

Гид по продукции BYD Semiconductor Co., Ltd



Aurora Evernet Components – профессиональный поставщик электронных компонентов

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Semiconductor

BYD Semiconductor

Automotive -grade MCU

TECHNOLOGICAL
INNOVATIONS
FOR A BETTER LIFE



Overview



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Scientific research team

- More than 800 people
- Undergraduate > 99%, Master and Doctor > 50%
- The average working experience is 10 years
- Shenzhen, Shanghai, Xi'an, Jinan

Application ecology

- BYDIDE, Keil, IAR, Eclipse, Visual Studio, GCC
- Mcal, Free RTOS
- U-link, J-link, B-link
- Application notes, development manuals

Quality performance

- The design satisfies system IATF16946
- ISO26262 ASIL B
- AEC-Q100-Grade1
- DFEMA, PFEMA, PPAP, etc
- Defective rate < 1ppm

Supply chain

- Wafer: TSMC, SMIC, HHgrace
- Package test: BYD Semiconductor, Huatian, Tongfu, Changdian

Product matrix

- Core: 8-bit 8051, 32bit-M0/M0+, M4F, M7
- Flash: 32K~1Mb
- Package: SOP8~LQFP100

Service

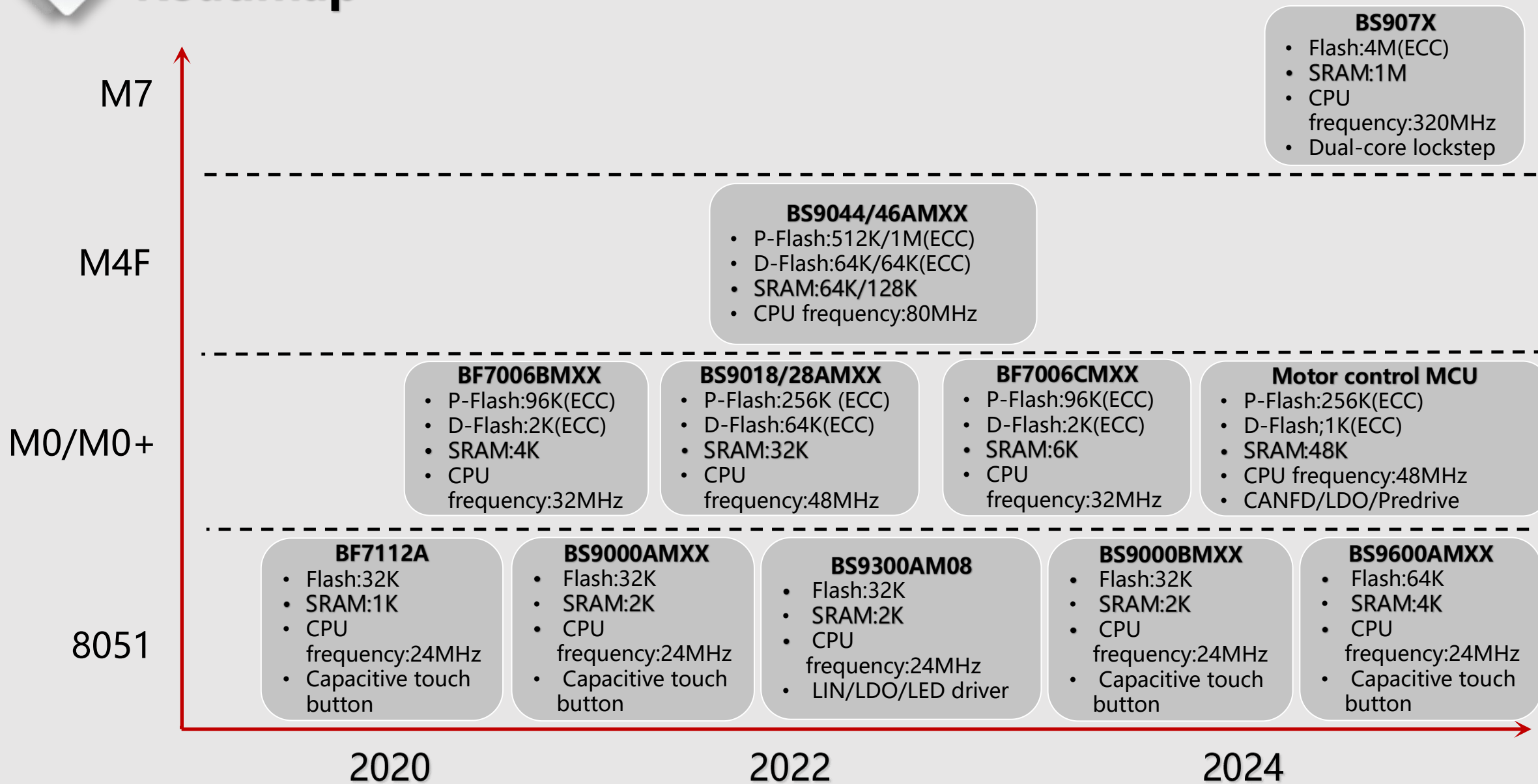
- 7×24H
- Delivery time: As predicted



Roadmap



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8051 core 8-bit automotive-grade touch MCU



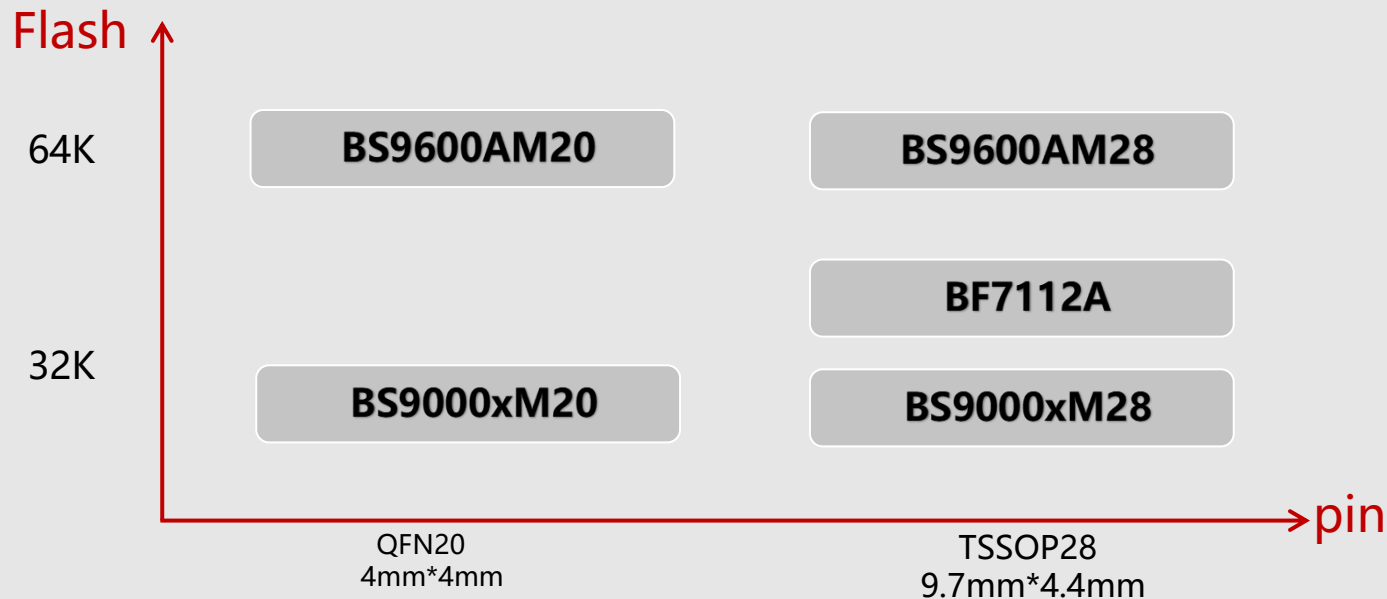
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Features:

- The detection accuracy is 0.1pf
- Low power detection mode is supported
- Hardware environment adaptive

Application:

- Ideal for automotive touch handles, indoor lights, power seats, and power Windows.



Product model	Core	Freq	ROM	EEPROM	RAM	Timer	RTC	PWM	GPIO	ADC	INT	LIN	UART	IIC	SPI	Touch-KEY	Operating Voltage	Operating Temperature	ESD (HBM)	Package
BS9600AM28	8051	24M	64K	1K	4K	3*16bit	1*16bit	7*16bit	26	24*12bit	26	1	2	1	1	24	3.0V-5.5V	-40°C ~ 125°C	± 8kV	TSSOP28
BS9600AM20	8051	24M	64K	1K	4K	3*16bit	1*16bit	7*16bit	18	16*12bit	18	1	2	1	1	16	3.0V-5.5V	-40°C ~ 125°C	±8kV	QFN20
BS9000xM28	8051	24M	32K	1K	2.256K	3*16bit	1*16bit	7*16bit	26	24*12bit	26	1	2	1	1	24	3.0V-5.5V	-40°C ~ 125°C	± 8kV	TSSOP28
BS9000xM20	8051	24M	32K	1K	2.256K	3*16bit	1*16bit	7*16bit	18	16*12bit	18	1	2	1	1	16	3.0V-5.5V	-40°C ~ 125°C	±8kV	QFN20
BF7112A	8051	24M	32K	2k	1k	4*16bit	/	2*12bit	26	/	23	/	2	1	/	23	2.7V-5.5V	-40°C ~ 125°C	± 2kV	TSSOP28



8051 core 8-bit automotive-grade LED drive MCU



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➤ Features:

- 30mA Current source with adjustable output
- Integrated LINPHY
- Integrated LDO

➤ Application:

- The chips are very suitable for RGB atmosphere lights, charging port lights.



Product model	Core	Freq	ROM	EEPROM	RAM	Timer	PWM	HVIO	WDT	LINphy	LDO	LED Driver	Operating Voltage	Operating Temperature	ESD(HBM)	Package
BS9200AM08	8051	24M	30.5K	1K	2.256K	3*16bit	3*16bit	3	1	内置	内置	3*30ma	6.0V-18V	-40°C ~ 125°C	±4kV	ESOP8

ARM Cortex-M0/M0+ Core 32-bit automotive -grade MCU



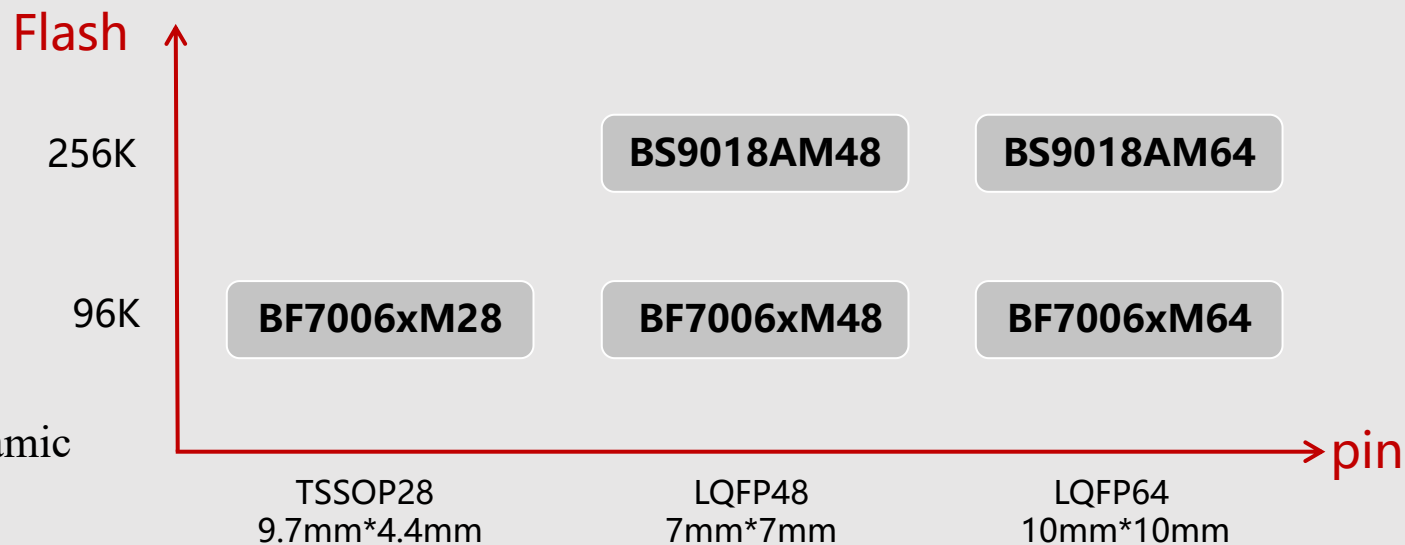
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➤ Features:

- Economy 32-bit general-purpose chip
- 7006 can be benchmarked to R products
- 9018 can be benchmarked to N products

➤ Application:

- Suitable for air conditioning panel, starting battery, DMS, rotating stand, charging gun, electronic shift, automatic start stop, panoramic sunroof, cooling fan, electric adjustment of steering wheel, LED rear taillight, etc.



Product model	Core	Freq	PFLASH	DFLASH	SRAM	Timer	RTC	PWM	GPIO	ADC	CMP	INT	CAN2.0 / CANFD	LIN	UART	IIC	SPI	CSE	Operating Voltage	Operating Temperature	ESD(HBM)	Package
BS9028AM64	ARM M0+	48M	256K	64K	32K	3*16bit 1*32bit	1*32bit	16*16bit	57	16*12bit	1	57	1	3	3	2	3	1	2.7V-5.5V	-40°C ~ 125°C	±6kV	LQFP64
BS9018AM64	ARM M0+	48M	256K	64K	32K	3*16bit 1*32bit	1*32bit	16*16bit	57	16*12bit	1	57	1	3	3	2	3	1	2.7V-5.5V	-40°C ~ 125°C	±6kV	LQFP64
BS9018AM48	ARM M0+	48M	256K	64K	32K	3*16bit 1*32bit	1*32bit	16*16bit	42	13*12bit	1	42	1	3	3	2	3	1	2.7V-5.5V	-40°C ~ 125°C	±6kV	LQFP48
BF7006xM64	ARM M0	32M	96K	2K	4K	2*16bit	1*32bit	6*16bit	54	24*12bit	/	24	1	2	2	/	1	/	3.6V-5.5V	-40°C ~ 125°C	±6kV	LQFP64
BF7006xM48	ARM M0	32M	96K	2K	4K	2*16bit	1*32bit	6*16bit	40	16*12bit	/	24	1	2	2	/	1	/	3.6V-5.5V	-40°C ~ 125°C	±6kV	LQFP48
BF7006xM28	ARM M0	32M	96K	2K	4K	2*16bit	1*32bit	6*16bit	22	8*12bit	/	14	1	2	2	/	1	/	3.6V-5.5V	-40°C ~ 125°C	±6kV	TSSOP28



ARM Cortex-M4F Core 32-bit automotive -grade MCU



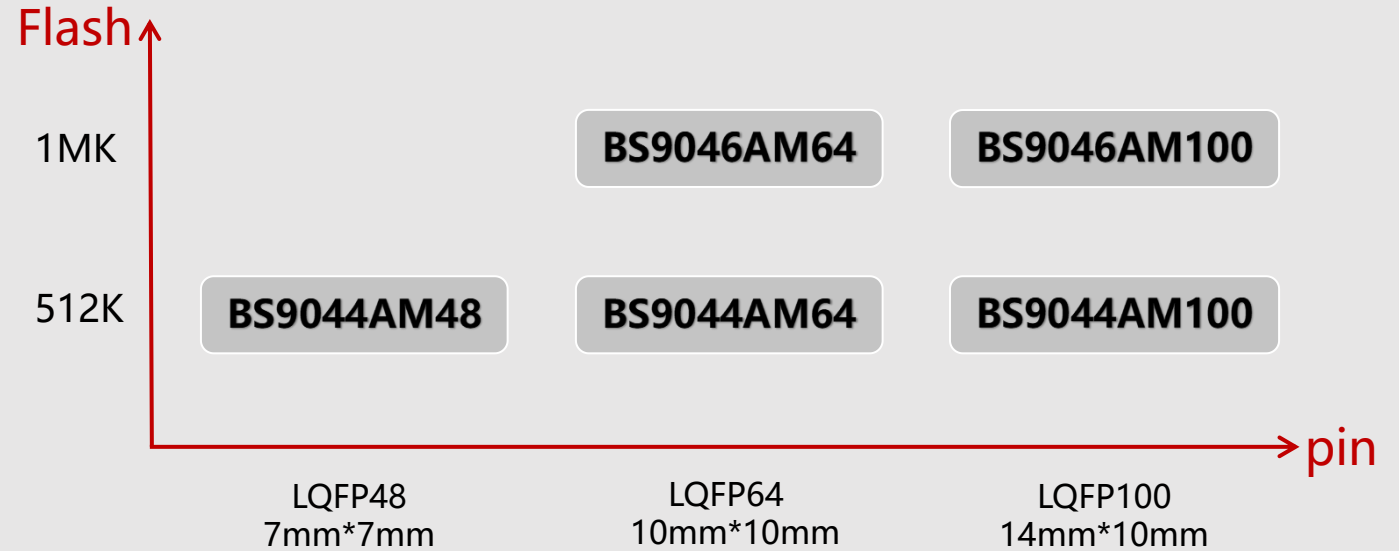
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➤ Features:

- Rich communication interfaces and analog peripherals
- Reliable safety detection module
- Can be benchmarked to N products

➤ Application:

- Suitable for air conditioning controllers, combined instrument, LED headlights, atmosphere light controller, intelligent entry, electronic gear shifters, electric tailgates, audio systems, ultrasonic radar control, streaming media mirrors, etc.



Product model	Core	Freq	PFLASH	DFLASH	SRAM	Timer	RTC	PWM	GPIO	ADC	CMP	INT	CANFD	LIN	UART	IIC	SPI	CSE	Operating Voltage	Operating Temperature	ESD(HBM)	Package
BS9046AM100	ARM M4F	80M	1M	64K	128K	5*16bit 4*32bit	1*32bit	36*16bit	88	32*12bit	1	88	4	4	4	4	4	1	2.7V-5.5V	-40°C ~ 105°C	±4kV	LQFP100
BS9046AM64	ARM M4F	80M	1M	64K	128K	5*16bit 4*32bit	1*32bit	36*16bit	57	27*12bit	1	57	4	4	4	4	4	1	2.7V-5.5V	-40°C ~ 105°C	±4kV	LQFP64
BS9044AM100	ARM M4F	80M	512K	64K	64K	5*16bit 4*32bit	1*32bit	36*16bit	88	32*12bit	1	88	4	4	4	4	4	1	2.7V-5.5V	-40°C ~ 105°C	±4kV	LQFP100
BS9044AM64	ARM M4F	80M	512K	64K	64K	5*16bit 4*32bit	1*32bit	36*16bit	57	27*12bit	1	57	4	4	4	4	4	1	2.7V-5.5V	-40°C ~ 105°C	±4kV	LQFP64



Collaborative brands



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In no particular order



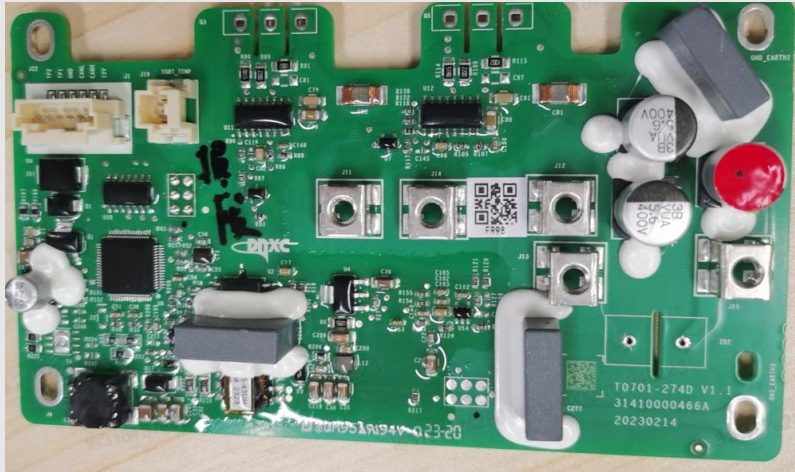


Vehicle application modules

Modules have been applied in vehicles					High-end Multicore MCU applicable modules	
Power Window	PM2.5	Combination Switch	BCM (Body Control Module)	SCU (Gear controller)	VCU (Vehicle Controller Unit)	BMS②
Power Seat	LED Headlight	DMS	Body Domain Controller	Oil /Water pump Controller	F/R MCU (Front/Rear motor controller)	ISG (Integrated Starter Generator)
Power Liftgate	LED Rearlight	Electronic steering column lock (ESCL)	Matrix Headlight	Auto start-stop	ECM (Engine Control Module)	TCU (Transmission Controller Unit)
Power Rear-view Mirror	Interior Light	Starting battery	TBOX	Panoramic sunroof	EPB (Electronic Parking Brake)	Suspension controller
Motor Spining Machine	Wireless Charger	Leakage Current Sensor	Center Console Multimedia (Coprocessing MCU)	Cooling fan (FOC)	OBC (on board charger)	DC-DC
AC Panel	Sunlight Sensor	Touchable Door handles	Air Conditioning Controller	Steering Wheel Adjustment	SRS (Supplementary Restraint System)	
Thermal Management Controller in A/C and Battery	Charging Gun	Atmosphere Light	BMS	Intelligent Entry	BSG (Belt Driven Starter Generator))	
Engine Sound Generator	Charging Box	Windshield Wiper	All-liquid Crystal Instrument		CEPS (Column Electric Power Steering)	

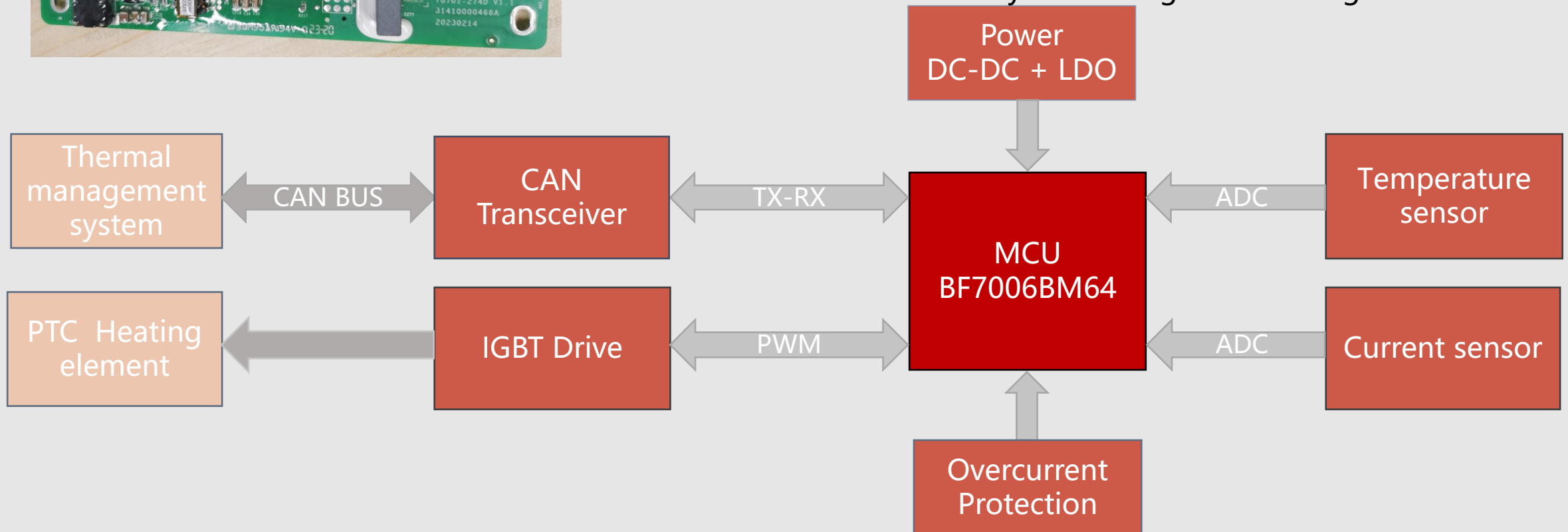


PTC Application scheme introduction - BF7006



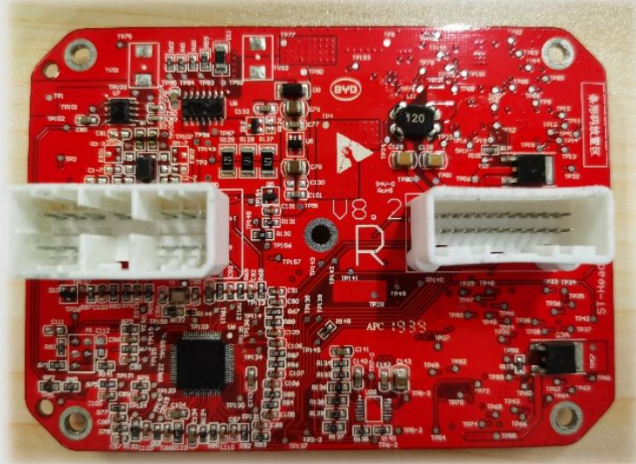
➤ PTC Heating controller:

Manage passenger compartment heating and battery pack heating in pure electric passenger vehicles, and unify the power supply and control of low-voltage and high-voltage systems through the entire vehicle. The controller drives and outputs the IGBT heated by PTC through PWM signal, and achieves constant temperature heating and automatic control functions by controlling the PWM signal.



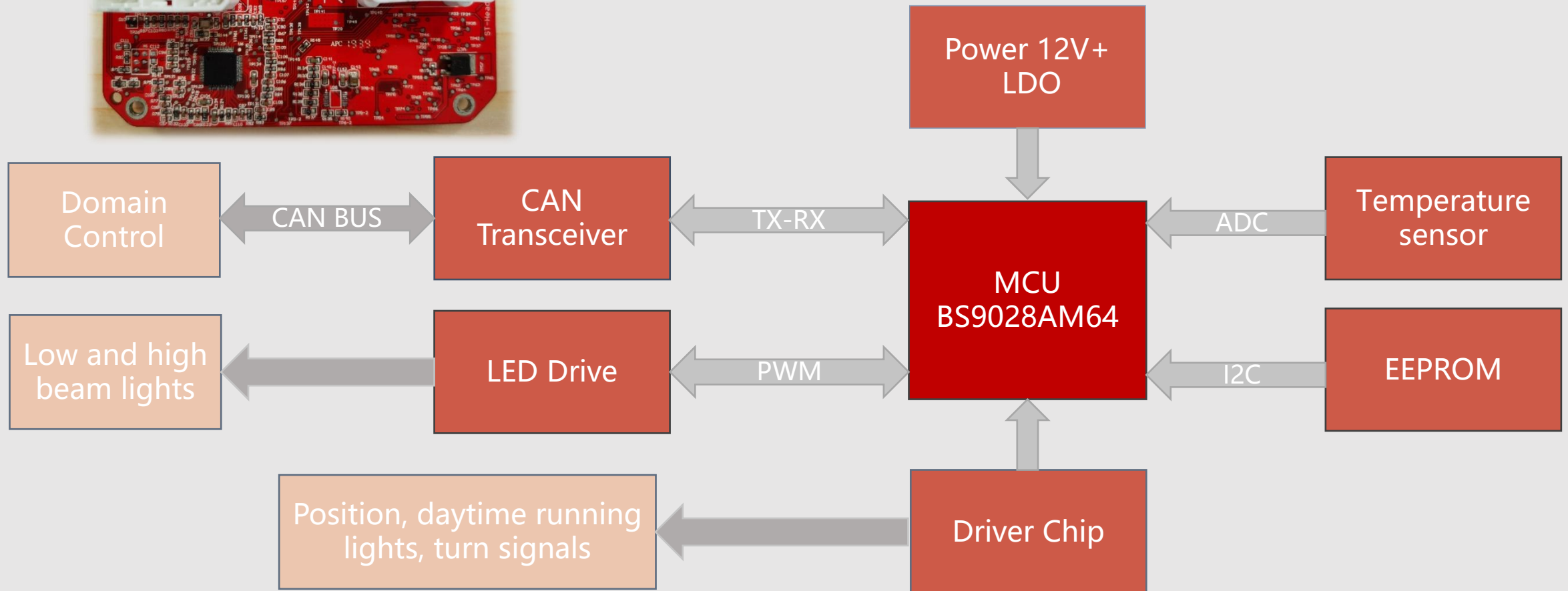


LED Introduction to application solutions for front headlights-BS9028



➤ Combination headlights:

The main functions include road lighting and signal transmission. Specifically, it includes high beams, low beams, turn signals, daytime running lights, and position lights



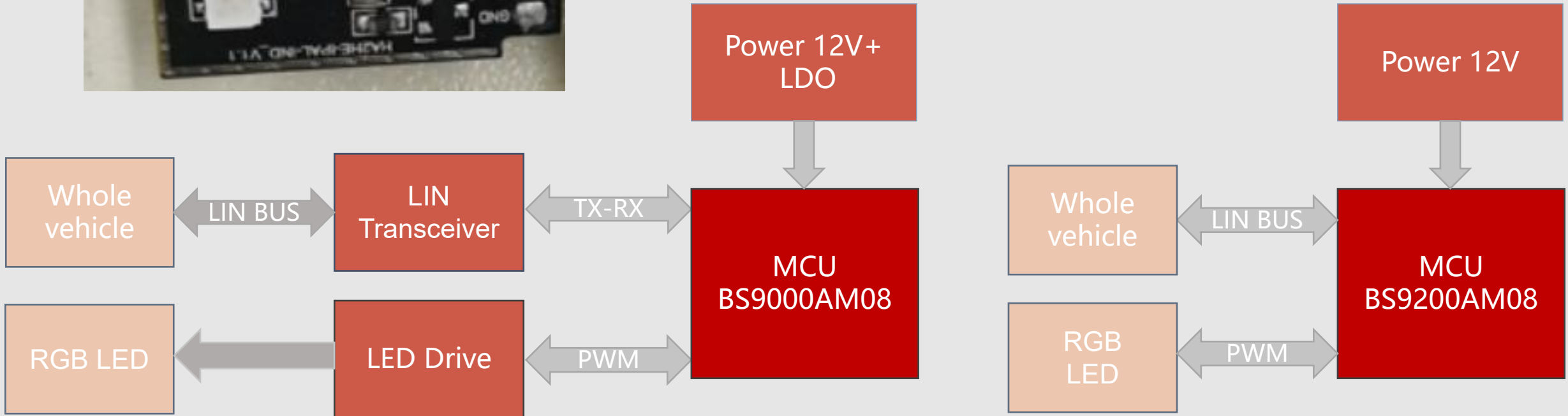


Introduction to application solutions for ambient lighting - BS9000、BS9200



➤ Car ambient lighting:

Also known as LED ambient lights, it is a type of lighting that serves as a decoration. Multiple lights are usually set up in the center console door panel, headlights, and central aisle, with monochrome and multi-color options available, such as red, green, blue, etc.



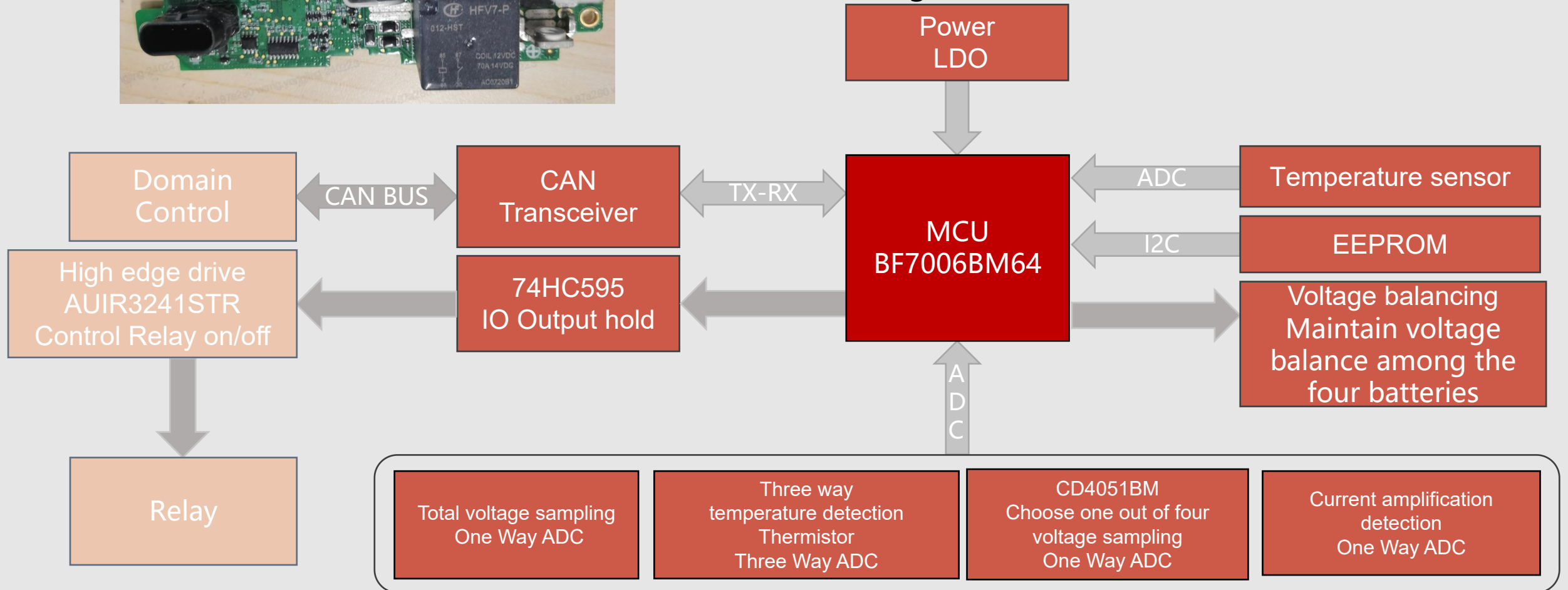


Introduction to battery application solutions for startup-BF7006



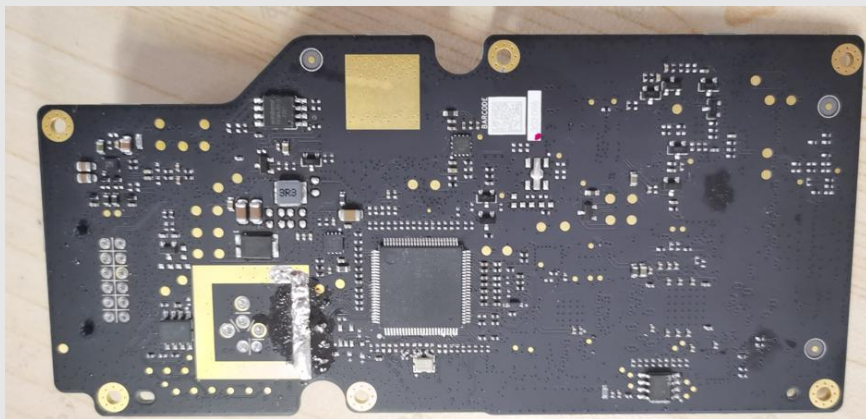
➤ Start Battery:

Starting battery management is used to control the charging and discharging of automotive batteries, monitor battery safety, and maintain voltage and current balance



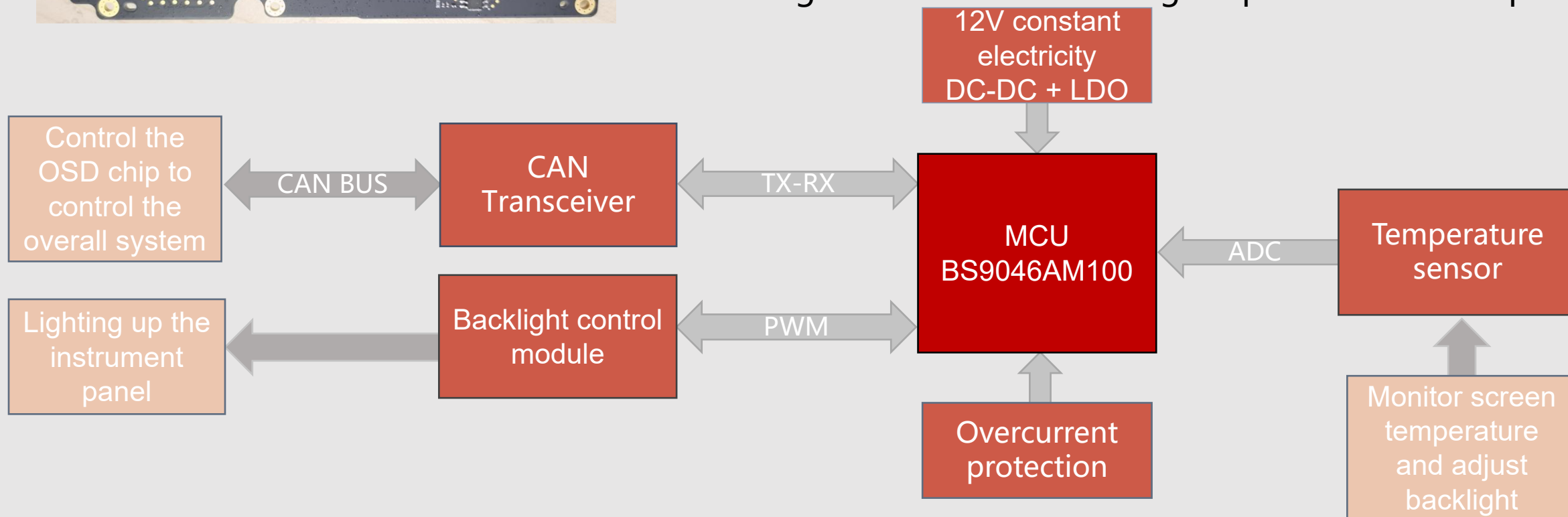


Introduction to in car multimedia application solutions - BS9046



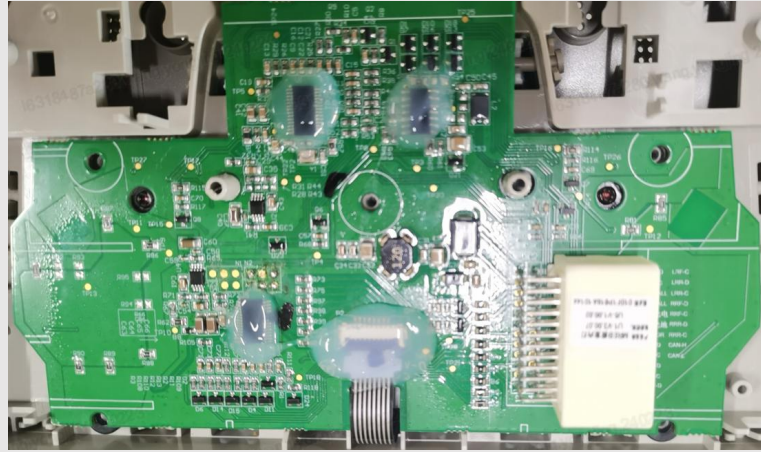
➤ Multimedia:

The multimedia host and the combination instrument display screen communicate data through GMSLTI. The combination instrument display screen is equipped with a backup system, and the MCU controls the OSD chip by receiving/forwarding CAN messages. Use PWM drive to control the backlight on the screen and light up the instrument panel.



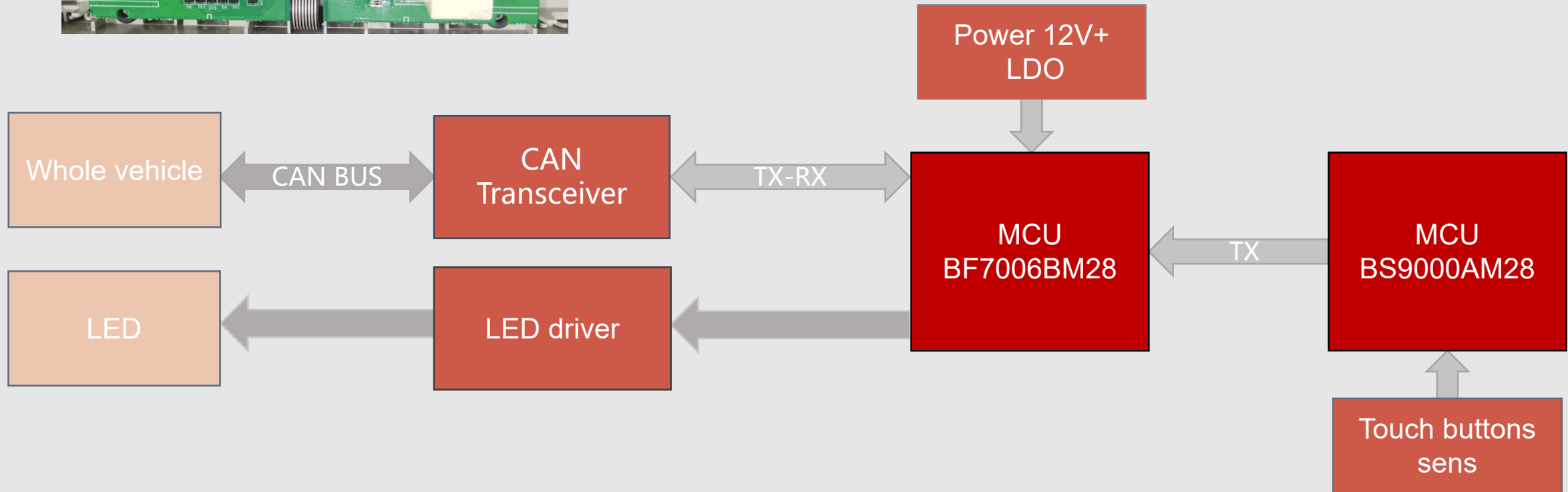


Introduction to application solutions for reading lights - BF7006、BS9000



➤ Touching indoor lights:

A lamp installed inside a car for easy illumination. This type of lamp is generally installed on the top of the driver's seat and the middle top of the backseat, mainly to facilitate passengers to easily turn on or off the interior headlights when needed.





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THANK YOU!

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