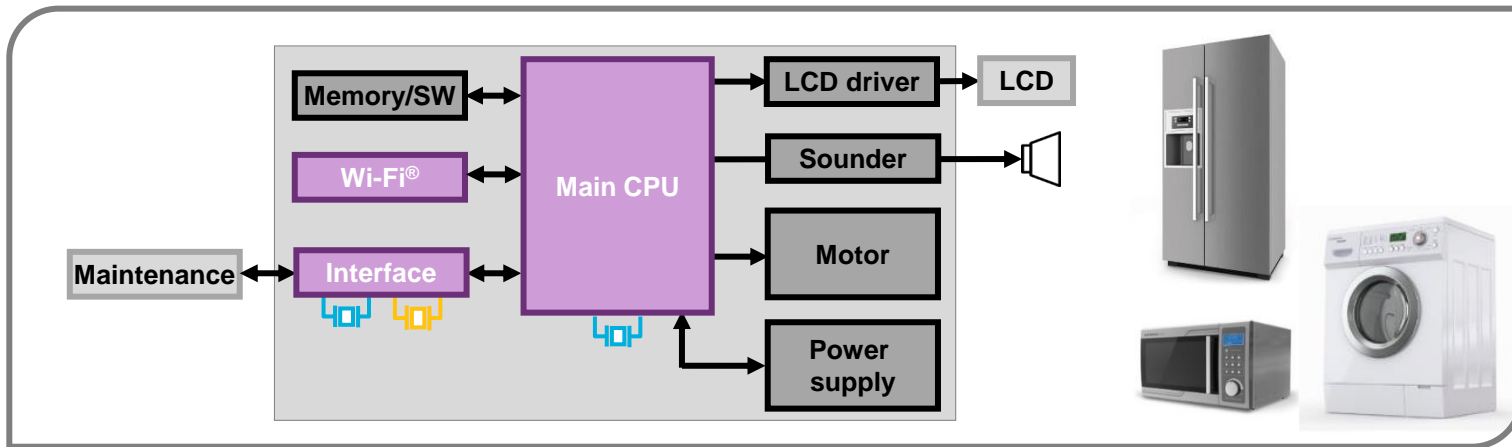
Block Diagram for Wearable Device






| Device | Size | Series / Spec. | Function |
|---|----------------|--|--------------------------|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTCR-G series | 4 to 7.999 MHz |
| | 3.2 x 1.3 mm | CSTNE-G series CSTNE-V series | 8 to 20 MHz |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-M series | 27.12 MHz |
| | | XRCGB-F-P series | 16 MHz / 24 MHz / 32 MHz |
|  MEMS Resonator | 0.95 x 0.60 mm | WMRAG series | 32.768 kHz |
|  Piezoelectric Sounders | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8 kHz |



Block Diagram for White Goods



| Device | Size | Series / Spec. | Function |
|---|----------------|----------------------------------|-------------------------|
|  Ceramic Resonators | 4.5 x 2.0 mm | CSTNR-G series | 4 MHz |
| | 3.2 x 1.3 mm | CSTNE-G series | 8 MHz / 12 MHz |
| | 3.2 x 1.3 mm | CSTNE-V series | 16 MHz / 20 MHz |
|  Crystal Units | 2.0 x 1.6 mm | XRCGB-F-P series | 24 MHz |
| | | XRCGB-F-M series | 25 MHz |
|  Piezoelectric Sounders | 12.0 x 12.0 mm | PKLCS series | 2 kHz / 2.4 kHz / 4 kHz |
| | 9.0 x 9.0 mm | PKMCS series | 4 kHz / 4.8 kHz |
| | Φ12.6 x 9.4 mm | PKHPS series | 4 kHz |