



ABOV Semiconductor Company Profile

ABOV @ a Glance

"Global Top Smart MCU Innovator"

30+ Years of Experience







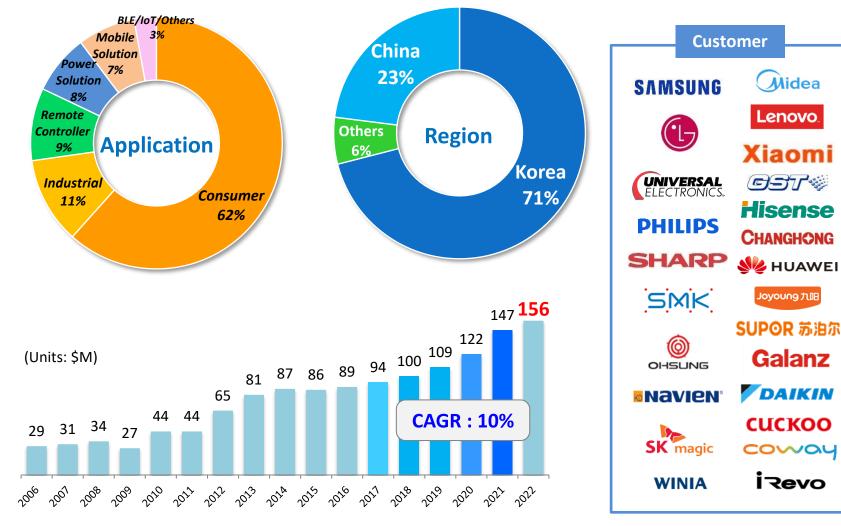
5 Billion+ Units Up to Date





Business Potential Continuous Growth & Proven Track Records

10% CAGR Since Foundation / Track Records with Global Industry Leaders



Total ≒ 800 Customers Around the World



Midea

Lenovo.

Joyoung 九阳

Galanz

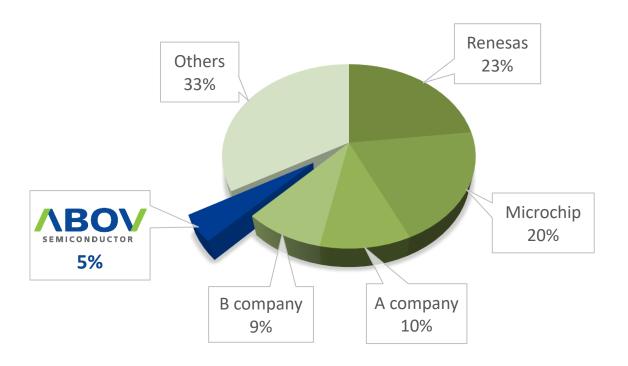
iRevo

Why ABOV? World-Class MCU Professional

ABOV is ...

Worldwide No. 5 in Home Appliance MCU Market & Worldwide No. 12 in Total MCU Market

Consumer Electronics MCU Market Share



Global MCU Multi-Market Supplier

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1<sup>st</sup> Microchip Technology

2<sup>nd</sup> STMicroelectronics

3<sup>rd</sup> Renesas Electronics Corporation

4<sup>th</sup> Texas Instruments

5<sup>th</sup> NXP

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12<sup>th</sup> ABOV
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(Source: OMDIA Microcontroller Market Tracker, 2022)

^{*} Multi-Market: Excluding automotive and smart cards from the whole MCU market.



Current Product Lineup

Total Solutions to Satisfy Various Customer Needs

8-bit 8051 Cores

Remote Controller

- **Universal Remote**
- **LCD** Remote





Connectivity

Bluetooth® Low Energy SoC

Bluetooth Bluetooth 4.2

32-bit Cortex®-M Cores



Universal Fast Charge Solution

- USB PD 3.0 PPS
- Quick Charge 4+
- **Wireless Charger**
- **Travel Adaptor**
- **Car Charger**





Ultra Low Power GP MCU

- under 100uA/MHz active mode
- RTC current: ~1uA
- deep Sleep: under 450uA
- shut down: ~45nA
- Fast wakeup: ~ 6us
- IoT, Smart Home
- Measurement

Optic Sensor

- **Ambient Light Sensor**
- **RGB Sensor**
- **Proximity Sensor**

Capacitive Sensor

- **Touch Key Sensor**
- **Grip/SAR Sensor**
- TWS Touch Solution





Inverter & Motor Solution

- 6-step BLDC Motor
- **Invertor Motor**
- **Compressor Solution**
- **HVAC Control Solution**

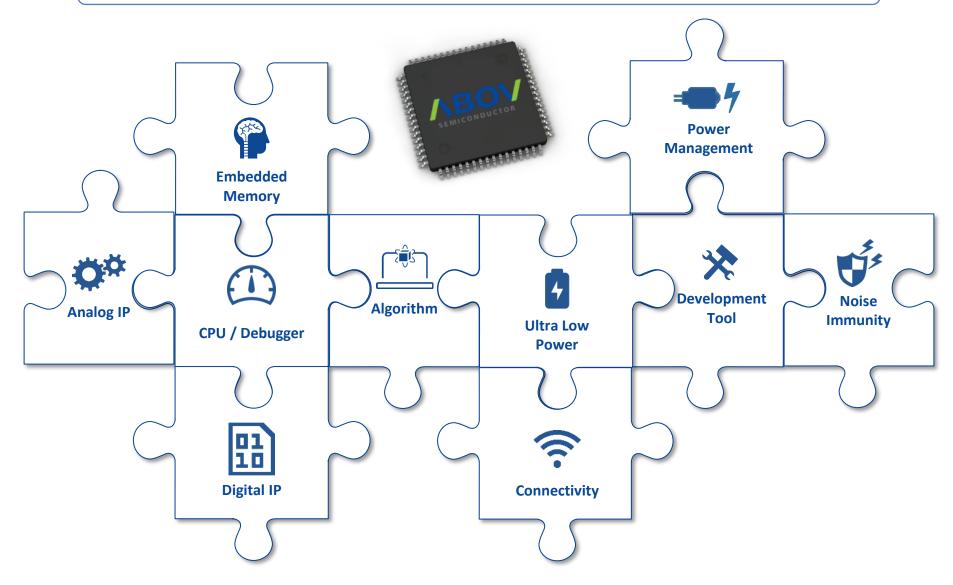
Fire & Safety Products

- **Smoke Detector**
- **Heat Detector**



IP Portfolio Enabling ABOV Products

Our In-House IPs and Technical Expertise Differentiate Our Products





32-bit Microcontrollers Line-up

From Cortex-M0+ to M4F, Our Lineup Offers Optimized Products for Customer's Various Needs and Performance Requirements

CPU Core speed

G1

series

A31G12x

A31G11x

• 64KB ~ 16KB

• LCD, LED Lighting

Cortex-M0+ up to 40MHz

Optimal Solution

with cost effectiveness for SHA

G2/G3 series

A31G31x

- 256KB ~ 64KB
- Touch, LED Lighting

A31G21x

- 64KB ~ 16KB
- Touch, LED Lighting

A31G32x

- Under development
- USB 2.0 FS, 128KB

A31G22x

- Under development
- 256KB ~ 128KB
- Data Flash: 32KB
- LCD/LED, FOTA

Cortex-M0+ up to 48MHz High Integration Plentiful HMI (LCD, Touch, USB)

G5 series

A33G52x

- 384KB ~ 128KB
- Data Flash: 32KB
- SRAM: 24KB
- UL60730 Certi. RTOS

Cortex-M3 up to 72MHz
Provide Optimal Functions
for HA Main Controller

L1 Series

A31L12x

- 64KB ~ 32KB
- 78uA/MHz @ Run
- 1.3uA @ Deep sleep
- LCD, Fast SPI & I2C

M4 Series

A34M41x

- 512KB ~ 128KB • Data Flash : 32KB
- SRAM: 64KB
- Advanced analog IPs
- 3-phase PWM x2
- ADC(1.5Msps) x 3
- PGA x3, CMP x 4

Cortex-M4F up to 120MHz High Performance & Advanced Integration

L2 Series

A31L21x A31L22x

- 128KB ~ 16KB
- 90uA/MHz @ Run
- 0.99uA @ Deep sleep
- LCD, Fast SPI & I2C

Cortex-M0+ up to 32MHz
Real Ultra Low Power
& Advanced Peripherals





White Goods



Small Home Appliance



Kitchen Solution





8-bit Microcontrollers Line-up

ABOV's Bestseller 8051 8-bit MCUs Offer a Variety of Field-Proven Products Sold More than 3 Billion Units Up-to-Date

CPU Core speed

General

Purpose

Series

MC96F8316A

- 16KB / 768B~512B
- High Current Port

A94B114

MC96F1206

• 8KB~6KB / 512B~256B

MC96F8204 MC96F8104

- 4KB / 256B
- 12-bit ADC with Vref.

MC94F1202A MC94F1102A

- 2KB / 256B
- 12-bit ADC

LCD

Series

MC97F6x128

MC96F7864

MC96F6432(A)

MC96F7816

MC96F7616A

MC96F7416S

MC96F6508A

- 128KB~16KB / 8KB~1KB
- High Precision IRC
- Crystal Clear LCD with VLC

Combo

series

MC95FGx128

A97C450

MC97FG316

- FLASH + E2PROM
- USART / SPI / I2C

Touch

*series*A96T218

- Max. 24ch Touch Key
- 32KB Flash, 2KB SRAM
- LED Driver 20SEG X 8COM

A96T418

- Max. 20ch Touch Key
- 32KB Flash, 2KB SRAM
- LED Driver 16SEG X 8COM

G1

Series

A96G140

- 64KB (2.5KB)
- LED 8COM 180mA / PPG
- High Current Port

A96G148

- 32KB (2.5KB)
- LED 8COM 180mA / PPG
- High Current Port

A96G150

- 64KB (2.5KB)
- LCD/ High Current Port
- IRC 32MHz ±2%

A96G166

- 64KB (2.5KB)
- LED 8-COM 180mA
- High Current Port

A96G174

8KB (512B)

A96G181

2KB (256B)





Multimedia Sub Controller



Small Home Appliance



Battery/Charger Controller



Personal Healthcare



Products: Application Specific Standard Product

High Performance IPs with Optimized MCUs Together Enable World-Class Sensor ICs and MCUs

Touch Key MCU





- 24-ch capacitive touch key sensing
- Internal LED/LCD Driver
- Single/Multi–key mode
- Effective Water Proof
- CS 10V Immunity

LED BLU MCU



- Sync. detector
- Floating-point timer
- High-speed S&H ADC with tracer
- 32/64-pin MCP, 8KB

Grip Sensor





- 8-ch capacitive touch key sensing
- Auto/Manual calibration
- Adjustable 256-step sensitivity
- Single/Multi–key mode
- Robust in noisy environment

Ambient Light Sensor/ RGB Color Sensor





- Detectable Illuminance : 0.00056 ~ 237,500lx
- 16/20-bit ADC
- I²C interface
- Interrupt function / selectable slave address
- Sensitivity variation by light source : $< \pm 10\%$

TWS Sensor MCU





- 3-ch ~ 9-ch capacitive touch key sensing
- Single/Double/Long Touch
- Slide Touch(Volume Up/Down)
- In-ear detection

LCD MCU



- Flexible LCD Duty Options and Capacitor Bias
- Built-in IR LED transistor
- ±1% Accuracy Internal RC Oscillator by User Trim
- 12-bit ADC 50ksps, LCD Driver
- Multi Connectivity Peripheral
- 48/64/80-pin



Products: Application Specific Standard Product

We Power Our Growth in New Markets with Application-Specific MCUs and In-House Solutions for Fast Charge, Bluetooth, and Smoke Detector.

Power Bank MCU



- 8-bit (M8051) Core
- USB PD3.0 PPS and proprietary fast charging methods
- Certificate for PD3.0 PPS: TID 2836, etc.
- Certificate for QC2.0: QC20200313141

Car Charger



- 8-bit (M8051) Core
- USB PD3.0 PPS and proprietary fast charging methods (TID 877)
- AEC-Q100

Bluetooth® Low Energy SoC



- Sensitivity: -94~-98dBm
- Built-in Power AMP: +0~8dBm Tx
- Built-in PMU: DC/DC, LDOs
- Security: TRNG, AES-128, ECDH
- Ultra Low Power Performance

Freestanding Smoke Detector MCU





- Low Noise OP-Amp 2ch
- 10-bit SAR ADC
- Constant Sink Current Generator 2-ch (Max 274mA)
- Idle Current: 1.5uA @3V, Ring OSC on
- LDO 2.3V & BGR 0.92V

Networking Smoke Detector MCU



- Low Noise OP-Amp 2ch
- 10-bit SAR ADC
- Constant Sink Current Generator 2-ch (Max 274mA)
- Integrated Line Interface Tx/Rx
- HVLDO 5.0V (Max Vin 42V)



Confidential Ver. 1.4

ABOV Advantages

One and Only MCU Design and Manufacturing Company in Korea

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- Immediate On-Site and Full Technical Support
 - ABOV's highly experienced Application Engineers
 - Easy and fast development platform
- On-Demand IP Design Capability
 - Satisfying customer's needs and system requirements

- In-House MCU Development System Support
 - Easy and convenient mass production for the customers
 - Cost competitiveness



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ABOV Advantages

Design / Engineering Resource

• Multiple Engineering Resources under ABOV Alliance in Korea







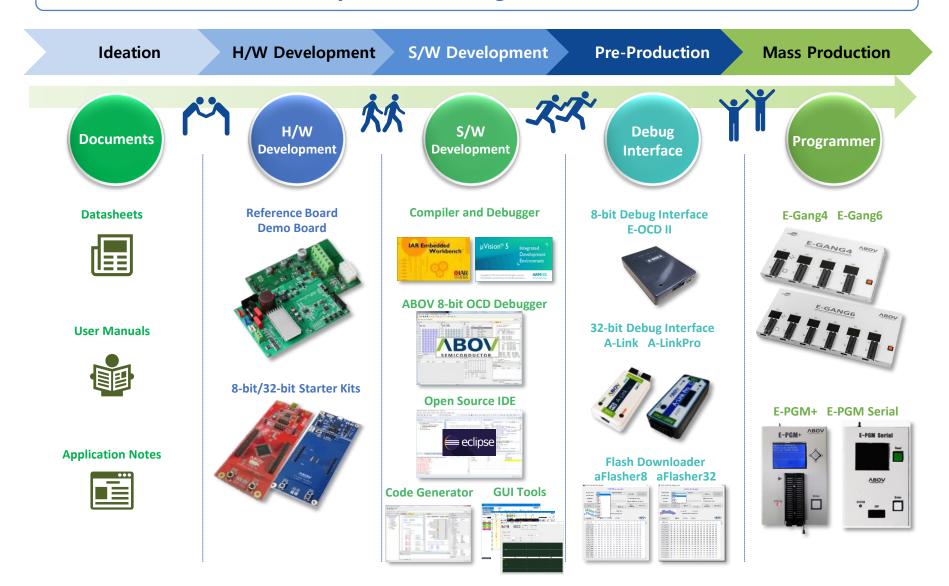


- Global R&D Center
 - Vietnam (R&D Center, Jan. 2022)
 - India (Sub Contractors, POC focused)
- Smallest Chip Design Capability
 - In-House, Cost-Effective NVM IP Design
 - ABOV's Proprietary Analog IP Design (Not Bulky IP Design Offered by Foundries)
- Fast Development TAT
 - Platform-Based Design Infrastructure
 - 6 Months Design Turnaround (Spec to Silicon)



Ecosystem One-Stop Shop for MCU Development

ABOV Offers a Total Ecosystem Covering Our Customer's Entire Value Chain





Global Top Smart MCU Innovator

For more information about our product and package, please contact our sales team or visit our website: www.abovsemi.com

