



Creative Wisdom

Wuhan Xinyuan Semiconductor Co., Ltd.

web: www.whxy.com

Wholly-owned subsidiary of P&S
Stock code : 300184



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COMPANY PROFILR

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01
Part



Parent company

P&S Information



- Top technology electronic component distribution enterprise;
- The first A-share listed company in the domestic electronic component service field in China, with stock code 300184
- The total number of employees exceeds 1400;
- Professional distribution of MCU for 30 years, with abundant downstream MCU customer resources;
- More than 200 technical engineers distributed nationwide;

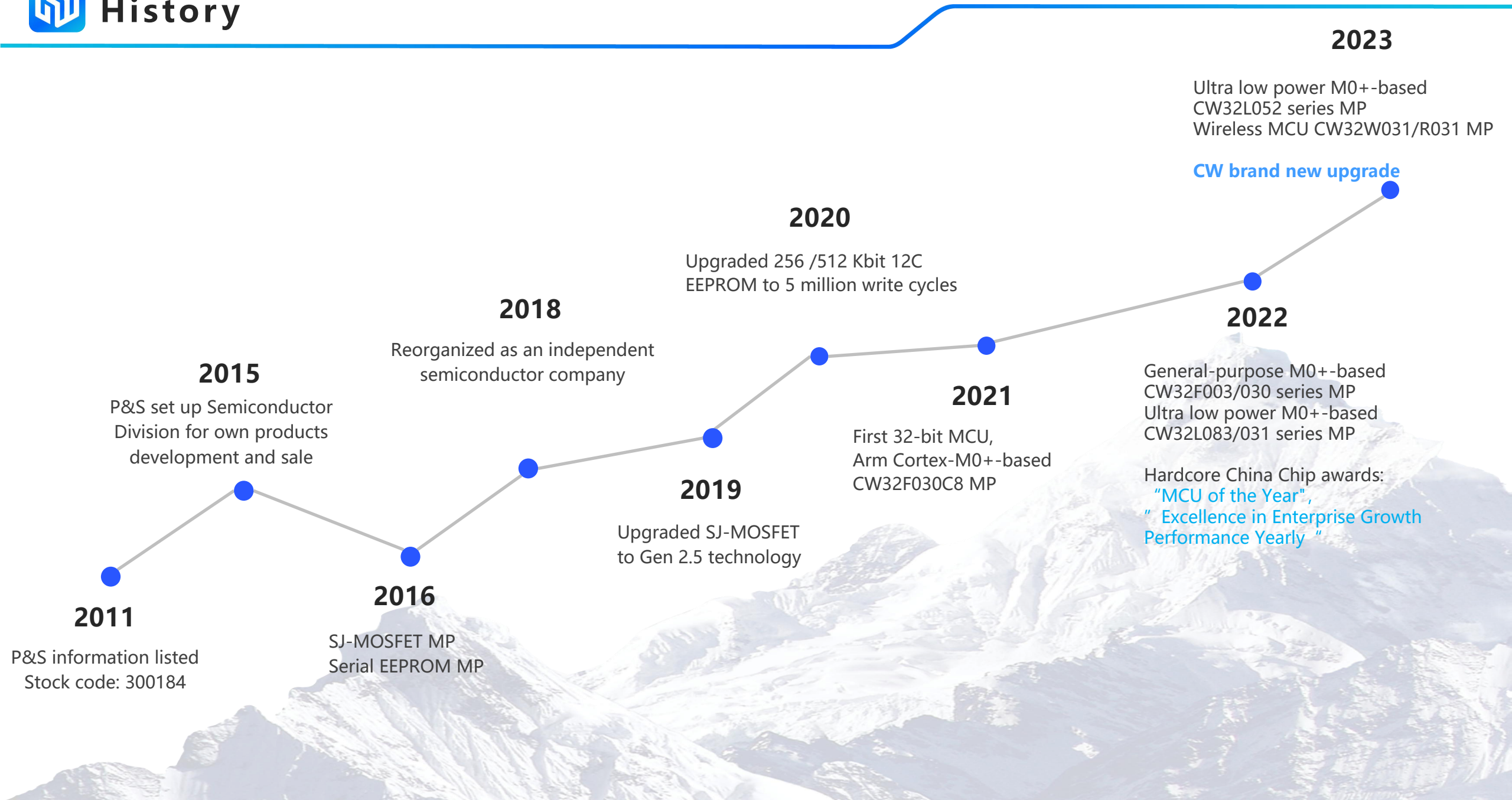
Wholly owned subsidiary

Wuhan Xinyuan Semiconductor Co., Ltd

- Stablished in August 2018, focusing on chip design, research and development, sales, and technical services;
- The CW brand originates from the initial letter CW of Creative Wisdom, conveying the brand concept of "creativity comes from wisdom";
- Having advanced integrated circuit design platforms and standardized product development processes;
- The core backbone has nearly 20 years of experience in mixed signal integrated circuit design;
- Headquarters - Wuhan, R&D - Shanghai, Wuhan; Sales Center - Shanghai and Shenzhen, Operations Center - Shanghai and Wuhan



History





Organizational structure





Corporate Honors



中华人民共和国国家版权局 计算机软件著作权登记证书

名称: CW32F003固件函数库软件
[简称: CW32F003固件库]
1.2

权利人: 武汉芯源半导体有限公司

完成日期: 2022年05月06日

首次发表日期: 未发表

取得方式: 原始取得

权利范围: 全部权利

登记号: 2022SR1409320

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中华人民共和国国家版权局 计算机软件著作权登记证书

名称: CW32L083固件函数库软件
[简称: CW32L083固件库]
1.3

著作权人: 武汉芯源半导体有限公司

开发完成日期: 2022年07月05日

首次发表日期: 未发表

权利取得方式: 原始取得

权利范围: 全部权利

登记号: 2022SR1409321

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证书号: 软著登字第10363518号

软件名称: CW32P003固件函数库软件
[简称: CW32P003固件库]
1.3

著作权人: 武汉芯源半导体有限公司

开发完成日期: 2022年06月16日

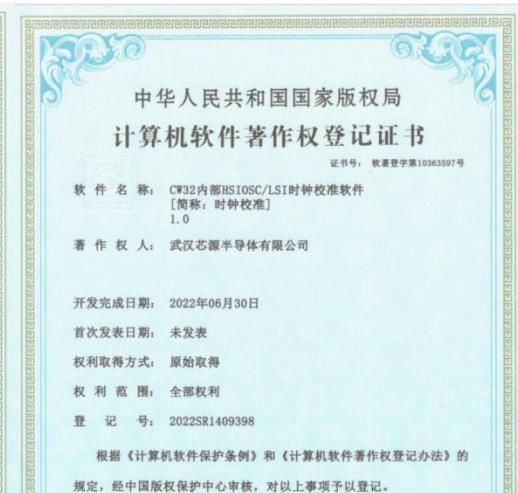
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证书号: 软著登字第10363507号

软件名称: CW32内部HSTC/LSI时钟校准软件
[简称: 时钟校准]
1.0

著作权人: 武汉芯源半导体有限公司

开发完成日期: 2022年06月30日

首次发表日期: 未发表

权利取得方式: 原始取得

权利范围: 全部权利

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证书号: 软著登字第10364403号

名称: CW32高低位触发ADC同步采样软件
[简称: ADC同步采样]
1.0

权利人: 武汉芯源半导体有限公司

完成日期: 2022年06月30日

首次发表日期: 未发表

取得方式: 原始取得

权利范围: 全部权利

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名称: CW32L31固件函数库软件
[简称: CW32L31固件库]
1.0

著作权人: 武汉芯源半导体有限公司

完成日期: 2022年07月29日

首次发表日期: 未发表

取得方式: 原始取得

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集成电路布图设计登记证书

登记证书号: 第06065号

布图设计名称: 集成芯片

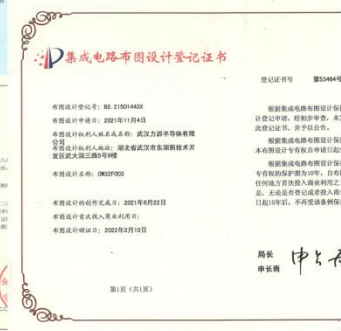
布图设计完成日期: 2022年11月21日

首次发表日期: 未发表

取得方式: 原始取得

权利范围: 全部权利

登记号: 2022SR1409320



集成电路布图设计登记证书

登记证书号: 第06065号

布图设计名称: 集成芯片

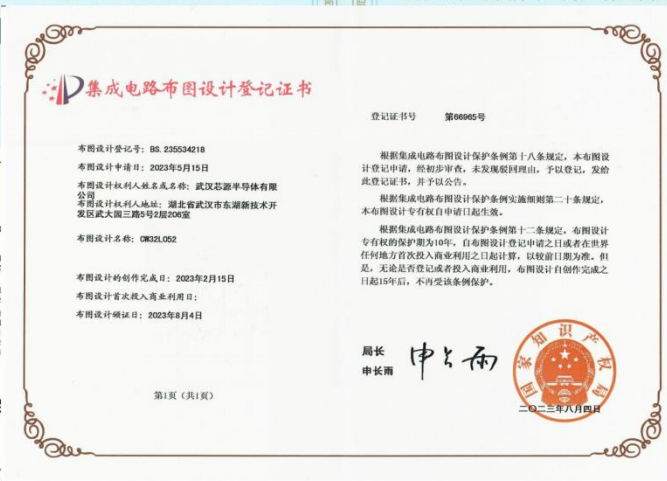
布图设计完成日期: 2022年11月21日

首次发表日期: 未发表

取得方式: 原始取得

权利范围: 全部权利

登记号: 2022SR1409321



集成电路布图设计登记证书

登记证书号: 第06065号

布图设计名称: 集成芯片

布图设计完成日期: 2023年2月15日

首次发表日期: 未发表

取得方式: 原始取得

权利范围: 全部权利

登记号: 2022SR1409322



集成电路布图设计登记证书

登记证书号: 第06065号

布图设计名称: 集成芯片

布图设计完成日期: 2023年2月15日

首次发表日期: 未发表

取得方式: 原始取得

权利范围: 全部权利

登记号: 2022SR1409323



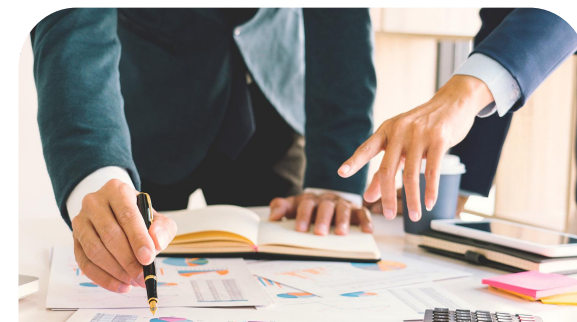
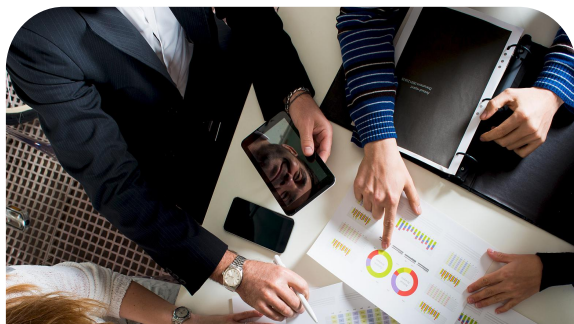
2022年度
最佳MCU芯片

武汉芯源半导体有限公司
武汉芯源CW32F030系列



2022年度
卓越成长表现企业

武汉芯源半导体有限公司



01

Corporate Vision

Committed to becoming the leader of the domestic chip industry

02

Product Positioning

Localized, industrial standard, high quality, affordable ICs

03

Business Philosophy

Open Innovation
Win-Win

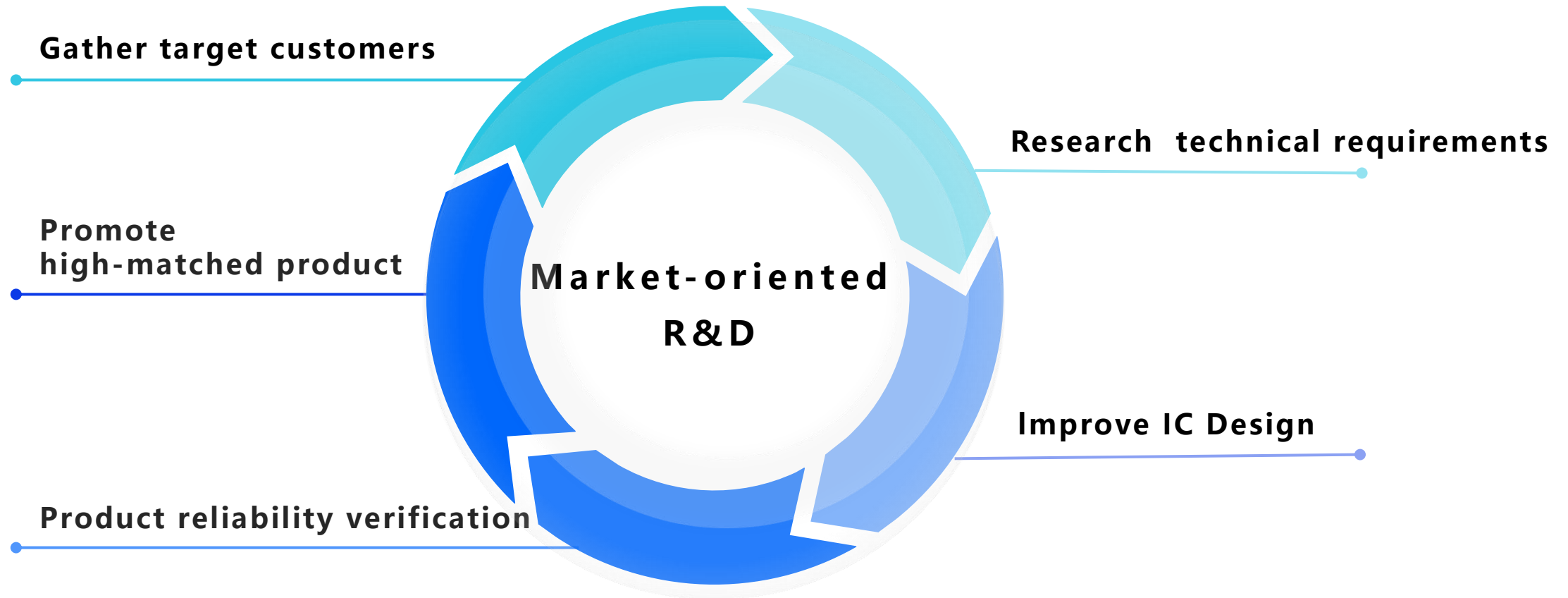
04

Service Tenet

Cost Advantage
Quality Guarantee
Technology Innovation
Reliable Service

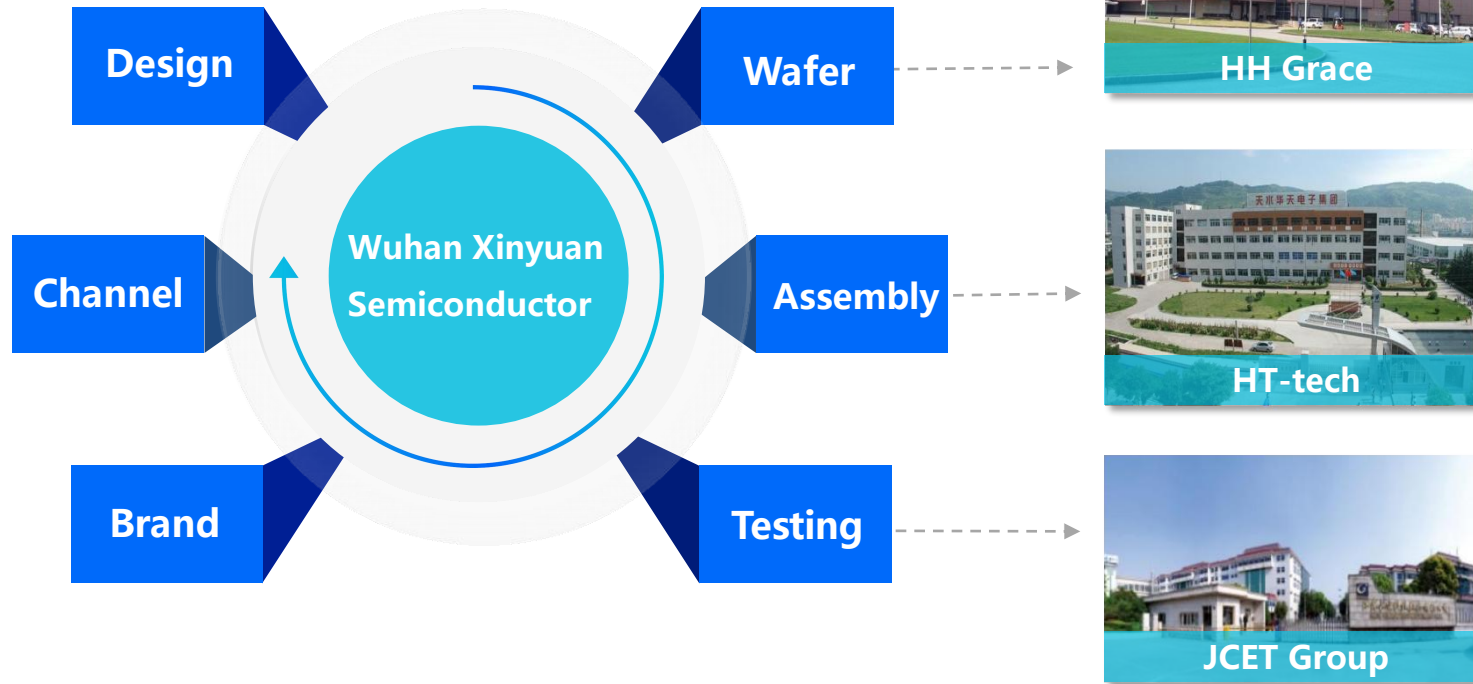


Product Operation Pattern





Industry Chain Partners



HHGrace, a wholly owned subsidiary of Hua Hong Semiconductor Limited (stock code: 1347.HK), focuses on continuous innovation of "8-inch + 12-inch" specialty technologies, with expertise in all technical nodes ranging from 1 μ m to 65/55nm. Its 110nm process is verified by fabless semiconductors as the most reliable technology for embedded MCUs in China

HT-Tech is a professional IC assembly and testing company founded in 2003 (stock code:002185), has fully independent intellectual property rights of wafer level fan-out packaging solution --eSiFO

Founded in 1972, JCET Group is the world's leading IC manufacturing with advanced wafer-level packaging, 2.5D/3D, System-in-Package, and reliable flip chip and wire bonding technologies



Partners

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安科瑞电气

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ACCOUSTICS

BSJ 博实结

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雷利
LeiLi 利

大焊

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许继集团有限公司
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Bercom

P&G

Quality and Reliability

- Quality Management System
- Certifications
- High Reliability Testing Process
- Environmental Compliance



02
Part



Quality Management System

Design
Development

Sample Trial
Production

Batch
Production

Testing/
Inspection

Customer
Application

Design Quality Assurance

Design review
Product design
Reliability design
Qualification

Process Quality Control

Staff training
Device management
Material control
System document control
Environmental management
Exception control
Change management

Production Quality Control

First article inspection
Process sampling inspection
Reliability testing
Yield management
Outgoing quality control

Quality Improvement

QCC root cause analysis
Quality specification maintenance and upgradation
Customer complaints handling and improvement measures validation
Quarterly/annual quality improvement plans
Quality training
DCC maintenance and upgradation

Customer Support

User Manual
Quality information
Failure analysis
Qualification
Quality analysis meetings



Certified by ISO 14001:2015 Environmental Management System Certification



Certified by ISO 9001:2015 Quality Management System



Certified by ISO 45001:2018 Occupational Health and Safety Management System



Performance reliability testing

HBM/CDM/MM ESD; Room temperature/high temperature Latch Up; EFT

All meet the highest level of testing standards

苏试宜特
CHINAISTI TESTING SERVICE

Report No.: SHZ20126006
Version: A

门锁试验报告

Latch up TEST REPORT

委托公司: 武汉芯源半导体有限公司
Company: 武汉芯源半导体有限公司
公司地址: 上海长宁区天山西路 567 号神州智慧大厦 3 楼
Address: 上海长宁区天山西路 567 号神州智慧大厦 3 楼
产品名称: CW32L031
Sample name: CW32L031
委托日期: 2022 年 1 月 24 日
Date Received: 2022 年 1 月 24 日
完成日期: 2022 年 1 月 17 日
Date Tested: 2022 年 1 月 17 日

实验室认证体系 (TESTING LABORATORY IS APPROVAL BY):
证书编号: IECQ-L DEKRA 17.0004-01
IECQ Certificate of Approval No.: IECQ-L DEKRA 17.0004-01 For Independent

实验室证明事项 (WE HEREBY CERTIFY THAT):
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The test(s) shown in the attachment were conducted according to the indicating procedures. We assume full responsibility for the accuracy and completeness of these tests and vouch for the qualifications of all personnel performing them.

	名称 (Name)	签名 (Signature)	日期 (Date)
检测员 Inspector	潘祥仁 Peter Pan		2022 年 2 月 17 号
报告审核人 Report reviewer	陈清珑 Larry Chen		2022 年 2 月 17 号
报告批准人 Approver	李鹏云 Smile Li		2022 年 2 月 17 号

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苏试宜特
CHINAISTI TESTING SERVICE

Report No.: SHZ20126006
Version: A

人体模型静电放电试验报告

HBM TEST REPORT

委托公司: 武汉芯源半导体有限公司
Company: 武汉芯源半导体有限公司
公司地址: 上海长宁区天山西路 567 号神州智慧大厦 3 楼
Address: 上海长宁区天山西路 567 号神州智慧大厦 3 楼
产品名称: CW32L031
Sample name: CW32L031
委托日期: 2022 年 1 月 24 日
Date Received: 2022 年 1 月 24 日
完成日期: 2022 年 2 月 17 日
Date Tested: 2022 年 2 月 17 日

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苏试宜特
CHINAISTI TESTING SERVICE

Report No.: SHZ20126006
Version: A

充电器件模型静电放电试验报告

CDM TEST REPORT

委托公司: 武汉芯源半导体有限公司
Company: 武汉芯源半导体有限公司
公司地址: 上海长宁区天山西路 567 号神州智慧大厦 3 楼
Address: 上海长宁区天山西路 567 号神州智慧大厦 3 楼
产品名称: CW32L031
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Chip manufacturing reliability



Chip electrical performance verification



Accelerated life testing



Accelerated environmental stress



Packaging integrity testing



Destructive Physical Analysis



CW32 full range of products, in compliance with IEC60730 and IEC61508 functional safety design specifications

IEC60730 specification self inspection test

- CPU register self-test test
- Program Counter PC Self Test
- Interrupt self-test test
- Flash memory self check test
- Stack self-test
- SRAM (Variable Memory) Self Test
- Clock self-test test
- Digital I/O self-test
- Analog to Digital Converter (ADC) Self Test

IEC61508 specification self inspection test

- CPU register self-test test
- CPU Instruction Self Test
- Bus self-test test
- Flash memory self check test
- SRAM (Variable Memory) Self Test
- Stack overflow self-test
- Clock self-test test
- Watchdog self check test
- Interrupt self-test test
- DMA self-test

PRODUCTS AND APPLICATIONS

- Arm Cortex-M0+ MCU
- Wireless RF MCU
- EEPROM
- SJ-MOSFET

03
Part





CW32 Arm Cortex-M0+ MCU

CW32 Arm Cortex-M0+ MCU Selection Table		Max. Frequency (MHz)	FLASH (KB)	RAM (KB)	GPIO	DMA	Timer	RTC	UART	SPI	I2C	Security Functions	LCD	Operating Temperature (°C)	Package
<ul style="list-style-type: none"> •1.65V~5.5V power supply •HBM ESD 8KV •12-bit ADC; ±1 LSB •Vref ±60ppm/°C •Temp Sensor ±3°C •Dual voltage comparator •POR/BOR •Programmable LVD •Clocks HSIOSC/LSI/RC10K/RC150K/HSE/LSI •Timers: ATIM/GTIM/BTIM •Watchdog: IWDG/WWDG •OTP memory •IR modulator •Serial wire debug (SWD) •80-bit unique ID 	CW32F030C8	64	64	8	39	5	8	1	3	2	2	CRC16/ CRC32	-	-40 ~ +105	LQFP48
	CW32F030K8	64	64	8	25/27	5	8	1	3	2	2	CRC16/ CRC32	-	-40 ~ +105	LQFP32/ QFN32
	CW32F030Fx	64	64/32	8/6	15	5	8	1	3	2	2	CRC16/ CRC32	-	-40 ~ +105	QFN20/ TSSOP20
	CW32F003E4	48	20	3	21	-	5	-	2	1	1	CRC16	-	-40 ~ +105	TSSOP24
	CW32F003F4	48	20	3	17	-	5	-	2	1	1	CRC16	-	-40 ~ +105	TSSOP20/ QFN20
	CW32L083VC	64	256	24	87	5	9 (1 LPTIM)	1	6	2	2	CRC16/ TRNG/AES	√	-40 ~ +85	LQFP100
	CW32L083MC	64	256	24	71	5	9 (1 LPTIM)	1	6	2	2	CRC16/ TRNG/AES	√	-40 ~ +85	LQFP80
	CW32L083Rx	64	256/128	24	55	5	9 (1 LPTIM)	1	6	2	2	CRC16/ TRNG/AES	√	-40 ~ +85	LQFP64
	CW32L052R8	48	64	8	55	4	8 (1 LPTIM)	1	3	2	2	CRC16	√	-40 ~ +85	LQFP64
	CW32L052C8	48	64	8	39	4	8 (1 LPTIM)	1	3	2	2	CRC16	√	-40 ~ +85	LQFP48
	CW32L031C8	48	64	8	39	4	6	1	3	1	1	CRC16	-	-40 ~ +85	LQFP48/ QFN48
	CW32L031K8	48	64	8	25	4	6	1	3	1	1	CRC16	-	-40 ~ +85	QFN32
	CW32L031F8	48	64	8	14	4	6	1	3	1	1	CRC16	-	-40 ~ +85	QFN20/ TSSOP20



CW32 Arm Cortex-M0+ MCU

Flash/RAM(bytes)

256K / 24K

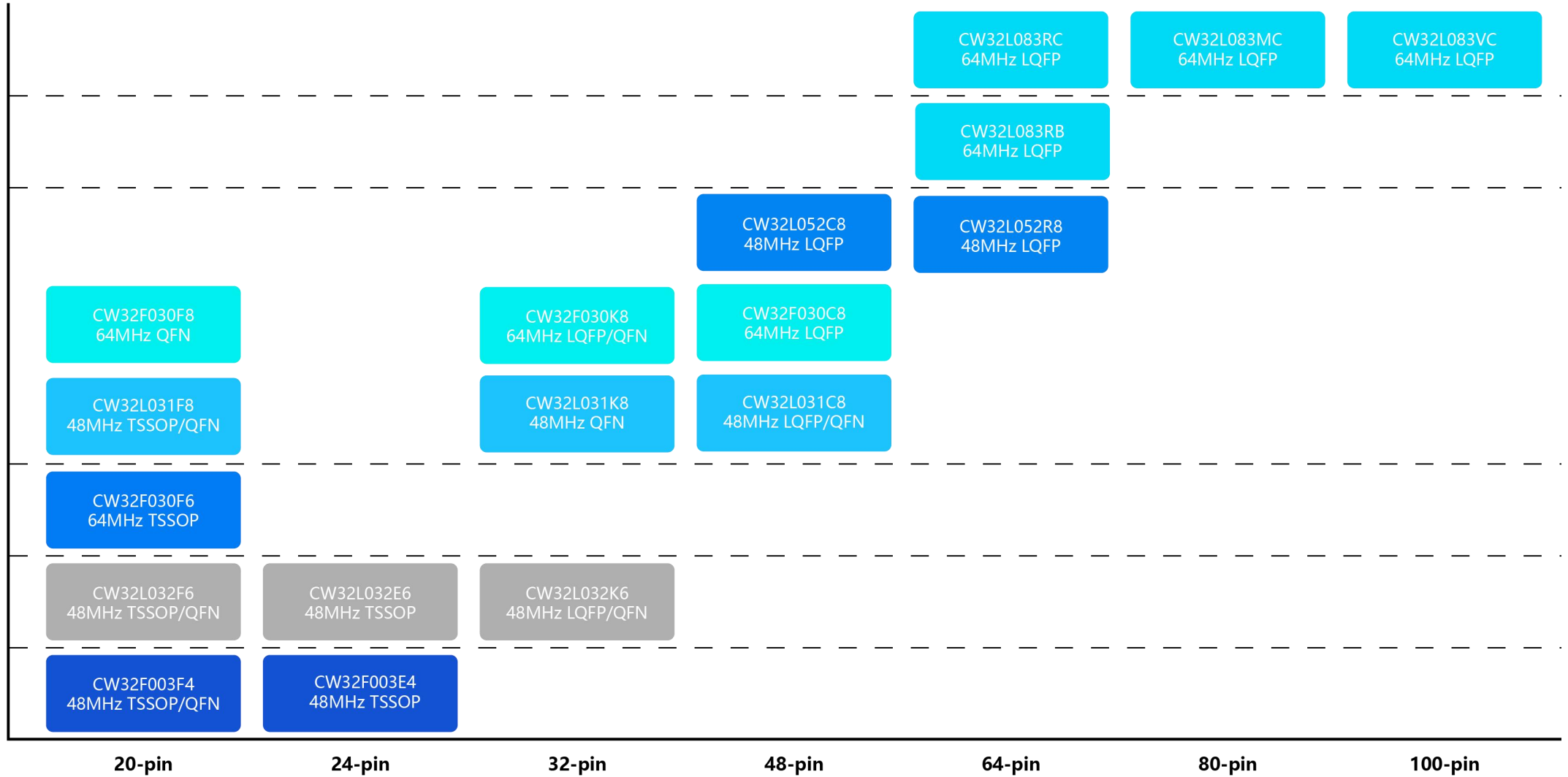
128K / 24K

64K / 8K

32K / 6K

32K / 4K

20K / 3K





Product Advantages

Operating Voltage : 1.65V-5.5V
Operating Temperature: -40 °C -105 °C

CW32F030 性能考核, 严苛考核条件下的算力表现

	Freq	Unit	CoreMark	uA	Coremark/(MHz)	Coremark/(mA)	
CW32F030	24	MHz	60.078	3510	2.50	17.12	FlashWait=0, CACHE=0, FETCH=0
	48	MHz	119.310	6220	2.49	19.18	FlashWait=1, CACHE=1, FETCH=1
	64	MHz	138.552	7830	2.16	17.70	FlashWait=2, CACHE=1, FETCH=1
	72	MHz	155.877	8690	2.16	17.94	FlashWait=0, CACHE=1, FETCH=1

72MHz run --- Pass (-60°C~+125°C, 1.6V~6.0V)

注: 数据基于研发测试过程, 保障性数据以官方数据手册为准

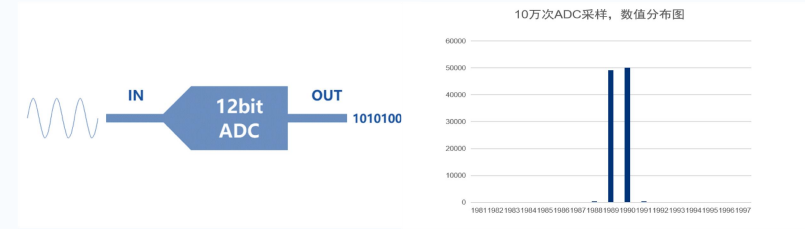
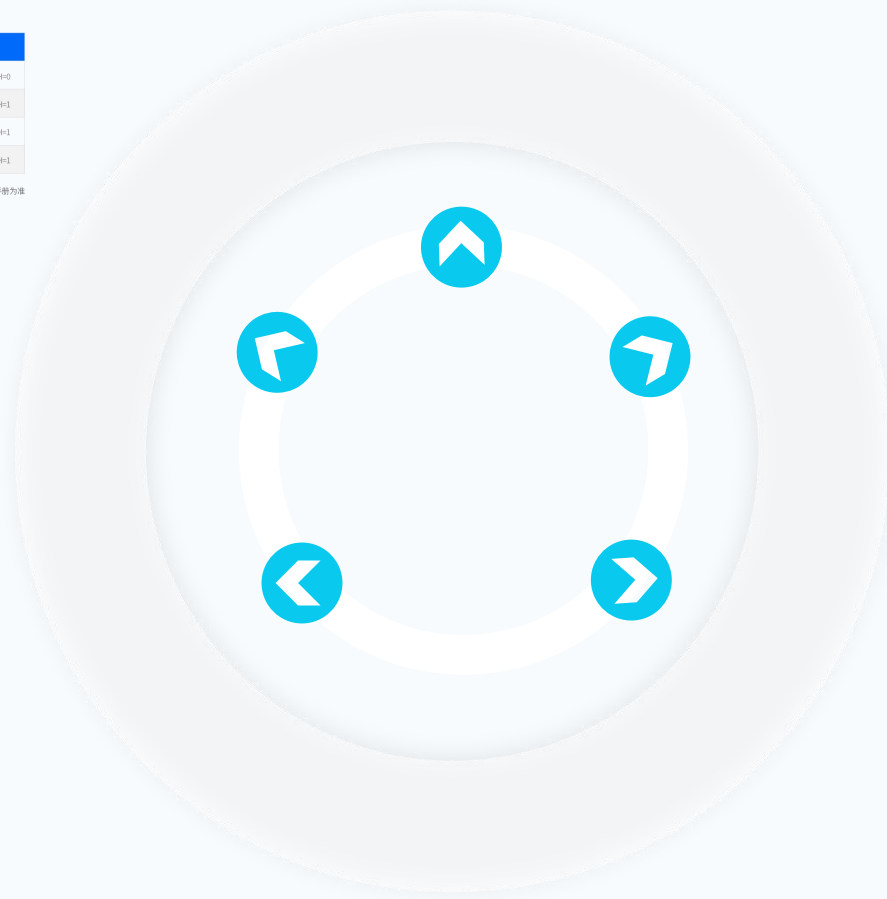
Adopting the Prefetch+Cache architecture
The computing power/power ratio of the same frequency CoreMark surpasses that of similar products

HHGrace | 华虹宏力 | HHGrace Semiconductor Manufacturing Corporation
上海华虹宏力半导体制造有限公司

Table 6: Reliability Characteristics

Symbol	Parameter	Minimum Specification	Units
N_{RETD}	Sector Endurance	20,000 (min) @1.5V	Cycles
T_{DR}	Data Retention	100year@25C, 25year@85C, 10year@125C	Years

Stable and reliable eFLASH manufacturing
Ensure highly reliable industrial applications



12-bit ADC, ±1 LSB, 11.3 ENOB

CHINAISTI(SHANGHAI)TESTING TECHNOLOGY CO.,LTD. Report No. : SH2106280099HE-CN
Reliability & Failure Analysis Group Version : A
No. 455 Jinfeng Road, Pudong New Area, Shanghai City, China. Page 5 of 7
Tel: 86-21-61910691, Fax: 86-21-64069790
<http://www.chinaisti.com>

2.5 SUMMARY OF TEST

Test Model : HBM	ESD Sensitivity Passed : ±8000V		ANSI/ESDA/JEDEC JS-001-2017 Classification Class : 3B
	Sample Quantity	Passed Volts	
Test condition	3	±8000V	Class 0Z : < 50V Class 0A : ≥ 50V , < 125V Class 0B : ≥ 125V , < 250V Class 1A : ≥ 250V , < 500V Class 1B : ≥ 500V , < 1000V Class 1C : ≥ 1000V , < 2000V Class 2 : ≥ 2000V , < 4000V Class 3A : ≥ 4000V , < 8000V Class 3B : ≥ 8000V
ALL OTHER PINS TO VSS (+/-) STEP: 8000V ALL OTHER PINS TO VSSA (+/-) STEP: 8000V ALL OTHER PINS TO VDD (+/-) STEP: 8000V ALL OTHER PINS TO VDDA (+/-) STEP: 8000V IOGroup01 TO IOGroup01 (+/-) STEP: 8000V			

ESD protection capability (HBM ESD, MM ESD, CDM ESD, Latch up @105°C) is certified to the highest class of JEDEC standard



Product Advantages

01 Operating Voltage : 1.65V-5.5V; Operating Temperature: -40 °C -105 °C

02 CW32L083/052series integrated features

- 1.16-bit low-power timer
- 2.Monochrome passive LCD controller (Built-in charge pump)
- 3.Advanced Encryption Standard module (CW32L083)
- 4.True Random Number Generator (CW32L083)

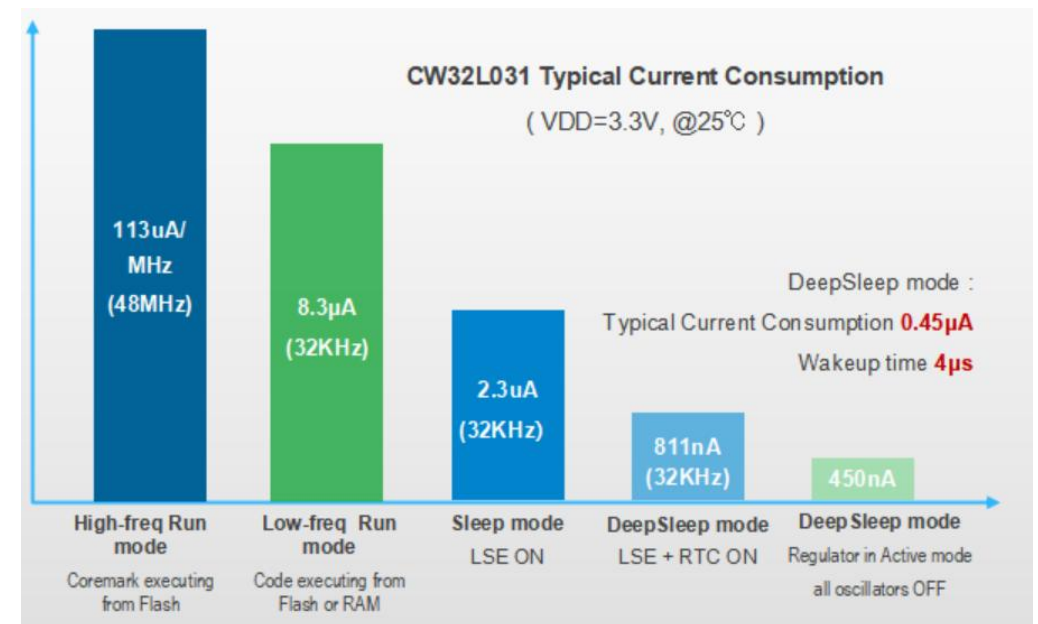
03 AUTOTRIM supports automatic clock calibration or automatic wake-up MCU from DeepSleep mode

04 12-bit ADC, ± 1 LSB, Internal 1.5V and 2.5 voltage reference Vref +60ppm/°C

05 Multilevel program security protection

06 ESD protection capability (HBM ESD,MM ESD, CDM ESD, Latch up @105°C) is certified to the highest class of JEDEC standard

07 Current consumption reference values





Consumer Electronics

Electronic cigarette, wireless charging, fascia gun, pan tilt control, electronic scale, wireless microphone, headphone charging case, remote control, electric toy, pet barking stop



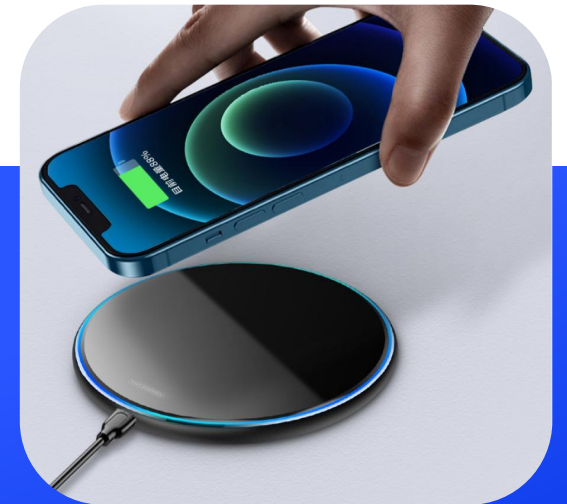
Earphone charging case



Fascial gun



Pet Barking Stopper

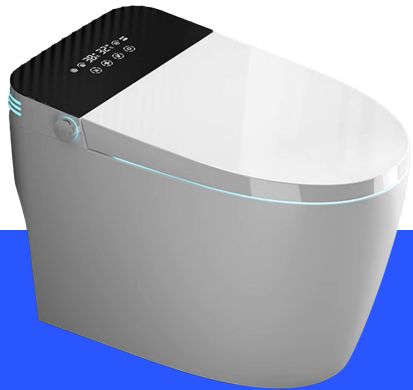


Wireless charging



Intelligent Life

Electric curtains, temperature controller, intelligent lifting table, intelligent toilet, intelligent door lock, washing machine control board, ice maker control board, vacuum cleaner, intelligent clothes hanger, intelligent water meter, intelligent gas meter, intelligent lighting, air purifier



Intelligence Toilet



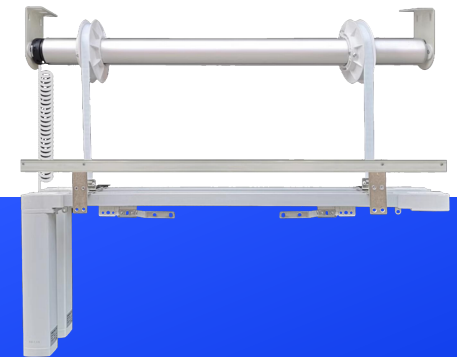
temperature controller



Intelligent water meter



Intelligent gas meter

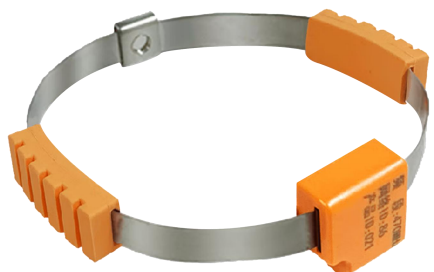


Electric curtain



Industrial control

Lighting, digital power supply, intelligent circuit breaker, wireless temperature measurement, welding machine, material level switch, combustible gas alarm, smoke detector, industrial sensor



Wireless temperature measurement



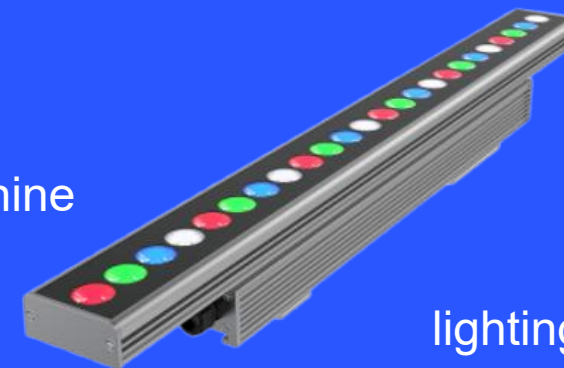
Combustible gas alarm



Electric welding machine



Intelligent circuit breaker



lighting



Product Application

Traffic

Electric motorcycle/bicycle dashboard, electric vehicle charger, two wheeled vehicle controller, portable charging gun, in car wireless charger, reverse radar, tailgate control, car ambient light, tire pressure monitoring, and air pump



Car ambient lighting



Parking sensor



Blast pump



Controller



Portable charger



Dashboard



New energy sector

Photovoltaic inverter, portable energy storage, household energy storage, lithium battery protection board BMS, photovoltaic combiner device, solar umbrella controller



Portable energy storage



PV Inverter



Photovoltaic convergence device



Home energy storage



Personal Health and Care

Blood oxygen meter, electronic thermometer, electronic blood pressure meter, household hair removal device, beauty device, ear temperature gun, handheld thermometer, massage chair



ear thermometer



cosmetic instrument



oximeter



massage chair



Electric tools

Handheld electric drill, garden tools, aircraft model servo, BLDC driver, lawn mower



water pump



Hand-held
electric drill



Aircraft model servo



cropper



Radio frequency MCU products

CW32 RF series	core	modulation	Protocol class	Working frequency band (MHz)	output power (dBm)	sensitivity (dBm)	Working current (RF part)	Max. Frequency (MHz)	FLASH (KB)	RAM (KB)	GPIO	communication interface	working voltage (V)	Operating Temperature (°C)	Package	
<ul style="list-style-type: none"> •12-bit ADC; ±1 LSB •Dual voltage comparator •Low Voltage Detector •128 byte OTP memory •Timers: ATIM/GTIM/BTIM •Clocks HSIOOSC/LSI/RC10K/RC150K/HSE/LSI •Watchdog: IWDG/WWDG •Real time clock and calendar •Four channel DMA •CRC hardware computing unit 	CW32R031C8	M0+	GFSK	2.4G private, Bluetooth Beacon	2400~2483	-40~+10	-88@1Mbps	Sleep: 100nA RX: 20mA TX: 25mA@0dBm	48	64	8	31	1xIIC 1xSPI 3xUART	2.2~3.6	-40~+85	QFN48
	CW32W031R8	M0+	ChirpIoT™	proprietary protocol	370 ~590 740~1180	-7~+22	-140@62.5kHz	Sleep: 400nA RX: 12.5mA@DCDC TX: 25mA@0dBm	48	64	8	33	1xIIC 1xSPI 3xUART	LDO1.8~3.6 DCDC2.0~3.6	-40~+85	QFN64

CW32W031 embedded low-power long-distance ChirpIoT™ The RF subsystem operates in the frequency bands of 370MHz~590MHz and 740MHz~1180MHz, supports half duplex wireless communication, supports low-speed modes of 0.08kbps~20.4kbps, supports automatic identification of spreading factors and CAD functions, and has high anti-interference, high sensitivity, low power consumption, and ultra long distance communication characteristics, suitable for long-distance wireless connections.

CW32R031 supports the communication frequency range of 2400MHz~2483MHz, is compatible with BLE and XN297L data packets, has a programmable output power of up to+10dBm, has a good reception sensitivity of -88dBm, supports automatic response and automatic retransmission functions, and is suitable for short distance wireless connections.



CW32 Radio frequency MCU typical application

CW32R031 application field

Remote control, e-cigarettes, drones, toys, electronic fences, electronic tags, lighting, door locks, keyboards and mice, and other products.



Remote control



e-cigarettes



door locks



drones

CW32W031 application field

Wireless automatic meter reading, long-distance data communication, smart home, industrial Internet of Things, smart agriculture, supply chain logistics, etc.



smart home



industrial Internet of Things



smart agriculture



supply chain logistics

R&D SUPPORT

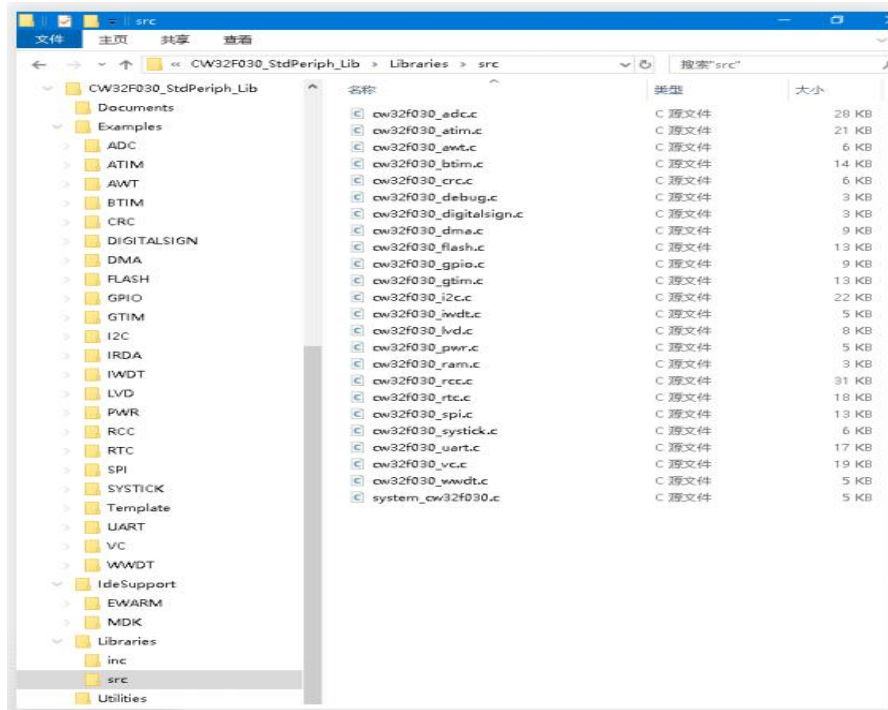
- R&D data
- Development tools
- Development Environment and Technology Forum

04
Part



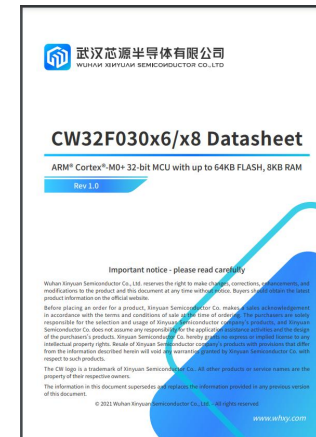
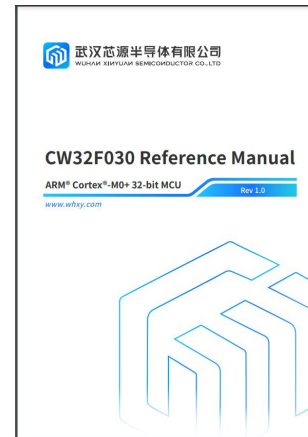
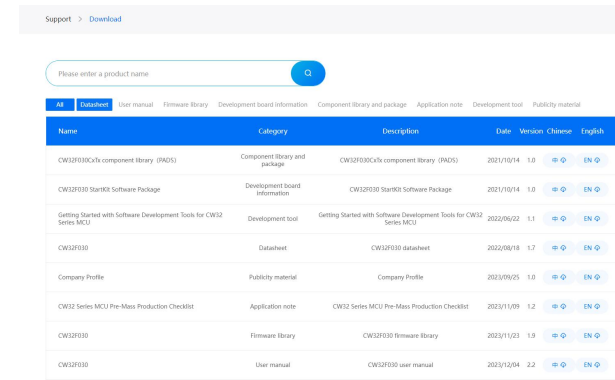


Standard Peripheral Libraries and Examples



Provide example codes for testing items of IEC 60730 /IEC 60335 Class B specifications.

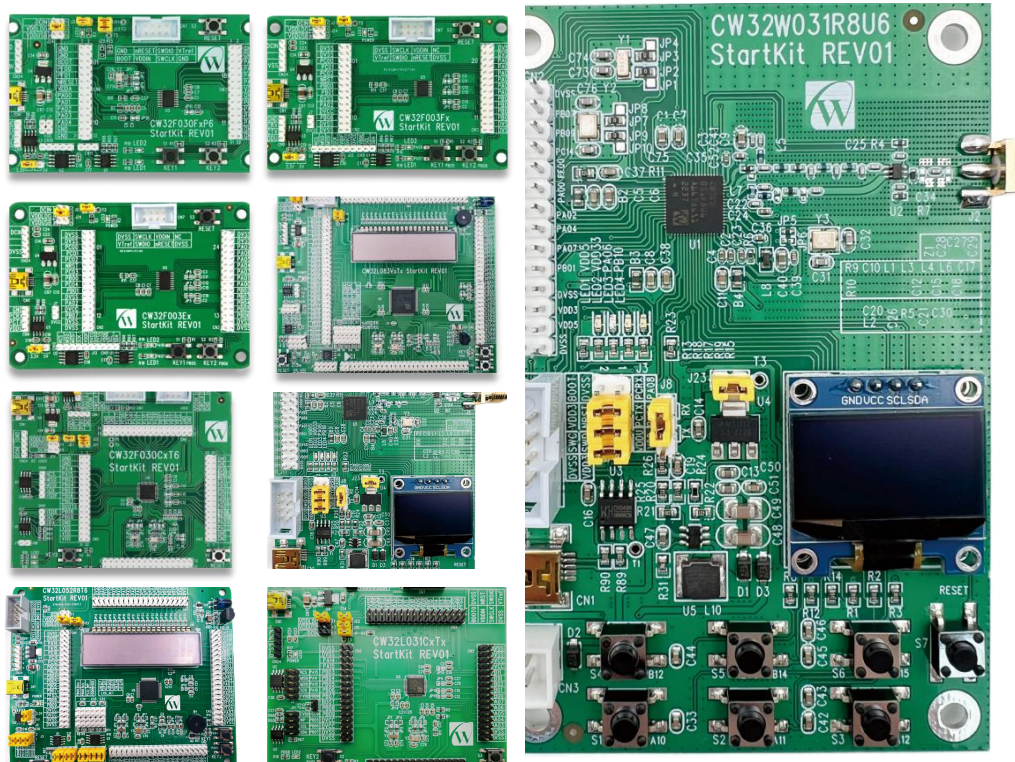
Product Materials on Official Website (Datasheets, User Manuals, Libraries, Application Notes...)



www.whxy.com



Evaluation Boards



Debuggers



CW-DAPLINK: DAP-based debugger for CW32 MCUs, no driver required

General SWD debuggers, e.g. JLINK

Programmers



CW-Writer: for CW32 MCUs online/offline programming, with port to automatic programming machine

Referring to the application note about CW32 MCU ISP protocol, 3rd parties also provide compatible programmers

Software IDE



Technical Exchange Forum



THANKS!

