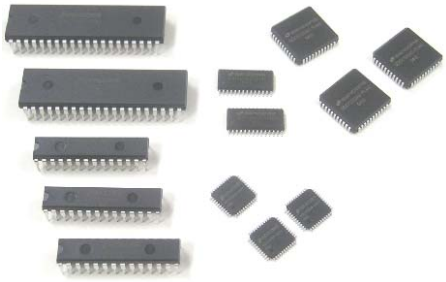
COMPANY PROFILE

Confidential

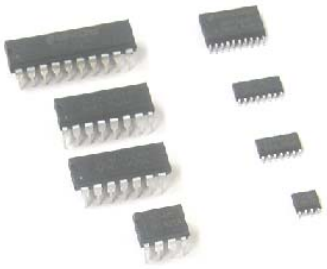
PR

Introduction to CORERIVER Semiconductor



V 2.9.1

Nov 2008



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CORERIVER Business

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- Business : MCU SoC
  - Develop MCU 80C52 Turbo Core & User Friendly MDS
  - RISC, DSP Cores

- General Purpose MCUs
- Application Specific MCUs :
  - Strategic Partnership with Customers
  - Application Area :
    Battery Charger, Electronic Key & Lock, Security, Multi-Media, Telecom,
    Touch Sensor, IR-Remocon, RF, and etc.

- Highly Experienced R&D Teams
  - Ph.D or Master degree in Electronic Engineering
  - Highly Experienced Engineers

- Global Sales/Marketing Network
  - Market Oriented Products

VISION 2015

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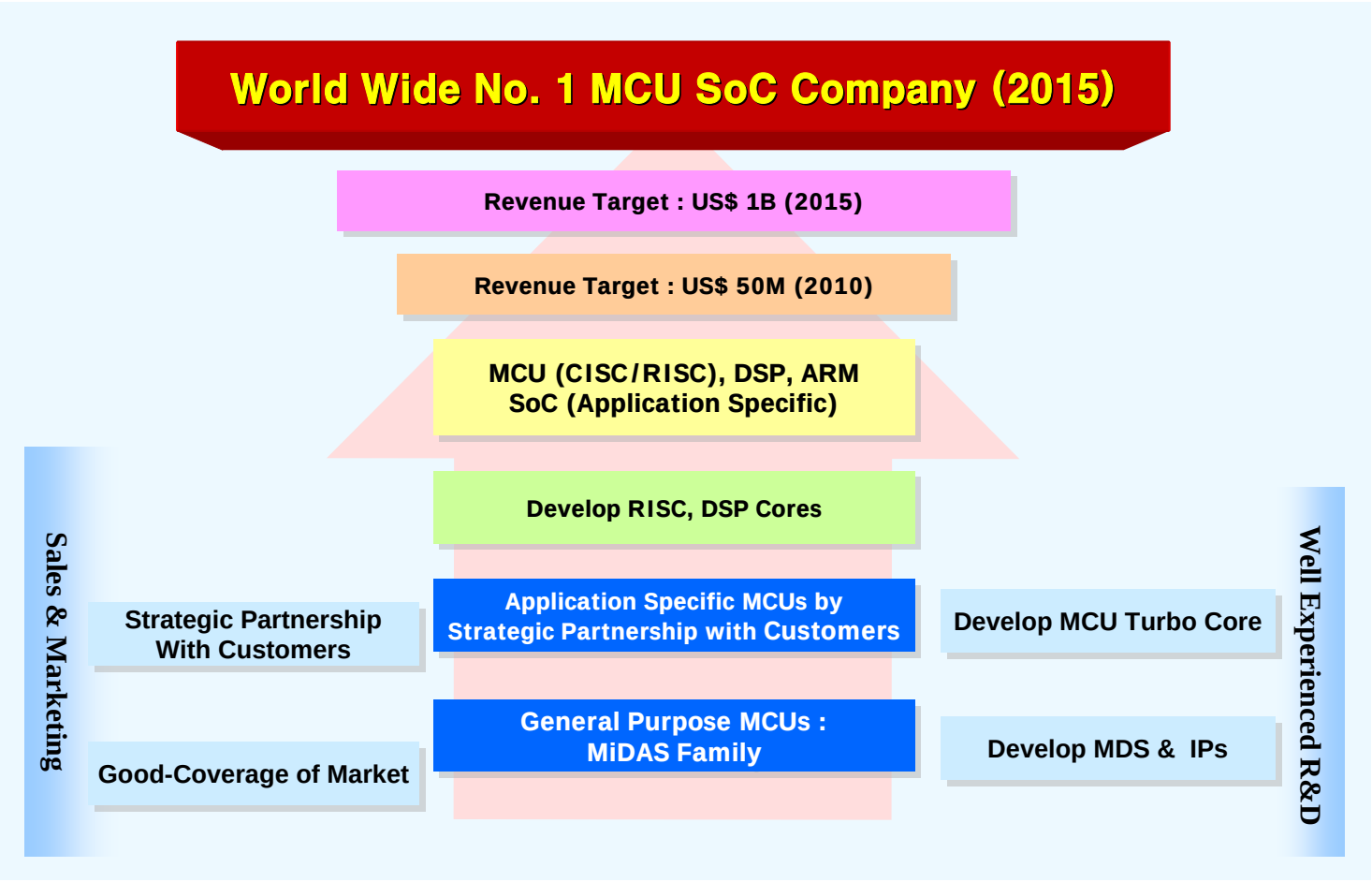

4S : Management Principle

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Organization of CORERIVER

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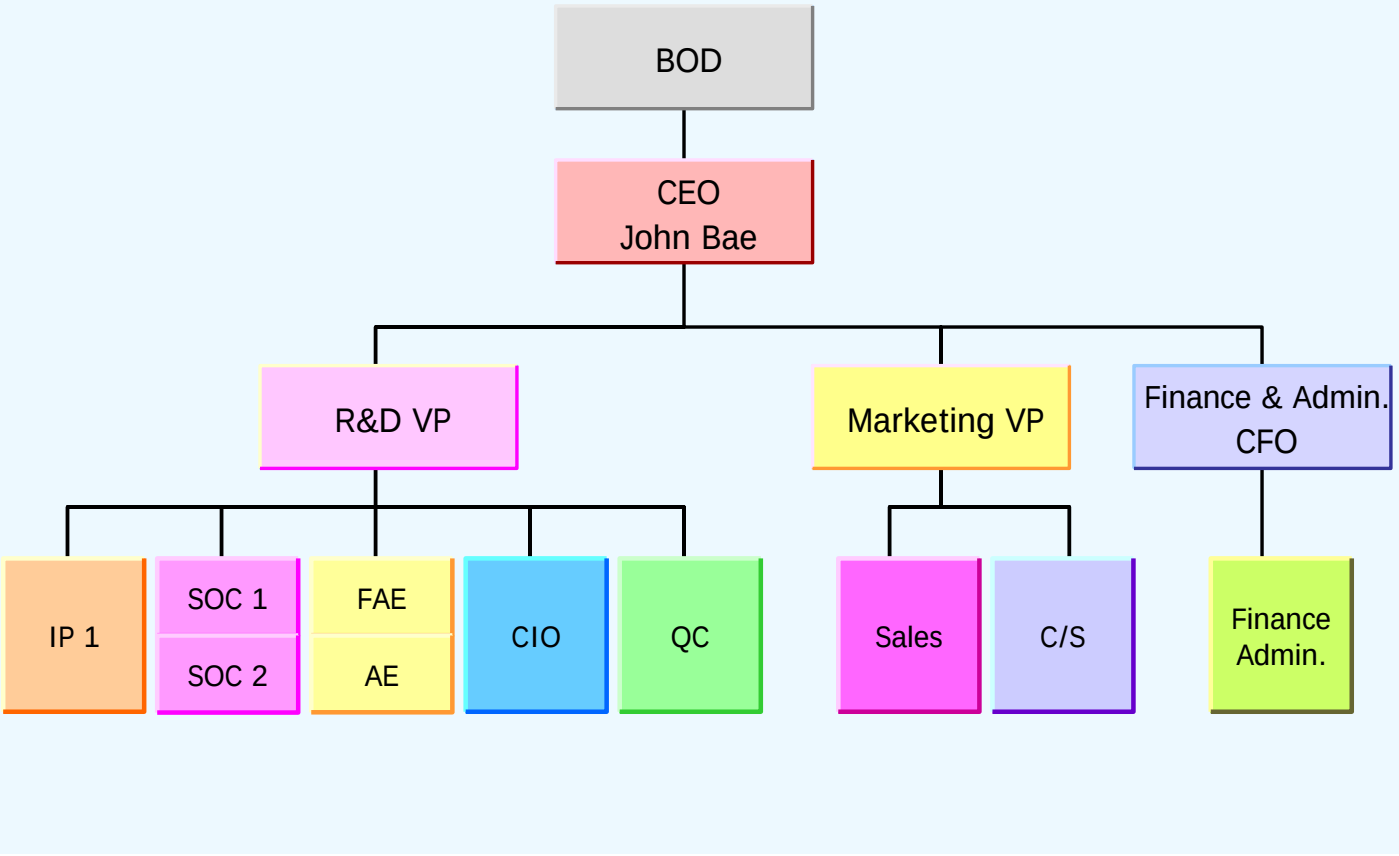

Product of CORERIVER

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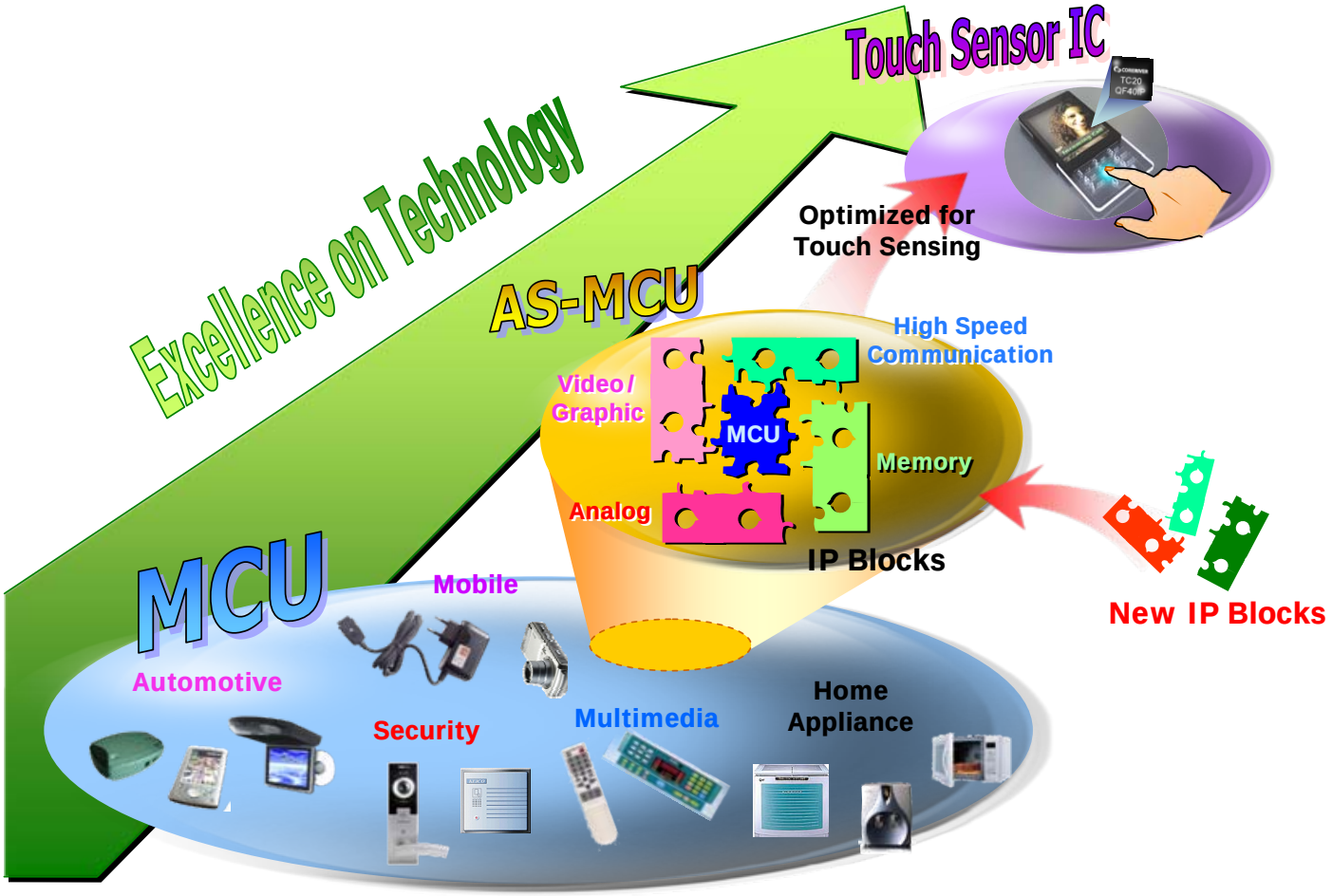

Supporting Tools for MCU Business

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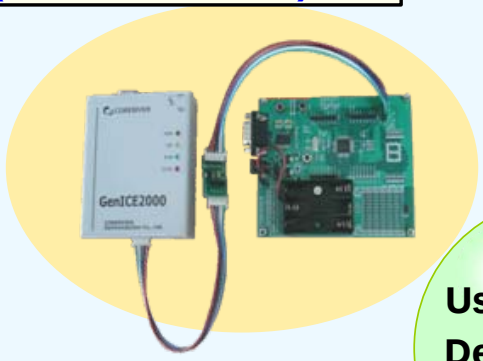
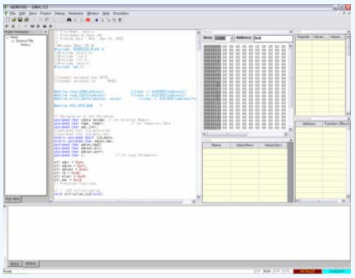
In-Circuit Debugger (GENSYS & GenICE)



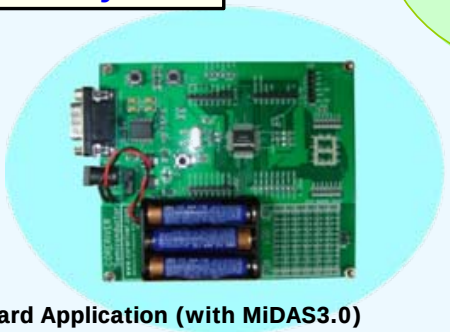
Easy-to-Use GUI (GENTOS)



1. Assembler & Linker for Windows
2. Optimized Cross-C Compiler

User-friendly Development Environment

Application System



1. On-board Application (with MiDAS3.0)
2. Various Sample Test Program

ROM Writer

1. World Wide Programmable in Anywhere
   - Hi-Lo Systems (ALL-11P3, GANG-08)
   - ADVATNECH (LAB TOOL-48/48XP)
   - EETOOLS (TOPMAX)
   - CORERIVER (GenWriter)
2. Support Parallel / Serial Program

AS-MCU (Application Specific MCU)

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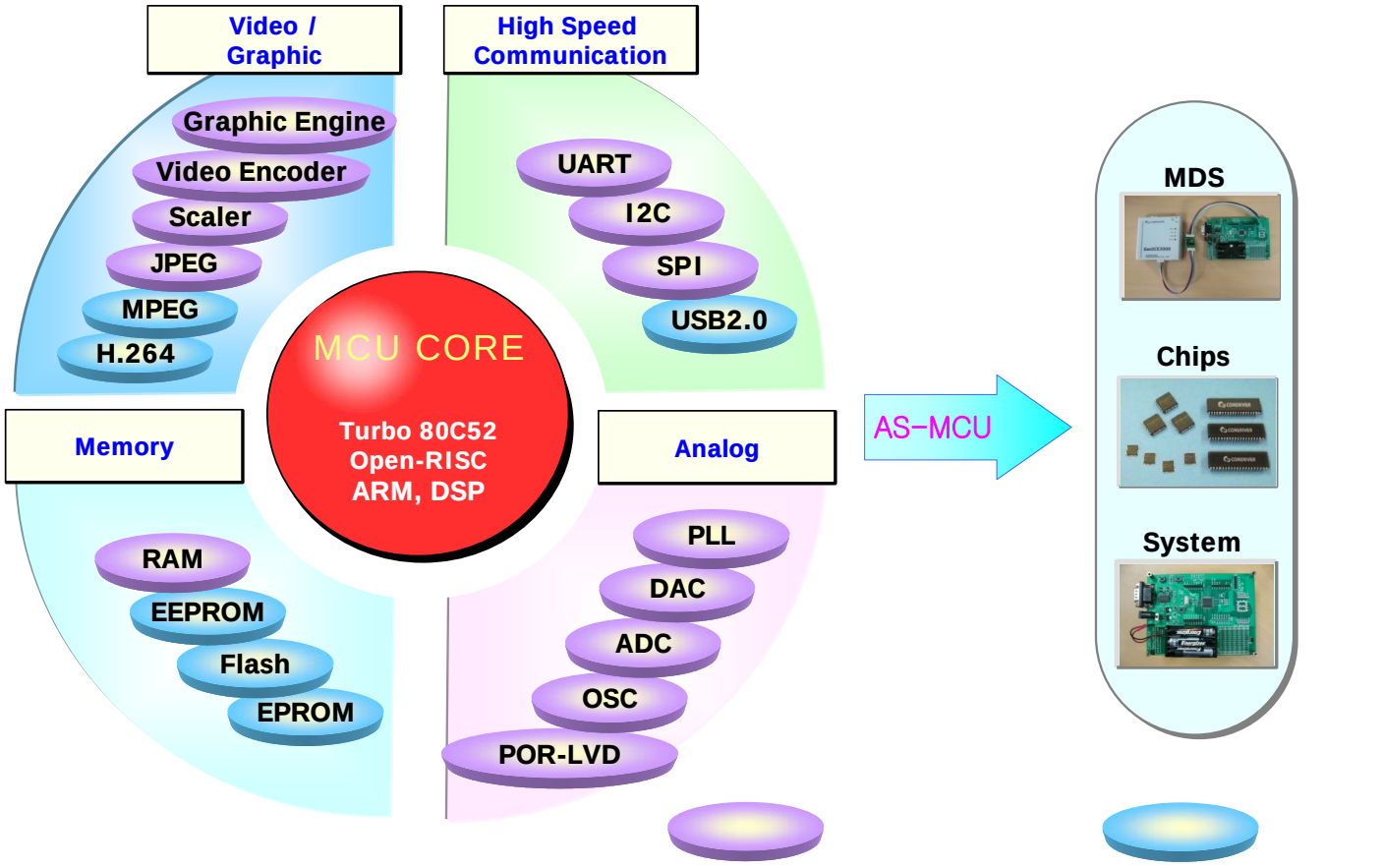

TouchCore Family (1/4)

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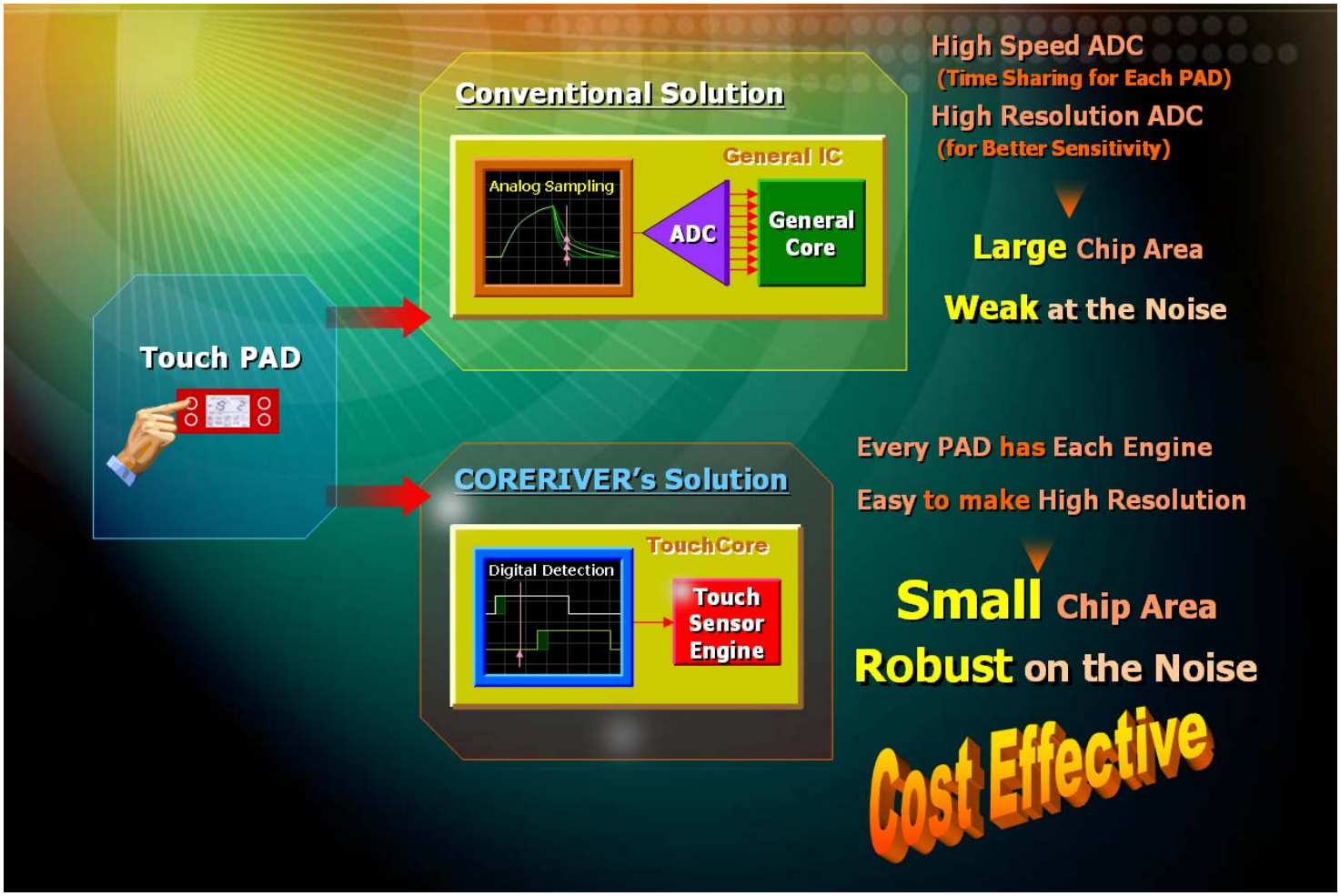
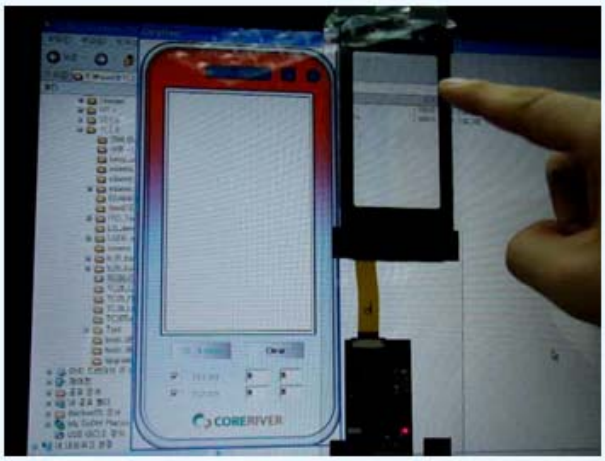
Strong Points of TouchCore : Digital Sensing (2/4)



TouchCore Family : Business Status (3/4)

Confidential

Mobile Phone



- MORE THAN 50 DESIGN-IN
  INCLUDING LG & Samsung
  - MOBILE PHONE / MP3P
  - NOTE BOOK PC
  - HOME APPLIANCE etc,.
- MASS-PRODUCTION ALREADY in LG, local & China Company
- HUGE OPPORTUNITIES in OVERSEAS
  - KODAK / FUJITSU / COBY etc,.
- HUGE CHANCES at TOUCH SCREEN MARKET

Home Theater

MP3 Player

TouchCore Family : Specification (4/4)

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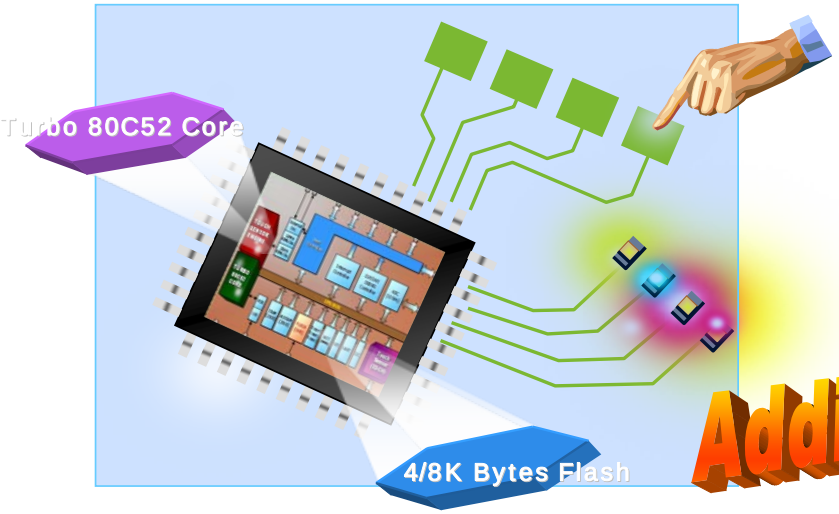
Product	Resolution	Flash (byte)	EEPROM (byte)	RAM (Byte)	Volt (V)	Freq. (MHz)	T/C (16bits)	COMM I/O	WDT	ADC (bit x ch)	PWM (bit x ch)	TS (ch)	I/O Pins	Package	Others
TouchCore1.0	256	4K	256	128	1.8 ~ 5.5	12 (4)	2	1 UART 2 I2C	YES	10x5 10x16 10x16	8x1 8x1 8x1	4 8 8	6 18 18	8-SOIC 20-SOIC 20-QFN	ISP IAP EJTAG POR
TouchCore2.0	65536	8K	(1K)	512	1.8 ~ 5.5	24 (4)	3	1 UART 1 I2C 1 SPI	YES	10x24 10x24 10x32 10x32	8x12 8x12 8x16 8x16	24 24 32 32	28 28 36 38	32-LQFP 32-TQFN 40-TQFN 44-PQFP	ISP IAP EJTAG POR
TouchCore2.1	65536	4K	(1K)	512	1.8 ~ 5.5	24 (4)	3	1 UART 1 I2C 1 SPI	YES	10x24 10x24	8x14 8x14	16	28 28	32-LQFP 32-TQFN	ISP IAP EJTAG POR



4/8/16/24/32CH Touch Sensor

LED Dimming etc,.

E.S.D Protection Up to 6,000V !

Additional Func.

ATOM1.0 Family (1/2)

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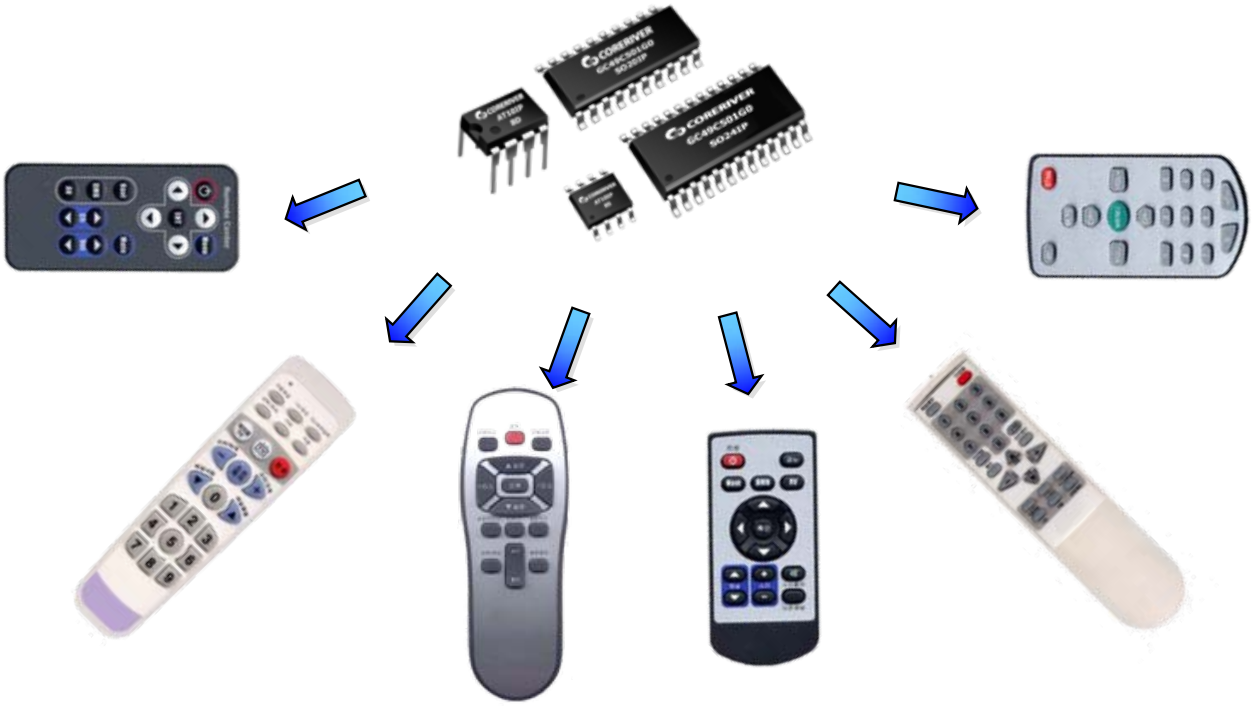
- **Application Specific MCU for Single Remote Controller**



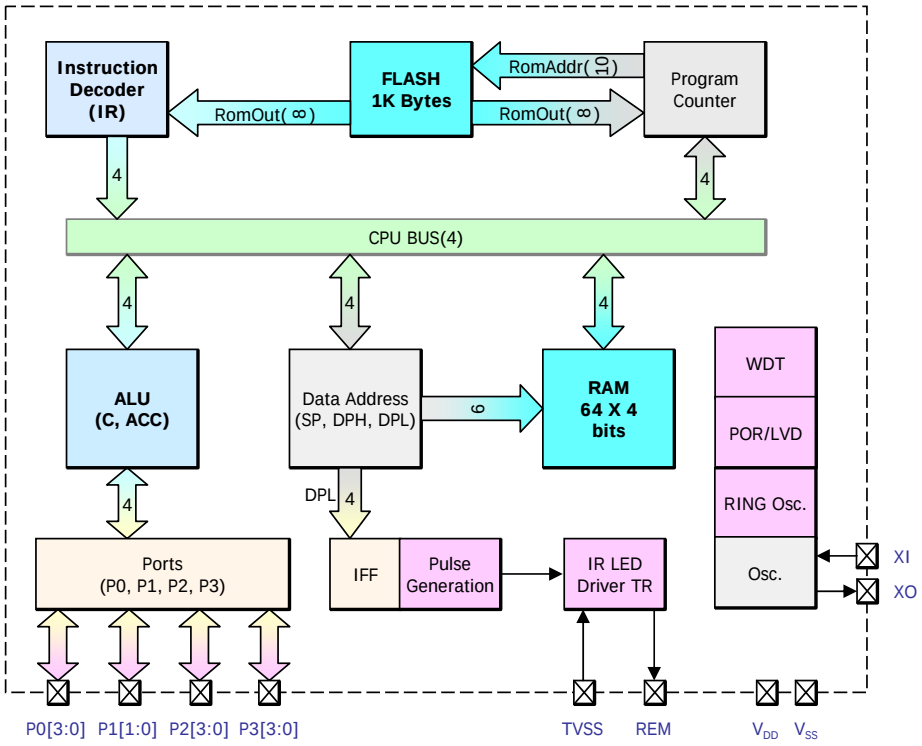
- ATOM Family is optimized AS-MCU for Single Remote Controller.

ATOM1.0 Family (2/2)

Confidential

◆ 4-bit MCU with reduced 8051 architecture

- **CPU**
  - ✓ 4-bit Reduced 8051 architecture
  - ✓ Continuous program addressing, not paged.
  - ✓ 50 instructions including push, pop logic inst.
  - ✓ instruction cycle : $F_{SYS}/6$
  - ✓ Multi-level subroutine nesting with RAM based stack.
- **On-chip Memories**
  - ✓ FLASH : 1024 bytes
  - ✓ RAM : 64 nibbles (including stack)
- **ISP (In System Programming of FLASH)**
- **IAP (In Application Programming)**
- **REM output (Remote control transmitter)**
- **Carrier Pulse Generation : 7 types**
- **Built-in Oscillator**
  - ✓ Crystal/Ceramic resonator
  - ✓ Internal 8Mhz oscillator (+/- 1%)
- **Power Consumption**
  - ✓ Stop mode : 1uA (Max.)
  - ✓ Normal mode : 400uA (Typ.) @ 2.2V, F_{OSC} = 4MHz
- **Operating frequency : F_{OSC} = 2.4 ~ 4 MHz**
- **Operating Voltage : 1.8V ~ 5.5V**
- **Packages**
  - ✓ 20-pin, 24-pin/SOIC
  - ✓ 8-pin SOIC/DIP
- **Ultra low cost 4-bit MCU**
- **Tool : Assembler, Linker**
- **Market : Remote Controller, Toy, & etc.**



ChargerCore Family (1/2)

- **Application Specific MCU for Battery Chargers**

- ChargerCore Family is optimized AS-MCU for Li-Ion battery Chargers.

ChargerCore Family (2/2)

Confidential

Travel Charger Sol.

USB Charger Sol.

CORERIVER Charger Sol.

BTC Charger Sol.

Charger Sol. Etc.

SecurityCore Family (1/2)

Confidential

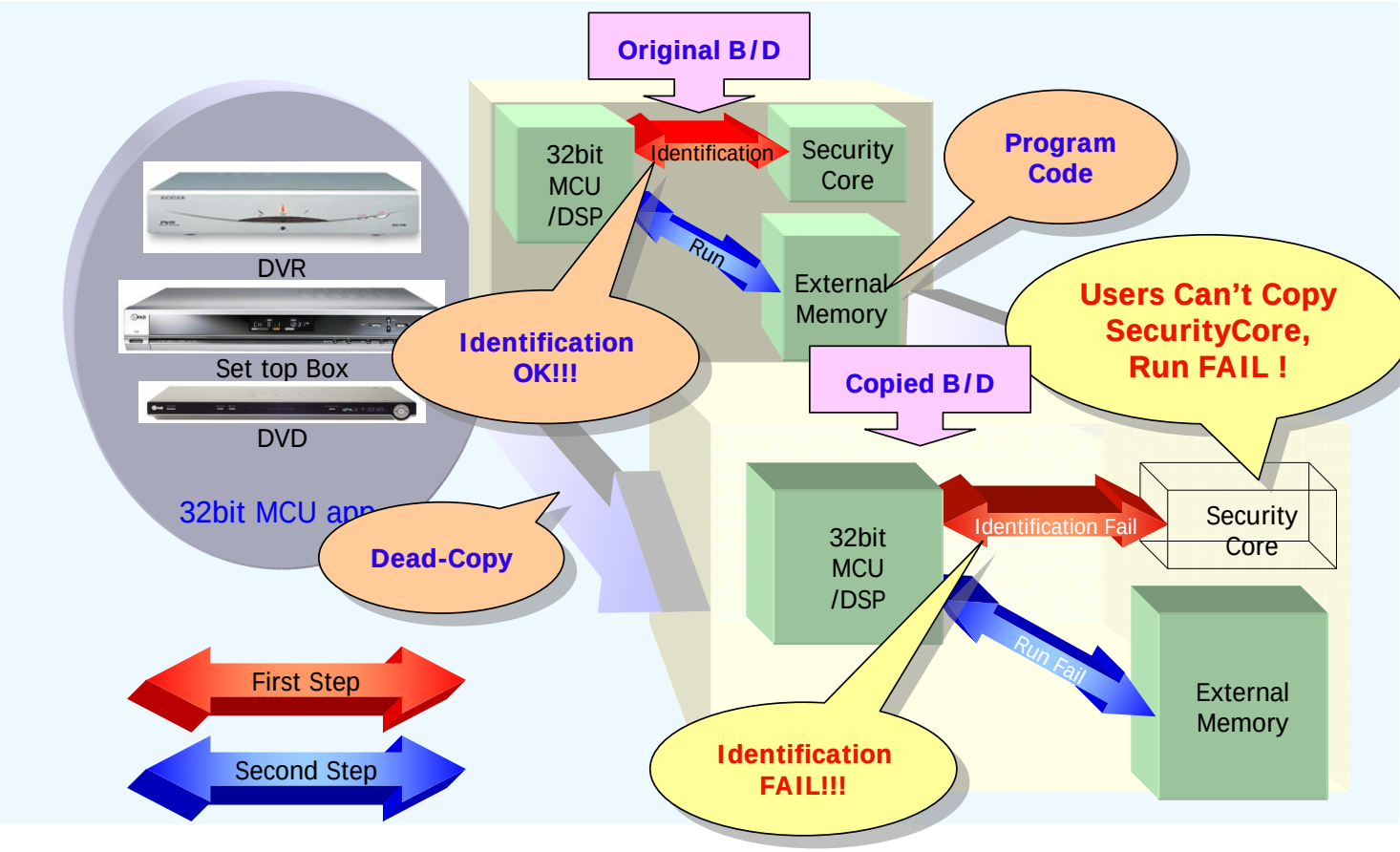
- **Application Specific MCU for Security System**

- SecurityCore family offers low cost, high performance and high security solution for system authentication application.
- It also supports various interface protocols just like UART, I2C and 1-wire Interface.

SecurityCore Family (2/2)

Confidential

- **How to Protect Know-how with SecurityCore Family.**

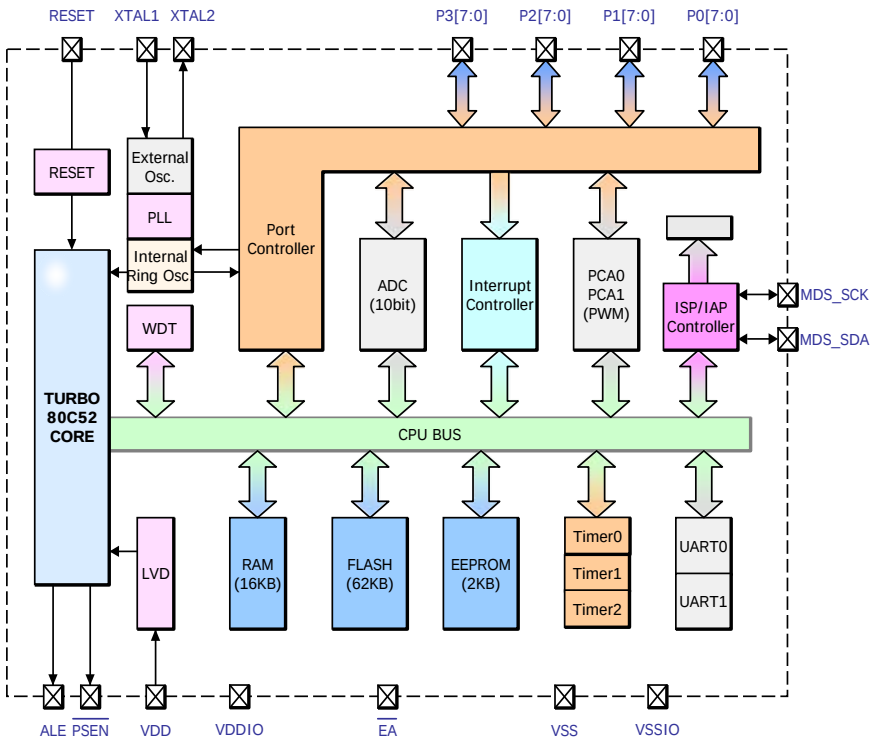


MiDAS3.0 Family (1/2)

Confidential

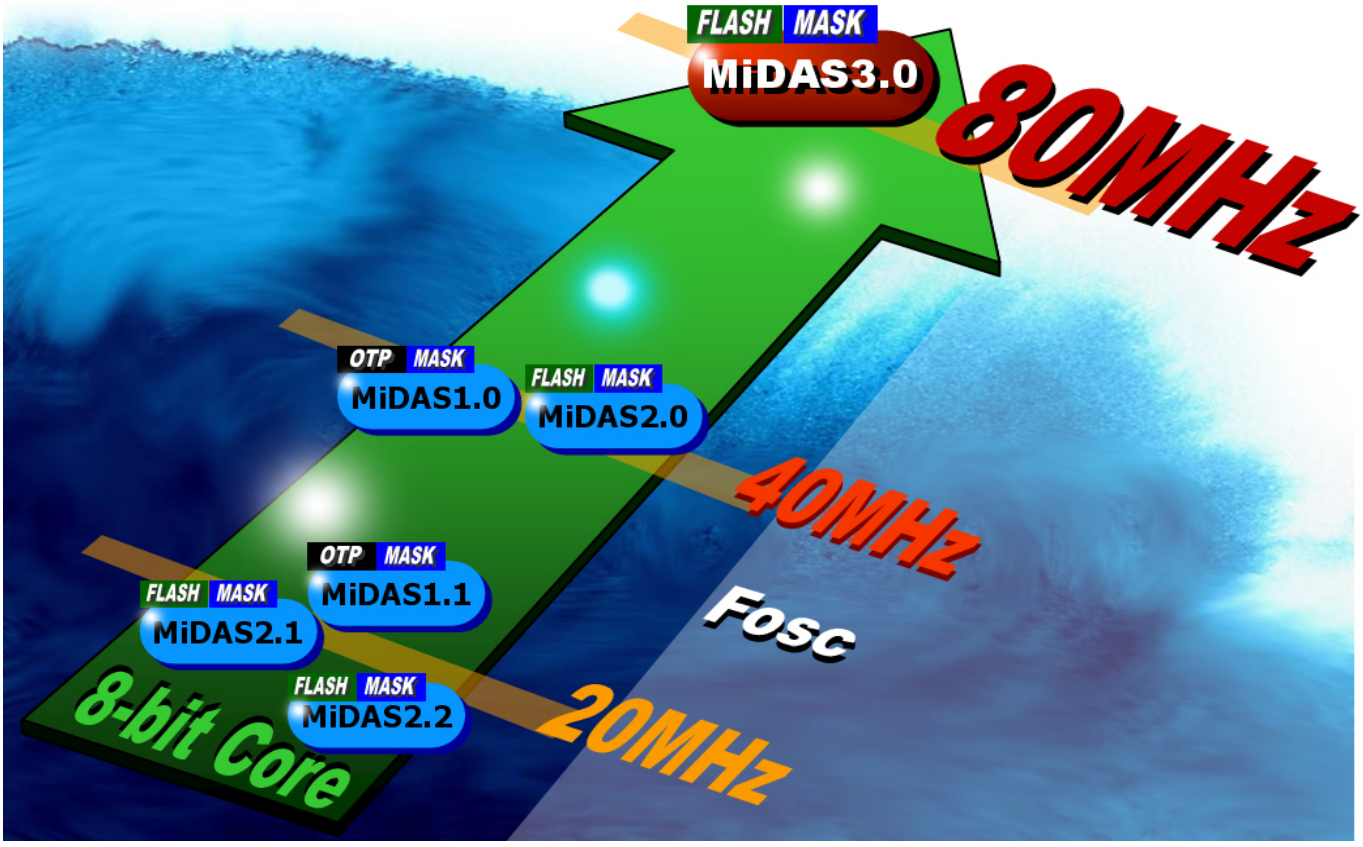
◆ 8-bit Turbo 80C52-based High-Performance General Core

- **High Performance Core**
  - ✓ 8-bit Turbo 80C52 Architecture
  - ✓ 4 cycles / 1 machine cycle
  - ✓ **Up to 20 MIPS**
  - ✓ Pin/Instruction Level Compatible with Intel 80C52
- **Additional Peripherals**
  - ✓ 10-bit ADC / 8 or 16-bit PWM / LVD / POR.
  - ✓ Ring Osc./ 27-bit WDT
  - ✓ Full UART / I2C
  - ✓ ISP/IAP, EJTAG
- **16KB/32KB/64KB On-chip FLASH ROM/MASK**
- **16 Kbytes on-chip RAM**
- **16 Interrupt Sources (with 6 external)**
- **On- Chip PLL**
  - ✓ VCO operation frequency : 70MHz ~ 130MHz
  - ✓ PFD comparison frequency : 2 MHz ~ 20MHz
  - ✓ Support 2bits output divider, 2bit input divider
  - ✓ Support 8bit feedback divider
- **Power Consumption**
  - ✓ Active Current : Typ. 50mA @ 1.8V, 80MHz
  - ✓ Stop Current : Typ. 10uA @ 1.8V
- **E.S.D. Protection up to 2,000V**
- **Latch-up Protection up to ± 200mA**
- **Packages**
  - ✓ 44MQFP/32-MLF



MiDAS3.0 Family (2/2)

- **MiDAS3.0 supports the Max. 80MHz Operation frequency**



Oversea Distributor Status

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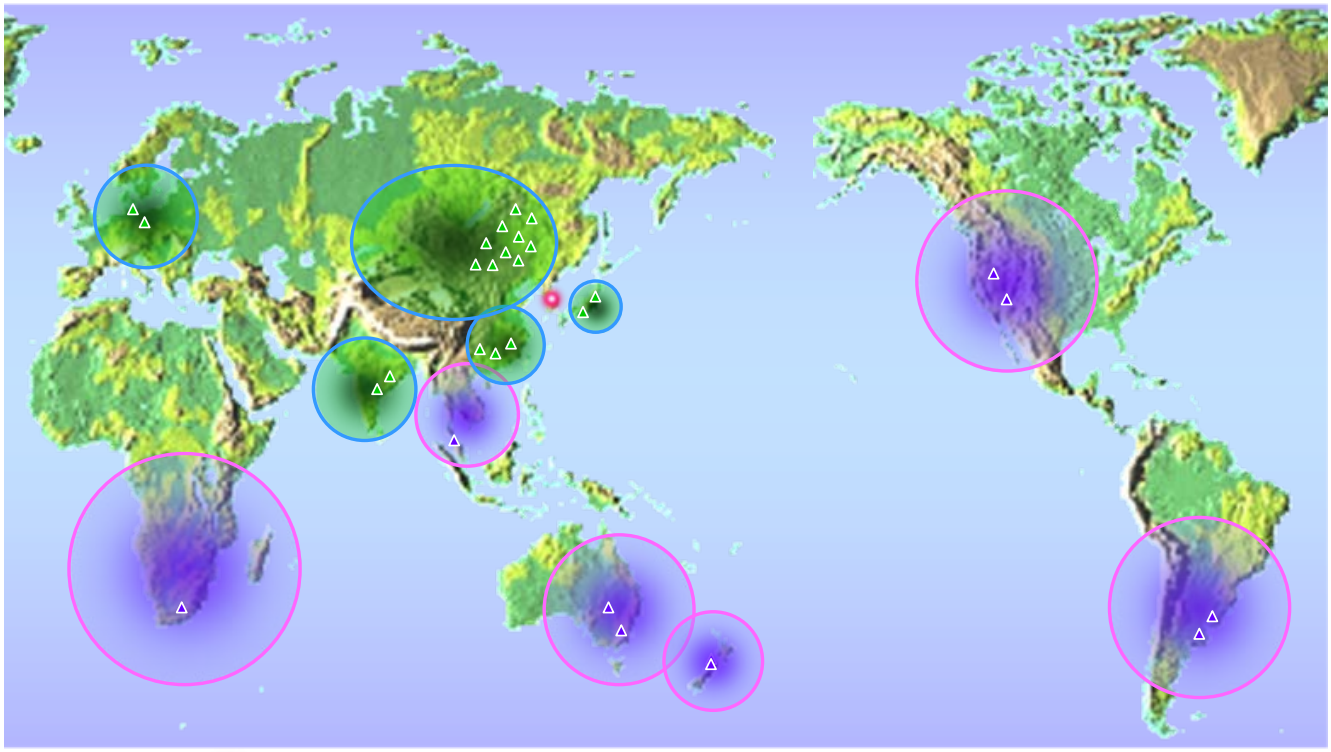
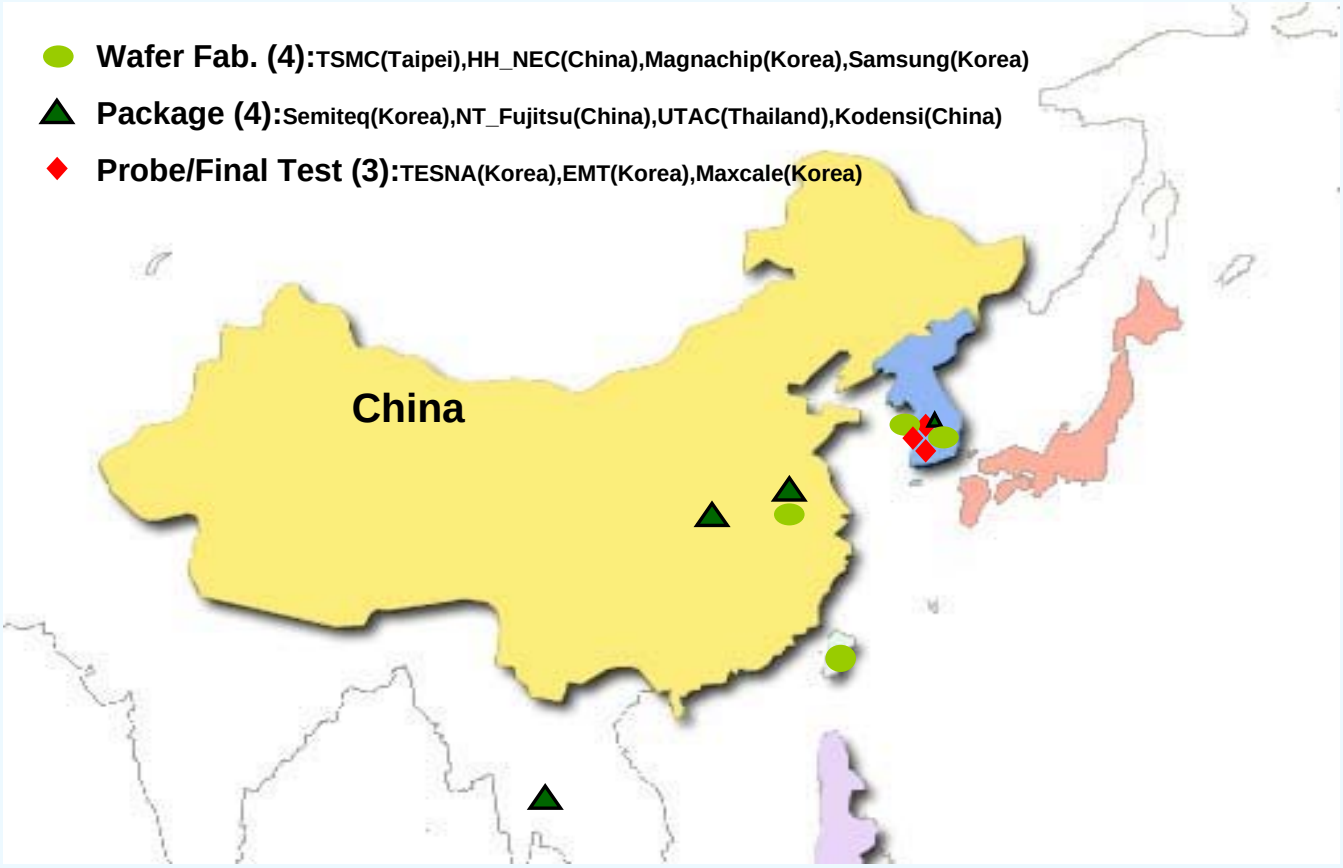


Production Sites



CORERIVER Product List(1)

Confidential

◆ MiDAS Family (Turbo 80C52-based General Core)

Product (Family/Series)		Mask-ROM [Byte]	FLASH [Byte]	EEPROM [Byte]	EPROM [Byte]	RAM [Byte]	Volt [V]	Freq. [MHz]	T/C [16bits]	Serial I/O	WDT	ADC [bit x ch]	PWM [bitxch]	Package	Others	Available Time
MiDAS1.0	GC87C520A0	-	-	-	8k	256	2.7~5.5	40 (20)	3	1 UART	1	9 x 4	8 x 2	44-PLCC 40-PDIP 28-SPDIP/SOIC	LVD POR	Now
	GC81C520A0	8k	-	-	-											
	GC80C320A0	ROMless														
★ MiDAS1.0B	GC89C521A0	-	8k	(1k)	-	512	1.8~5.5	24 (4)	3	1 UART 1 SPI I²C	1	10 x 32 10 x 24 10 x 20	8 x 16 8 x 12 8 x 10	44-PQFP 40-TQFN 32-TQFN 32-LQFP 28-SOIC	ISP/IAP EJTAG LVD POR RING Osc. (*Blue Clock)	Now
MiDAS1.1	GC87C510A0	-	-	-	4k	128	2.4~5.5	20 (10)	2	1 UART	1	10 x 12 10 x 8 10 x 2	8 x 1	20-SPDIP/SOIC 16-SPDIP/SOIC 16-TSSOP 8-SPDIP/SOIC	LVD POR RING Osc.	Now
	GC81C510A0	4k	-	-	-											
	GC81C500A0	2k	-	-	-											
	GC87C510A1	-	-	-	4k							10 x 3		8-SOIC		
	GC81C510A1	4k	-	-	-											
	GC81C500A1	2k	-	-	-											

CORERIVER Product List(2)

Confidential

◆ MiDAS Family (Turbo 80C52-based General Core)

Product (Family/Series)		Mask-ROM [Byte]	FLASH [Byte]	EEPROM [Byte]	EPROM [Byte]	RAM [Byte]	Volt [V]	Freq. [MHz]	T/C [16bits]	Serial I/O	WDT	ADC [bit x ch]	PWM [bitxch]	Package	Others	Available Time
MiDAS2.0	GC89C591A0	-	64k	(2k)	-	2k	3.0~3.6	40	3	2 UART	1	10 x 8	8 x 12	100-TQFP 64-TQFP/64-LQFP 44-PQFP	ISP/IAP LVD POR	Now
	GC81C591A0	64k	-	-	-											
	GC89C581A0	-	32k	(2k)	-											
	GC81C581A0	32k	-	-	-											
	GC89C541A0	-	16k	(2k)	-											
	GC81C541A0	16k	-	-	-											
MiDAS2.1	GC89C520A0	-	8k	(1k)	-	512	2.2~5.5	20 (12)	2	1 UART	1	10 x 28 10 x 24	8 x 1	32-LQFP 32-QFN 28-SOIC	ISP/IAP I²C EJTAG LVD POR	Now
	GC81C520A0	8k	-	-	-											
	GC89C511A0	-	4k	(1k)	-											
	GC81C511A0	4k	-	-	-											
★ MiDAS2.2	GC89C510A0	-	4k	(128)	-	128	1.8~5.5	20 (10)	2	1 UART	1	10 x 16 10 x 12 10 x 4	8 x 1	20-SPDIP/SOIC 16-SPDIP/SOIC 8-SPDIP/SOIC	ISP/IAP I²C EJTAG LVD POR RING Osc. (Blue Clock)	Now
	GC81C510A2	4k	-	-	-											
	GC89C500A0	-	2k	(128)	-											
	GC81C500A2	2k	-	-	-											
	GC89C501A0	-	1k	(128)	-											
	GC81C501A0	1k	-	-	-											

CORERIVER Product List(3)

Confidential

◆ MiDAS Family (Turbo 80C52-based General Core)

Product (Family/Series)		Mask-ROM [Byte]	FLASH [Byte]	EEPROM [Byte]	EPROM [Byte]	RAM [Byte]	Volt [V]	Freq. [MHz]	T/C [16bits]	Serial I/O	WDT	ADC [bit x ch]	PWM [bitxch]	Package	Others	Available Time
★ MiDAS3.0	GC89L591A0	-	64k	(2k)	-	16k + 256	1.6~2.0 (Core) 3.0~3.6 (I/O)	80	3	2 UART I²C	1	10 x 32 10 x 21	8 x 12 Or 16 x 6 8 x 6 Or 16 x 3	44-PQFP 32-QFN	ISP/IAP I²C EJTAG LVD POR Ring Osc.	Now
	GC81L591A0	64k	-	-	-											
	GC89L581A0	-	32k	(2k)	-											
	GC81L581A0	32k	-	-	-											
	GC89L541A0	-	16k	(2k)	-											
	GC81L541A0	16k	-	-	-											
★ MiDAS4.0	GC89L591L0	-	64k	(2k)	-	512	1.8~5.5	20 (12)	2	1 UART 1 SPI I²C	1	10 x 12	YES	32-LQFP 44-LQFP 64-LQFP	LVD POR RING Osc. (Blue Clock) ISP/IAP LCD	'09.Q1
	GC81L591L0	64k	-	-	-											
	GC89L581L0	-	32k	(2k)	-											
	GC81L581L0	32k	-	-	-											
	GC89L541L0	-	16k	(2k)	-											
	GC89L541L0	16k			-											

◆ ATOM Family (4-bit Mini 8051-based General Core)

Product (Family/Series)		MaskROM [Byte]	FLASH [Byte]	EEPROM [Byte]	EPROM [Byte]	RAM [Nibble]	Volt [V]	Freq. [MHz]	WDT	REM Output	IR.LED Driver Tr.	Package	Others	Available Time
★ ATOM1.0	GC49C510G0	-	1k	(128)	-	64	1.8~5.5	10 (5)	1	1	Yes	24-SOIC 20-SOIC 8-DIP/SOIC	LVD POR Ring OSC. (Blue Clock) ISP/IAP	Now
	GC41C510G0	1k	-	-	-		1.8~5.5			1	Yes			

CORERIVER Product List(4)

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◆ TouchCore Family (Application Specific MCU for Touch)

Product	Flash (byte)	EEPROM (byte)	RAM (Byte)	Volt (V)	Freq. (MHz)	T/C (16bits)	COMM I/O	WDT	ADC (bit x ch)	PWM (bit x ch)	TS (ch)	Resol.	Package	Others	Available Time
TouchCore1.0 ★	4K	256	128	1.8 ~ 5.5	12 (4)	2	1 UART 2 I2C	YES	10x5 10x16 10x16	8x1 8x1 8x1	4 8 8	256	8-SOIC 20-SOIC 20-QFN	ISP IAP EJTAG POR	Now
TouchCore2.0 ★	8K	(1K)	512	1.8 ~ 5.5	24 (4)	3	1 UART 1 I2C 1 SPI	YES	10x32 10x32 10x24 10x24	8x16 8x16 8x12 8x12	32 32 24 24	65536	44-PQFP 40-TQFN 32-LQFP 32-TQFN	ISP IAP EJTAG POR	Now
TouchCore2.1 ★	4K	(1K)	512	1.8 ~ 5.5	24 (4)	3	1 UART 1 I2C 1 SPI	YES	10x24 10x24	8x14 8x14	16	65536	32-LQFP 32-TQFN	ISP IAP EJTAG POR	Now

◆ ChargerCore Family (Application Specific MCU for Battery Chargers)

Product	Feature	Volt [V]	Package	Others	Available Time
ChargerCore1.0	Optimized Application Specific MCU (AS-MCU) for Battery Charger Application	2.7~5.5	8-SOIC	LVD POR Ring OSC	Now
ChargerCore2.0	Optimized Application Specific MCU (AS-MCU) for Battery Charger Application	2.7~5.5	16-SPDIP	LVD POR Ring OSC	Now
ChargerCore3.0	Optimized Application Specific MCU (AS-MCU) for Battery Charger Application	2.7~5.5	16-SOIC	LVD POR Ring OSC	Now

CORERIVER Product List(5)

Confidential

SecurityCore Family (Application Specific MCU for Security System)

Product	Feature	Volt [V]	Package	Others	Available Time
SecurityCore1.0	Optimized Application Specific MCU (AS-MCU) for Security System	2.4~5.5	8-SOIC	LVD POR Ring OSC	Now
SecurityCore2.0	Optimized Application Specific MCU (AS-MCU) for Security System	2.4~5.5	8-SOIC	LVD POR Ring OSC	Now
SecurityCore3.0	Optimized Application Specific MCU (AS-MCU) for Security System	1.8~5.5	8-SOIC 6-DFN (SOT-23)	LVD POR Ring OSC	Now
SecurityCore4.0	Optimized Application Specific MCU (AS-MCU) for Security System	1.8~5.5	8-SOIC	LVD POR Ring OSC	Now

RoboCore Family (Application Specific MCU for Robot Control)

Product	Flash [Byte]	EEPROM [Byte]	RAM [Byte]	Volt [V]	Freq. [Mhz]	T/C [16bits]	Serial I/O	WDT	ADC [bit x ch]	PWM [bit x ch]	I/O Pins	Package	Others	Available Time
RoboCore1.0	8K	(1K)	512	2.2~5.5	20 (12)	2	1 UART	1	10x17	8x1	21	32-QFN	ISP, IAP EJTAG LVD, POR Motor Driver I2C UART	Now

CORERIVER Product List(6)

Confidential

AS-MCU Family (Application specific MCU)

MCU Core	High Speed Communication	Analog	Memory	Video / Graphic	Others	Available Time
Turbo 80C52 **Open-RISC** **ARM, DSP**	UART /I2C /SPI /USB2.0	PLL /DAC /ADC /OSC /POR-LVD	RAM /EEPROM /Flash /EPROM	Graphic Engine /Video Encoder /Scaler /JPEG /MPEG /H.264	- Customized Special Blocks - Small Area - Customized Pin Assignment & Package type - Customized Development Tools	Now

Supporting Tools

Product	Feature	Available Time
GenSys52	System Debugging Tool for MiDAS1.X (H/W) - Clock : 1MHz ~ 20MHz - Full Range PC and H/W breakpoints - POD Socket : 40-pin DIP/20-pin SPDIP - Adaptors : 44-pin PLCC, 28-pin DIP	Now
GENTOS	System Debugging Tool for MiDAS Family (S/W) - Full Range PC and H/W breakpoints	Now
GenICE52 GenICE52 2000	ISP Tool ISP/IAP/EJTAG Tool	Now
HERA_K2.1 HERA_K2000 HERA_T2K HERA Jr.	Application Board for MiDAS1.X Family Application Board for MiDAS1.X Family and MiDAS2.0 Family Application Board for MiDAS1.X Family and MiDAS2.0 Family (New Version) Application Board for MiDAS1.1 Family	Now
GenWriter S1000 GenWriter G1000	Single ROM Writer Gang ROM Writer	Now

Future of CORERIVER

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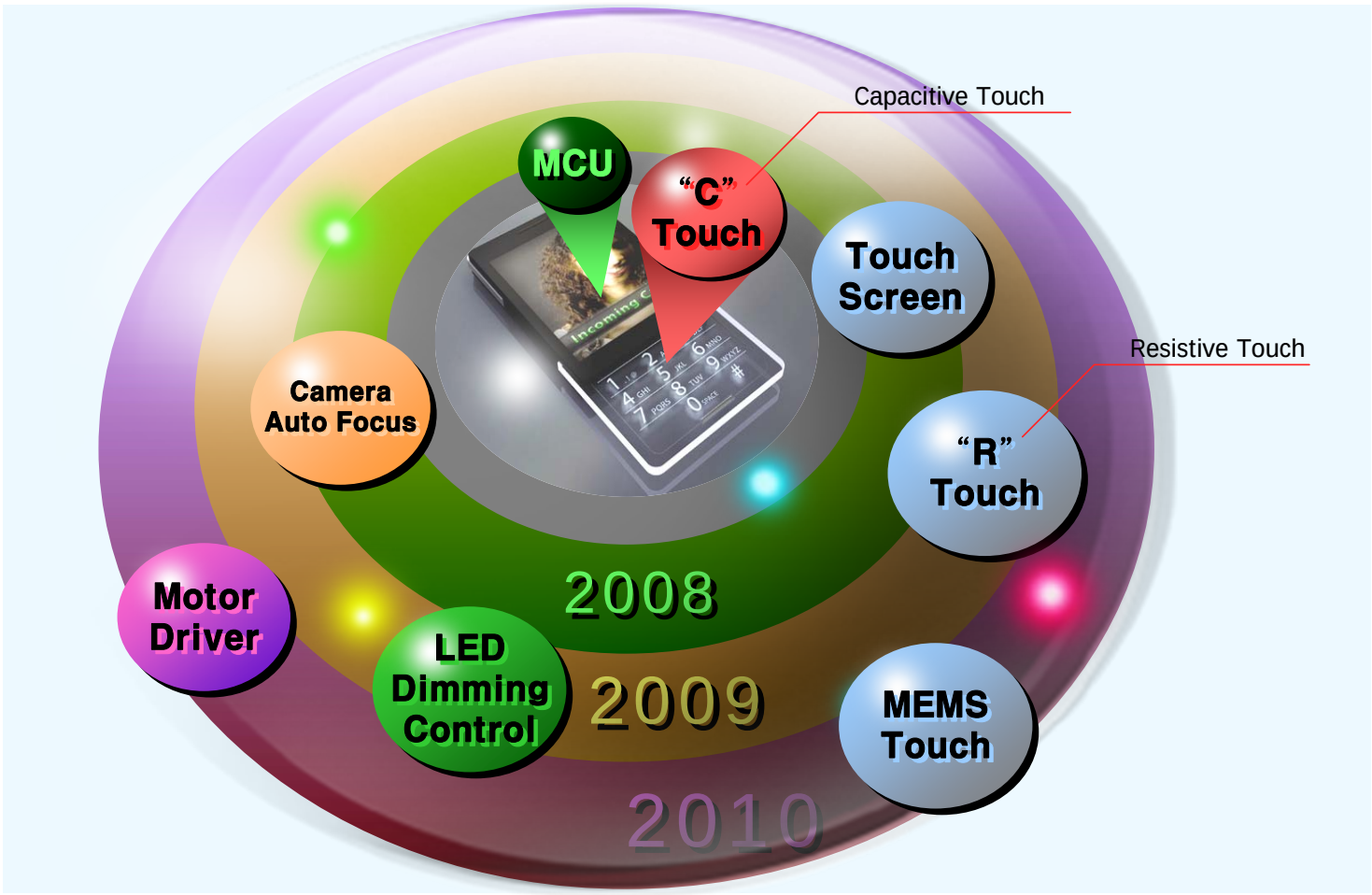

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Thanks

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