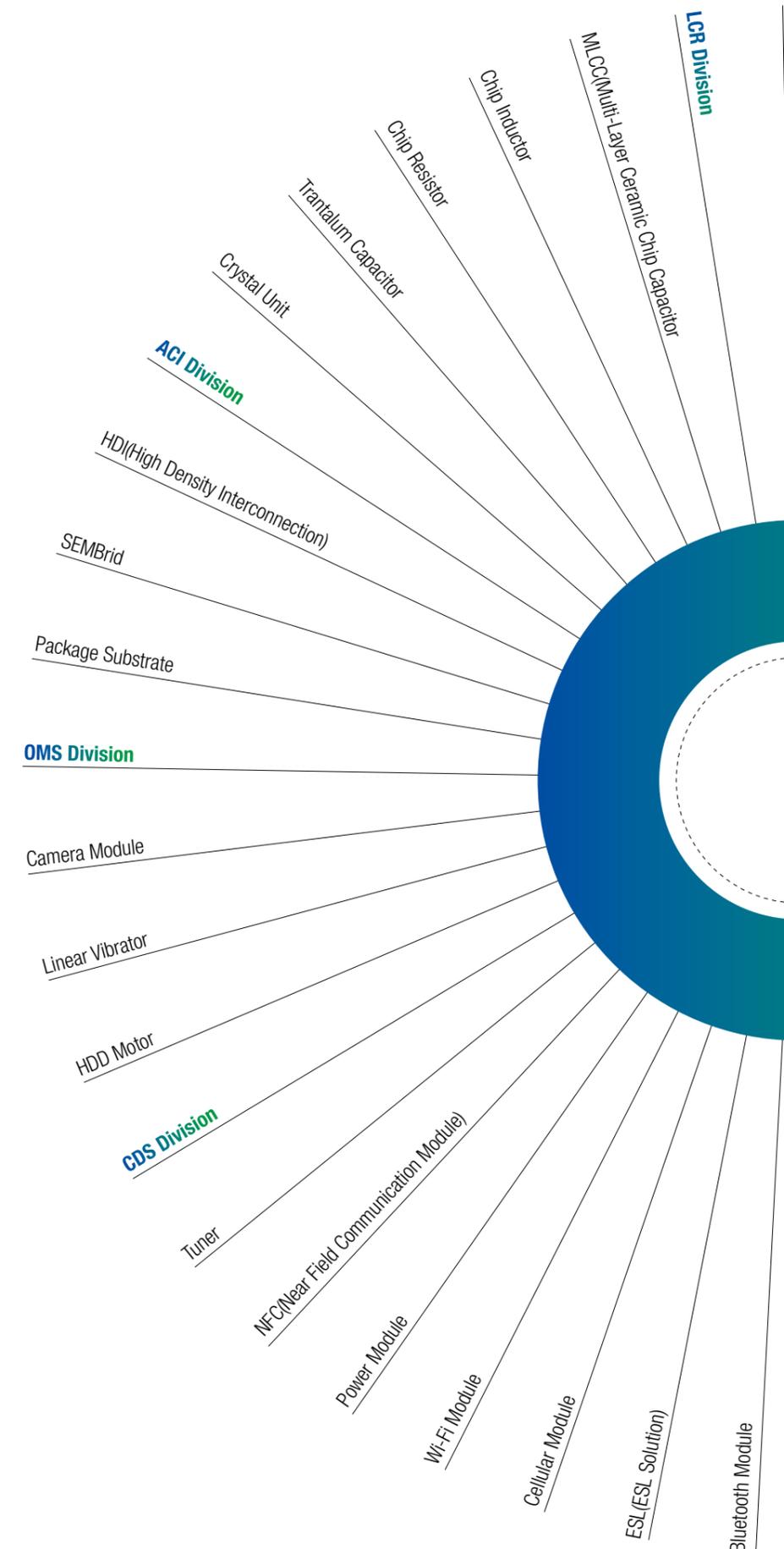


2012 Application Guide

SAMSUNG ELECTRO-MECHANICS



C O N T E N T S

LCR Division	02
ACI Division	03
CDS Division	04
OMS Division	05
Smart Phone / Feature Phone	06
Desktop / Tablet Computer	08
LCD TV(LED TV)	10
PDP TV	11
LCD Monitor	12
Set-top Box	13
Game Console	14
Digital Still Camera	15
Digital Video Camcorder	16
Navigation	17
Portable Multimedia Player	18
MP3 Player	19
e-Book	20
Laser Printer	21
Copy Machine	22
Projector	23
Hard Disk Drive	24
Solid State Drive	25
Electronic Shelf Label	26
LED Lighting	27
Automotive	28

2012 Application Guide

SAMSUNG ELECTRO-MECHANICS

LCR Division

Linkage of Magnetic Flux Coil
Capacitor
Resistor

LCR division stands for Linkage of Magnetic Flux Coil, Capacitor and Resistor. Main products are passive components such as MLCC, Chip Resistors, Chip inductors, crystal unit and Solid tantalum. Premium MLCCs, designed to restrain the mechanical crack appearances and malfunctions, are suitable for applications requiring high reliability such as automotive and industrial applications.

1. MLCC (Multi-Layer Ceramic Chip Capacitor)

As a major passive component, MLCC is the most prevalent type of capacitor today which temporarily stores electrical charge and decouples the noise in electronic circuits its main body is made up of interleaved layers of dielectric and metal inner electrode which is usually nickel. The external electrodes or terminations provide physical and electrical connection of MLCC to printed circuit board or hybrid IC module



2. Chip Inductor

Chip inductor is a kind of SMD type passive component of inductance. It is made by thick film multi-layer process. It is mainly used for impedance matching of telecommunication devices, LC resonance circuits and elimination electromagnetic noise of digital devices.



3. Chip Resistor

Chip resistor is general passive components which are useful for controlling current and duration voltage in the circuit. Also it can be mounted on the surface of the PCB.



4. Tantalum Capacitor

Tantalum capacitors are designed with excellent performance characteristics for filtering, by-passing, coupling, blocking and R.C tuning circuit. They are used extensively in industrial, commercial, entertainment and medical electronic equipments.



5. Crystal Unit

Quartz crystal units are passive components used reverse-piezoelectricity. Samsung's crystal units are designed to be applicable for the requirement of high precision specification such as mobile devices.



ACI Division

Advanced
Circuit
Interconnection

ACI division stands for Advanced Circuit Interconnection. Main products are HDI, RF-PCB, FCxGA and BGA. PCB (printed circuit board) is a device that provides electrical interconnections and a surface for mounting electronic components. Most PCBs are made from a flat rigid or flexible material layered between insulating and conductive element through which electrical currents travel.

1. HDI (High Density Interconnection)

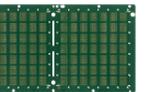
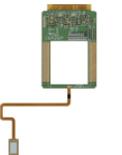
It refers to high-density PCBs created with fine pattern and pitch to exchange electrical signals between electrical components mounted onto a PCB

2. SEMBrid

SEMBrid is the acronym of "SEM" + "Hybrid", meaning multi-layer rigid-flex PCB manufactured by Samsung Electro-Mechanics

3. Package Substrate

Package substrate is a substitution technology of lead frame in chip packages. The sort of package substrates is UT-CSP, BOC, RF-Sip, FC-CSP and others. These products are used in Application processor, DRAM module, RF-Module, Flash memory, Main purpose is mobile phone.



CDS Division

Circuit
Drive
Solution

CDS division stands for Circuit Drive Solution. Main products are digital tuners, network modules, power modules, and ubiquitous modules. We are continuing making an effort to boost sales of premium products, such as power module and network module products keep developing for customer diversification.

1. Power Module

The power module converts externally supplied electricity to the required output voltage for electronic products.

- SMPS for LED TV, LCD TV etc
- Adapter for Note PC, Tablet PC etc
- Power module for LED Lighting, Data Server



2. Tuner

The digital tuner is an essential component for the digital broadcasting industry. This front-end component is built into LCD TVs and other broadcasting receivers to select the right signals from broadcasters so that viewers can watch their desired channels.



3. NFC (Near Field Communication Module)

NFC module is device that enables wireless communication for unencrypted information exchanges in a short distance within 10 cm by using RFID technology.



4. Wi-Fi Module

The Wi-Fi module is a sophisticated device that enables personal computers, smart phone and other products to access the internet in real time. Samsung Electro-Mechanics is manufacturing a various combo module such as WLAN + BT



5. Cellular Module

The cellular module uses broadband frequencies for mobile phones to provide smart phones, tablet PCs and other handhelds with high-speed internet connectivity. This device is expected to be a requirement for operating in a mobile internet environment



6. ESL (ESL Solution)

S-Label Tag is a product that displays price electronically and it can display information customer's needs such as price, discount rate and sale signs on the tag. And it is capable of supporting a multi-mode which can display additional information such as producing center, manufacturer, inventory and sales volume for the store managers, A safety lock has been added to prevent theft of the tag, and various colors and designs are available for displaying store logos



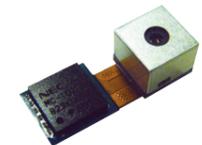
OMS Division

Opto &
Mechanics
Solution

OMS division stands for Opto and Mechatronics Solution. Main Products are camera modules, precision, motors and HDD Motor. We are also expanding into camera modules specifically for smart phones and tablet PCs as well as new areas into the new markets automotive electronic system and sensing applications.

1. Camera Module

Camera modules, akin to an "electronic eye," transform images that pass through the lens into digital signals for taking pictures and recording video. SEM is working on exceptional camera modules for smart phones with high resolution solution, subminiature camera, auto focus, vibration compensation and high quality actuators/lens. The company is also expanding into camera modules specifically for smartphones and tablet PCs as well as new areas into the new markets, automotive electronic system and sensing applications



2. Linear Vibrator

Precision motors are built inside smartphones and game consoles to generate vibrations that convey messages such as silent alerts of incoming calls or text messages. With today's popular smartphones, the use of vibration is evolving to include haptic functions, which interface with the user through the sense of touch. In addition, R&D resources are being focused on the development of smaller, thinner, and more durable precision motors suitable for mobile applications.

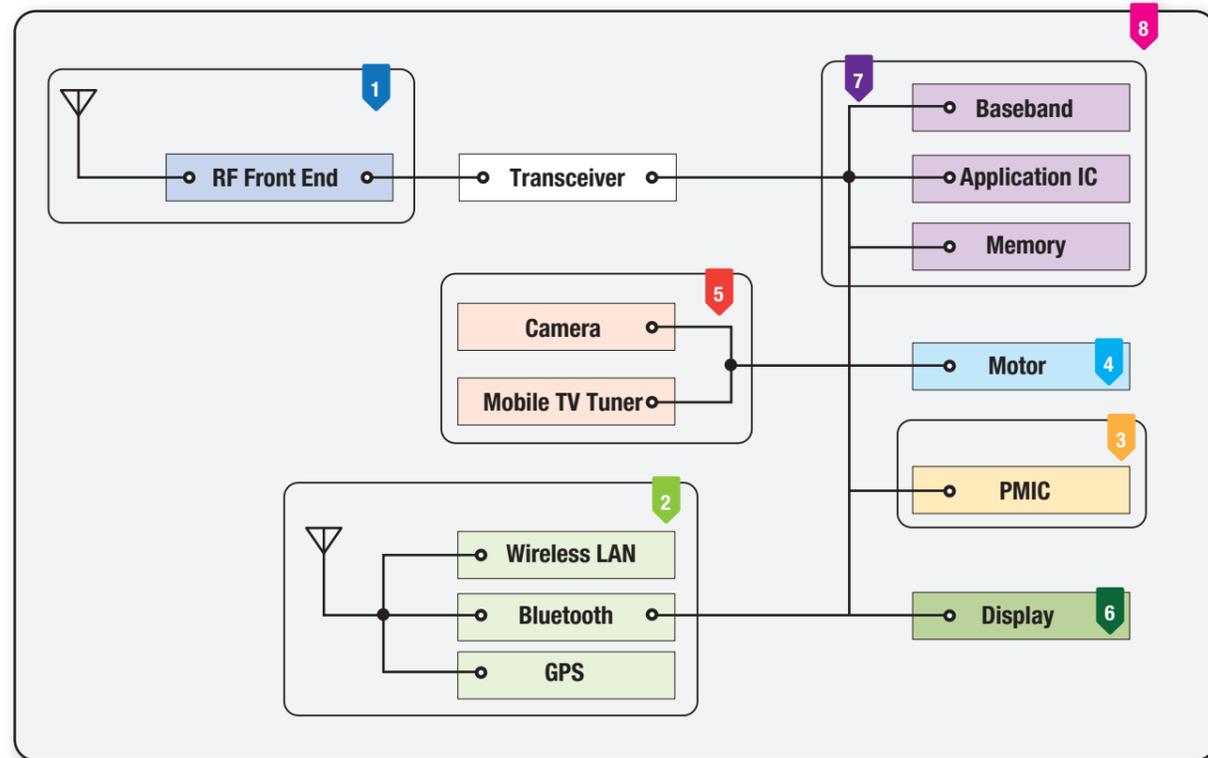


3. HDD Motor

Hard Disk Drive Motor revolves the disks installed in HDD of computers, while Optical Disc Drive Motor is used in CD and DVD players at rated speed.



1 Smart Phone / Feature Phone



1 RF Components

- In mold antenna 
- MLCC 
- Chip inductor 
- Chip bead 
- Crystal unit 

2 Network

- WiFi+BT combo module 
- Bluetooth module 
- NFC module (Near field communication) 

3 Power Control

- MLCC 
- Tantalum capacitor 
- Power inductor 
- Chip bead 
- Chip resistor 
- Wireless power transfer 
- Adapter 

5 Multimedia

- Camera module 
- Mobile tuner 
- Optical navigation module 

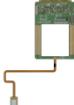
7 Chipset

- FCCSP 
- RFSiP 
- CSP(Ultra thin) 
- Crystal unit 

4 Motor

- Vibration motor 
- Linear vibrator 

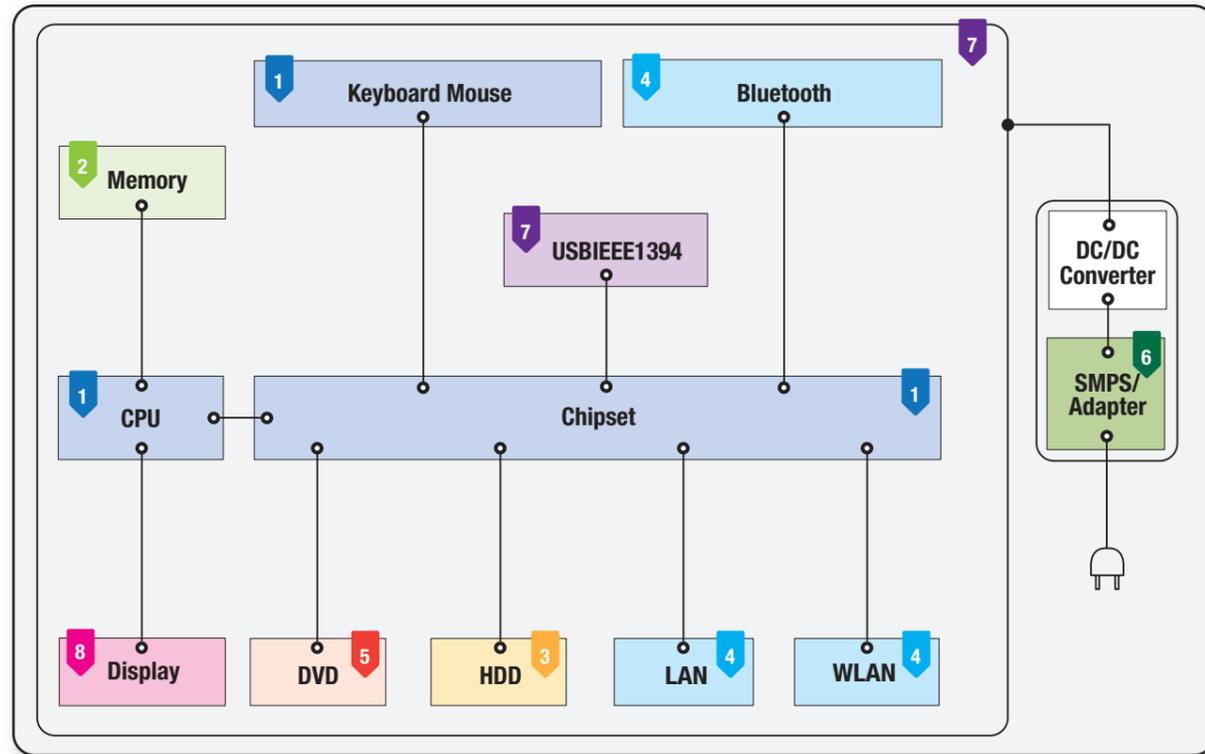
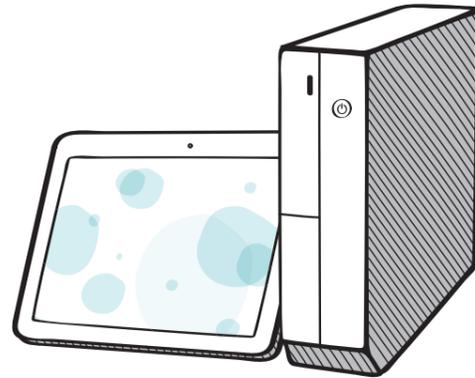
6 Display

- Rigid-flex 

8 Main Board

- HDI 
- HDI-flex 
- MLCC 
- Tantalum capacitor 
- Power inductor 
- Chip inductor 
- Chip bead 
- Chip resistor 
- Crystal unit 
- Hall IC 

2 Desktop / Tablet Computer



1 Chipset

- CSP(Ultra thin) 
- FCCSP 
- MLCC 

2 Memory

- BOC 
- MLCC 
- Chip resistor 

3 HDD

- HDD Motor 

5 DVD

- ODD Motor 

7 Main Board

- HDI 
- MLCC 
- Tantalum capacitor 
- Chip inductor 
- Chip bead 
- Chip resistor 
- Crystal unit 

4 Network

- WiFi+BT combo module 
- WiMAX module 
- Cellular module 
- NFC (Near Field Communication) 

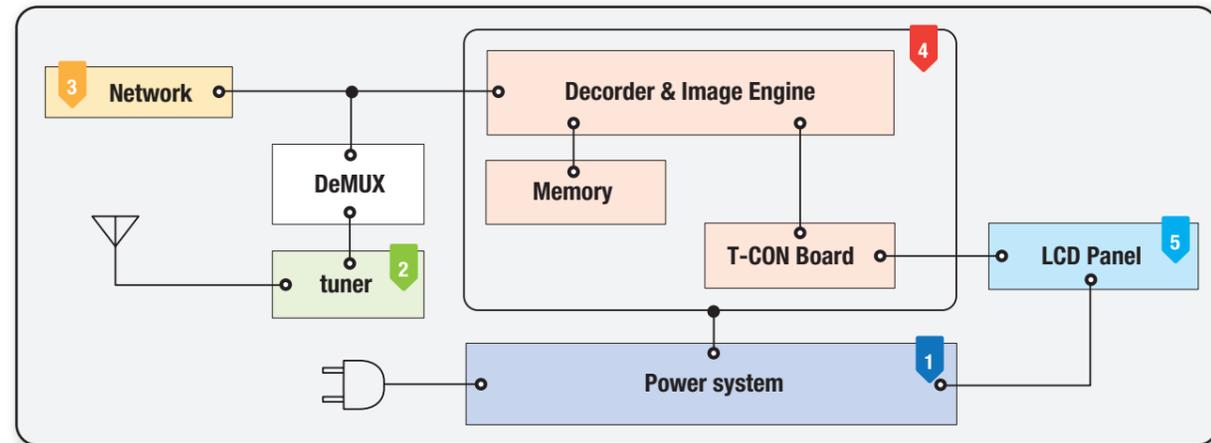
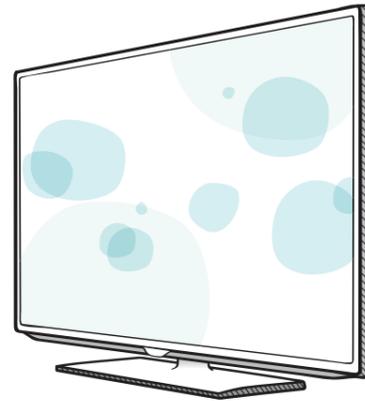
6 Power System

- Adapter 
- Server Power 

8 Display

- Camera module 
- LED driver IC 
- Linear vibrator 

3 LCD TV (LED TV)



1 Power Control

- Super IP board
- SMPS(LCD)
- Inverter
- Power driver for LED TV
- LED Driver

3 Network

- WiFi module

5 LCD Panel

- LED driver IC

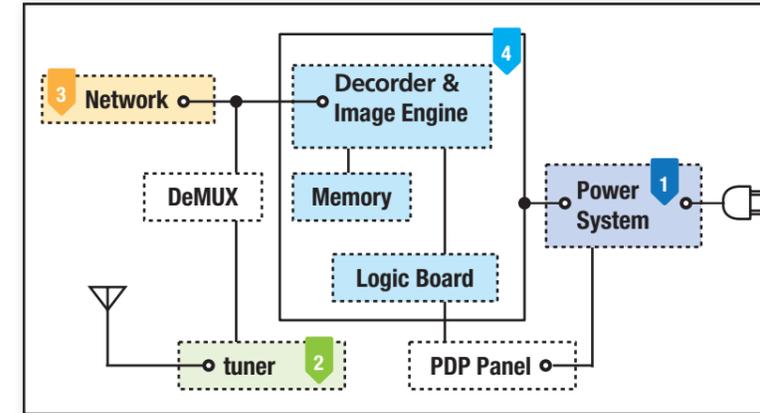
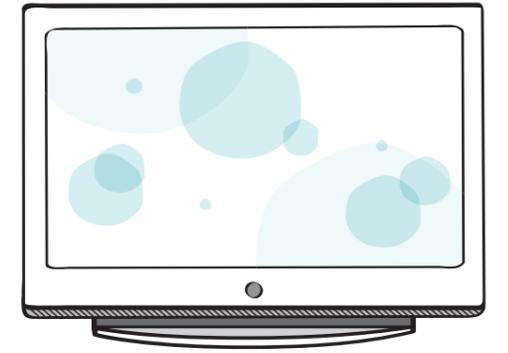
2 Tuner

- Digital tuner (Silicon tuner)
- Slim tuner for LED TV

4 Main Board

- PBGA
- FCBGA
- MLCC
- Chip inductor
- Chip bead
- Chip resistor

4 PDP TV



1 Power System

- SMPS

3 Network

- WiFi module

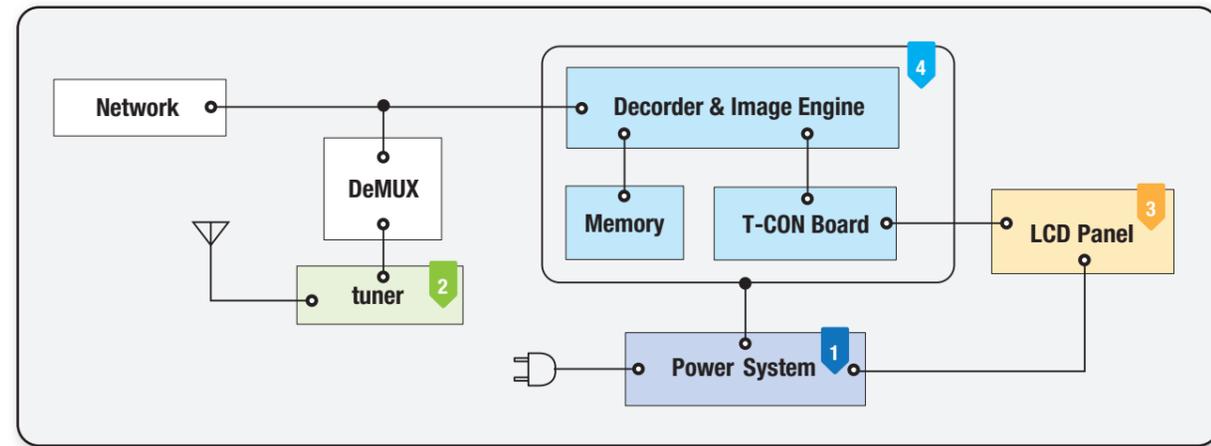
2 Tuner

- Digital tuner (Silicon tuner)

4 Main Board

- PBGA
- FCBGA
- MLCC
- Chip inductor
- Chip bead
- Chip resistor

5 LCD Monitor



1 Power System



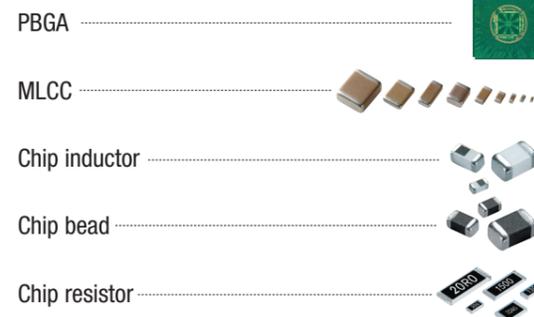
2 Tuner



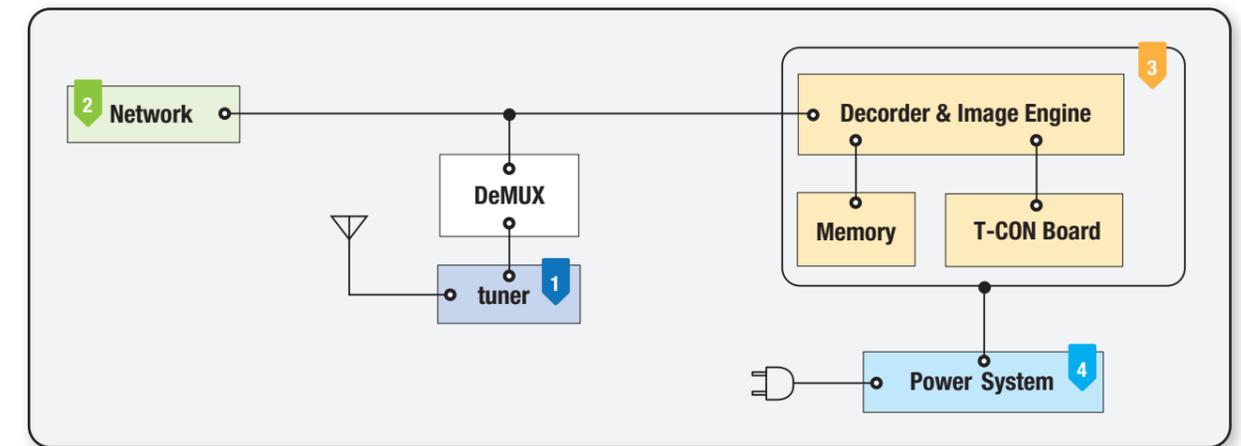
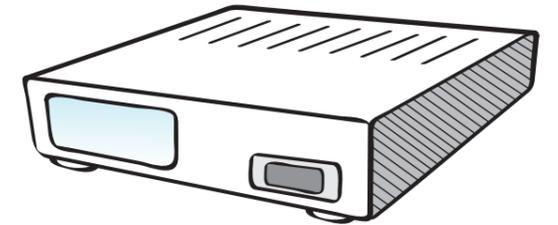
3 LCD Panel



4 Main Board



6 Set-top Box



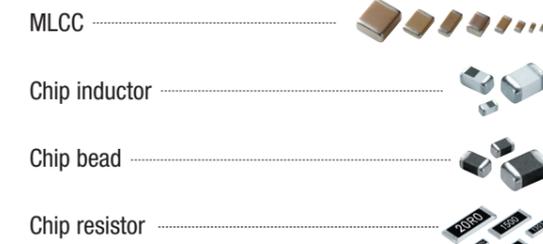
1 Tuner



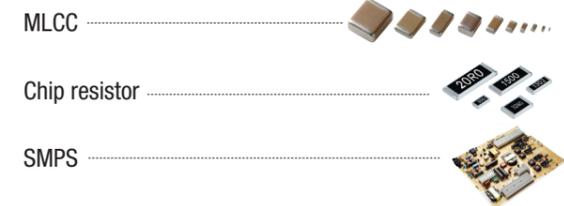
2 Network



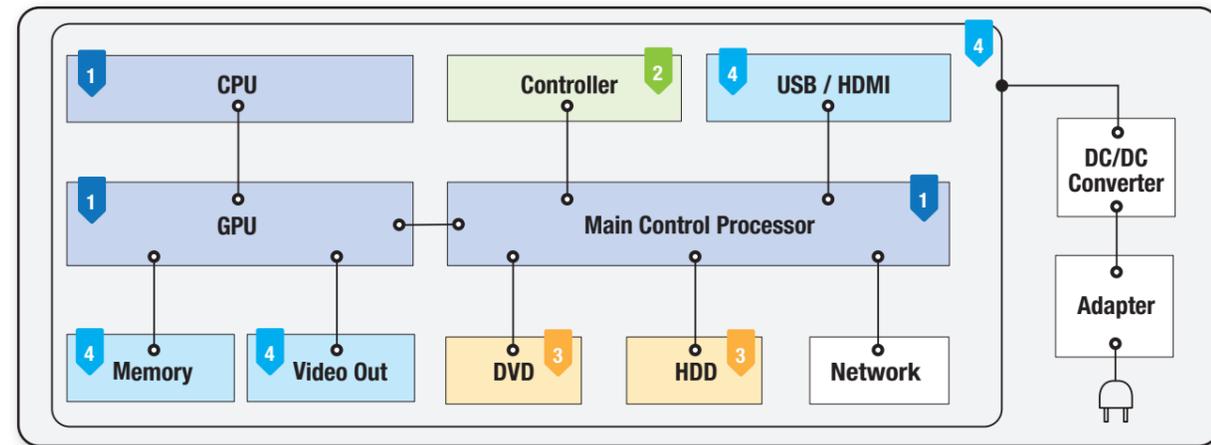
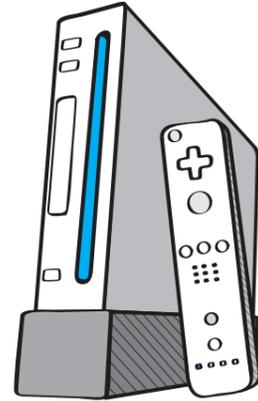
3 Main Board



4 Power System



7 Game Console



1 Chipset

- FCBGA
- PBGA
- MLCC

2 Controller

- Vibration motor
- Camera module

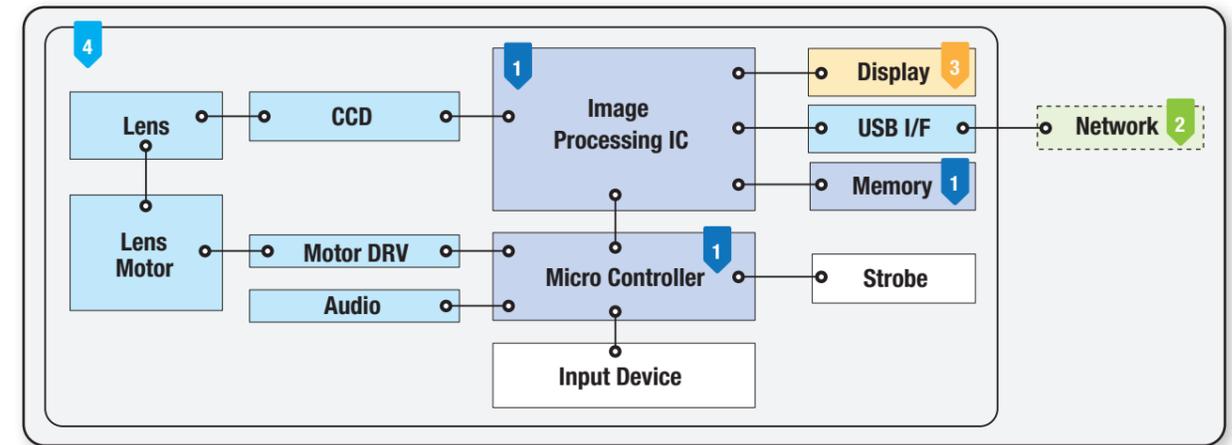
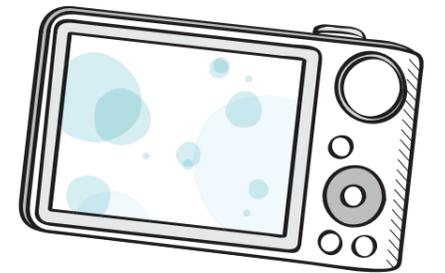
3 DVD - HDD

- HDD Motor
- MLCC
- PDIC

4 Main Board

- HDI
- BOC
- MLCC
- Tantalum capacitor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit

8 Digital Still Camera



1 Chipset

- CSP
- FCCSP

2 Network

- WiFi+BT combo module

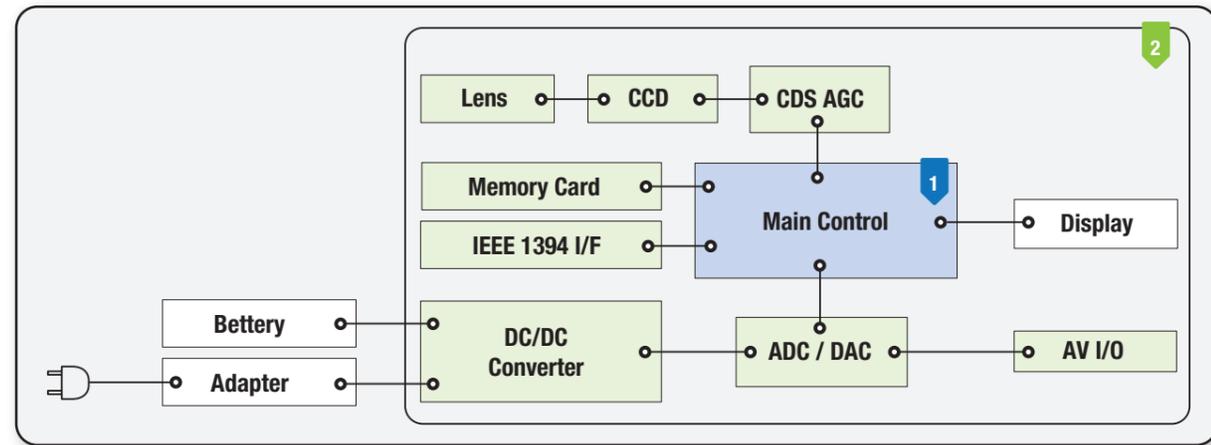
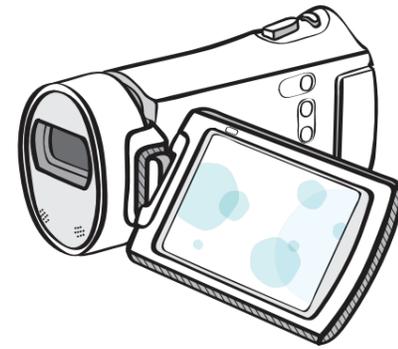
3 Display

- Linear vibrator

4 Main Board

- HDI
- MLCC
- Tantalum capacitor
- Chip inductor
- Power inductor
- Chip bead
- Chip resistor
- Crystal unit

9 Digital Video Camcorder



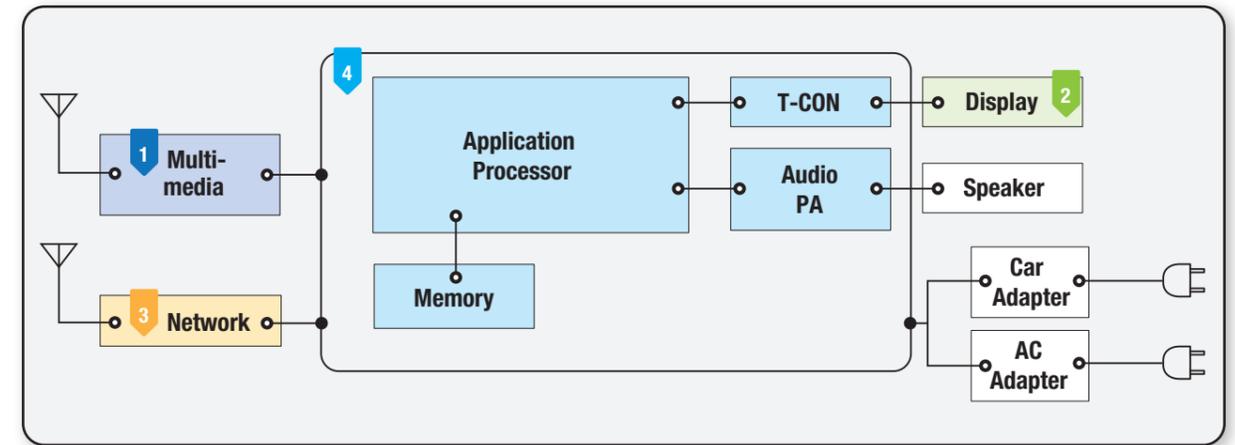
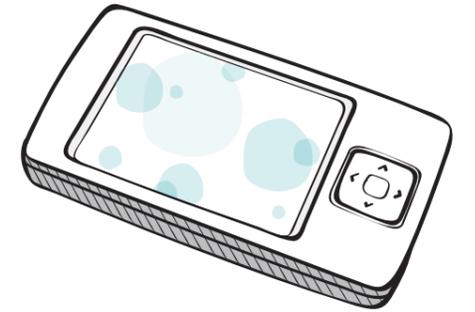
1 Chipset

- CSP
- FCCSP

2 Main Board

- HDI
- MLCC
- Tantalum capacitor
- Power inductor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit

10 Navigation



1 Multimedia

- Mobile tuner

2 Display

- Linear vibrator

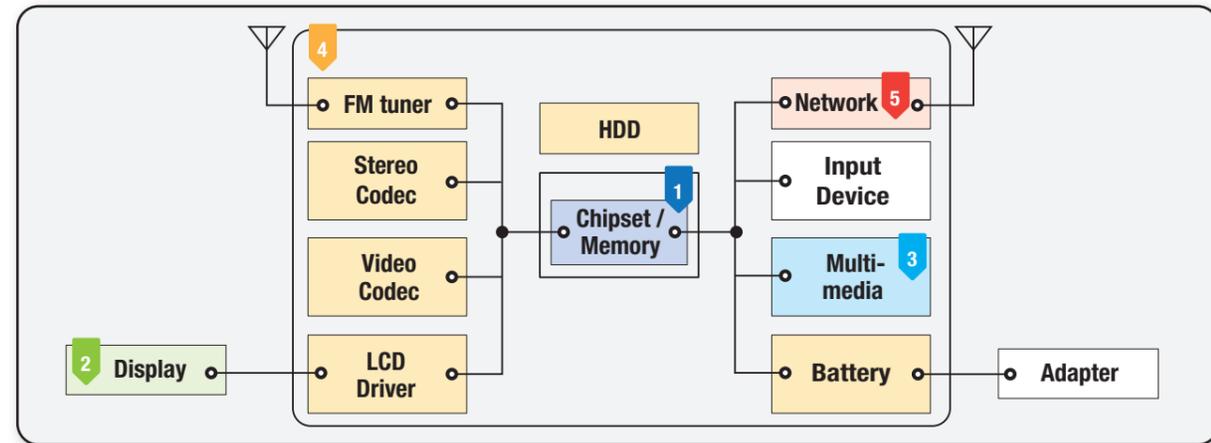
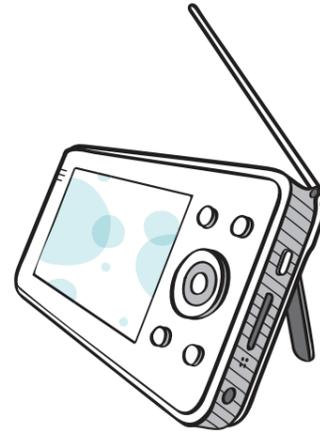
3 Network

- WiFi+BT combo module

4 Main Board

- HDI
- CSP
- FCCSP
- MLCC
- Tantalum capacitor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit

11 Portable Multimedia Player



1 Chipset / Memory

- CSP
- FCCSP

3 Multimedia

- Camera module

5 Network

- WiFi+BT combo module

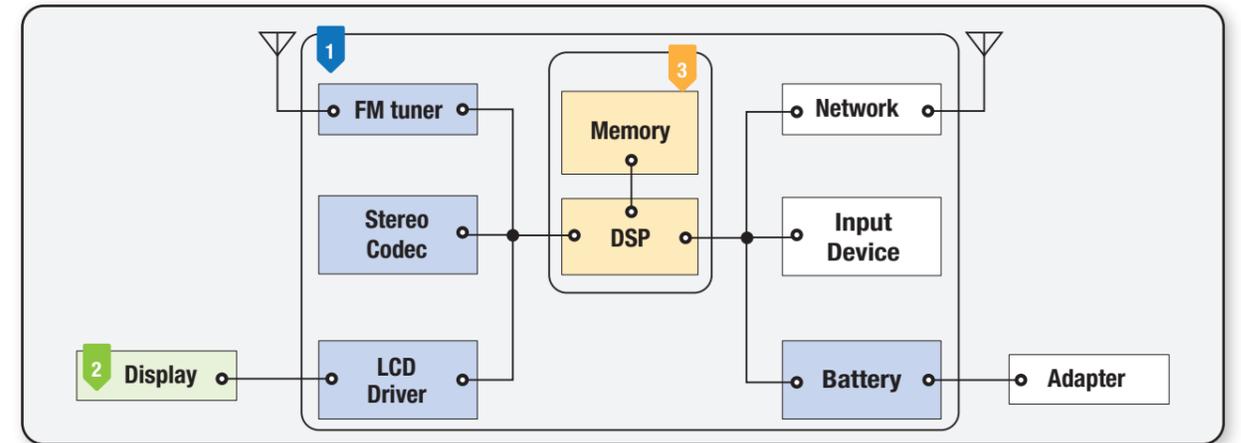
2 Display

- Linear vibrator

4 Main Board

- HDI
- MLCC
- Tantalum capacitor
- Power inductor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit

12 MP3 Player



1 Main Board

- MLCC
- Tantalum capacitor
- Power inductor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit

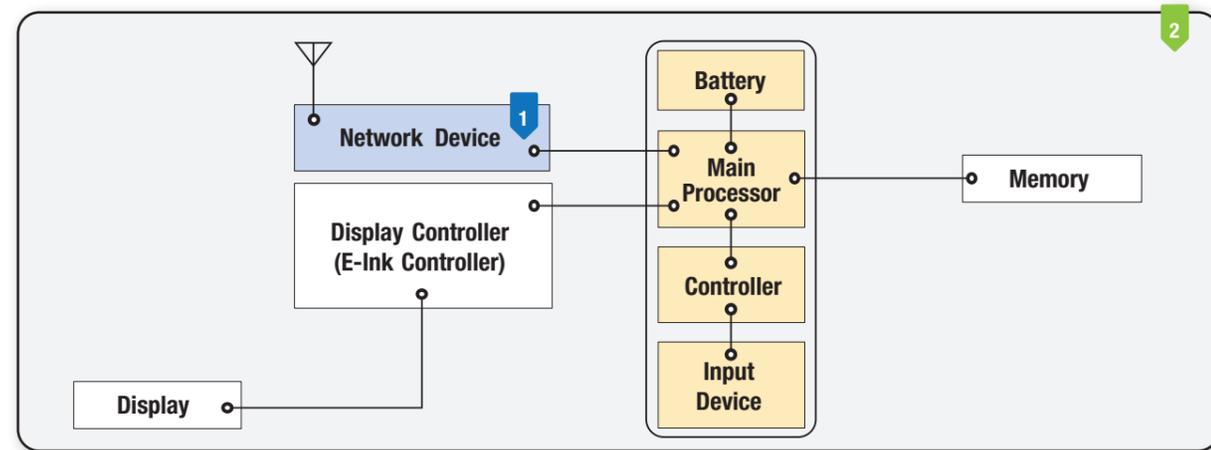
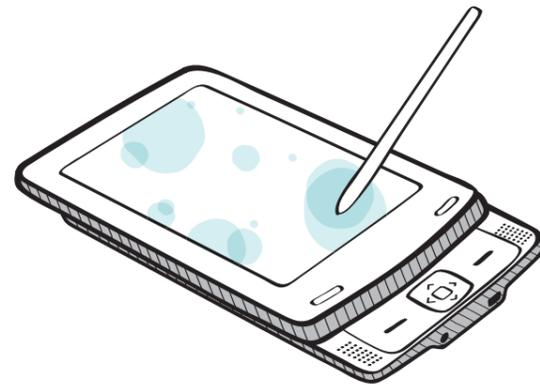
2 Display

- Linear vibrator

3 Chipset / Memory

- CSP

13 e-Book



1 Network

WiFi+BT combo module



2 Main Board

HDI

CSP

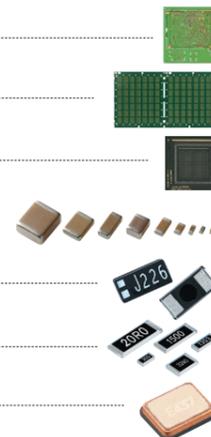
FCCSP

MLCC

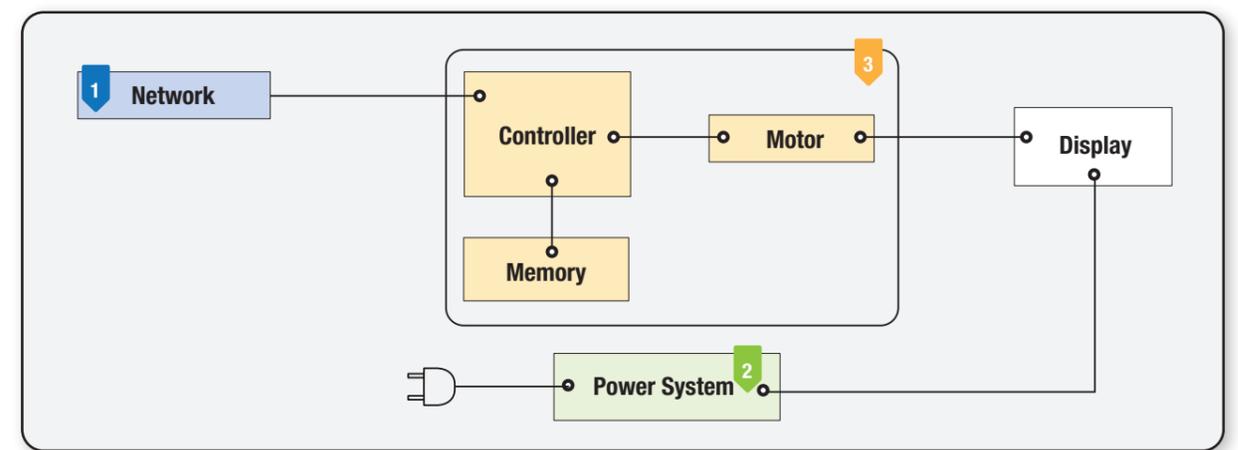
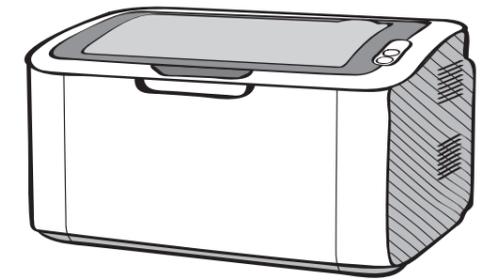
Tantalum capacitor

Chip resistor

Crystal unit



14 Laser Printer



1 Network

WiFi module



2 Power System

SMPS



3 Main Board

PBGA

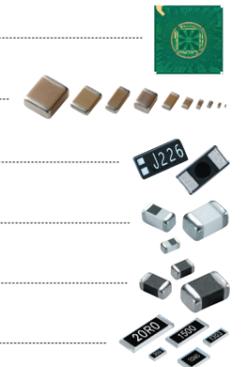
MLCC

Tantalum capacitor

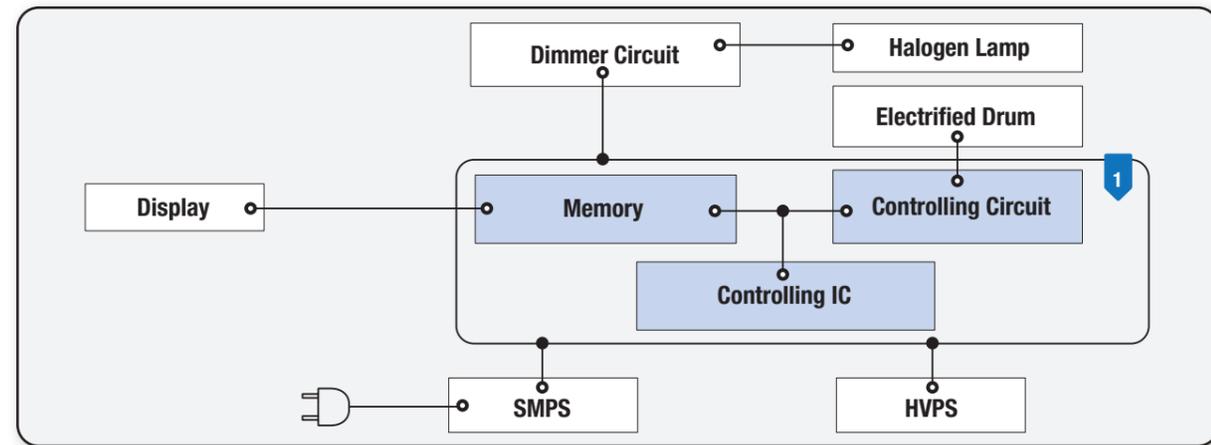
Chip inductor

Chip bead

Chip resistor



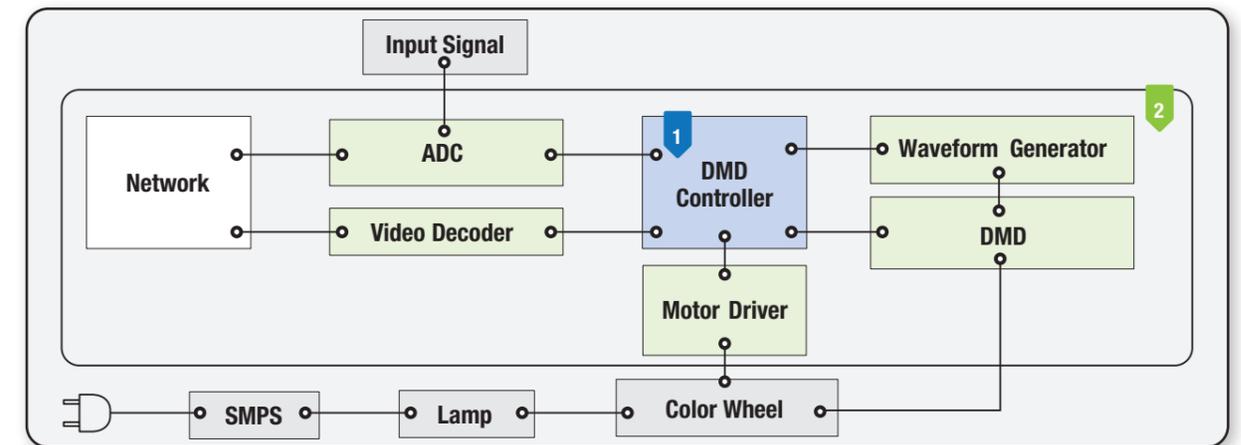
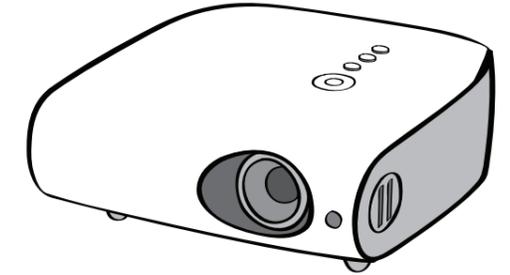
15 Copy Machine



1 Main Board

- HDI 
- PBGA 
- MLCC 
- Tantalum capacitor 
- Chip inductor 
- Chip bead 
- Chip resistor 

16 Projector



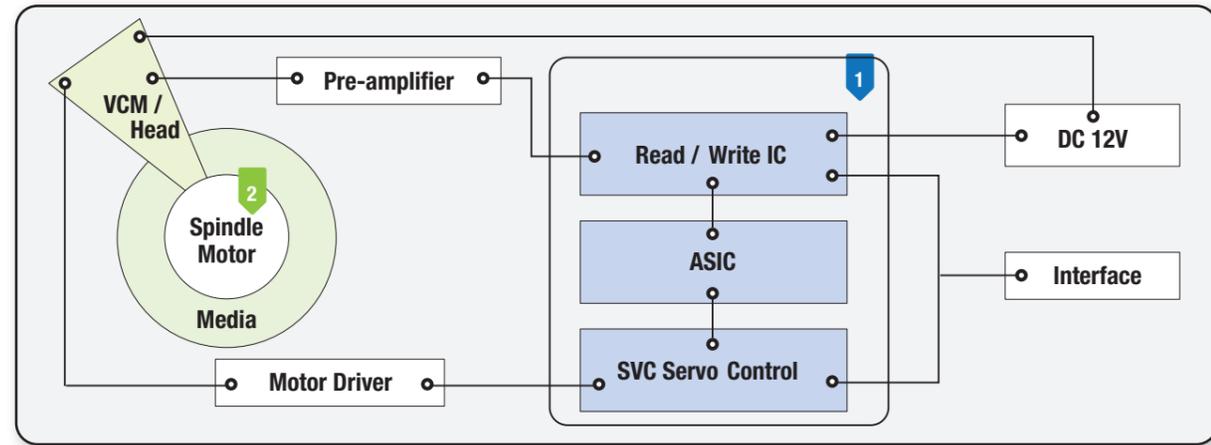
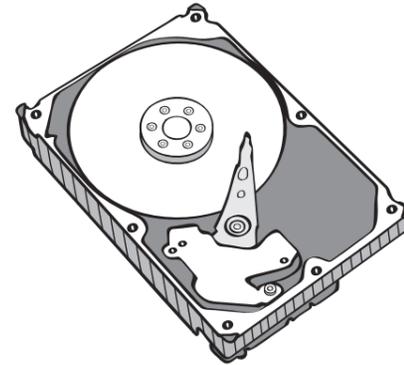
1 DMD(Digital Micromirror Device) Controller

- PBGA 

2 Main Board

- HDI 
- MLCC 
- Tantalum capacitor 
- Chip inductor 
- Chip bead 
- Chip resistor 

17 Hard Disk Drive



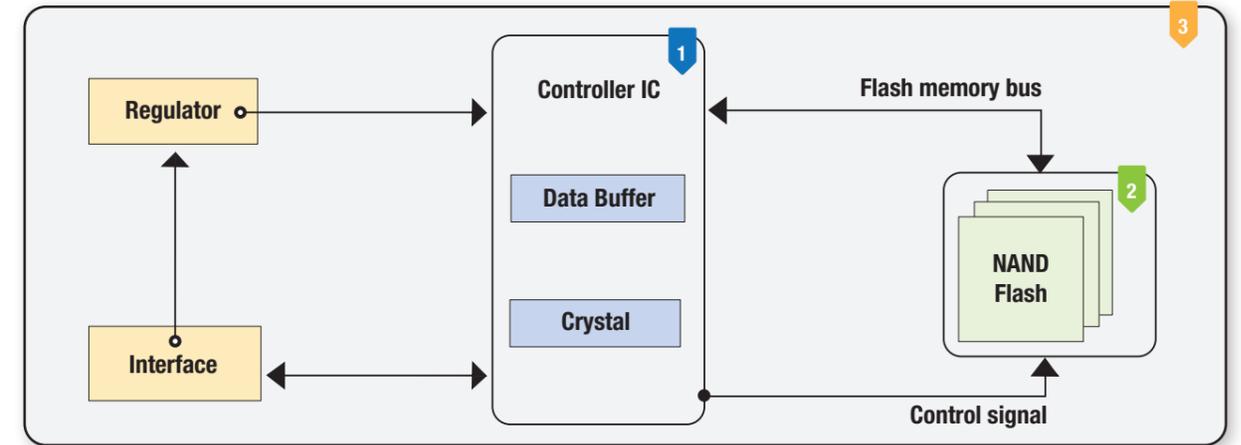
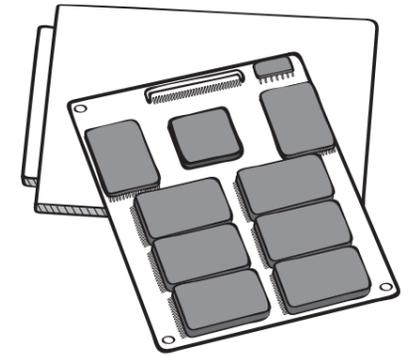
1 Main Board

- MLCC
- Tantalum capacitor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit
- EMI filter
- CSP

2 Disk Enclosure

- HDD motor

18 Solid State Drive



1 Controller IC

- CSP
- MLCC
- Power inductor
- Chip inductor
- Chip bead
- Chip resistor
- Crystal unit

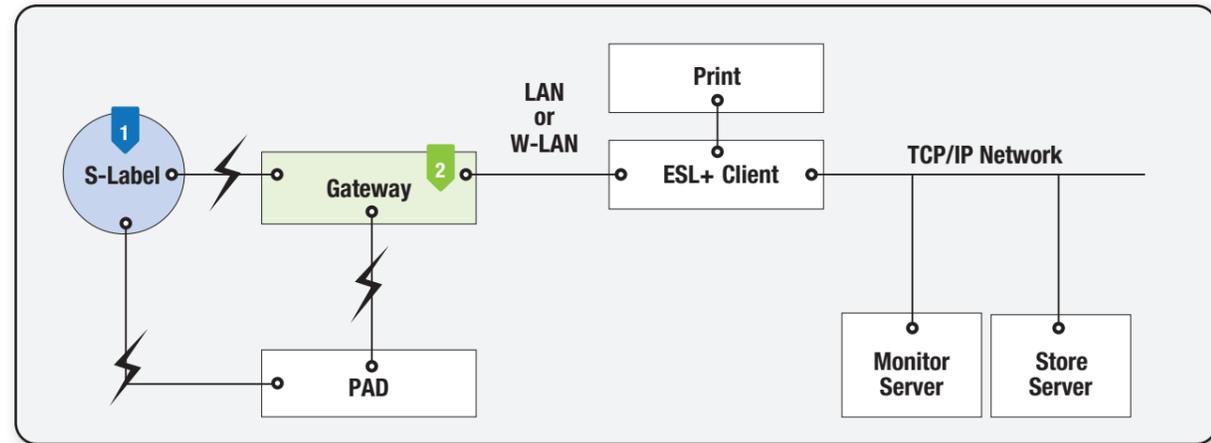
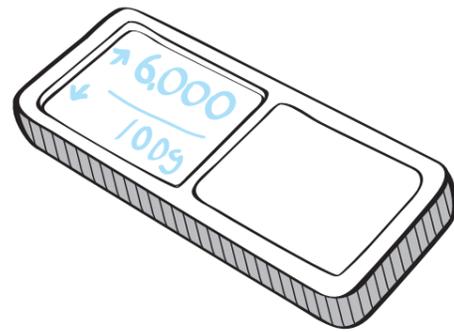
2 Memory

- CSP
- MLCC
- Chip resistor

3 Regulator

- HDI
- MLCC
- Chip resistor

19 Electronic Shelf Label



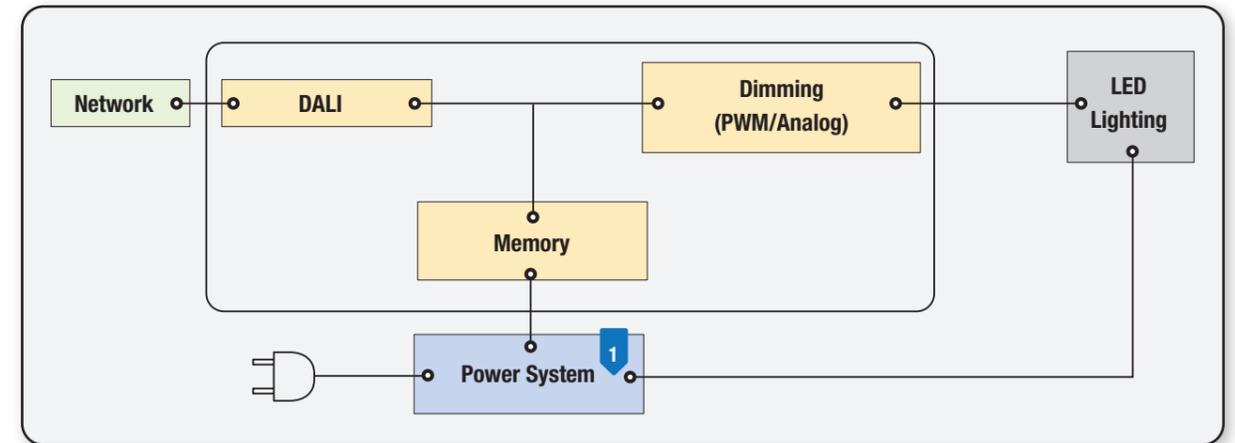
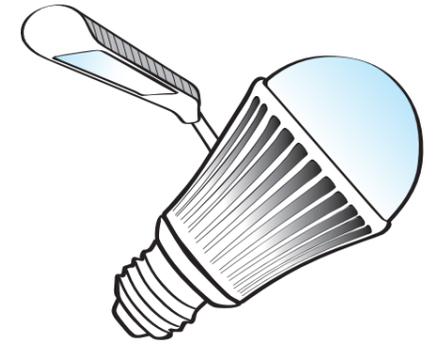
1 S-Label

- EPD Type ESL Tag 
- TN LCD Type ESL Tag 
- Active Matrix Tag 

2 Gateway

- Gateway 

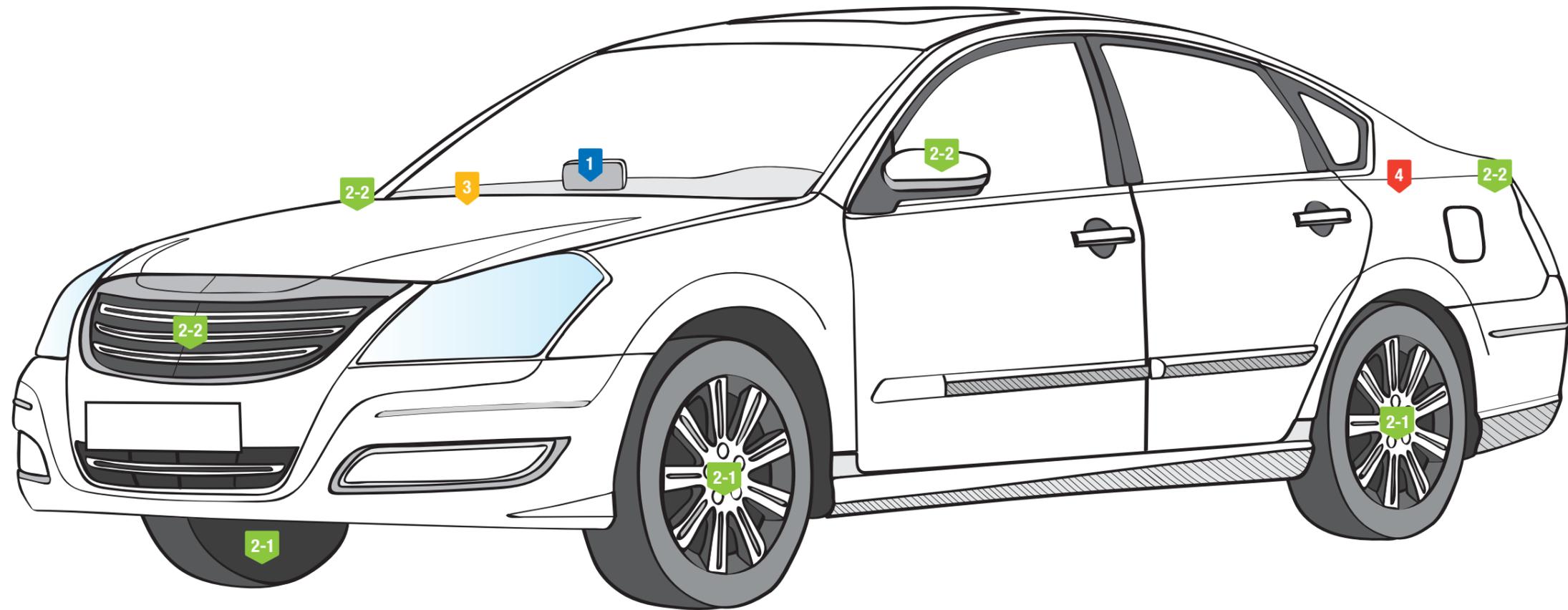
20 LED Lighting



1 Power System

- SMPS**
- Bulb 
- Down Light 
- L-Tube 
- Flat Panel Light 
- Street Light 

21 Automotive



1 Information, Comfort

MLCC 

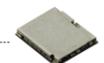
2 Safety

2-1. TPMS(Tire Pressure Monitoring System) 

2-2. Camera Module 
- SVM : Side View Monitoring
- NVC : Night Vision Camera
- RVC : Rear View Camera

3 Car Connectivity

Telematics System

Bluetooth Module 
WiFi Module 
Cellular Module 

4 xEV Powertrain

On-Board Charger 

MEMO

MEMO

Head Office & Worksites (Korea)

Head office & Sales Dept.

206, Cheomdansaneop Road, Yeongtong-Gu, Suwon City, Kyeonggi Province 443-743, Korea
Tel: 031-210-5114
Fax: 031-210-6363

Daejeon Plant

581, Myeonghah-ri, Dong-myeon, Yeonggi-gun, Chungnam Province 339-860, Korea
Tel: 041-861-1214
Fax: 041-861-1333

Busan Plant

114, Noksansaneopjung Road, Gangseo-gu, Busan 618-270, Korea
Tel: 051-970-7114, 8114
Fax: 051-970-8702

Seoul office

21st Fl, Samsung Seocho-Tower 1320-10, Seocho 2-dong, Seocho-gu, Seoul 137-857, Korea
Tel: 02-2255-2840~49
Fax: 02-2-2255-2850

Global Network

Production

Manufacturing Sites

Dongguan Samsung Electro-Mechanics Co., Ltd.(DSEM)

Hengkeng Management Area, Liaobu Town, Dongguan City, Guangdong Province, China 523413
Tel: +86-769-8330-5000
Fax: +86-769-8330-5001

Tianjin Samsung Electro-Mechanics Co., Ltd.(TSEM)

27, Heiniucheng-Road, Tianjin, China 300210
Tel: +86-22-2830-3333
Fax: +86-22-2830-7436, 2831-6600

Samsung High-Tech Electro-Mechanics(Tianjin) Co., Ltd.(STEM)

Xiqing Dist. Micro-Electronics Industrial Park, Jingang Highway, Tianjin, China 300385
Tel: +86-22-2397-9000
Fax: +86-22-2396-2532

Kunshan Samsung Electro-Mechanics Co., Ltd.(KSEM)

8, Yaoning Rd, Kunshan City, Jiangsu, China 215300
Tel: +86-512-5790-8888(899)
Fax: +86-512-5771-1065

Samsung Electro-Mechanics Philippines Co., Ltd. (SEMPHIL)

Block No. 5, Calamba Premiere International Park, Barangay Batino, Calamba, Laguna, The Philippines
Tel: +63-49-508-8311
Fax: +63-49-508-8450

Samsung Electro-Mechanics Thailand Co., Ltd. (SEMTHAI)

Wellgrow Industrial Estate, 93 Moo 5T, Bangsamak, A. Bangpakong, Chachoengsao 24180, Thailand
Tel: +66-38-562-000
Fax: +66-38-562-177~9

Branch Factories

Suzhou Branch Factory

Suchuan #17D Industrial Square, No.428 Xinlong Street, Suzhou Industrial Park, Suzhou, China 215000
Tel : +86-512-8716-9898(100)
Fax : +86-512-8716-9896

Binhai Branch Factory

No 80 xiaqing road, TEDA west District, China
Tel : +86-22-2830-3333(3500)
Fax : +86-22-6686-3333~3628

Hungary Branch Factory

Samsung Electro-Mechanics Hungary branch, H-2310 Leshegy utca 2-4 Szigetszentmiklos Pest megye, Hungary
Tel: +36-24-551-144
Fax: +36-24-551-104

Sales Offices

The AMERICAS

Samsung Electro-Mechanics America

3333 Michelson Drive Suite 500, Irvine, CA. 92612, U.S.A
Tel: +1-949-797-8000~8059
Fax: +1-949-797-8060~8062

Sao Paulo Office

04578-910 Av. Das Nações Unidas, 12399, Edificio Landmark, 89B Sao Paulo SP
Tel: +55-11-3544-5600
Fax: +55-11-3544-5629

San Jose Office

85 W Tasman Drive, San Jose, CA. 95134 U.S.A.
Tel: +1-408-544-5274
Fax: +1-408-544-4967

Chicago Office

1870 West Winchester Blvd. Suite #247 Libertyville IL, 60048 U.S.A
Tel: +1-847-549-9421~4
Fax: +1-847-549-9419

Phoenix Office

4505 E. Chandler Blvd., Suite #1115, Phoenix, AZ 85048 U.S.A.
Tel: +1-480-592-0180
Fax: +1-480-592-0186

R&D center(Atlanta)

6 Concourse Parkway, Suite 900 Atlanta, GA 30328 U.S.A
Tel : +1-770-542-2220
Fax : +1-770-542-2225

Europe

Samsung Electro-Mechanics GmbH.

Samsung Haus, Am Kronberger Hang 6, 65824 Schwalbach/TS, Germany
Tel: +49-6196-66-7250, 7265, 7254
Fax: +49-6196-66-7744, 7766, 7755

London office

Samsung House 3000, Hillwood Drive Chertsey Surrey KT16 OPS, U.K.
Tel: +44-1932-45-5480, 5483
Fax: +44-1932-45-5484

Istanbul office

Harman Caddesi, Polat Plaza B-Block No.4, Kat4 Levent-80640 Istanbul, Turkey
Tel: +90-212-324-0856,8
Fax: +90-212-270-0077

Helsinki office

02601 Lars Sonckin Kaari 14 Espoo Finland
Tel: +358-9-8531-132
Fax: +358-9-2517-2258

China

Samsung Electro-Mechanics(H.K) Ltd.

8/F., Central Plaza, 18 Harbour Road, Wanchai, Hongkong, China
Tel: +852-2862-6340, 6350, 6360
Fax: +852-2862-6362~4

Shenzhen Office

46 F, New World Center, Yitian Road, Futian District, Shenzhen, China 518026
Tel: +86-755-8608-5581
Fax: +86-755-8608-5566

Shanghai office

Rm. 1211, Shanghai International Trade Center No.2201 Yan An(W) Rd., Shanghai, China 200335
Tel: +86-21-6270-4168(Ext.200)
Fax: +86-21-6219-6640

Beijing office

24F, China Merchants Tower, No.118, Jianguo Rd., Chaoyang District, Beijing, China 100022
Tel: +86-10-6566-8100(#6600)
Fax: +86-10-6566-8146

Taiwan

Taipei office

9F-1, No.399, Ruey Kuang Road, Neihu District, Taipei City 114, Taiwan R.O.C
Tel: +886-2-2656-8350
Fax: +886-2-2656-8388

Japan

Samsung Electro-Mechanics Japan Co., Ltd

Roppongi T-Cube Building, 3-1-1, Roppongi, Minato-Ku, Tokyo 106-8532, Japan
Tel: +81-3-6234-2569, 2573, 2405
Fax: +81-3-6234-2568

Osaka Office

6th Fl., Crystal Tower, 1-2-27, Shiromi, Chuo-ku, Osaka 540-6006, Japan
Tel: +81-6-6949-3406~9
Fax: +81-6-6949-3047

Southeast Asia

Samsung Electro-Mechanics Private Limited

3 Church Street Samsung Hub #23-02 Singapore 049483
Tel: +65-6833-3215~31
Fax: +65-6833-3243~4

Bangkok Office

23rd Floor, Lake Rajada Office Complex 193/52 Rachadapisek Road, Klongtoey, Bangkok 10110 Thailand
Tel: +662-661-8004~5
Fax: +662-661-8006

Penang Office

1-05-3A Menara IJM Land Lebuhan Tunku Kudin 3, 11700 Gelugor, Penang, Malaysia
Tel: +60-4-660-6120,2
Fax: +60-4-660-6123

Manila Office

4027 Block No. 5, Calamba Premiere International Park, Barangay Batino, Calamba, Laguna, The Philippines
Tel: +63-49-508-8446

New Delhi Office

A-25, GF, Mohan Co-operative Industrial Estate, New Delhi-110044, India
Tel: +91-11-49661241
Fax: +91-11-43661299

Hanoi Office

1st floor, Technosoft building, Dich Vong Hau Cau Giay, Hanoi Vietnam
Tel: +84-4-6673-1200
Fax: +84-16-9259-6656

R&D Center(Bengaluru)

201, World Trade Centre, Rajkumar Rd, Malleshwaram Bangalore Karnataka India
Tel: +91-80-6726-0888
Fax: +91-80-67260876