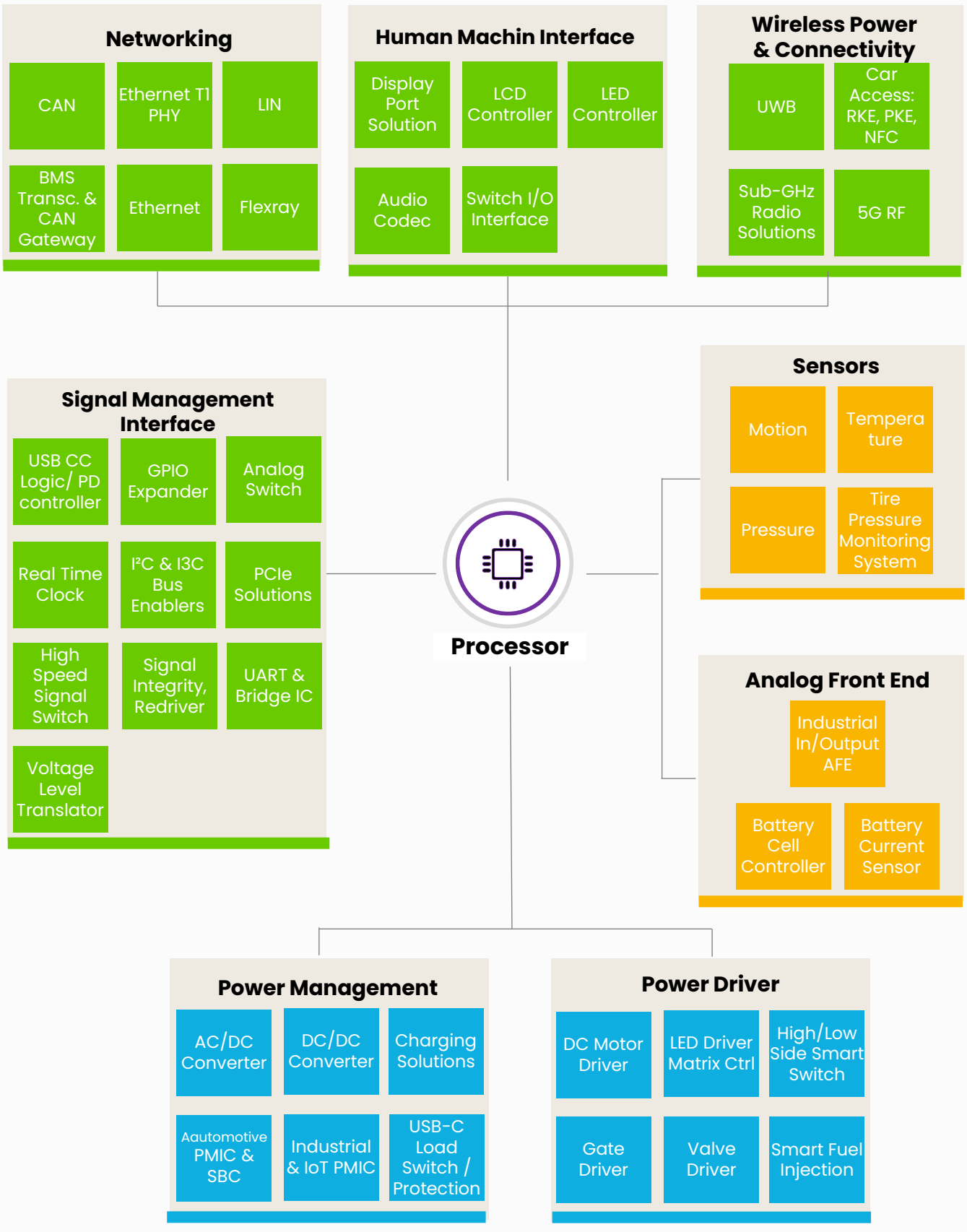
Advanced Analog

PRODUCT CATALOG Selection

January 2025 Rev3.1

Advanced Analog Portfolio Summary

Data Network – Precision Analog – Energy Network



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PRODUCT CATALOG SELECTION –INDEX-

Segment	Category	Product	Description	Link to ID	For Indust. & IoT	For Auto
Function Specific Analog & Interfaces	BUS Repeater	PCA9617A	Level Translating I2C-bus Repeater	Link	●	
	USB Type-C Switch	PTN36043	USB Type-C SuperSpeed Redriver Switch	Link	●	
	Level Translator	NVT2002	Dual Supply and Bidirectional Voltage Translator	Link	●	●
	Level Translator	NTS0102	Dual Supply and Bidirectional Voltage Translator	Link		
	Real-Time Clock	PCF85263	Real-Time Clock/Calendar	Link	●	
	Real-Time Clock	PCF2131	Nano-Power Highly Accurate Real Time Clock Module	Link	●	
	General Purpose I/O	PCAL6416 / PCAL6524	16bit & 24bit Agile I/O GPIO Expander	Link	●	
	LED Driver	PCA9955	16-Channel Constant-Current LED Driver	Link	●	
	Switch Detection Interface	CD1020	22-Channel Multiple Switch Detect Interface	Link		
LIN / CAN / Ethernet	LIN	TJA1021	LIN2.1/SAE J2602 Transceiver	Link	●	●
	LIN	TJA1028	MINI LIN System Basis Chip	Link	●	●
	CAN FD	TJA1044 / TJA1057	High Speed CAN with Flexible Data Rate	Link	●	●
	CAN SIC	TJA1462 / TJA1463	CAN SIC Transceiver with Standby & Sleep Mode	Link	●	●
	Ethernet Switch	SJA1105	5 port Ethernet Switch	Link	●	●
Sensors	Accelerometer	FXLS8974	3-Axis Accelerometer for Low-Power Motion Wakeup	Link	●	
	Accelerometer	FXLS8971 / FXLS8961	3-axis Accelerometer for high performance over temperature	Link	●	●
	Temp. Sensor	P3T1035 / P3T2030	Temperature Sensor, I3C, I²C, WLCSP4, 12-bit, ±0.5 °C & ±2.0 °C	Link	●	●
	Temp. Sensor	P3T1750 / P3T1755	Temperature Sensor, I3C, I²C, TSSOP, 12-bit, ±0.5 °C & ±1 °C	Link	●	
	Magnetic Sensor	NMH1000	Ultra-Low Power and Low-Voltage Magnetic Switch Sensor	Link	●	
	Pressure Sensor	MPL3115A2S	Digital Pressure Sensor 20 to 110kPa	Link	●	

Blue Font → Additional items since Jan'25

PRODUCT CATALOG SELECTION –INDEX-

Segment	Category	Product	Description	Link to ID	For Indust. & IoT	For Auto
Analog Front-End		NAFE1xxx/ NAFE7xxx	Software Configurable Analog Input AFE	Link	●	
System Power Management	SBC	FS23	System Basis Chip for Automotive Body End-Nodes Systems	Link		●
	SBC	FS24	QM to ASIL B Mini System Basis Chip with DC-DC / LDO / CAN FD	Link		●
	SBC	FS65 / FS45	Grade 1 and Grade 0 Safety Power System Basis Chip	Link		●
	SBC	FS56	Dual channel HVBUCK regulator with safety features	Link	●	●
	PMIC	PF81 / PF82	12-Channel 5 V PMIC for High-Performance Processing	Link	●	●
	PMIC	PF0100	14-Channel Configurable & Programmable PMIC	Link	●	●
	PMIC	PCA9420 / PCA9421	Power Management IC for Low Power IoT Systems	Link	●	
	PMIC	PCA9450	Power Management IC for i.MX 8M Mini/Nano/Plus	Link	●	
	PMIC	PCA9451A	Power Management IC for i.MX 93 Application Processor	Link	●	
Power Delivery	USB Power Delivery	NX20P3483	USB PD and Type-C High-Voltage Sink/Source Combo Switch	Link	●	
	USB Power Delivery	NX20P5090	20 V High-Voltage USB Power Delivery Switch	Link	●	
	AC/DC	TEA2017	AC to DC with Digital Configurable LLC & Multimode PFC Controller	Link	●	
	AC/DC	TEA2095	GreenChip Dual LLC Synchronous Rectification (SR) Controller	Link	●	
	AC/DC	TEA2376	Digital Configurable Interleaved PFC Controllers	Link	●	
	High Side Switch	XS2410	3V to 60V, 4 channel self-protected High-Side Switch	Link	●	

Blue Font → Additional items since Jan'25

1 About Technical Support

If you have a question about NXP products, you can reach out NXP's Distributors or NXP sales, or NXP can support by online base too!

Support Tickets
Confidential assistance with NXP support professional
Click → Submit a ticket

Live Chat
How can we help?
Click → Live Chat: Online Now

NXP Community
Open forum for technical discussions moderated by NXP experts
Click → Get answers

2 About Product Longevity

- HERO+ are available for minimum of 10 years or 15 years since product launched date
- Extended periods may be available under certain circumstances
- About each product information, please check Product Longevity in NXP.com

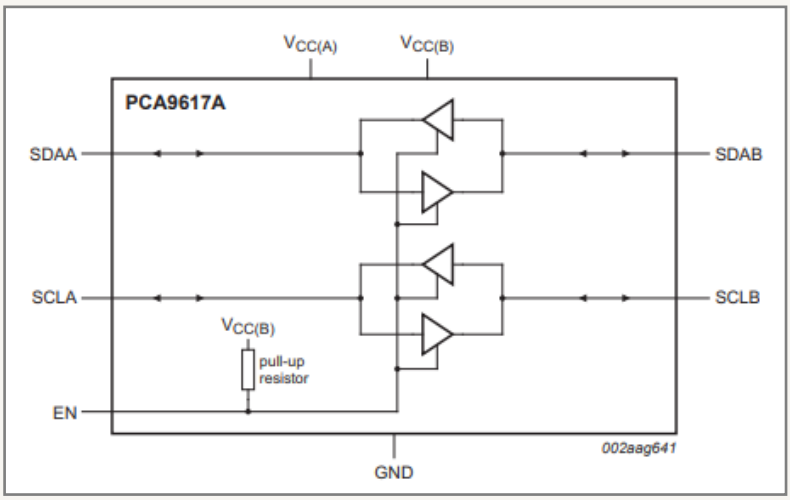
Product Longevity

PCA9617

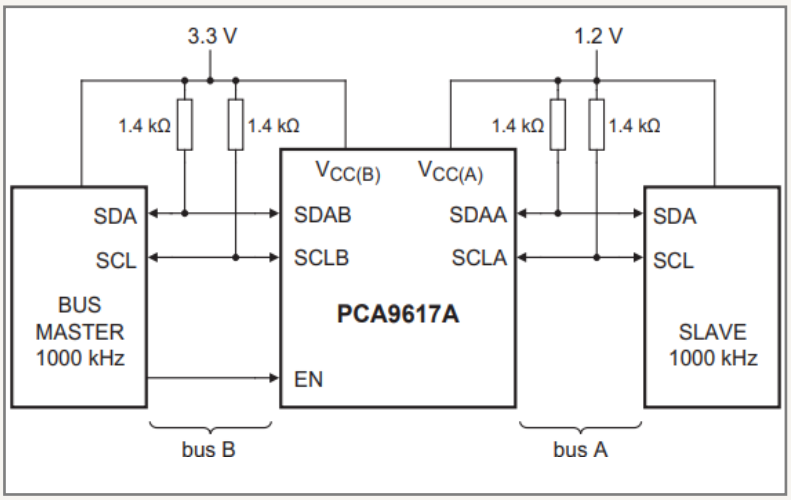
Level Translating I2C-bus Repeater

Enable the next design level with higher data rates and up to 540 pF bus loading, by PCA9617A supporting I2C Fast-mode plus 1 MHz

Device Block Diagram



Application Block Diagram



1 Key Features

- **2 channel Bidirectional I2C Buffer**
- Supporting Standard-mode, Fast-mode and Fast-mode Plus = **1 MHz** I2C-bus devices
- Port A operating 0.8V – 5.5V and Port B operating 2.2 V – 5.5 V with static offset level

2 Benefit for customers

- Enable to **translate voltage between master and slave devices**
- Enable to **isolated two different buses** for both capacitive load and voltage
- Supporting **Intel and AMD's server platforms**

3 Target Application

- Applications requiring, the connection with many devices though I2C/I3C
- Applications requiring, I/O card insertion into a live system
- Advanced TCA Card
- Server
- Notebooks/Desktops

Key Device Parameters

- 2 channel, bidirectional buffer isolates capacitance, and allows 540 pF on either side of the device at 1 MHz and up to 4000 pF at lower speeds
- Voltage level translation from 0.8 V to 5.5 V and from 2.2 V to 5.5 V
- Footprint and functional replacement for PCA9517A at Fast-mode speeds
- Port A operating supply voltage range of 0.8 V to 5.5 V with normal levels
- Port B operating supply voltage range of 2.2 V to 5.5 V with static offset level
- 5 V tolerant I2C-bus and enable pins
- 0 Hz to 1000 kHz clock frequency
- Active HIGH repeater enable input referenced to VCC(B)
- Open-drain input/outputs
- Latching free operation
- Supports arbitration and clock stretching across the repeater
- Accommodates Standard-mode, Fast-mode and Fast-mode Plus I2C-bus devices, SMBus (standard and high power mode), PMBus and multiple masters
- Powered-off high-impedance I2C-bus pins
- ESD protection exceeds 5500 V HBM per JESD22-A114 and 1000 V CDM per JESD22-C101
- Latch-up testing is done to JEDEC Standard JESD78 which exceeds 100 mA
- Packages offered: TSSOP8 and HWSON8
- Supporting Product Longevity

Product Longevity

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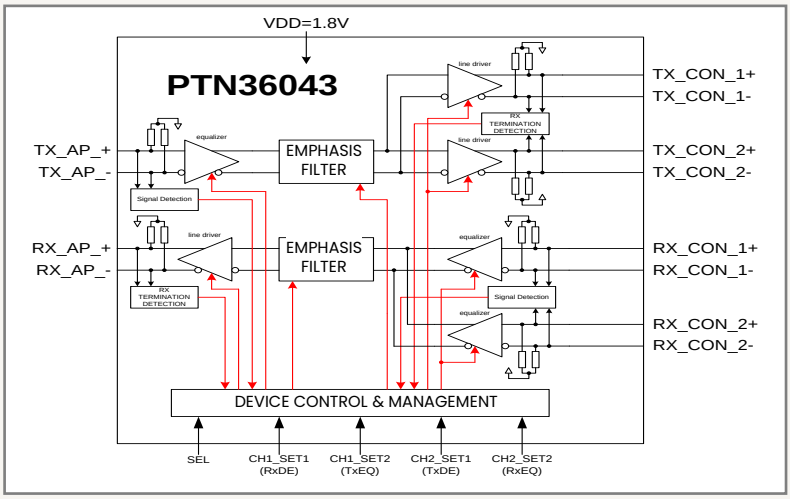
PTN36043

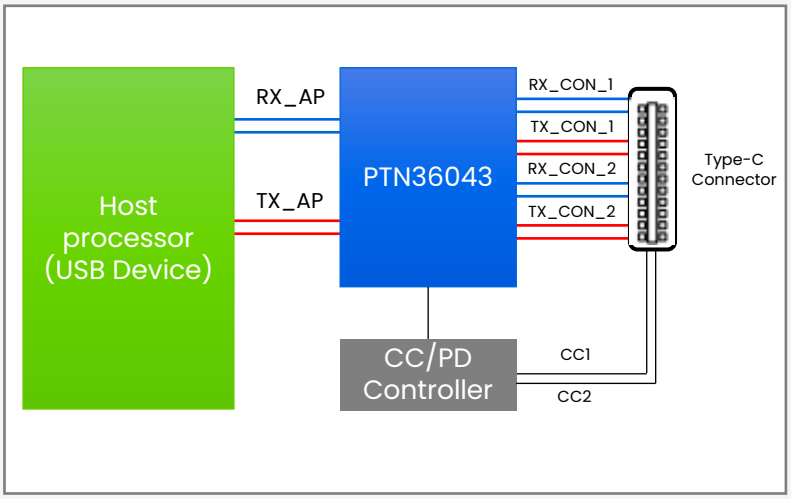
USB Type-C SuperSpeed Redriver Switch

Drive USB2 signals from processors to the USB Type-C connector, targeting Smartphone, Laptop, Tablet, Portable Electronics

Device Block Diagram



Application Block Diagram



1 Key Features

- **5 Gbps USB3.0 one port redriver switch**
- Optimized data flow for **Type-C connector**
- **Significant Power-Saving**:
  1.35 mW/0.75 mA (typical) when in U2/U3 states
  0.81 mW/0.45 mA (typical) when no connection detected

2 Benefit for customers

- **Ease PCB layout and minimize crosstalk** effects by Flow-through pinout
- **Enable Smaller PCB design** by very small thin DHXQFN18 package
- Allow expansion of existing high-speed ports for **ultra low power consumption**

3 Target Application

Smart Phones, Notebooks, Tablets, Servers, Docking stations, Flat Panel Display, Consumer/Storage Devices, Printers, USB3.1 Capable Hubs/Repeaters

Key Device Parameters

- USB Type-C Active MUX
- Compliant to SuperSpeed USB 3.0 standard
- 2 control pins for each channel to select optimized signal conditions
  Receive equalization / Transmit de-emphasis / Output swing adjustment
- Low power management scheme
  - ✓ 203 mW active power
  - ✓ 1.35 mW in U2/U3 state
  - ✓ 0.81 mW with no connection
- Supply Voltage: 1.8 V
- ESD: 7000 V HBM; 1000 V CDM
- Package : DHX2QFN 18 2.0 mm x 2.4 mm x 0.35 mm, 0.4 mm pitch
- Supporting “Product Longevity”

Product Longevity

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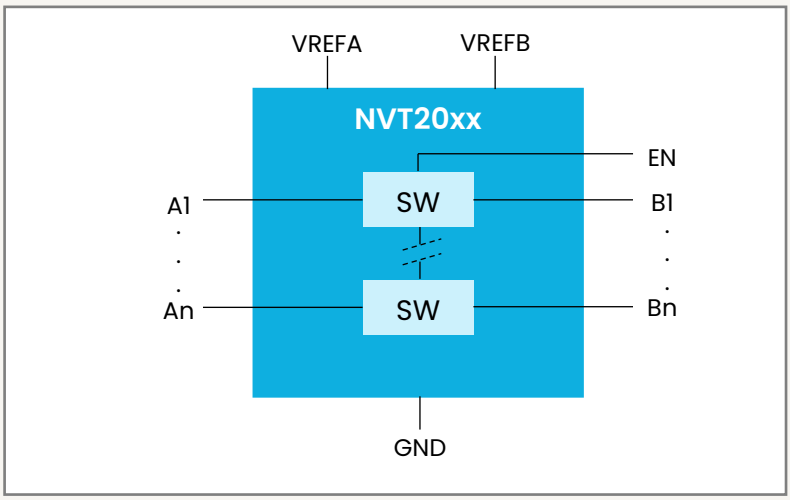
NVT2002

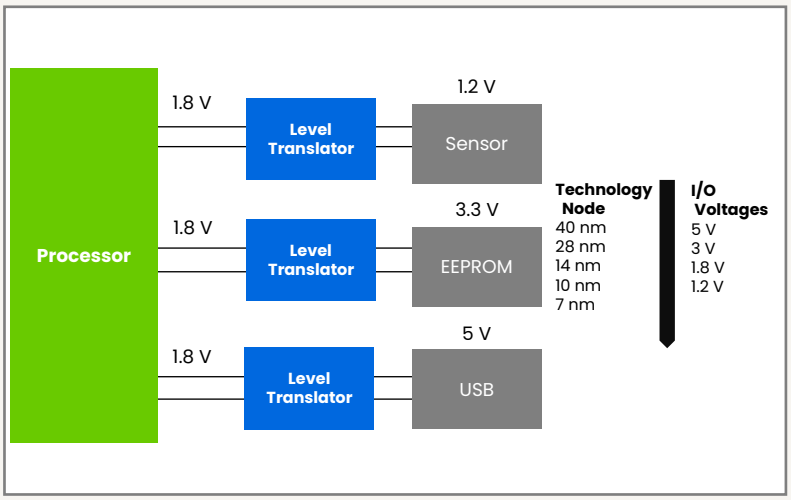
Dual Supply and Bidirectional Voltage Translator

Dual supply and Bidirectional voltage level translators with extremely thin, small package options

Device Block Diagram



Application Block Diagram



1 Key Features

- **Two power supplies for same line**
- **Extremely thin & small** packages available
- **Bi-directional voltage translation** without direction pin
  - Vref(A): 1.0 ~ 3.3 V
  - Vref(B): 1.8 V + 5 V

2 Benefit for customers

- **Enable connection of advanced nodes processors** to different higher voltage peripherals
- **Enable smaller design** by the small package option
- Suitable for Push-Pull and Open-Drain Applications

3 Target Application

Broad applications, which has advanced process nodes CPU

Key Device Parameters

- Provides bidirectional voltage translation with no direction pin
- Less than 1.5 ns maximum propagation delay
- Allows voltage level translation between:
  - 1.0 V $V_{ref(A)}$ and 1.8 V, 2.5 V, 3.3 V or 5 V $V_{ref(B)}$
  - 1.2 V $V_{ref(A)}$ and 1.8 V, 2.5 V, 3.3 V or 5 V $V_{ref(B)}$
  - 1.8 V $V_{ref(A)}$ and 3.3 V or 5 V $V_{ref(B)}$
  - 2.5 V $V_{ref(A)}$ and 5 V $V_{ref(B)}$
  - 3.3 V $V_{ref(A)}$ and 5 V $V_{ref(B)}$
- Low 3.5 Ω ON-state connection between input and output ports provides less signal distortion
- 5 V tolerant I/O ports to support mixed-mode signal operation
- High-impedance An and Bn pins for EN = LOW
- Lock-up free operation
- Flow through pinout for ease of printed-circuit board trace routing
- ESD protection exceeds 4 kV HBM per JESD22-A114 and 1000 V CDM per JESD22-C101
- Supporting Product Longevity

Part number	Package
NVT2002DP	TSSOP8, 3 x 3 x 1.1 mm
NVT2002TL	HXSON8, 3 x 2 x 0.5 mm

Product Longevity

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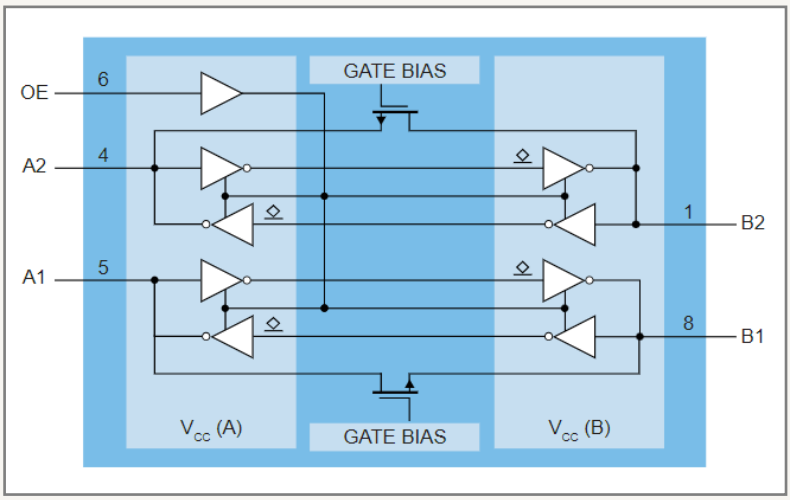
NTS0102

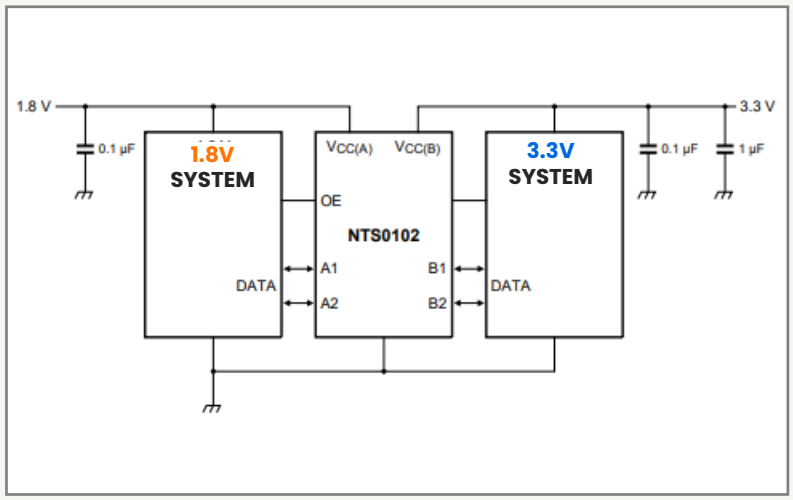
Dual Supply and Bidirectional Voltage Translator

Dual supply & Bidirectional level translating with the wide voltage range

Device Block Diagram



Application Block Diagram



1 Key Features

- 2-bit Dual supply voltage translating between
  VCC(A) : **1.65 to 3.6 V**
  VCC(B) : **2.3 V to 5.5 V**
- **Auto Direction sensing** and no direction-control signal needed
- AEC-Q100 Qualified version is available (Tamb= 125 ˚C)

2 Benefit for customers

- **Enable connection of advanced nodes processors** to different higher voltage peripherals
- Suitable for Push-pull and Open drain applications
- Enable simple design with Integrated **pull-up resister** on I/Os lines

3 Target Application

Broad applications, which has advanced process nodes CPU

Key Device Parameters

- Wide supply voltage range:
  VCC(A): 1.65 V to 3.6 V and VCC(B): 2.3 V to 5.5 V
- Maximum data rates: Push-pull: 50 Mbit/s
- I_{OFF} circuitry provides partial Power-down mode operation
- Inputs accept voltages up to 5.5 V
- ESD protection:
  - HBM JESD22-A114E Class 2 exceeds 2500 V for A port
  - HBM JESD22-A114E Class 3B exceeds 8000 V for B port
  - MM JESD22-A115-A exceeds 200 V
  - CDM JESD22-C101E exceeds 1500 V
- Latch-up performance exceeds 100 mA per JESD 78B Class II
- Multiple package options
- Automotive product qualification in accordance with AEC-Q100 (Grade 1)
  - Specified from -40 °C to +85 °C & -40 °C to +125 °C
- Supporting Product Longevity

Product Longevity

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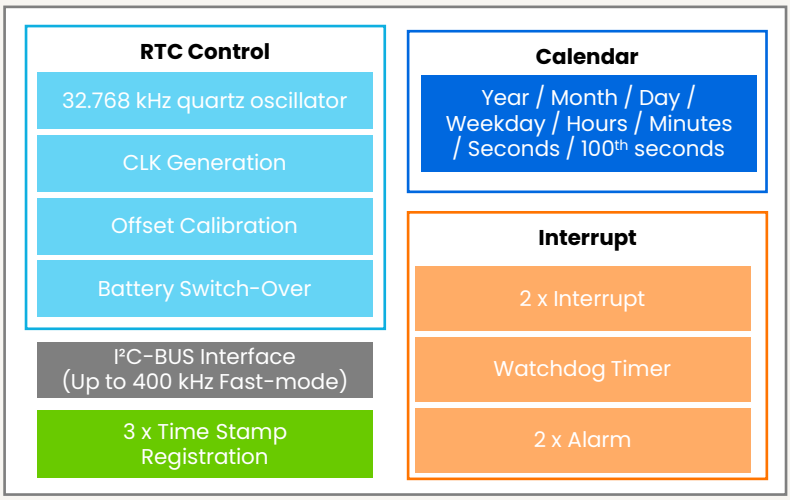
PCF85263A

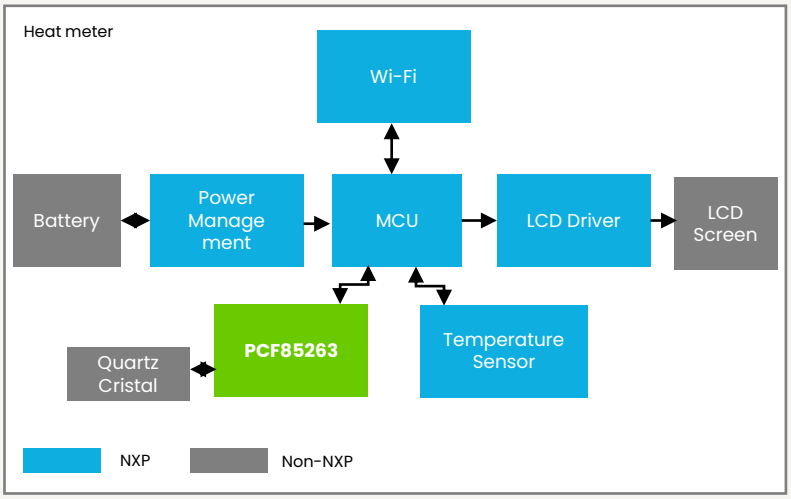
Real-Time Clock/Calendar

PCF85263A is optimized for the low power consumption in your system and with automatic switching to battery on main power loss

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide **I²C** voltage operation from **1.8V to 5.5V** and down to **0.9V** for clock operation
- Integrated full featured; **Tamper pin**, **Timestamp**, **Interrupt Generator**, **Battery Backup**, **Tuning register**
- Low current; **typical 0.28 µA** at VDD = 3.0 V and Tamb = 25 °C

2 Benefit for customers

- **Optimized for low power consumption** over the whole system
- **Offered in a wide variety of packages** from ultra-small WLCSP12 to HXSON10 package options.
- Thanks to the Battery Switch-over function, it **enable to keep operation when the primary power source is disabled**

3 Target Application

Printers & copiers, electronic metering, elapsed time counter, battery backed up systems, data loggers, smart meters, Digital cameras, white goods, network powered devices, digital voice recorders, mobile equipment

Key Device Parameters

- UL Recognized Component *
- Provides Year, Month, Day, Weekday, Hours, Minutes, Seconds, 1/100 seconds
- Stop-watch mode for elapsed time counting from 1/100 seconds to 999999 hours
- 2 x independent alarms
- Battery back-up circuit
- WatchDog timer
- 3 x timestamp registers
- 2 x independent interrupt generators + predefined interrupts at every second, minute, or hour
- Frequency adjustment via programmable offset register
- Clock operating voltage : 0.9 V to 5.5 V
- Low current; typical 0.28 µA at V_{DD} = 3.0 V , T_{amb} = 25 °C
- 400 kHz two-line I^2>C-bus interface (at V_{DD} = 1.8 V to 5.5 V)
- Programmable clock output for peripheral devices : 32.768 kHz, 16.384 kHz, 8.192 kHz, 4.096 kHz, 2.048 kHz, 1.024 kHz, and 1 Hz
- Configurable oscillator circuit for a wide variety of quartzes : C_L = 6 pF, C_L = 7 pF, and C_L = 12.5 pF
- Supporting Product Longevity

Product Longevity

* This device is Recognized by UL. Representative samples of this component have been evaluated by UL and meet applicable UL requirements.

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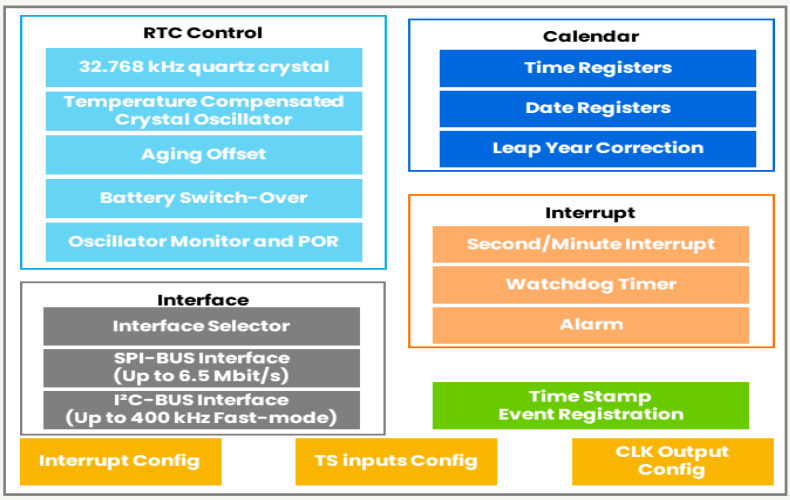
PCF2131

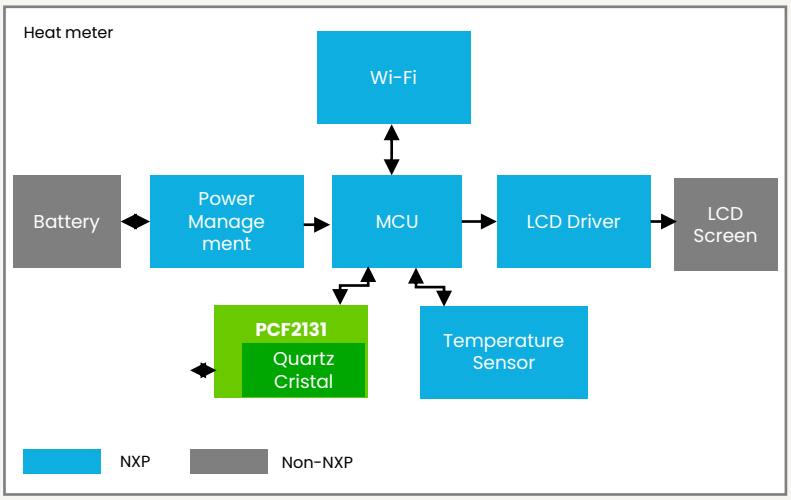
Nano-Power Highly Accurate Real Time Clock Module

Enable high accurate real timing and longer battery life in your IoT application

Device Block Diagram



Application Block Diagram



1 Key Features

- Ultra-Low power consumptions **64nA typ** that enables long battery life
- **Integrated 32.768 kHz quartz crystal** and **Temperature Compensated Crystal Oscillator (TCXO)**
- Very accurate timing across the temperature range **±3ppm typ @ -40°C to +85°C**

2 Benefit for customers

- **Longer battery life** with low & optimized power consumption
- **Reduce BOM count and size**, integrated quartz crystal and oscillator
- **Enable flexibility of system** thanks to 2 types of Interface SPI & I²C

3 Target Application

Printers & copiers, electronic metering, elapsed time counter, battery backed up systems, data loggers, smart meters, Digital cameras, white goods, network powered devices, digital voice recorders, mobile equipment

Key Device Parameters

- Temperature Compensated Crystal Oscillator (TCXO) with trimmed integrated capacitors
- Integration of a 32.768 kHz quartz crystal and oscillator in the same package
- Ultra low supply current: typical 64 nA at VDD = 3.3 V
- Temperature compensated RTC, ±3 ppm@typ from -40 °C to +85 °C
- Provides year, month, day, weekday, hours, minutes, seconds and 1/100 seconds, leap year correction
- Timestamp function 1. with interrupt capability 2. detection of four different events on four input pins
- 2-line bidirectional 400 kHz Fast-mode I²C-bus interface
- 4-line SPI-bus with separate data input and output (max speed 6.5 Mbit/s)
- Battery backup input pin & switch-over circuitry , Battery backed output voltage, Battery low detection function
- Power-On Reset (POR), Power-On Reset Override (PORO) function
- Software reset function
- Two interrupt outputs (open-drain)
- Programmable 1 second or 1 minute interrupt / watchdog timer with interrupt / alarm function with interrupt capability / square output
- Clock operating voltage: 1.2 V to 5.5 V
- HLSON 16 package 4.5 mm x 3.5 mm x 1.45 mm body
- Supporting Product Longevity

Product Longevity

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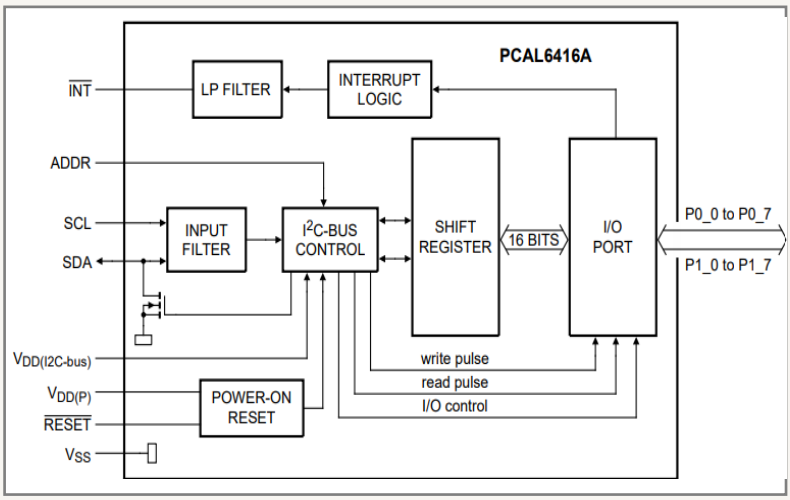
PCAL6416/PCAL6524

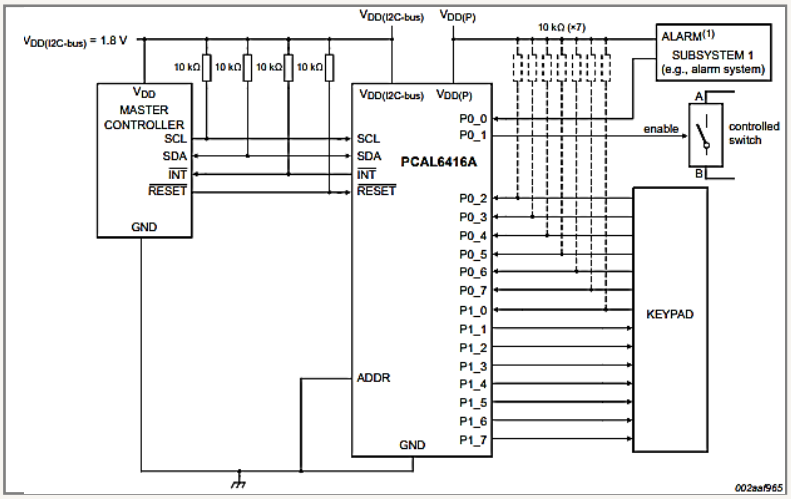
16bit & 24bit Agile I/O GPIO Expander

NXP's "Agile I/O" version of General Purpose I/O is ease software development and can reduce development time

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide voltage operation **1.65V to 5.5V(PCAL6416) & 0.8 to 3.6V(PCAL6524)**
- Selectable drive strength to 25%, 50%, 75% or 100%, which helps **conserve battery power** & **reduce power-supply noise**
- Programmable pull-up or pull-down resistor
- PCAL family (from 8bit to 34bit) is an easy to upgrade from the old gen series with no change in the board design

2 Benefit for customers

- **Save valuable pins on the CPU or ASIC** to control LED, Switches…etc.
- **Reduce development time** thanks to the configurable features
- **Suitable for a wide range of applications** in portable, industrial, and automotive segments by the wide voltage operation and low current consumption

3 Target Application

Computing (Servers, RAID Systems, etc.)
Industrial Controls, Medical Equipment
Cell Phones, Gaming Machines,
Test and Measurement instruments…etc.

Key Device Parameters

	PCAL6416	PCAL6524
Bit	16	24
Operating Voltage	1.6 to 5.5 V I/O ports & 1.65 to 5.5 V I²C-bus	1.6 to 5.5 V I/O ports & 0.8 to 3.6 V I²C-bus
Standby Current	1.5 µA typical at 5 V VDD 1.0 µA typical at 3.3 V VDD	2.0 µA typical at 3.3 V VDD
I²C-bus	400KHz	1000KHz
Package	VFBGA24, X2QFN24, HWQFN24, TSSOP24	HUQFN32, VFBGA36

- Agile I/O Features(PCAL6416 & PCAL6524 both)
  - Backward-compatible with PCA family
  - New registers to control configurable features
  - Input latch locks in any changes on input pins until the
  - input port register is read
  - Programmable pull-up or pull-down resistors
  - Output drive strength selectable to ¼, ½, ¾ or max to
  - conserve battery power and reduce power-supply noise
  - when simultaneous outputs switch
  - Interrupt mask to limit interrupt sources
  - Interrupt status register shows interrupt source
  - Output selection of open-drain or push-pull configuration
- Supporting Product Longevity

Product Longevity

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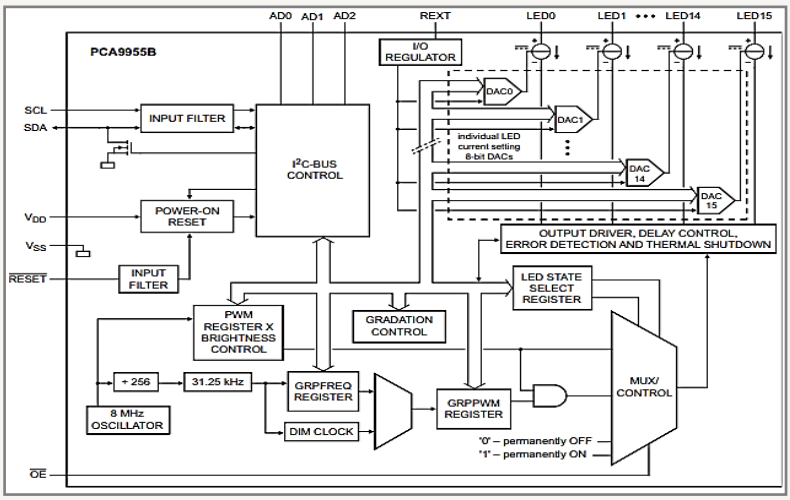
PCA9955BTW

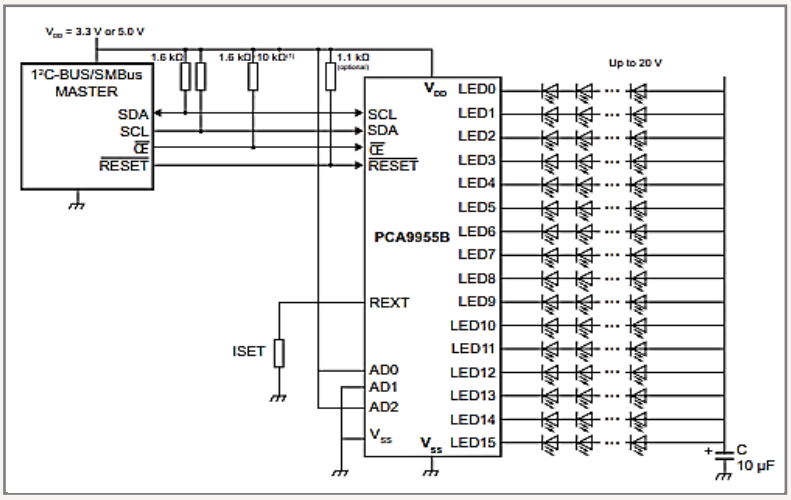
16-Channel Constant-Current LED Driver

Enable the system performing a variety of control LEDs while offloading the system processor

Device Block Diagram



Application Block Diagram



1 Key Features

- Operating voltage from **3.0 V to 5.5 V**
- Output is **programable** at Off, On, LED brightness, group dimming & blinking, output delay
- Constant current; Up to **57 mA** current drive/channel
- Integrated **1 MHz Fast-mode I²C BUS**

2 Benefit for customers

- **Minimized supply voltage ripple** with programmable LED outputs phase shifting
- **High programmability** for different lighting effects and enable advanced LED lighting control
- Thermally enhanced by HTSSOP package

3 Target Application

- Equipment status indicator and control (Blinkers)
- Keypad and LCD backlighting (Dimmers)
- Color mixing and brightness control (Dimmers)

Key Device Parameters

- VCC = 3.0 V t o 5.5 V
- Output
  - Constant current; Up to 57 mA current drive/channel
  - 20 V sustaining voltage
  - REXT sets ILED for all channels
  - ±4% channel-to-channel matching
  - ±6% IC-to-IC matching
  - 0.8 V (typ) regulation voltage
  - 256:1 LED current peak adjustment
  - Gradation Control for all channels
- Digital Interface
  - I²C (Fm+), 1 MHz (bi-directional)
  - Three quinary (five states) input address pins allow up to 125 devices to be connected on the same bus
  - Four software programmable I²C-bus addresses
- PWM Generator
  - 256:1 Individual PWM dimming range (31.25 kHz)
  - 256:1 Global PWM dimming range (122 Hz)
  - 256:1 Global blinking (0.05 Hz to 15 Hz)
  - Programmable phase shifting (125 ns to1.875 us)
- Over-Temperature Protection (150 °C typ)
- -40 °C to +85 °C Operating Temperature
- HTSSOP28 Package with Thermal Relief Pad
- Compliant to ESD Standards (3 kV HBM, 1 kV CDM)
- Supporting Product Longevity

Product Longevity

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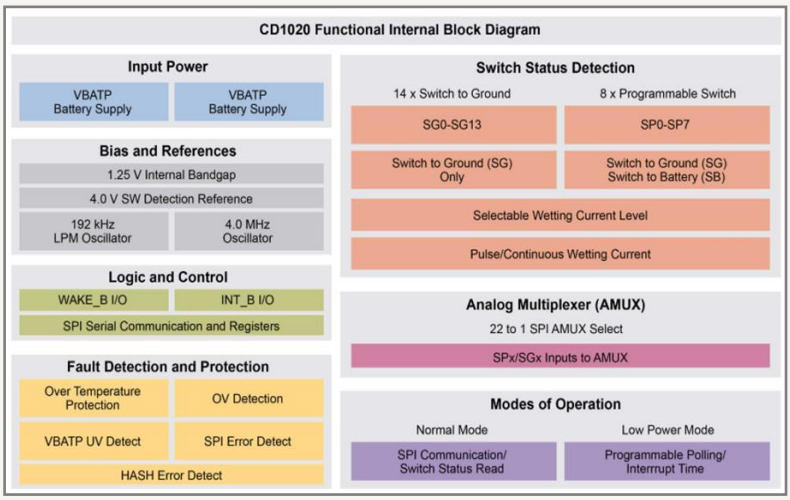
CD1020

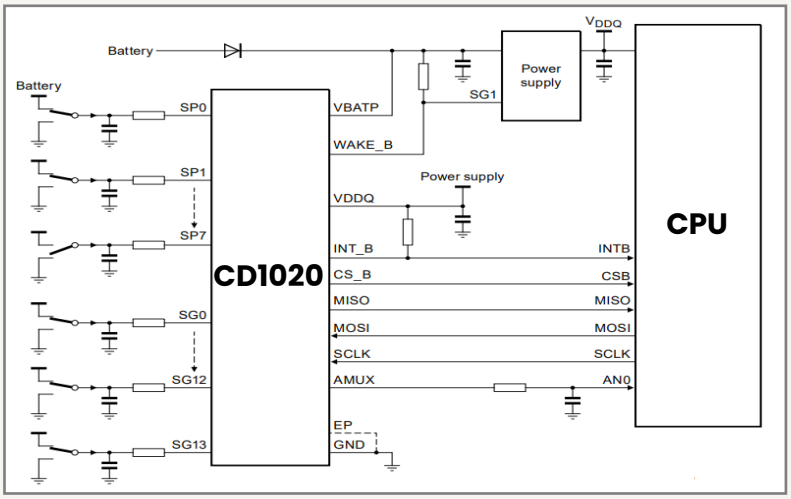
Switch Detection Interface

CD1020 is optimized to detect the closing & opening of up to 22 switch contacts, with the small footprint, very low quiescent current and robustness

Device Block Diagram



Application Block Diagram



1 Key Features

- **Integrated 22 I/Os ; 14** are switch-to-ground and 8 are programmable - switch to battery or ground
- **Programmable wetting/drive** current from 2mA to 20mA
- **24 to 1** Analog Multiplexer
- Integrated **temperature sensor** and **Battery Voltage Sensing**
- Direct MCU Interface through **3.3 V / 5.0 V SPI protocols**

2 Benefit for customers

- **High level of robustness** thanks to the battery sense presence and the EMC performances
- **Enable efficient performances** to reduce current consumption and provides flexibility of programming
- **Smaller module design** with small 7*7mm LQFP package and integrated functionalities

3 Target Application

- Multiple switch detect in Body-Control modules
- Engine Control Modules
- Front-of-Dash Modules
- Door modules
- Wire Harness
- Junction Box
- Communication switch detect

Key Device Parameters

- Designed to operate 6 V ≤ VBATP ≤ 36 V
- Switch input voltage range -14 V to VPWR, 36 V Max.
- Interfaces directly to an MCU using 3.3 V / 5.0 V SPI protocol
- Selectable wake-up on change of state
- Selectable wetting current (2, 8, 12, or 16mA)
- 8 programmable inputs (switches to battery or ground) and 14 switch-to-ground inputs
- Typical standby current - VBATP = 30 uA and VDD = 10 uA
- Integrated battery and temperature sensing
- Active switch monitoring, switch detection interface device function
- Package termination count: 32
- Package type: HVQFN32 (5 x 5 x 0.85 mm)
- Ambient operating temperature -40 to 125 °C
- Supporting Product Longevity

Product Longevity

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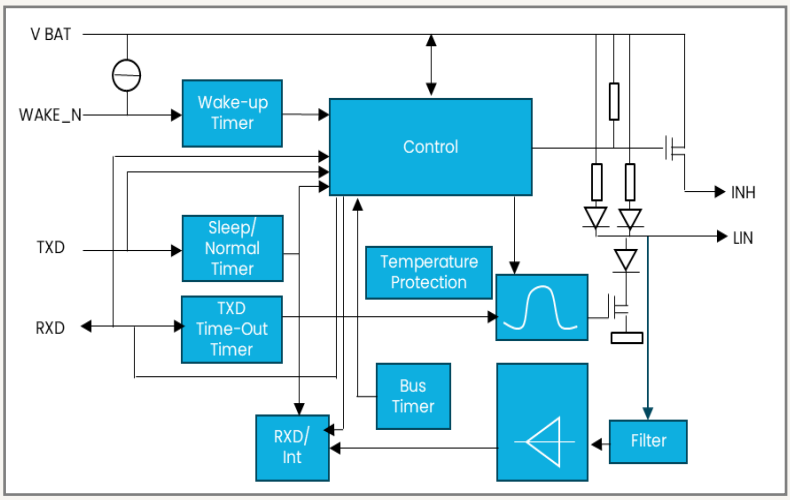
TJA1021A/B

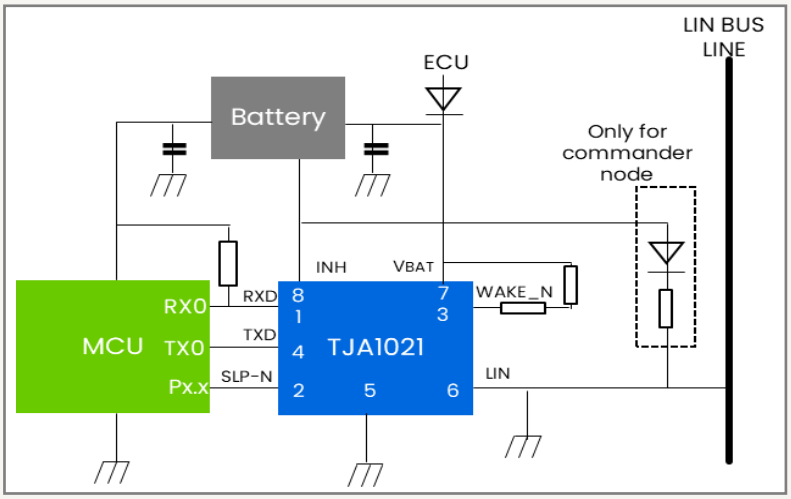
LIN2.1/SAE J2602 Transceiver

SOI3+ Generation LIN enables easy integration with the older generation and more stable supply

Device Block Diagram



Application Block Diagram



1 Key Features

- Single-channel transceiver, integrated **INH & Local Wake-up**
- **Multisource** , robust supply chain
- Compliant with **LIN 2.0, LIN 2.1, LIN 2.2, LIN 2.2A, SAE J2602 and ISO 17987-4:2016 (12 V)**

2 Benefit for customers

- **Stable supply** by multisource manufacturing
- **Easy integration** with existing designs
- Enable **smaller designs** with HVSON8 Package option

3 Target Application

- Automotive Body Applications;
  Mirror, Lighting, Seat, Roof controller
- Industrial
  Sensors, Heating Pumps, Thermostat

Key Device Parameters

- Integrated **Inhibit Output(INH)** and **Wake-up Input** pin
- ISO17898-4:2016 (12V)/LIN 2.1/SAE J2602 compliant
- Baud rate up to 20 kBd
- Very low Electro Magnetic Emission (EME)
- High Electro Magnetic Immunity (EMI)
- Passive behavior in unpowered state
- Input levels compatible with **3.3 V and 5 V devices**
- **Wake-up** source recognition (local or remote)
- Package :
  - ✓ HVSON8 3 x 3 x 0.85
  - ✓ SO8 4.9 x 3.9 x 1.75
- Supporting Product Longevity

Description Maximum Data Rate / Package	Old Gen process version	New SOI3+ process version
10 kbit / SO8	TJA1021T/10	TJA1021AT/0
20 Kbit / SO8	TJA1021T/20	TJA1021BT/0
10 kbit / HVSON8	TJA1021TK/10	TJA1021ATK/0
20 kbit / HVSON8	TJA1021TK/20	TJA1021BTK/0

TJA1021Ax or TJA1021Bx are preferred for new design.
If the customer uses TJA1021Tx, please consider migrating to TJA1021A or TJA1021B.

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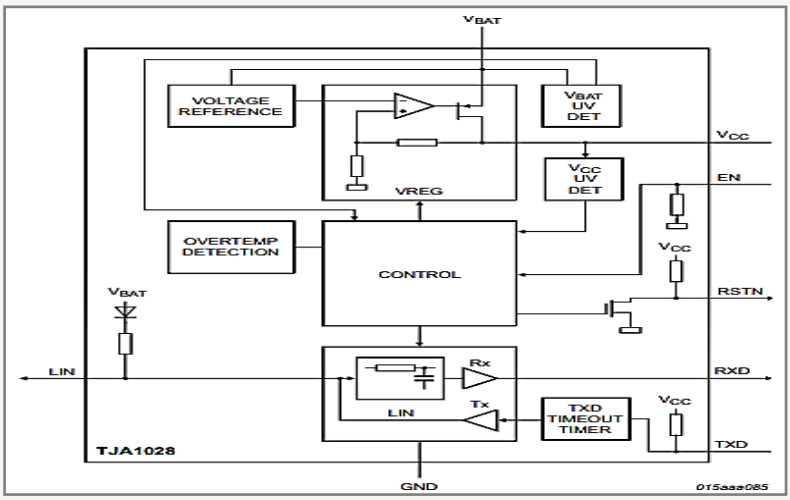
TJA1028A/B/C/D

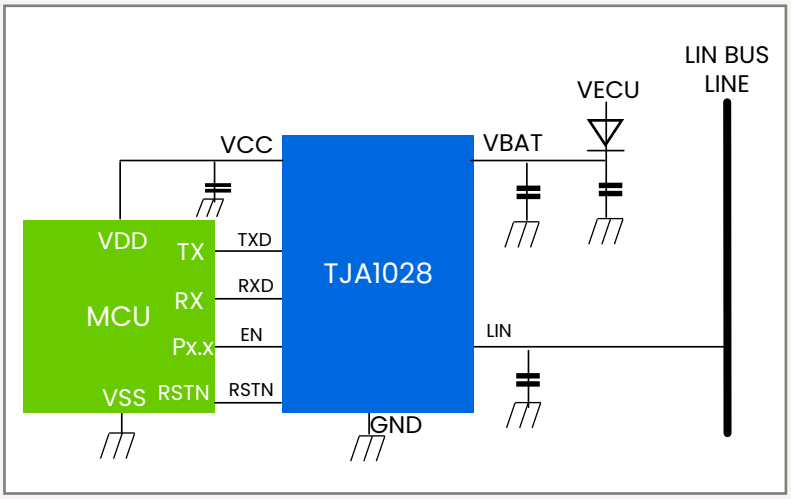
MINI LIN System Basis Chip

Easy integration with the older generation products and more stable supply with SOI3+ technology

Device Block Diagram



Application Block Diagram



1 Key Features

- Integrated **70 mA Regulator** with Reset Out
- Optimized current consumption by **Sleep Mode max. 18 µA & Standby Mode max. 59 µA**
- Strong ESD* performance; **8 kV** according to IEC61000-4-2 for pins LIN and VBAT

2 Benefit for customers

- **Stable supply** by Multisource manufacturing
- **Pin-to-pin and SW compatible** with many legacy CAN products
- **Simplified HW/SW architecture** through integration
- **Flexible 8 variants** for optimal application fit

3 Target Application

Alarm, Seat Heater, Power Seat, Parking Distance Control, Rain Light Sensor, HVAC, Garage Opener, MF Steering Wheel, Wiper

Key Device Parameters

- LIN2.x/ISO17987/J2602 compliant
- Integrated 70 mA Regulator offering 5 V or 3.3 V with reset output
- Sleep Mode with max. 18 µA
- Standby Mode with max. 59 µA
- 7 V tolerant I/Os
- ESD performance ± 8 kV according to IEC61000-4-2
- Excellent EMC performance
- Package: HVSON8 3 x 3 x 0.85, SO8 4.9 x 3.9 x 1.75
- Supporting “Product Longevity”

Description Regulator /Baud Rate	SO8 Package		HVSON8 Package	
	Old Gen Process version	New SOI3+ Process ver.	Old Gen Process version	New SOI3+ Process ver.
3.3 V / 10.4 kBd	TJA1028T/3V3/10	TJA1028AT/0	TJA1028TK/3V3/10	TJA1028ATK/0
3.3 V / 20 kBd	TJA1028T/3V3/20	TJA1028BT/0	TJA1028TK/3V3/20	TJA1028BTK/0
5 V / 10.4 kBd	TJA1028T/5 V0/10	TJA1028CT/0	TJA1028TK/5 V0/10	TJA1028CTK/0
5 V / 20 kBd	TJA1028T/5 V0/20	TJA1028DT/0	TJA1028TK/5 V0/20	TJA1028DTK/0

TJA1028A/B/C/D are preferred for new design
If the customer uses TJA1028Tx, please consider migrating to TJA1028A/B/C/D

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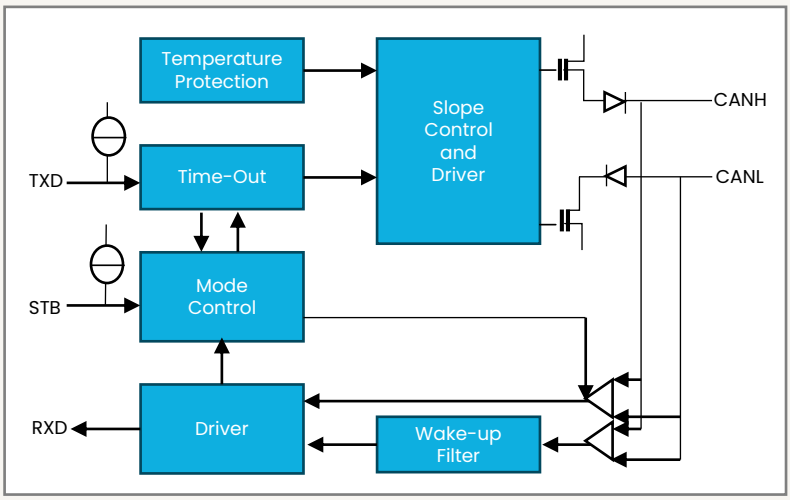
TJA1057B/C, TJA1044B/C

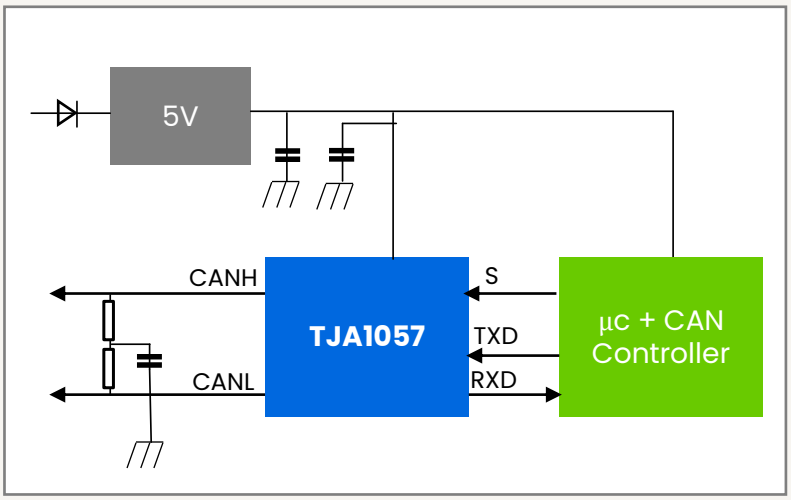
High Speed CAN with Flexible Data Rate

SOI3+ Generation enables easy integration with the older generation and more stable supply

Device Block Diagram



Application Block Diagram



1 Key Features

- AEC-Q100 Grade-1 qualified($T_{ambient}$=125 °C)
- **Standby Mode feature** with TJA1044
- **3V VIO** support offered for all family

2 Benefit for customers

- **Stable supply** by Multisource manufacturing
- **Pin-to-pin and SW compatible** with many legacy CAN products
- Enable **smaller designs** with HVSON8 Package option

3 Target Application

- Automotive
  - Body and lighting, Electrical Vehicle
- Industrial
  - Robotics, Factory automation, Transportation, Elevators

Key Device Parameters

- HS CAN and CAN FD up to 5 Mbps
- Compliant to ISO 11898-2:2016, SAE J2284-4/-5
- VeLIO support offered with –V option for Japanese market
- AEC-Q100 Grade-1 (Tambient = 125 °C)
- Excellent ESD robustness of ±8 kV at HBM according to IEC 61000-4-2
- Multi-sourced – internal, robust supply chain with dual and quad sourced options available
- Overtemperature protection
- Dark green product (RoHS compliant)
- Pin-to-pin and software compatible with NXP's older generation HS CAN products
- Package :
  - ✓ SO8 4.9 x 3.9 x 1.75
  - ✓ HVSON8 3 x 3 x 0.85
- Supporting Product Longevity

Description CAN type / VIO pin	SO8 Package		HVSON8 Package	
	Old Gen version	New SOI3+ version	Old Gen version	New SOI3+ version
Sleep Mode CAN / VIO pin	TJA1044GT/3	TJA1044BT/0	TJA1044GTK/3	TJA1044BTK/0
Sleep Mode CAN / No VIO pin	TJA1044GT TJA1044GT/1	TJA1044CT/0	TJA1044GTK	TJA1044CTK/0
Basic CAN FD / VIO pin	TJA1057GT/3	TJA1057BT/0	TJA1057GTK/3	TJA1057BTK/0
Basic CAN FD / No VIO pin	TJA1057GT TJA1057GT/1	TJA1057CT/0	TJA1057GTK	TJA1057CTK/0

TJA1044B/C, TJA1057B/C are preferred for new design
If the customer uses TJA10xxG, please consider migrating to TJA1044 B/C or 1057B/C

Product Longevity

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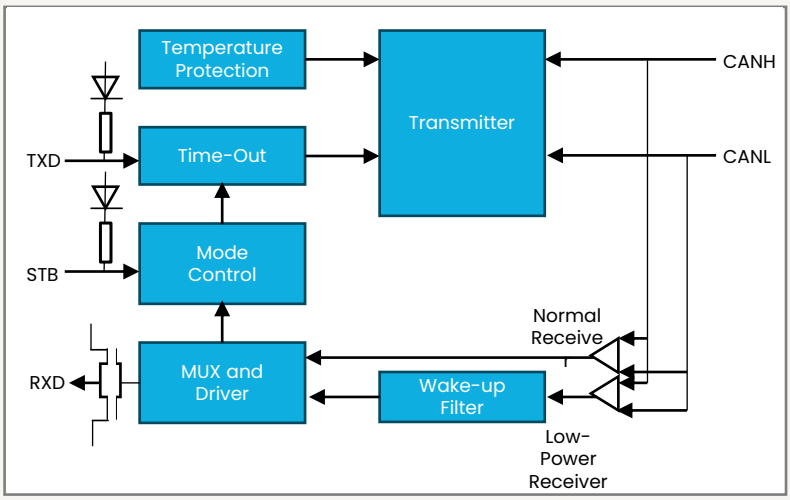
TJA1462A/B, TJA1643A

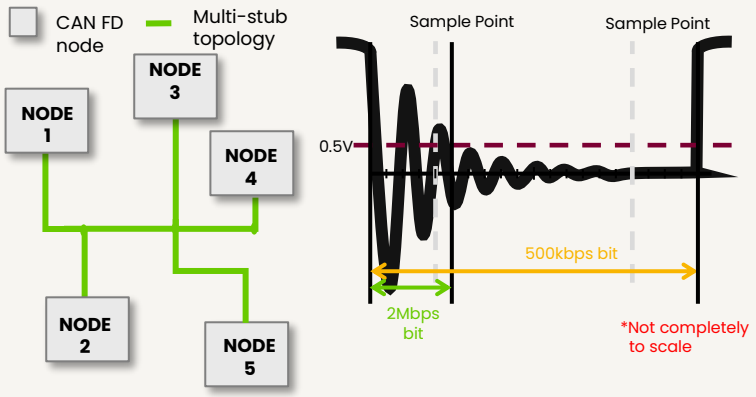
CAN SIC Transceiver with Standby Mode & Sleep Mode

TJA146x series actively improve CAN signals to ensure robust communication in large networks and at faster bit rates

Device Block Diagram



Why CAN SIC?



CAN FD enables less cable, increases flexibility, no loss of network in case of single failure, however, **there is a limit in Data Rate**

CAN SIC resolves this trade-off
Accelerating CAN networks faster than ever before

1 Key Features

- Allow Large, complex **Stubs / Star topologies**
- Accelerate networks faster than before : **5-8 Mbps**
- Run CAN FD networks on **low-cost cables**

2 Benefit for customers

- **Larger and star-based CAN FD networks** through reduced signal ringing
- Expand potential of CAN FD to an optimized cost **+5 Mbps network**
- Enable to avoid expensive **cabling & workarounds** which are cost and weight

3 Target Application

- Automotive
  - EV application
- Industrial
  - Sensor, Motor drive, factory automation

Key Device Parameters

- HS CAN and CAN FD communication at 5 Mbps
- Implements CAN Signal Improvement Capability as defined in new ISO11898-2:2024
- Low-power Standby mode [TJA1462]
- Ultra low-power Sleep mode [TJA1463]
- Compliant to ISO 11898-2:2024, SAE J2284-1 to -5 and SAE J1939-14
- Excellent ESD robustness of ±8 kV at HBM according to IEC 61000-4-2
- Robust design with self-diagnostics
- Full range gap-free predictable and fail-safe behavior
- AEC-Q100 Grade-1 ($T_{ambient}$= 125 °C)
- Package : SO8 4.9 x 3.9 x 1.75, HVSON8 3 x 3 x 0.85
- Supporting "Product Longevity"

Product Longevity

- Family of CAN SIC products are Pin-to-Pin compatible to standard 8pin, 14pin CAN Transceivers

Product Name	Package	Function	Replacement target CAN Transceivers
TJA1462AT(K)	SO8, (HVSON8)	Standby Mode with V_{IO}	TJA1042T(K)/3, TJA1044GT(K)/3
TJA1462BT(K)	SO8 , (HVSON8)	Standby Mode	TJA1042T, TJA1044GTK
TJA1463AT(K)	SO14, (HVSON14)	Sleep Mode with V_{IO}	TJA1043T(K)

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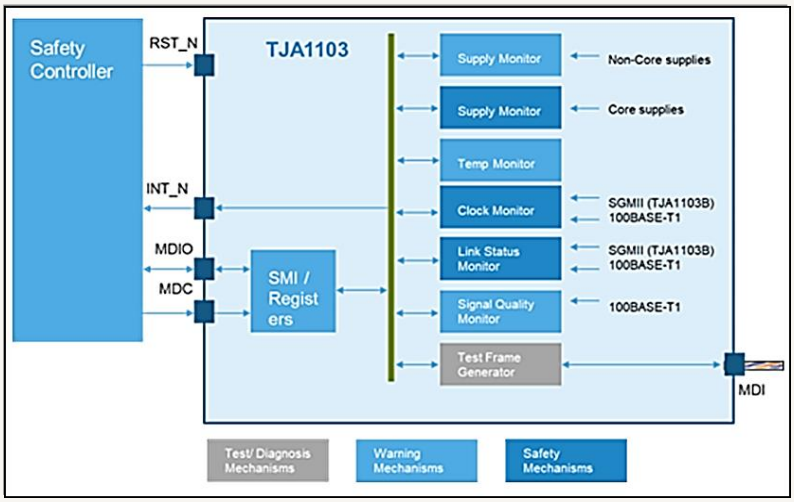
TJA1103

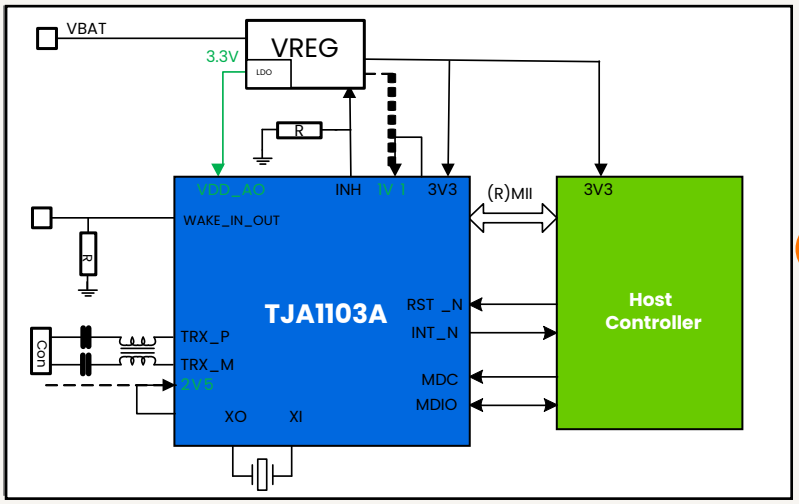
Ethernet 100BASE-T1 PHY Transceiver

100 Mbps Ethernet Transceiver developed according to ISO26262 supporting ASIL B safety level

Device Block Diagram



Application Block Diagram



1 Key Features

- **Flexible interface** RGMII and SGMII
- **Pin-to-Pin compatible** with 1000Base-T1 TJA1120/TJA1121
- **ESD/EMC** full IEC/SAE compliant
- Package 6 x 6 mm, **36 pin HVSON and external faults**, i.e. open line, short, and leakage

2 Benefit for customers

- Enable the **smaller module design** by small package
- **Faster development** due to the designed & optimized functions for automotive requirement
- Minimize the effort **supporting all WW car OEMs ESD/EMC standard**

3 Target Application

- Industrial
  - Robotics, Factory Automation, PLC, Energy Management, Transportation
- Automotive
  - Broad range of Automotive applications

Key Device Parameters

- Functional safety ISO 26262 ASIL B compliant
- IEEE802.3bw compliant 100BASE-T1 PHY
- OPEN Alliance TC-1 advanced PHY features
- IEEE1588v2 / 802.1AS compliant time stamping
- OPEN Alliance TC-10 compliant sleep / wake up
- Includes startup self test
- Compliant to AEC-Q100 Grade 1
- Single (3.3V) or multi-supply (3.3V, 1.8V), as low as 85mW
- Low-power Sleep mode : <20µA (typ), <35µA (max)
- Package : HVQFN36 (6 x 6 mm) with wettable flanks
- Supporting “Product Longevity”

Product Longevity

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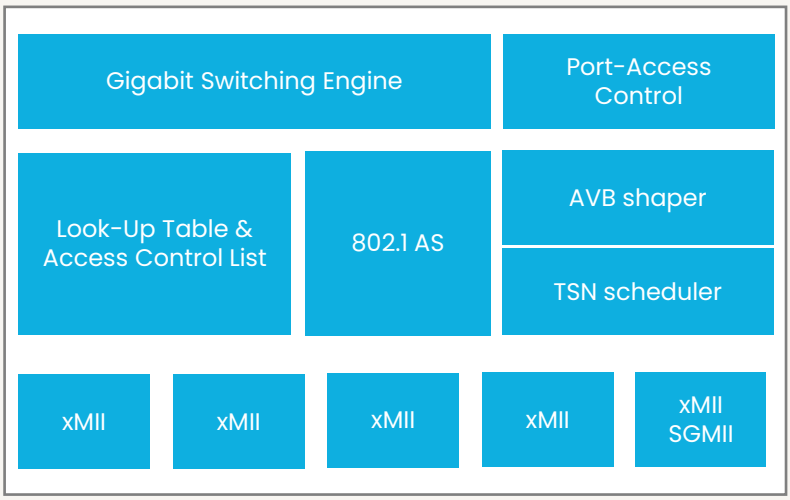
SJA1105P/Q/R/S

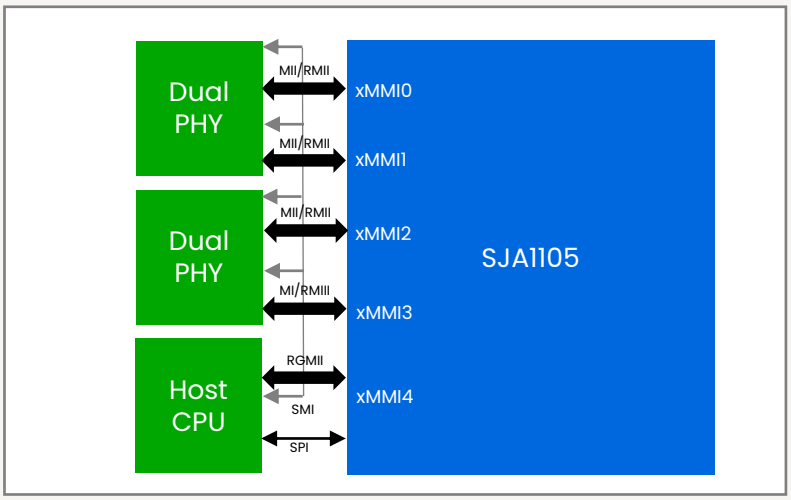
5 port Ethernet Switch

SJA1105 Ethernet switches provide customers with safe and secure products to interconnect microprocessors, connect PHYs and to expand the Ethernet port count in MCU/ MPU/ SOC

Device Block Diagram



Application Block Diagram



1 Key Features

- Supporting Gigabit speed full duplex on ALL 4 ports
- Integrated MII/RMII, RGMII, SGMII interfaces to connect any PHY or SOC/MCU
- Robust security via TCAM-based L2 Access control list
- Advanced Traffic Engineering features

2 Benefit for customers

- Enable to build **the scalable system design** with SJA1105P/Q/R/S, which are Pin to Pint & SW compatible
- **Minimize the development time** by NXP's Software enablement, including Linux Driver, AUTOSAR drivers

3 Target Application

- Industrial & IoT

Robot Control, PLC, Central Machine Control, Airport/Warehouse monitoring, Drone Control Module, Audio System

- Automotive

Telematics Unit, ADAS Platform

Key Device Parameters

- 5-port store and forward architecture
- Each port individually configurable for 10/100 Mbit/s when operated as MII/RMII and 10/100/1000 Mbit/s when operated as RGMII or SGMII
- Independent I/O voltage domains: selectable 1.8/2.5/3.3 V operation for MII/RMII/RGMII; selectable
- 1.8/2.5/3.3 V for host interfacing; 1.2 V core voltage domains
- Small footprint: LFBGA159 (12 mm × 12 mm) package
- Automotive Grade 2 ambient operating temperature: -40 °C to +105 °C
- Automotive product qualification in accordance with AEC-Q100 Rev-H
- ISO-26262, ASIL-A compliant , Supporting Product Longevity

Product Longevity

	MII/RMII/RGMII Ports	SGMII Ports	TSN/TTEthernet	RGMII-ID	TCAM
SJA1105P	5	0	No	Yes	Yes
SJA1105Q	5	0	Yes	Yes	Yes
SJA1105R	4	1	No	Yes	Yes
SJA1105S	4	1	Yes	Yes	Yes

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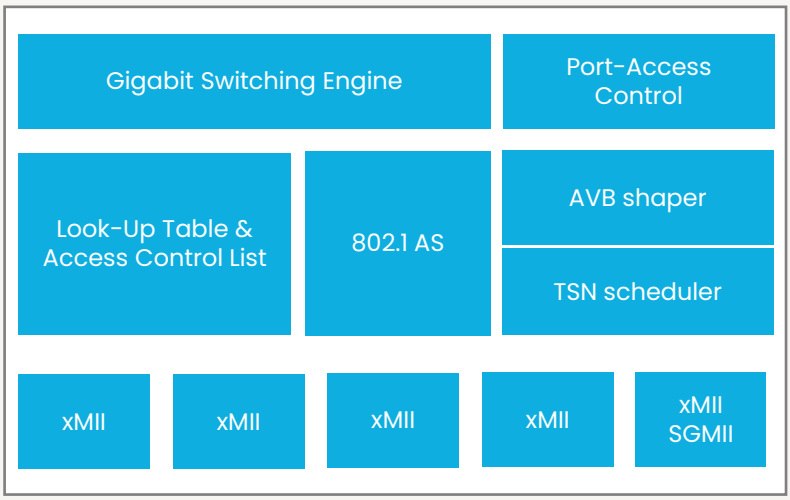
SJA1105P/Q/R/S

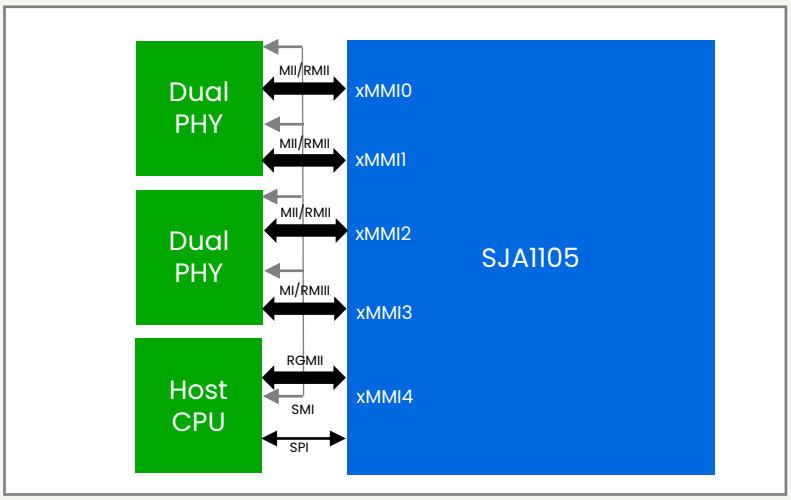
5 port Ethernet Switch

SJA1105 Ethernet switches provide customers with safe and secure products to interconnect microprocessors, connect PHYs and to expand the Ethernet port count in MCU/ MPU/ SOC

Device Block Diagram



Application Block Diagram



1 Key Features

- Supporting Gigabit speed full duplex on ALL 4 ports
- Integrated MII/RMII, RGMII, SGMII interfaces to connect any PHY or SOC/MCU
- Robust security via TCAM-based L2 Access control list
- Advanced Traffic Engineering features

2 Benefit for customers

- Enable to build **the scalable system design** with SJA1105P/Q/R/S, which are Pin to Pint & SW compatible
- **Minimize the development time** by NXP's Software enablement, including Linux Driver, AUTOSAR drivers

3 Target Application

- Industrial & IoT

Robot Control, PLC, Central Machine Control, Airport/Warehouse monitoring, Drone Control Module, Audio System

- Automotive

Telematics Unit, ADAS Platform

Key Device Parameters

- 5-port store and forward architecture
- Each port individually configurable for 10/100 Mbit/s when operated as MII/RMII and 10/100/1000 Mbit/s when operated as RGMII or SGMII
- Independent I/O voltage domains: selectable 1.8/2.5/3.3 V operation for MII/RMII/RGMII; selectable
- 1.8/2.5/3.3 V for host interfacing; 1.2 V core voltage domains
- Small footprint: LFBGA159 (12 mm × 12 mm) package
- Automotive Grade 2 ambient operating temperature: -40 °C to +105 °C
- Automotive product qualification in accordance with AEC-Q100 Rev-H
- ISO-26262, ASIL-A compliant , Supporting Product Longevity

Product Longevity

	MII/RMII/RGMII Ports	SGMII Ports	TSN/TTEthernet	RGMII-ID	TCAM
SJA1105P	5	0	No	Yes	Yes
SJA1105Q	5	0	Yes	Yes	Yes
SJA1105R	4	1	No	Yes	Yes
SJA1105S	4	1	Yes	Yes	Yes

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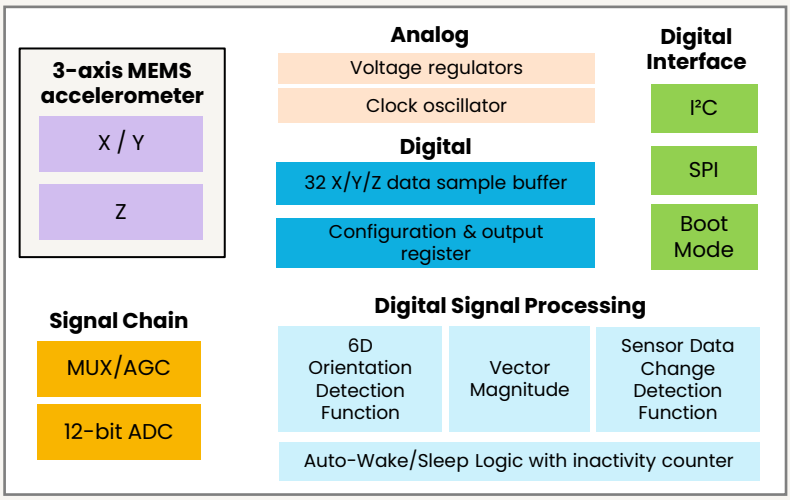
FXLS8974

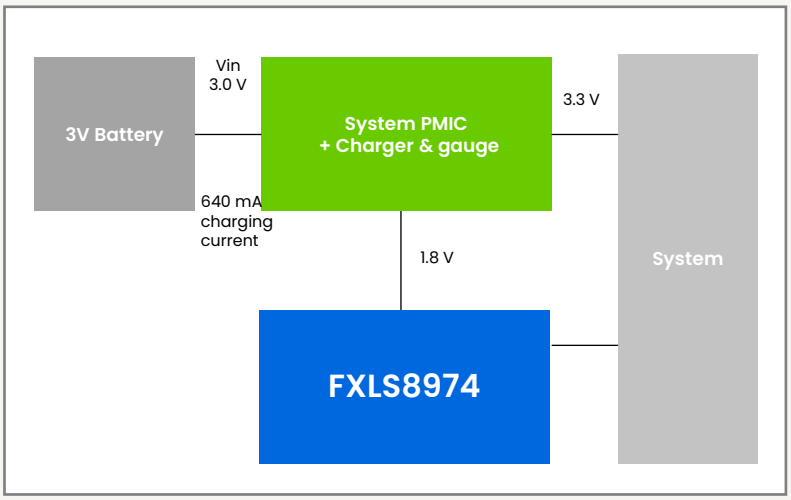
3-Axis Accelerometer for Low-Power Motion Wakeup

Enable best in-class low-power consumption in a wide range of industrial & medical IoT applications that require ultra-low-power wake-up on motion

Device Block Diagram



Application Block Diagram



1 Key Features

- 3-axis, **±2 to ±16g** low-G accelerometer
- **<1.0µA** in low power wakeup mode
- highly Flexible & programmable **Sensor Data Change Detection (SDCD) block**
- AEC-Q100 qualified, extended **temperature -40 °C to 105 °C**

2 Benefit for customers

- Integrated embedded features **reduce system power consumption**
- Enable to simplify host **data collection**
- Comply **EMS Class III**
- **Shorter development** by NXP's sensor toolbox ecosystem

3 Target Application

- Industrial

Asset Tracking System, Equipment monitors, HVAC

- Smart Home

Home Security & Surveillance, Portable Electronics, Wearables

Key Device Parameters

- **Ultra Low power**: < 1µA in low power wakeup mode (0.78 Hz to 6.25 Hz ODR)
- **Sensor Data Change Detection (SDCD) function**: highly configurable digital window comparator for easy / efficient implementation of low-power motion detection
- **Self-Test Diagnostic**: Can be run in field to assess device health (unaffected by device orientation or motion)
- **±2 to ±16g** (user selectable) full scale range
- **12-bit** Sensor Data Output Resolution
- **I²C / SPI** (pin configurable) digital interfaces
- Package : **2 x 2 DFN**, 0.4 mm pitch with wettable flanks
- Operating Temperature range : **-40 °C to 105 °C**
- **EMC Class III Compliant**
- Supporting "Product Longevity

Product Longevity

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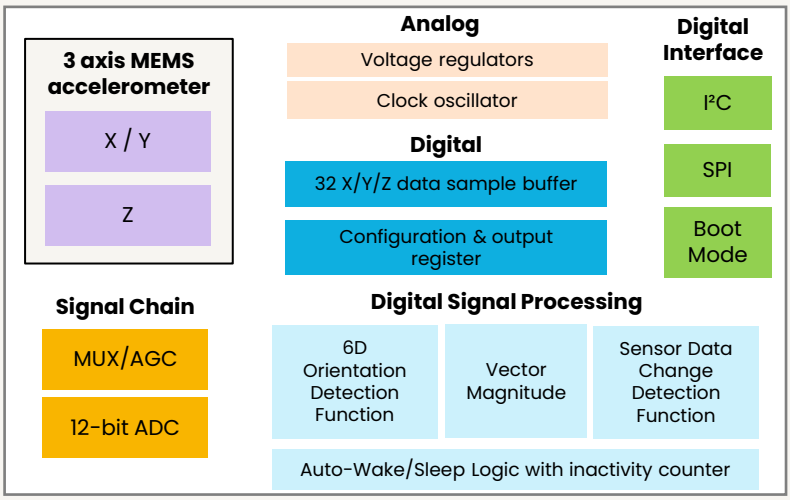
FXLS8971CF/FXLS8961AF

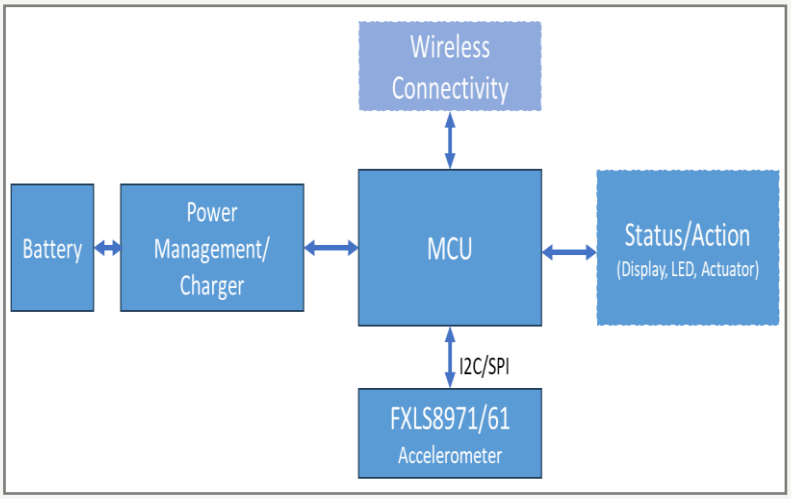
3-axis Accelerometer for high performance over temperature

Enable motion & position sensing / angle detection with low-power & high sensitivity stability and low offset over extended temperature range

Device Block Diagram



Application Block Diagram



1 Key Features

- **3-axis**, **±2 to ±16g** low-G accelerometer
- **<1.0µA** in low power wakeup mode
- highly Flexible & programmable **Sensor Data Change Detection (SDCD) block**
- High performance over temperature guaranteed **post-board assembly reflow**

2 Benefit for customers

- Integrated embedded features **reduce system power consumption**
- **Enable high performance and motion stability** with excellent offset and sensitivity over temperature
- **AECQ-100** qualified
- **Shorter development** by NXP's sensor toolbox ecosystem

3 Target Application

- Automotive ▶ Vehicle Tilt, Bike Lean Angle Detection, Theft Detection, Headlights & Auto-leveling, Smart Doors & Laches
- Industrial ▶ Asset Tracking System, Equipment monitors, HVAC
- Smart Home ▶ Home Security & Surveillance, Portable Electronics, Wearables

Key Device Parameters

- **Low power**: < 1µA in low power wakeup mode; 150uA in high performance mode
- Low Noise : 230 µg/√Hz in high performance mode
- **Market Leading TCO / TCS: Target ±0.15 mg/°C / ±0.01 %/°C**
- **Advanced Feature set**: Vector Magnitude, Sensor Data Change Detection (SDCD), Self-test diagnostic, FIFO
- **±2 to ±16g** (user selectable) full scale range
- **12-bit** Sensor Data Output Resolution
- **I²C / SPI** (pin configurable) digital interfaces
- Package : **3x3 QFN Package**, 0.65mm pitch with wettable flanks
- **-40 to 105°C** operating temperature, AECQ-100 auto / industrial qualified
- **EMC Class III** Compliant
- Supporting "Product Longevity"

Product Longevity

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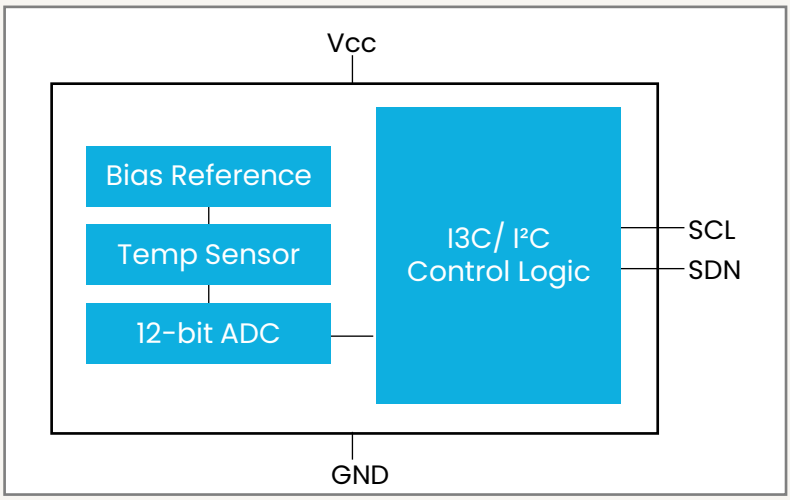
P3T1035/P3T2030

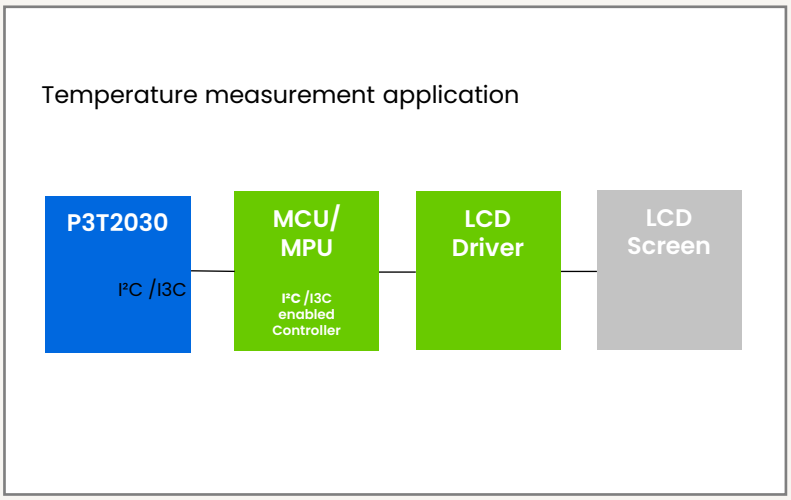
Temperature Sensor, I3C, I²C, WLCSP4, 12-bit, ±0.5 °C & ±2.0 °C

Combine everything you need to quickly and easily determine the heat produced by other components

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide voltage supply range from **1.4 V to 1.98 V**
- Better Accuracy,

  P3T1035 **: ±0.5 °C from 0 °C to + 70 °C**

  P3T2030 **: ±2.0 °C from -40 °C to +125 °C**
- Both **I²C (up to 3.4 MHz)** and **I3C (up to 12.5 MHz)** are integrated

2 Benefit for customers

- Fully back ward compatible to I²C and future proof I3C interface which offers
  - ✓ Higher data rate vs I²C
  - ✓ Supports **In-Band interrupt** saving CPU I/O pins for interrupt as needed by I²C
- Can reach Automotive/Consumer/ Industrial, broad market

3 Target Application

- Industrial ▶Industrial Controllers, Building Automation, LED Driving Applications, Servers
- Smart Home ▶ PC and Notebooks, Home Appliances, Home Control
- Medicals ▶ Medical Devices, CPAP

Key Device Parameters

- ±0.5 °C (P3T1035) or ±2 °C (P3T2030) accuracy options
- Internal 12-bit A-to-D converter (0.0625 °C resolution)
- Allows 8-bit (MSByte) reading with temperature resolution of 1 °C
- Programable under and over temperature alerts
- Operating voltage from 1.4 V to 1.98 V
- Low quiescent current: 6 µA (maximum)
- I3C, which is also fully back ward compatible to I²C interface
- Eight different target address options
- Package : WLCSP4 0.91 x 0.855 x 0.455 body, 0.4 mm pitch
- Supporting “Product Longevity”

Product Longevity

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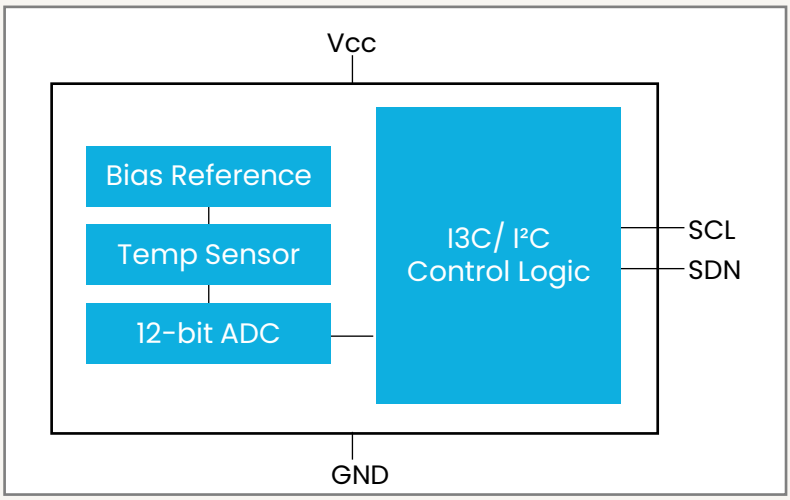
P3T1750/P3T1755

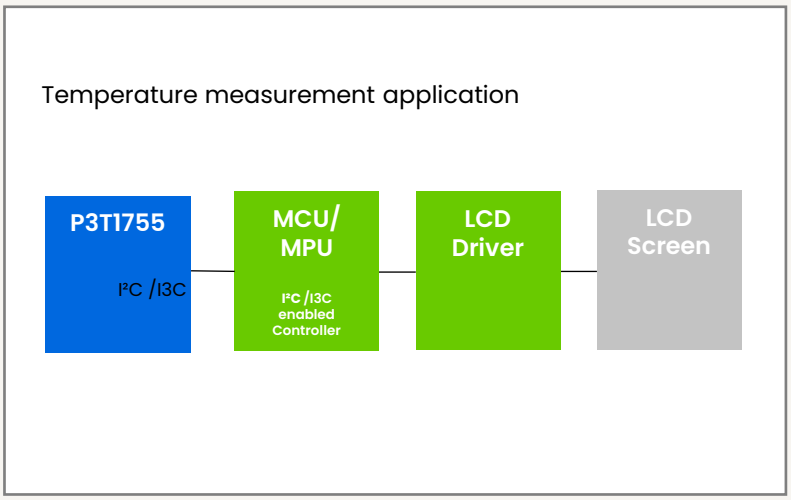
Temperature Sensor, I3C, I²C, TSSOP, 12-bit, ±0.5 °C & ±1 °C

Highly accurate digital sensor and can be used broad market applications, Automotive, Consumer, and Industrial market

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide operating voltage from **1.4 V up to 3.6 V**
- Both I²C and **I3C** are integrated
- Better Accuracy, up to

  P3T1750 : **±1 °C max from -40 to 125 °C**

  P3T1755 : **±0.5 °C max from -20 to 85 °C**
- Certificated **AEC-Q100** Grade

2 Benefit for customers

- Suitable for the application, requires lower voltage
- Fully back ward compatible to I²C and future proof I3C interface which offers
  - ✓ Higher data rate vs I²C
  - ✓ Supports **In-Band interrupt** saving CPU I/O pins for interrupt as needed by I²C

3 Target Application

- Industrial ▶Industrial Controllers, Building Automation, LED Driving Applications, Servers
- Smart Home ▶ PC and Notebooks, Home Appliances, Home Control
- Medicals ▶ Medical Devices, CPAP

Key Device Parameters

- I3C, which is also fully back ward compatible to I²C interface
- Supply voltage: 1.4 V to 3.6 V
- Operating temperature range: -40 °C to 125 °C
- Temperature resolution: 12-bit (0.0625 °C)
- Temperature accuracy
  - ✓ P3T1750: ±1 °C max from -40 °C to 125 °C
  - ✓ P3T1755: ±0.5 °C max from -20 °C to 85 °C
- Low quiescent current: 6 µA maximum
- Programmable under and over-temperature alerts
- Package: TSSOP8 (3.0 mm x 3.0 mm)
- AEC-Q100 versions: P3T1750DP/Q900 , P3T1755DP/Q900
- Drop-in compatible with TMP175 series but better performance
- Supporting “Product Longevity”

Product Longevity

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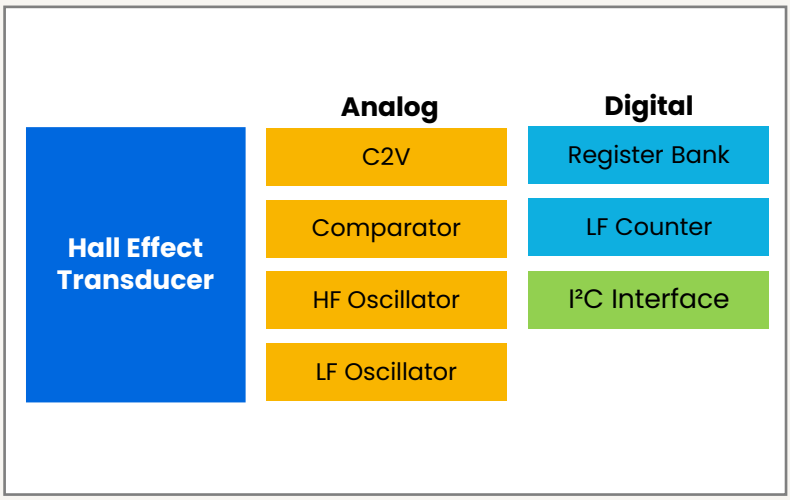
NMH1000

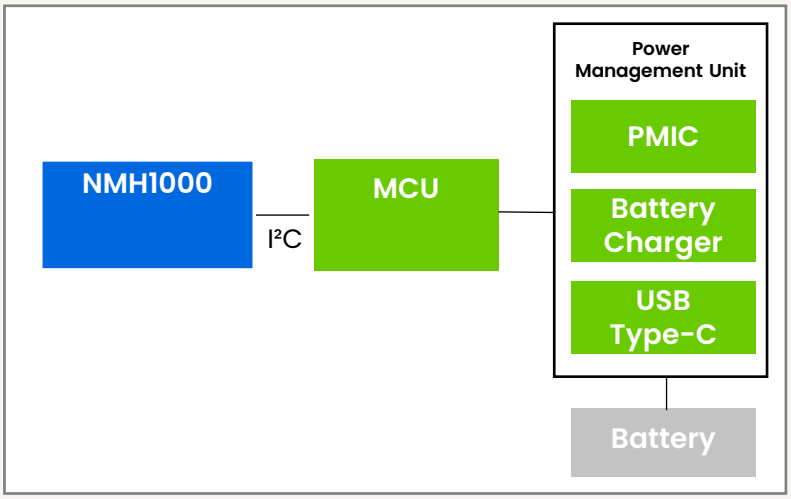
Ultra-Low Power and Low-Voltage Magnetic Switch Sensor

Enable to operate at ultra-low power consumption with extended battery life

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide operating voltage from **1.2 V up to 3.6 V**
- Low power consumption **75nA typ@1Hz**
- Smaller package **QFN6 1.4 x 1.4 x 0.85 mm**
- **Configurable** to threshold & Sample Rate

2 Benefit for customers

- **Smaller battery size** and **longer battery life** by low power consumption
- Configurable threshold & sample rate enable **more flexibility** for different applications
- **Enable smaller module** design for your IoT Application

3 Target Application

- Medical ▶ Continuous Glucose Monitor, Insulin Pump Flow Control
- Industrial / Consumer ▶ Gas & water applications, Electronic system wake-up off Electronic device lid open/close detect, Metering anti-tampering,
- Smart Home ▶ Alarm systems (door or window open/close detect)

Key Device Parameters

- Z- axis Hall effect switch for axial magnets; North & South polarity sensitivity
- Low operating voltage: 1.2 V min
- Ultra low current: 75 nA typ. @ 1 Hz sample rate
- Industrial operating temperature range: -40 °C to 85 °C
- Selections by hardware pin / register: Threshold, Sample Rate, Standalone Mode or I²C User Mode
- 2-state output via hardware pin / register
- Package : QFN6 1.4 x 1.4 x 0.85 mm
- Supporting “Product Longevity”

Product Longevity

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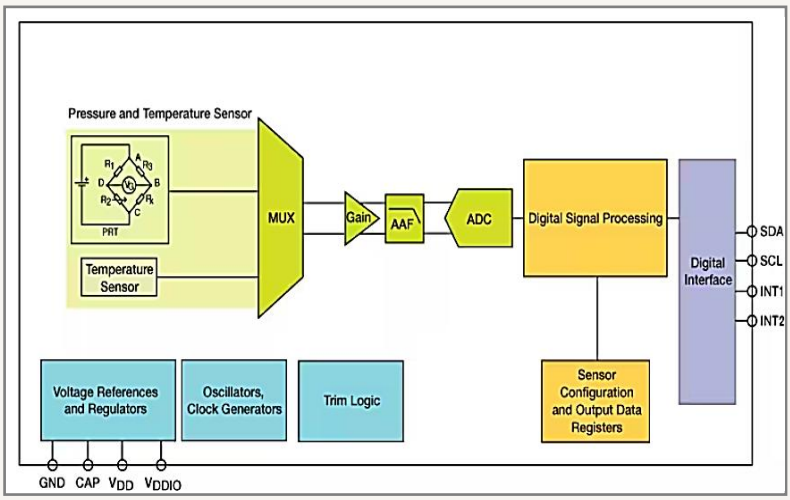
MPL3115A2S

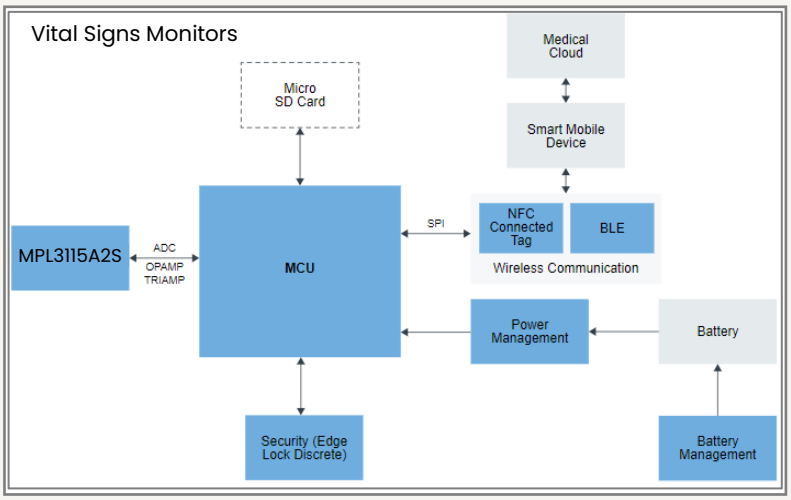
Digital Pressure Sensor 20 to 110kPa

MPL3115A2S can support simplified system designs by requiring fewer external components

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide operating range of **20 kPa to 110 kPa**, a range that covers all surface elevations on Earth
- **Pressure and temperature data are fully compensated digitized output** though a high-resolution ADC
- Feature rich user configurations, including pressure(Pascal) or altitude (meter) output selection through **I²C digital interface**

2 Benefit for customers

- **Simplifying system design**, due to the internal processing in MPL3115A2 which removes compensation and unit conversion by MCU
- Enable **smaller module design** thanks to highly integrated functions
- MSL 1 (Moisture Sensitive Level) compliant

3 Target Application

- Medical , Industrial & Consumer Altimeters/navigation systems, Weather station equipment, Health/Activity Monitors, Oxygen Concentrators, Ventilation system

Key Device Parameters

- Calibrated range: 50 kPa to 110 kPa absolute pressure
- Operating range: 20 kPa to 110 kPa absolute pressure
- I²C digital output interface (up to 400 kHz)
- Fully compensated internally
- Programmable Interrupts
- 1.95 V to 3.6 V Supply Voltage, internally regulated
- 1.6 V to 3.6 V Digital Interface Supply Voltage
- Operating temperature from -40 °C to +85 °C
- 5 mm x 3 mm x 1.1 mm LGA package (1.25 mm lead pitch)
- MSL 1 compliant
- Direct Reading
  - ✓ Pressure: 20-bit measurement [Pascals]
  - ✓ Altitude: 20-bit measurement [meters]
  - ✓ Temperature: 12-bit measurement [degrees Celsius]
- Autonomous Data Acquisition
  - ✓ Embedded 32-Sample FIFO
  - ✓ Data logging up to 12 days using the FIFO
  - ✓ 1 second to 9 hour data acquisition rate
- Supporting Product Longevity

Product Longevity

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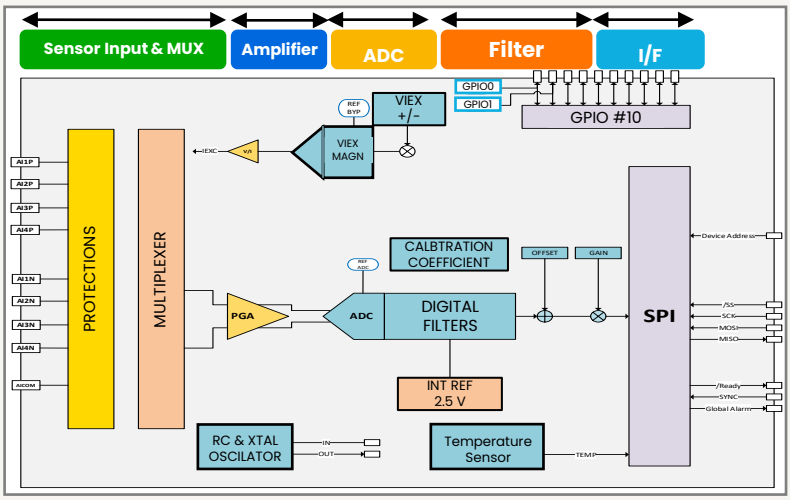
NAFE Family

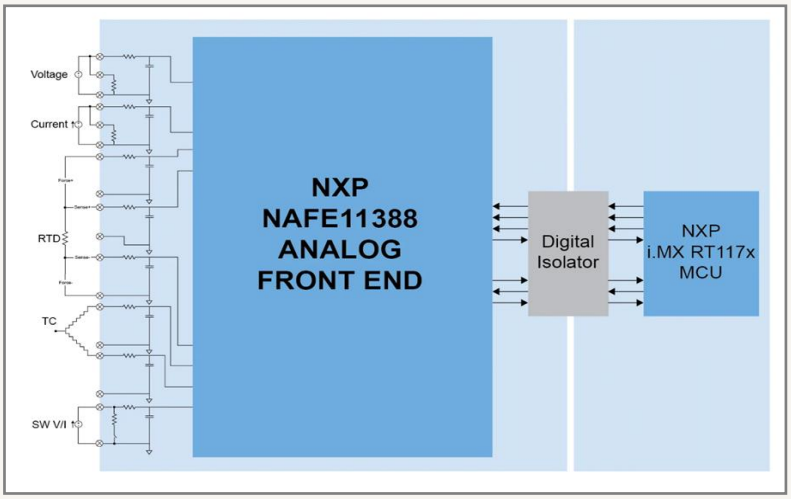
Software Configurable Analog Input NAFE Family

Enable to build more flexible & reliable system, and software-defined factory

Device Block Diagram



Application Block Diagram



1 Key Features

- **8/4 Single-ended input** channels with integrated protection up to 36 V with choice of 16/24-bit ADC
- **Universal Analog Input device to measure** voltage, current, resistance, RTD, thermocouples with option of built-in V/I excitation
- **High-accuracy** and **precision** provide best-in-class measurements

2 Benefit for customers

- **Scalable** family concept for redesign across platforms with **Quick time-to-market**
- **Integrated solutions** offering significant system BoM savings, high reliability and small form factor
- **Diagnostics** and anomaly detection to enable **predictive maintenance**

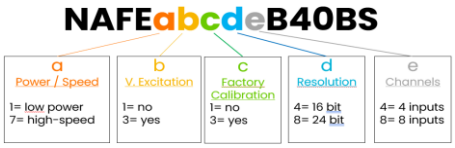
3 Target Application

- PLC, I/O Module, Data Logger, Sensor and Data Acquisition Systems, Instrumentation, Balanced cell measurements

Key Device Parameters

- 8/4 configurable HV inputs
  - ✓ Single ended or differential, with ranges up to ±25V
  - ✓ Configurable for voltage, current, resistance, RTD, Thermocouples
  - ✓ Over-voltage protected up to ±36V
- Fast Data Rate with high resolution
  - ✓ **NAFE1XXXX**: 7.5 SPS to 288 kSPS with ENOB 17-bit at 72 kSPS / 24-bit at 30 SPS
  - ✓ **NAFE7XXXX**: 15SPS to 576 kSPS with ENOB 17-bit at 144 kSPS / 24-bit at 50 SPS
  - ✓ Simultaneous 50Hz/60 Hz line rejection
- High Accuracy
  - ✓ 0.01% accuracy at room
  - ✓ 0.05% accuracy over temperature
- System Calibration with option for factory calibrated device also
  - ✓ End-to-end calibration with integrated precise voltage sources
  - ✓ Accurate digitally calibrated products are available
- Package : 64 pin, 9mm x 9mm x 0.85mm VQFN
- Operating temperature range TA: -40 ˚C to 125 ˚C
- Supporting Product Longevity

- NAFE Part Number Variants



Product Longevity

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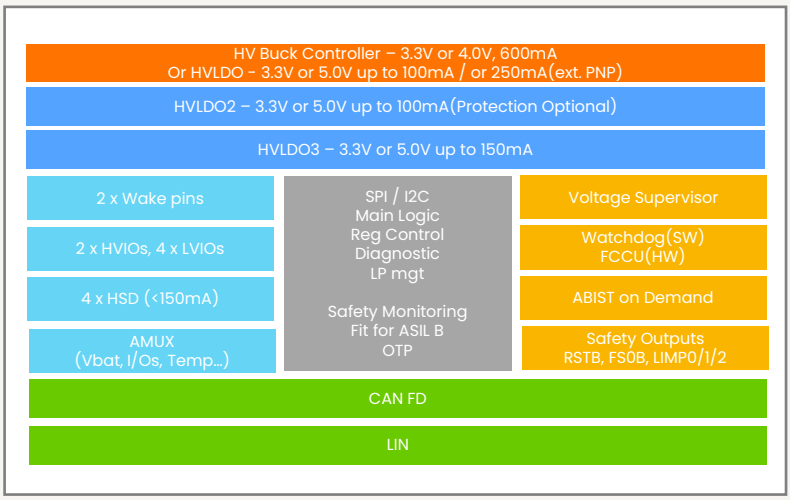
FS23

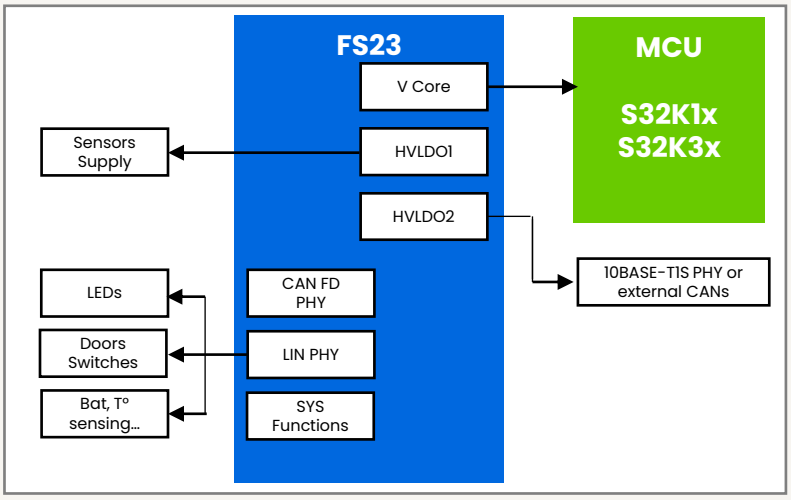
System Basis Chip for Automotive Body End-Nodes Systems

Connected directly to 12 V battery and allow a high-level system integration for body end-nodes with a large portfolio from QM to ASIL B

Device Block Diagram



Application Block Diagram



1 Key Features

- Full system solutions, **S32K1x & S32K3x companion chip**
- **Scalable from LDO version to DC-DC** version as well as from **QM to ASIL B**
- Integrated **CAN and LIN transceivers**
- **Best in class standby mode current consumption**

2 Benefit for customers

- **Enable to reduce BOM cost**, by system added value
- **Compatible all S32K1x & S32K3x controllers** by SW drivers and enable **scalable system designs**
- **Optimize PCB size** with a high level of system integration
- **Designed fit for ASIL B systems**
- **More flexible** to customize your SBC on-chip OTP

3 Target Application

Lighting, HVAC, Car Access, Tail Gate, Slide Doors, BCM, Shifter...etc.

Key Device Parameters

- Safety System Basis Chip (SBC) Family: Integrated Power Management, CAN and LIN
- Safety: **ISO 26262** compliant by process, by design and by product behavior and, fit for **ASIL B**
- Scalability: Family of devices pin-to-pin and software compatible for platform concept
- SW Real Time Drivers, **ISO 26262 AUTOSAR®** compatible for NXP HW/SW system solution
- Package: 7.00 mm x 7.00 mm 48 QFN-EP
- Supporting "Product Longevity"

Product Longevity

- FS23 can fit with those processors

Provider	Processor
NXP	S32K11x, S32K14x, S32K31x, S32K322, S32K344, S32K341, S32K342, S32K344
Infineon	Traveo2, PSoC, Aurix TC2/3
Renesas	RH850F, RH850D

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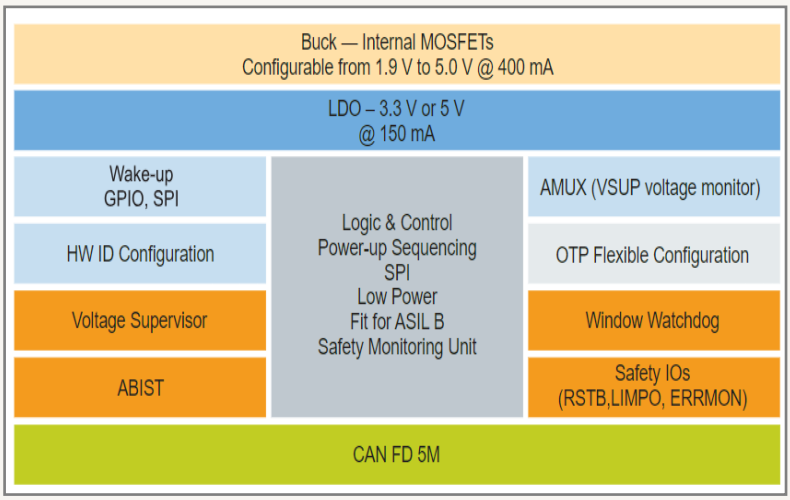
FS24

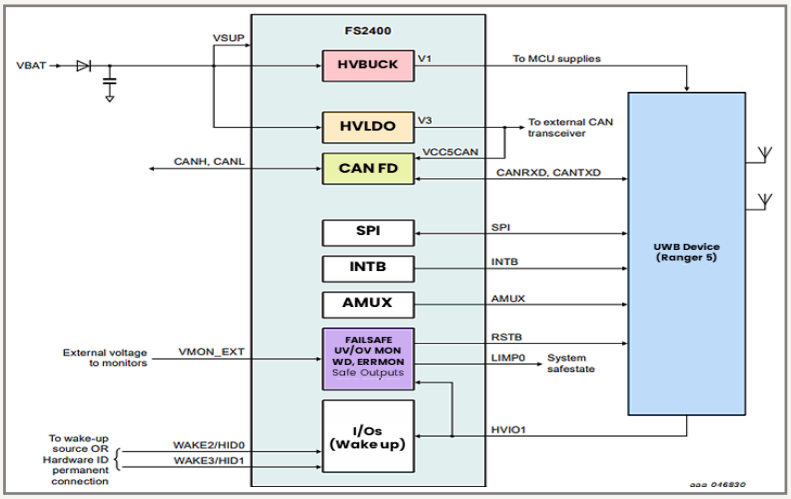
QM to ASIL B Mini System Basis Chip with DC-DC/LDO/CAN FD

Optimized for Automotive Body & End Nodes SDV with low power performance requirements, such as car connectivity & secure car access applications using UWB, NFC and Bluetooth devices

Device Block Diagram



Application Block Diagram



1 Key Features

- Operating range : **40 V DC maximum input voltage**
- Integrated High-Voltage synchronous Buck Converter with FETs, and High-Voltage LDO regulator
  - **BUCK Converter** : 1.9 to 5.0 V output
  - **LDO Regulator** : 3.3V and 5.0 V output
- **CAN FD supporting up to 5 Mbps** communication following ISO 11898-2:2016 and SAE J2284 standards

2 Benefit for customers

- **Enable to reduce external components** by high integration, including CAN FD, HW ID Configuration, and 12-channel analog multiplexer
- **Flexibility to support up to ASIL B system**, and robust safety mechanism
- **Suitable for connectivity application** due to the optimized design to supply power to MCU & Connectivity

3 Target Application

Body and comfort , Car connectivity & Secure Car Access, Exterior Lighting, Electric Pumps, HVAC, Transmission and Gearbox

Key Device Parameters

- HVBUCK up to 400 mA / HVLDO up to 150 mA / CAN FD CAN FD 5M with wake-up capability
- HWID input to setup module hardware ID
- Advanced Low Power Mode: LPOFF and LPON
- OTP (one-time programmable) memory for flexible device configuration
- 32bit SPI interface with 8bit CRC
- IO compatible from 1.9 V to 5 V
- Over temperature protection
- AMUX for various voltage monitoring
- Monitoring Circuits to fit up to ASIL B Safety Level
- Supplies, sequencing, and specific functions can be programmed by OTP memory
- HVQFN32EP 5 x 5 x 0.85 mm, 0.5 mm pitch

Product Longevity

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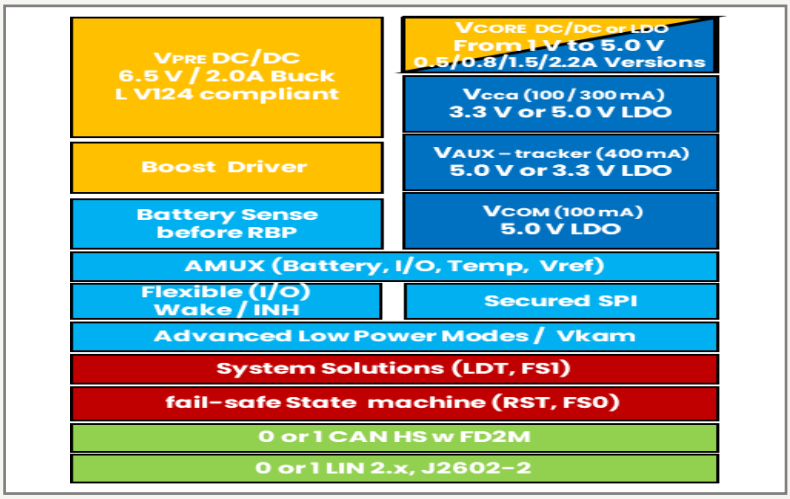
FS65/FS45

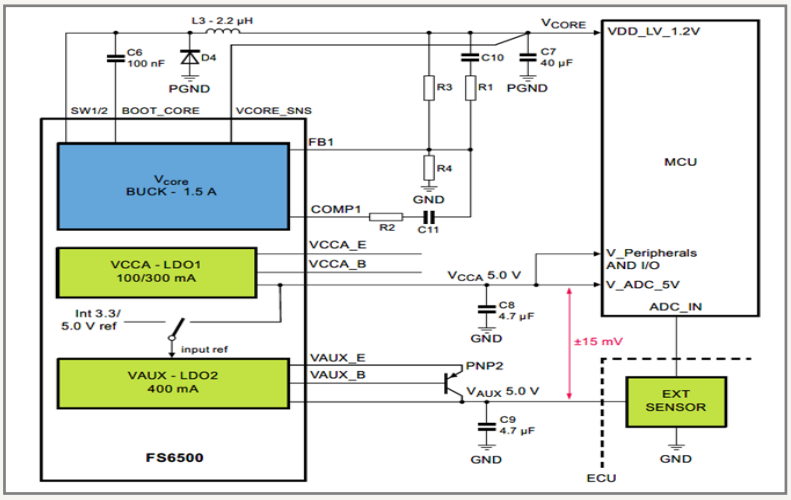
Grade 1 and Grade 0 Safety Power System Basis Chip

Enable to provide power to MCUs and optimizes energy consumptions for ASIL B & ASIL D applications

Device Block Diagram



Application Block Diagram



1 Key Features

- Integrated **Serial Peripheral Interface(SPI),** to control and diagnostics with MCU, and **CAN FD**, and **LIN physical interfaces**
- A range of **integrated safety features** reduces software complexity
- High-temperature capability up to **T_{amb} = 150 °**

2 Benefit for customers

- **Enable to Optimize PCB** size with a high level of system integration and **reduce external components**
- **Best-In-Class** fit for ASIL D solution
- Enable **scalable system designs** between FS65/45

3 Target Application

Automotive Suspension, Battery Management System, Electric Power Steering(EPS), Braking and Stability Control, Hybrid Electric Vehicle(HEV) applications, Diesel Engine Management…etc.

Key Device Parameters

- Battery voltage sensing and MUX output pin
- Highly flexible SMPS pre-regulator
- Supply MCU core from 1.0 V to 5.0 V with SMPS (0.8 A or 1.5 A) /FS65 or LDO (0.5 A)/FS45
- Linear voltage regulator dedicated to
  - ✓ Auxiliary functions, or sensor supply, 5.0 V, or 3.3 V
  - ✓ MCU Analog/Digital (A/D) reference voltage or I/Os supply (VCCA), 5.0 V, or 3.3 V
- 3.3 V keep alive memory supply available in low-power mode
- Long duration timer, counting up to 6 months with 1.0 s resolution
- Multiple wake-up sources in low-power mode: CAN, IOs, LDT
- Five configurable I/Os
- Package : HLQFP48 7 x 7 x 1.4
- Supporting “Product Longevity”

Product Longevity

- FS65/45 can fit with

Provider	Processor
NXP	S32K17x, S32K14x, S32K3x, MPC56x, MPC57x, S32R2x
TI	TMS570
ST Micro	SPC58
Infineon	Aurix TC2/3
Renesas	RH850C/E/P/U

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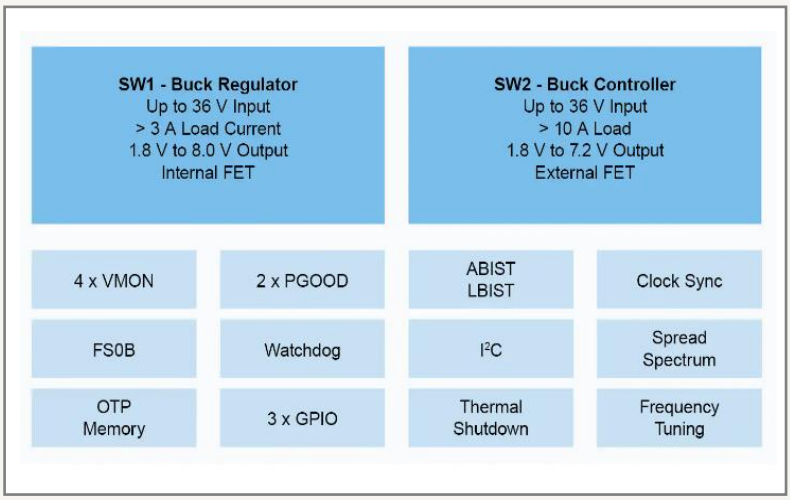
FS5600

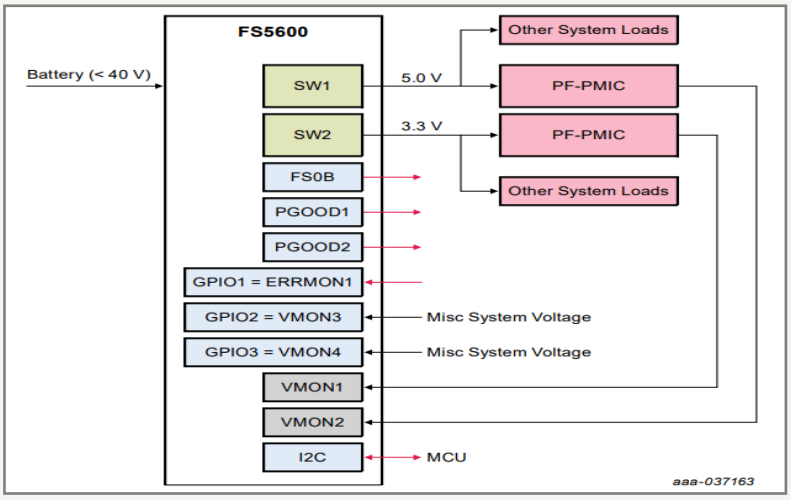
Dual channel HVBUCK regulator with safety features

15A and 3A HVBUCK combination to address varying current level in systems

Device Block Diagram



Application Block Diagram



1 Key Features

- Integrated **HV Buck Controller with External FET, and 3A HV Buck Regulator with Internal FET**
- **PFM mode** for system standby support
- **Integrated Safety features;** 2 x Internal, 4 x external voltage monitors, Windowed Watchdog Timer, PGOOD & FS0B Outputs, ABIST & LBIST
- GPIOs for seamless operation with NXP PFxxx PMICs

2 Benefit for customers

- Controller + Regulator combination fits **wide range of applications**
- Thanks to Spread Spectrum, Frequency Tuning & Synchronization, **enable to minimize EMC**
- **Smaller module design** compared to discrete implementation
- **Functional Safety** support up to ISO26262 ASIL B

3 Target Application

- Industrial Application
  Factory Automation, HMI
- Automotive Applications;
  Infotainment, Telematics, Rader, Vision, ADAS

Key Device Parameters

- Integrated FET + External FET combination
  - ✓ Output accuracy, ± 2%
  - ✓ 250 kHz to 3 MHz buck switching frequency
- Spread spectrum and frequency synchronization features enable low noise operation
- Up to 4 external voltage monitors with programmable fail-safe reaction
- FCCU and ERRMON monitoring
- OTP programmability that delivers different device configurations
- GPIOs for seamless operation with low voltage input PMICs
- Safety grade scalability from Enhanced ASIL B, ASIL B and QM
- Supporting Product Longevity

Product Longevity

- FS5600 can fit with those processors

Provider	Processor
NXP	i.MX8Qx, i.MX8Dx, i.MX95, i.MXRT117x, SAF86/86, LX2160
Ambarella	CV22/25, CV5/52
Black Sesame	A1000/A1000L
TI	AWR2243, TDA2, TDA4
Xillinx	ZU2/3,/4/5/6/7/9
Altera	Stratix10, Agilex F

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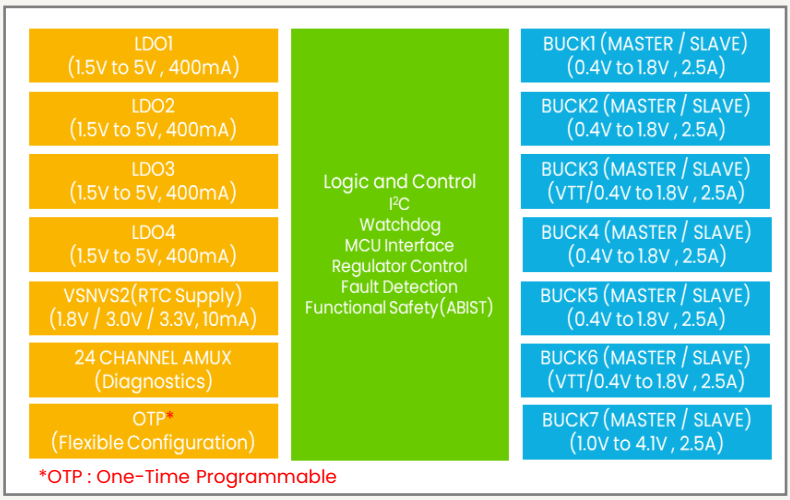
PF81/PF82

12-channel 5V PMIC for High-Performance processing

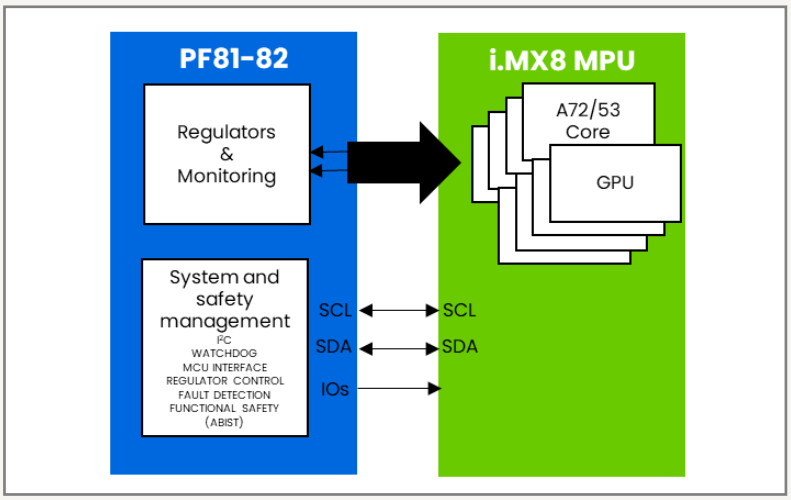
Easy to use by NXP's reference design for High-Performance processor, which is for advanced graphics, Vision, and safety-critical applications in industrial / Consumer / Automotive market

Device Block Diagram



*OTP : One-Time Programmable

Application Block Diagram



1 Key Features

- **High Power integration & High Efficiency** up to 10A core supply and >10A total output power
- **Proven & Robust solution** co-developed with NXP MPU
- Comply with **ISO26262** and flexible for **ASIL B(D)**
- Minimized EMC with spread spectrum, frequency tuning & synchronization, and multi-phase operation

2 Benefit for customers

- **Smaller module design** compared to discrete implementation
- **Accelerate customer design** and **reduce development cost** by BSP and reference design with NXP MPU
- **Reduced complexity for functional safety** implementation

3 Target Application

- Automotive

Infotainment / Driver Monitoring System, Vision, Cable & Internet Stream Boxes

- Industrial & Consumer

Energy Monitoring Display, Robotic Appliance, Smart Watch, Hearables

Key Device Parameters

- Input Voltage: 2.7 – 5.5 V
- 6 Buck 0.4- 1.8 V, 2.5 A Master/Slave; 1 Buck 1.0- 4.1 V Independent
- 4 LDO 1.5 - 5 V
- Prog Freq, Dynamic Freq Spread Spectrum , Ext Clock Synch
- 32 Channel AMUX, OV,UV
- Qualified for QM level or ASIL B Safety Level
- Temperature: -40 °C to 105 °C (T_{amb}), - 40 °C to 150 °C (Tj)
- Package: 8 x 8 mm 56-LD QFN-EP
- Automotive and Industrial grades available
- Supporting "Product Longevity"

Product Longevity

- PF81-82 can fit with those CPU

Provider	Processor
NXP	i.MX 8Q, S32V
TI	TDA2, TDA4
Xilinx	ZU2/3/4/5/6/7/9/11/13/15
Horizon	J2, J3
Ambrella	CV22, CV25
Black Sesame	A1000, A1000L
Renesas	R-Car H3, R-Car M3

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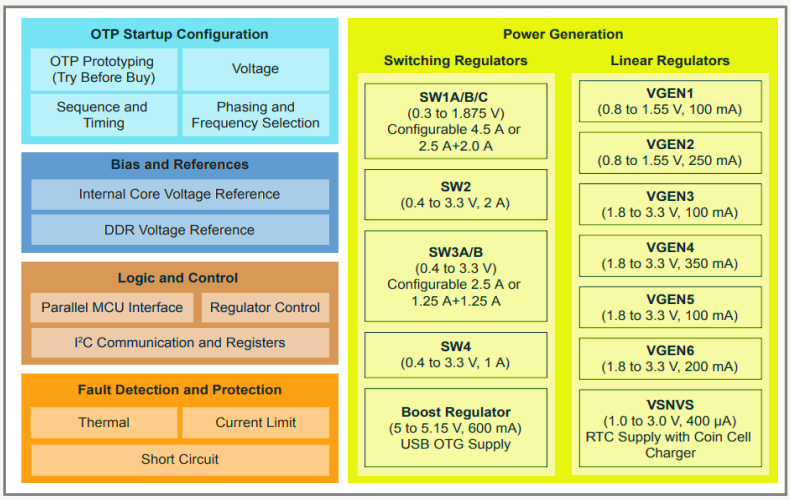
MMPF0100

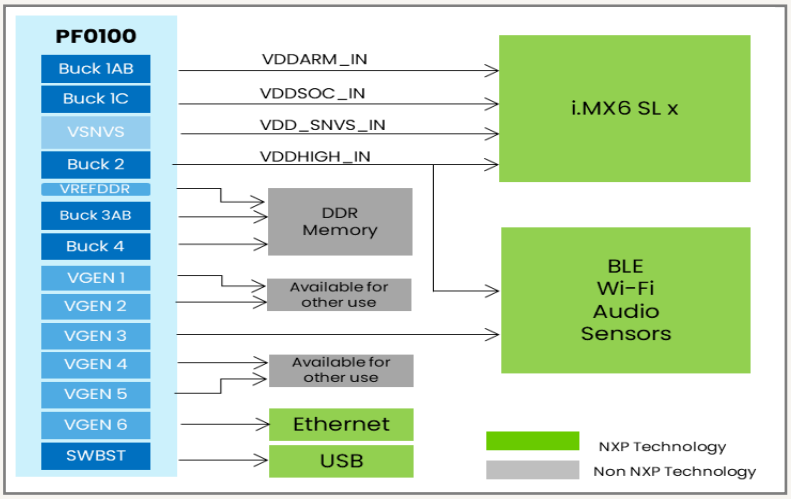
14-Channel Configurable & Programmable PMIC

Provide power for a complete system, including application processors, memory, and system peripherals, in a wide range of applications

Device Block Diagram



Application Block Diagram



1 Key Features

- **Optimized for i.MX 6 family**, supporting BSP & Validation with i.MX 6
- Integrated **4 to 6 configurable Buck Converters, 1 x Boost converter, and 6 x LDO**
- **High current capability** by supporting Power Virus mode operation

2 Benefit for customers

- **Reduce eBOM** by the integrated multiple functions and small package
- **Accelerate customer design** and **reduce development cost** by BSP and reference design with NXP MPU
- **Enable prototyping and customization** of the start-up sequence by OTP

3 Target Application

- Automotive

Infotainment, Instrument Clusters, Telematics, Vision systems

- Industrial

Smart Monitors, Medical Tablets, Factory Automation, HMI, Digital signage, Printers

- Smart Home

Smart Energy, Home Appliances

Key Device Parameters

- Four to six buck converters, depending on configuration
  - ✓ Single/Dual phase
  - ✓ DDR termination tracking mode
- 5.0V boost regulator and six general purpose LDOs
- Programmable output voltage, sequence and timing
  - ✓ OTP(One-Time-Programmable) memory for configuration
  - ✓ Try-before-buy option
- Coin cell charger and RTC supply
- DDR termination reference voltage
- I²C control
- Programmable user modes
- Consumer/Industrial and Automotive AEC-100 Grade 3 qualified
- Temperature(Tamb) : -40 °C to 105 °C , -40 °C to 85 °C
- Packages: 56 QFN 8 X 8, 0.5 mm
- Supporting "Product Longevity"

Product Longevity

- MMPF0100 can fit with those CPU

Provider	Processor
NXP	i.MX 6 series
Xilinx	Zynq-7000

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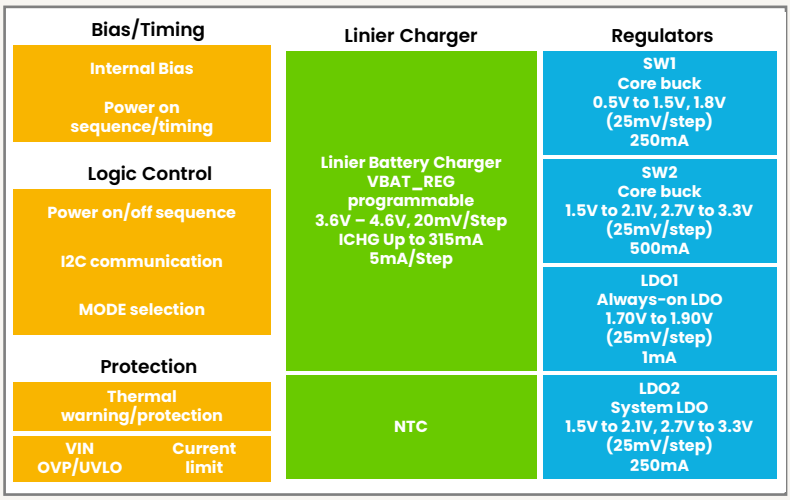
PCA9420/21

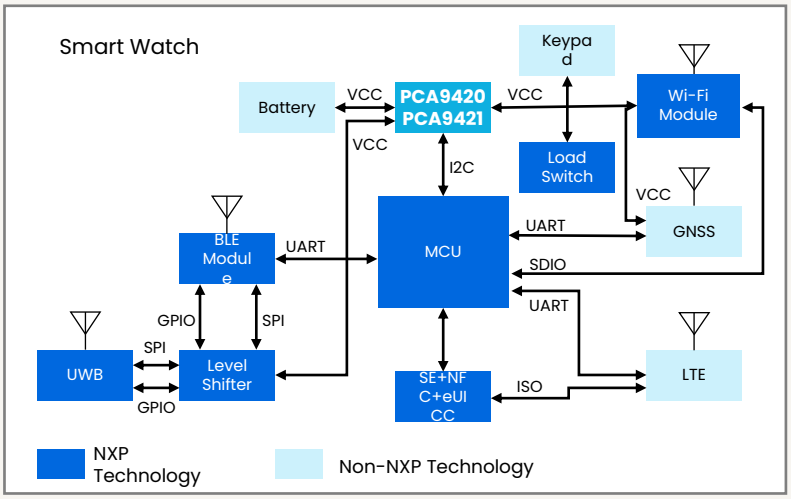
Power Management IC for Low Power IoT Systems

Simplify system design & Extend battery life for IoT application, such as hearables, fitness bands, and watches

Device Block Diagram



Application Block Diagram



1 Key Features

- Integrated **2 x DC/DC, 2 x LDO,** which has **I²C programmable output voltage**
- Integrated **1x Linear Battery Charger up to 315 mA** (PCA9420 only)
- Smaller Package options : **WLCSP25 2.09 x 2.09 x 0.525 mm**

2 Benefit for customers

- **Extend battery life** by the optimized functions for low power applications
- **Better power tree coverage** by more DC/DC & LDO, and battery charger functions
- **More Flexible** to support different MCU operation modes and vendors

3 Target Application

Hearables, Fitness Bands, Smart Watches, Smart Glasses, Audio Subsystems

Key Device Parameters

- Optimized for RT 5/600 low-power applications
- Typical **100 nA quiescent** current in ship mode for long battery life
- Built-in "Mode" configuration to accommodate a fast mode switch supporting different MCU operation modes
- Programmable **automatic recharge** voltage and **termination** current threshold
- Load **supply voltage** 2 V (Min), 6.8 V (Max)
- 2 x LDO- 250 mA, 1 mA , 2 x Buck- 250 mA, 500 mA
- I²C interface, Watchdog timers for MCU/MPU monitoring
- Integrated *Only PCA9420
  - 1 x **Liner Battery Charger** for Li- Ion cell chemistry- up to 315 mA charging current, compliant to **JEITA standard**
  - 1 x NTC(Negative temperature coefficient sensor)
- Temperature(Tamb): -40 °C ~ +85 °C
- Packages:
  - 2.09 mm x 2.09 mm, 5 x 5 bump, 0.4 mm pitch WLCSP
  - 3 mm x 3 mm, 24-pin QFN
- Supporting "Product Longevity"

- PCA9420/9421 can fit with those CPU

Provider	Processor
NXP	i.MX RT500, i.MX RT600, MCX, NXH3675
ST Micro	STM32W/L
AMBIQ	Appollo4 family

Product Longevity

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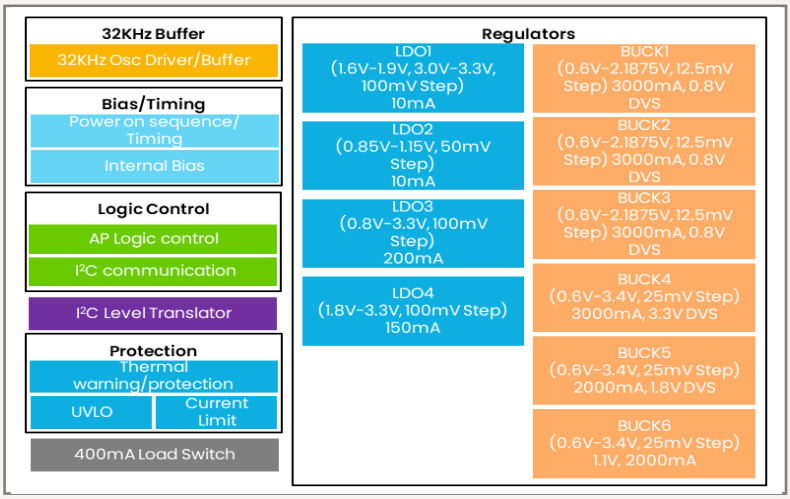
PCA9450

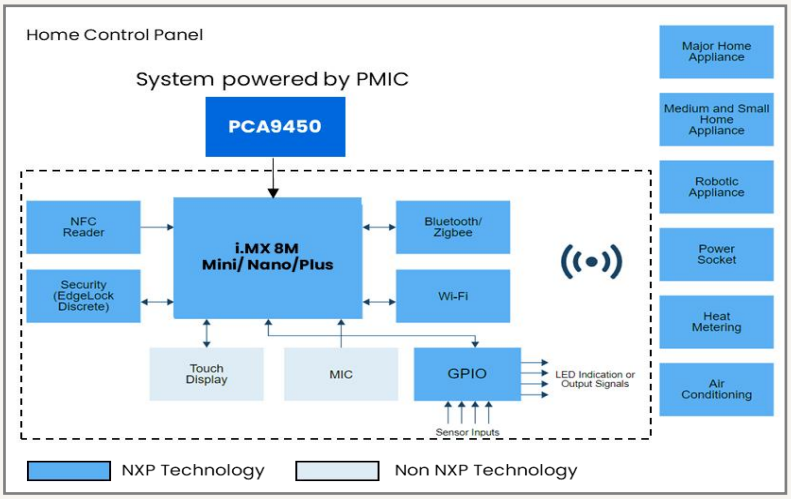
Power Management IC for i.MX 8M Mini/Nano/Plus

Enable shorter development recourses by the optimized functions specifically for i.MX 8M Mini/Nano/Plus

Device Block Diagram



Application Block Diagram



1 Key Features

- **Optimized and fully validated for i.MX 8M Mini/Nano/Plus**
- Integrated **6x High-Efficiency BUCK** and **5x LDO**
- Integrated **I²C level translator, load switch**, and **32MHz crystal driver**
- Support various memory types: **DDR4/LPDDR4/DDR3L**

2 Benefit for customers

- **Optimize BOM** by integrated multiple functions
- **Accelerate customer design**, supporting BSP & validation with i.MX 8M Family
- **More flexible** by supporting Dynamic Voltage Scaling(DVS) and remote sense through I2C

3 Target Application

Digital Signage, Machine Visual Inspection, Audio/Video Receivers, Sound bars, Home Control Panel, POS systems, Tablets

Key Device Parameters

- Integrated **6 x BUCK** with DVS and **5 x LDO**
- 400 mA Load Switch with active discharge
- **32.768 kHz Crystal oscillator** buffer output
- **1.8V to 3.3V** -Level translator
- Power control IO
  - ✓ Power ON/OFF control
  - ✓ Standby/Run mode control
- Fm+ 1 MHz I²C Interface
- ESD protection
  - ✓ Human Body Model (HBM) : +/- 2000 V
  - ✓ Charged Device Model (CDM) : +/-500 V
- Package : 7mm x 7mm, 56-pin HVQFN with 0.4 mm pitch
- Temperature(Tamb) : -40° ~ +105°
- PCA9450 can fit with i.MX 8M Mini/Nano/Plus
- Supporting Longevity Program

Product Longevity

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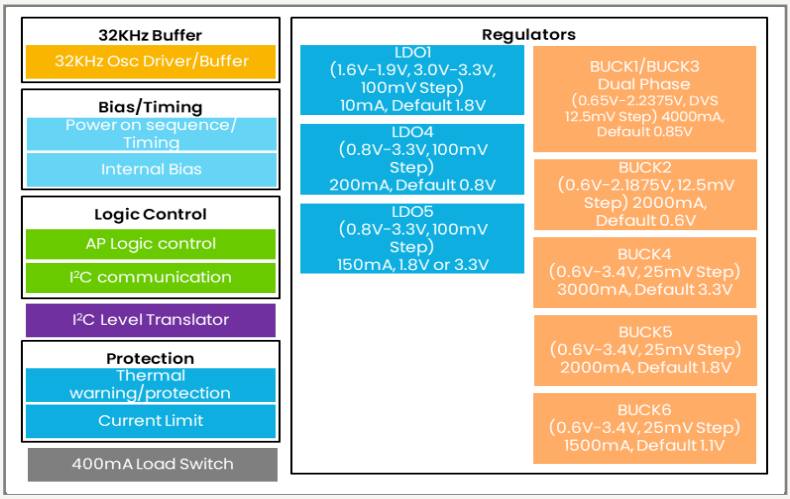
PCA9451A

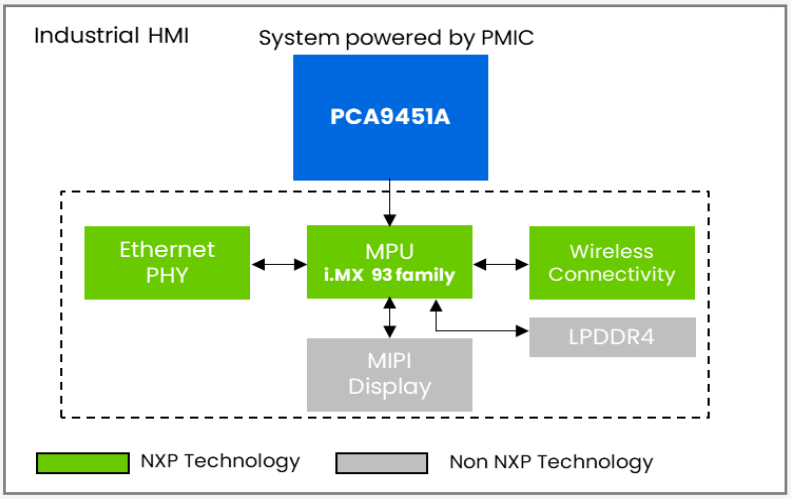
Power Management IC for i.MX 93 Application Processor

Improve power consumption and robust system reliability, attaching with i.MX 93 processor + PCA9451A

Device Block Diagram



Application Block Diagram



1 Key Features

- **Optimized for i.MX 93** and **scaled solution for i.MX 93 and 91 family**
- Integrated **6x High-Efficiency BUCK** and **3x LDO**
- Integrated **I2C level translator**, **load switch**, and **32MHz crystal driver**
- **Dynamic Voltage scaling (DVS)** to support different power-mode processor

2 Benefit for customers

- **Optimize BOM** by the integrated multiple functions
- **Accelerate customer design**, supporting BSP & validation with i.MX 93
- **Enable for the industrial**, **smart home and consumer markets**, characterizing across **T(amb) -40 ° to 105 °** temperature range

3 Target Application

- Industrial

EV Charging Station, I/O Control Unit, Industrial HMI, Machin Vision and Scanning

- Smart Home

Audio sound bar, Home Security Hub, Smart Lock, Energy monitoring HMI

Key Device Parameters

- Optimized PMIC for i.MX 93x Consumer & Industrial applications
  - ✓ PCA9451A for LPDDR4X and LPDDR4
  - ✓ Supports all versions of i.MX 93x
- 6x High-Efficiency Buck regulators
- 3x Lineal Regulators (LDOs)
- Integrated multiple functions :
  - ✓ I2C Level Translator /400 m A load Switch /
  - ✓ 32.768 kHz crystal oscillator / buffer output
- Package : HVQFN56, 7 mm x 7 mm, 0.4 mm pitch
- Temperature(Tamb) : -40 °C to 105 °C
- PCA9451A can fit with i.MX 93 & 91

  i.MX 93 and 91 are pin compatible therefore it enables SW & PCB deign reuse by same PMIC
- Supporting Longevity Program

Product Longevity

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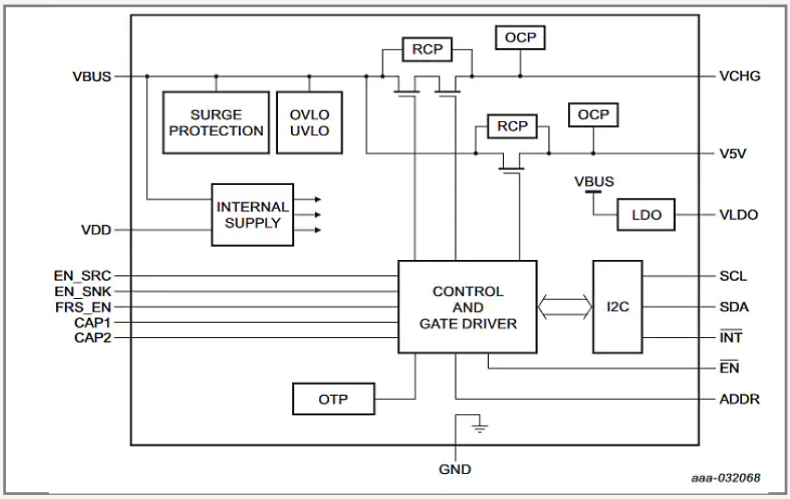
NX20P3483

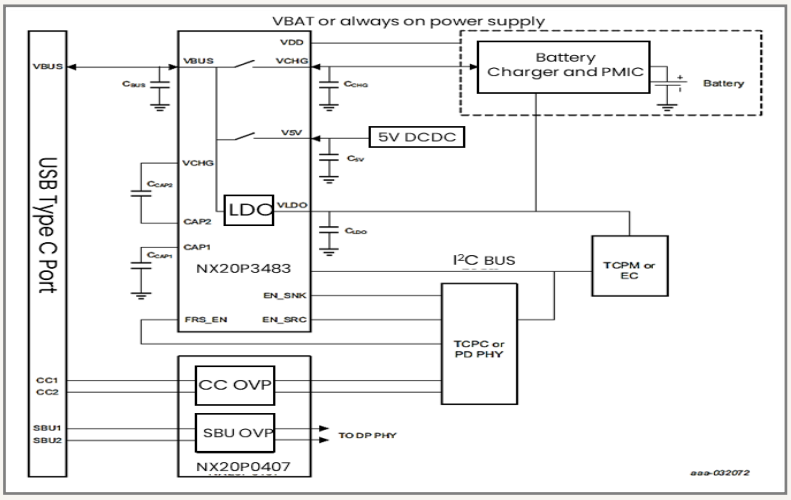
USB PD and Type-C High-Voltage Sink/Source Combo Switch

Better eBOM and enable board ~65% smaller than the Discrete solution for USB-PD Dual Role Port

Device Block Diagram



Application Block Diagram



1 Key Features

- Integrated **a bi-directional high-voltage power switch**, supports both 20V/5A sink and 5V/3A source
- Integrated **high voltage LDO** with reverse voltage protection
- Having **Dead Battery Operation** Mode

2 Benefit for customers

- **Max. 65% smaller size** than the combination of discrete solutions
- **Better eBOM cost** due to the integrated multiple protection functions
- Enable **higher surge protection** of VBUS up to 100V

3 Target Application

- Computing, Smartphone, Tablet, portable USB-PD Device
- USB PD DRP (Dual Role Port) Device

Key Device Parameters

- Supply voltage range for VBUS : from 2.8V to 20V
- System power supply V5V : from 4.0V to 5.5V
- Chip power supply VDD : from 2.7V to 5.5V
- VBUS to VCHG Switch for Sink Path up to 20V
- V5V to VBUS switch for source Path of 5V
- Integrated high voltage LDO with reverse voltage protection
- Built in slew rate control for all power switches for inrush current limit
- Supports 1MHz Fast Mode Plus I2C-bus interface and four different I2C slave addresses by ADDR pin
- Operating ambient temperature : 40° to +85°
- Package : WLCSP42 2.91 x 2.51 x 0.525
- Supporting Product Longevity

NX20P3483 is a reference part of Google Chromebook in those platforms
- Mediatek Platform
- Big-Core of Intel Platform
- AMD Platform

Product Longevity

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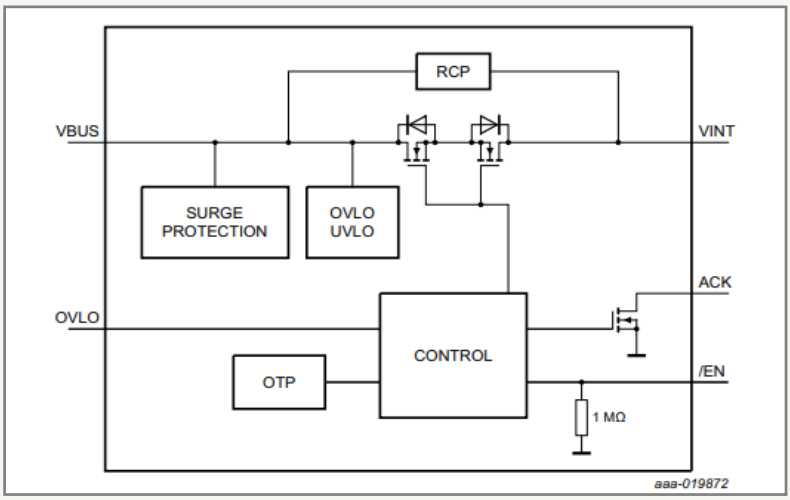
NX20P5090

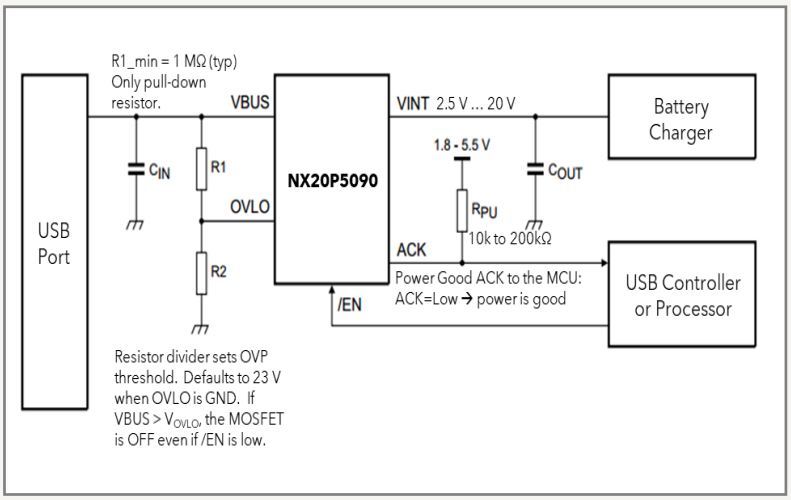
20V High-Voltage USB Power Delivery Switch

Safe and Efficient protection solution for USB PD Type-C applications

Device Block Diagram



Application Block Diagram



1 Key Features

- **5A capable power switch** with programmable over-voltage protection (OVP)
- Operates from 2.5 V to 20 V
- Integrated **under-voltage protection (UVP), reverse-current protection (RCP), and over-temperature protection (OTP)**

2 Benefit for customers

- **Enable to protect the system**, thanks to the function to isolate the power switch terminals automatically when a fault condition occurs
- **Effective power distribution** for USB PD SPR
- **High Surge Protection** up to 100V by integration of Power Surge Diode

3 Target Application

- Computing, Smartphone, Tablet, portable USB-PD Device
- USB PD DRP (Dual Role Port) Device

Key Device Parameters

- Wide supply voltage range from 2.5 V to 20 V
- ISW maximum 5 A continuous current
- 29 V tolerance on both VBUS and VINT pin
- 30 m Ω (typical) Low ON resistance
- Adjustable VBUS over voltage protection
- Built in slew rate control for inrush current limit
- All time two level reverse-current protection
- Protection circuitry
  - ✓ Over-Temperature Protection
  - ✓ Over-Voltage Protection
  - ✓ Under-Voltage Lockout
  - ✓ Reverse Current Protection
- Surge protection:
  - ✓ IEC61000-4-5 exceeds ±90 V on VBUS without capacitor
  - ✓ IEC61000-4-5 exceeds ±100 V on VBUS with 22 uF capacitor
- ESD protection
  - ✓ IEC61000-4-2 contact discharge exceeds 8 kV on VBUS
  - ✓ HBM ANSI/ESDA/JEDEC JS-001 Class 2 exceeds 2 kV
  - ✓ CDM AEC standard Q100-01 (JESD22-C101E)
- Specified from 40 ° C to +85 ° C
- Supporting Product Longevity

Product Longevity

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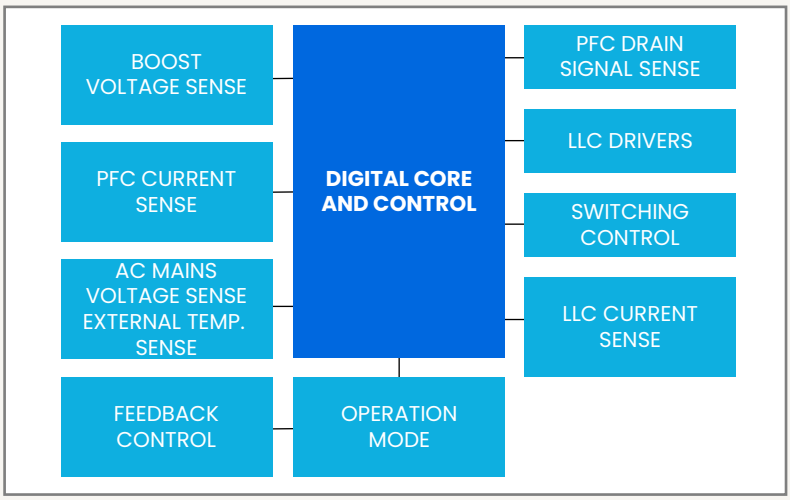
TEA2017

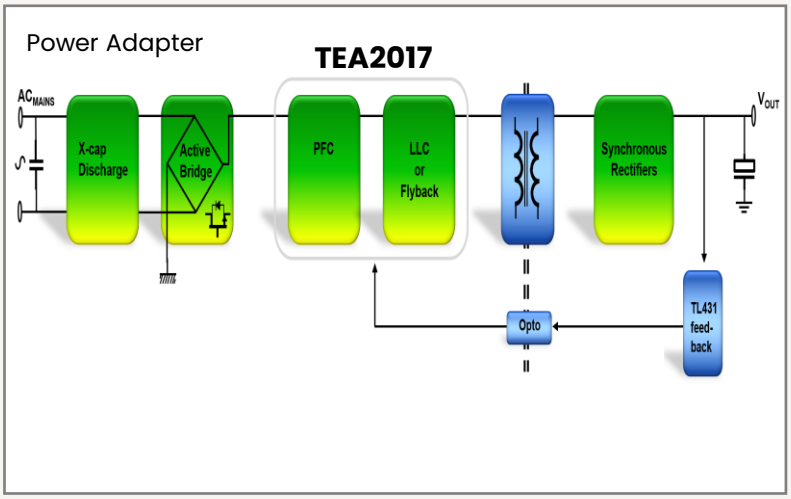
AC to DC with Digital Configurable LLC & Multimode PFC

Enable building a complete Best-In-Class efficient resonant ACDC power supply which is easy to design, flexible to multiple application use cases and has a very low component count

Device Block Diagram



Application Block Diagram



1 Key Features

- ACDC Converter with **Best-In-Class energy conversion**
- Extremely **High efficiency** from low load to high load
- Complete functionality of LLC and PFC controller in a single **small-size SO16 package**
- PFC can be configured to operate in **DCM/QR, CCM & DCM/QR/CCM***, also called mixed mode operation

*DCM/Discontinuous Current Mode, CCM/Continuous Current Mode, QR/Quasi-Resonant

2 Benefit for customers

- Complies with **latest energy-saving standards and directives** (Energy Star, EuP, DoE...etc.)
- **Better eBOM** by integrated X-capacitor discharge
- GUI enables **easy development** of the power supply with "live programming of parameters"

3 Target Application

- Smart Home ▶ Notebook PC, Docking, PC Monitor, TV, Gaming, e-Bike, Satellite internet receivers
- Smart Industry ▶ PLC, Medical equipment, POE switches, Server, Telecom, Lighting

Key Device Parameters

- Complete functionality of LLC and PFC controller
- Integrated high-voltage start-up
- Integrated drivers and high-voltage level shifter (LS)
- Accurate boost voltage regulation
- PFC can be configured to operate in DCM/QR, CCM fixed frequency & DCM/QR/CCM (also called mixed mode operation)
- Integrated X-capacitor discharge without additional external components
- PFC jitter for optimized EMI performance
- Excellent Power Factor (PF) and Total Harmonic Distortion (THD)
- Package : SO16, 9.9 x 3.9 x 1.35
- Junction Temperature : -40° to 150°C
- Supporting "Product Longevity"

Product Longevity

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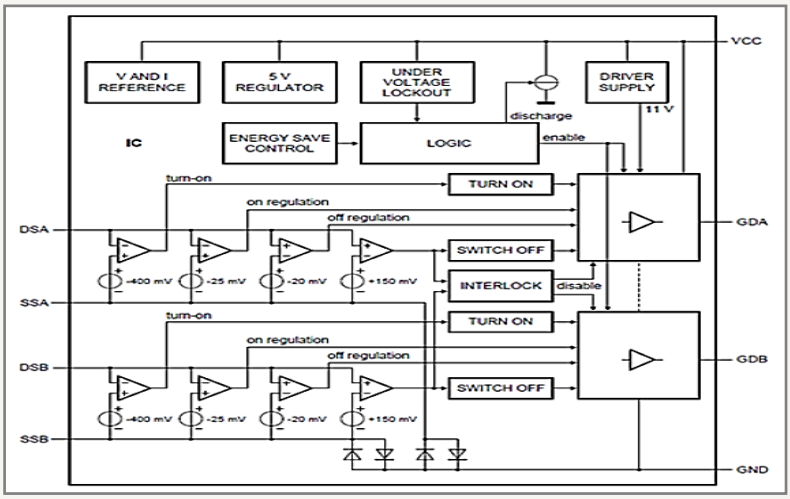
TEA2095T/TE

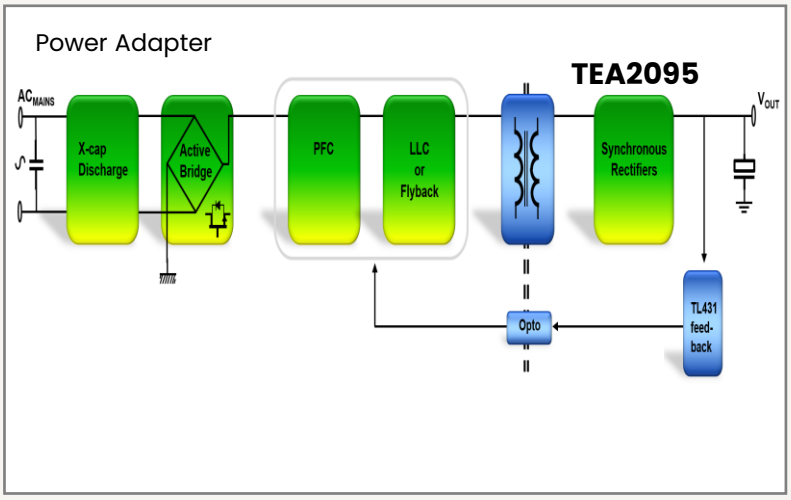
GreenChip Dual LLC Synchronous Rectification (SR) Controller*

Enable maximum efficiency, suitable for adapters & other power supplies

Device Block Diagram



Application Block Diagram



1 Key Features

- **Dual synchronous rectification** for LCC resonant
- Wide supply voltage range from **4.5 V to 38 V**
- Enable to use MOSFETS **with very low Rdson for high efficiency** and **low Vds**
- Supports **1 MHz switching frequency**

2 Benefit for customers

- **High efficiency** over entire load range
- **Better eBOM** for auxiliary SR supply winding by supporting 5V operation
- Enable **better thermal** on the board

3 Target Application

- Smart Home ▶ Notebook PC, Docking, PC Monitor, TV, Gaming, e-Bike, Satellite internet receivers
- Smart Industry ▶ PLC, Medical equipment, POE switches, Server, Telecom, Lighting

Key Device Parameters

- Dual synchronous rectification for LLC resonant
- Supply voltage range : from 4.5 V to 38 V
- Discharge of the output capacitor after mains disconnect
- Adaptive gate drive for maximum efficiency at any load
- Supply current in energy save operation of 90 µA
- Regulation level of -25 mV for driving low-ohmic MOSFETs
- Interlock function to prevent simultaneous conduction of the external MOSFETs
- Supports 1 MHz switching frequency
- Package options :
  - ✓ HSO8 5 x 4 x 1.68
  - ✓ SO8 4.9 x 3.9 x 1.75
- Junction Temperature : -40° to 150°C

Product Longevity

* SR : synchronous rectifier
GreenChip : Name of NXP's product portfolio, which is aimed at enabling more energy efficient power solutions

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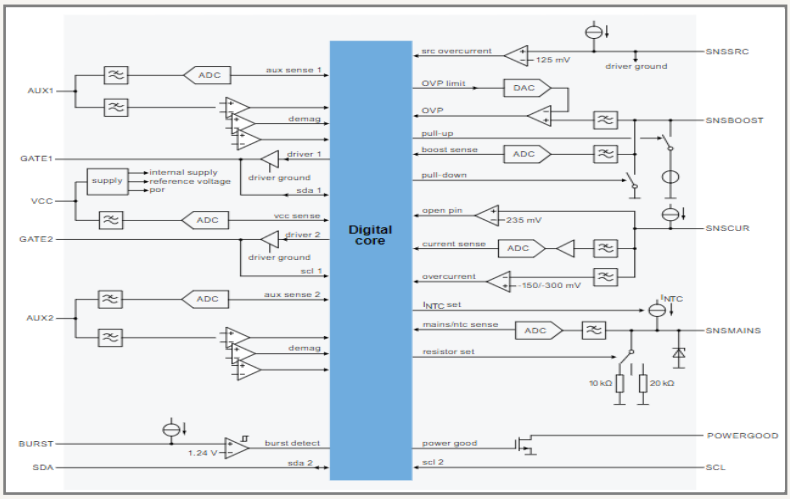
TEA2376xT

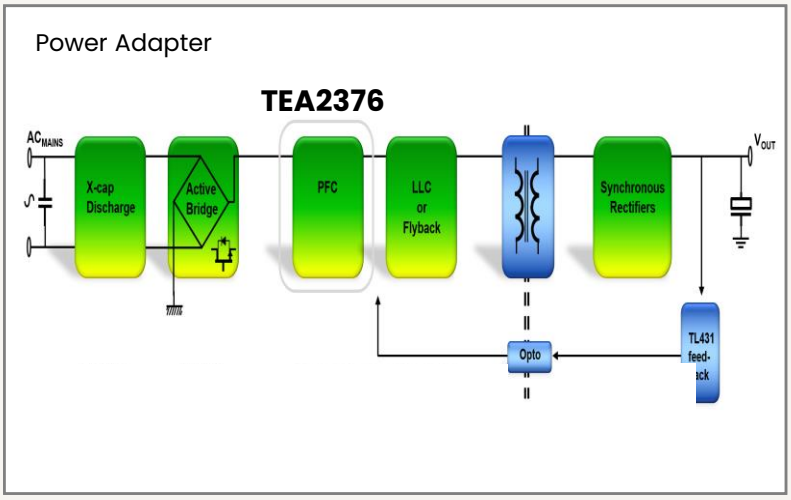
TEA2376xT, Digital Configurable Interleaved PFC Controllers

Enable low size AC/DC power supplies with high efficiency, through reliable interleaved PFC with a low external component count for power levels up to typically 1000 W

Device Block Diagram



Application Block Diagram



1 Key Features

- Enable **very high-efficiency** from high load to medium and low load by **phase shedding** and **burst mode** operation
- 180 °C phase shifting
- Support **I²C communication**

2 Benefit for customers

- **Optimized for energy efficiency,** specializing in high-power density, safety and reliability
- **Easy to design** with a low external component count and NXP's GUI parameter programming
- **Enable smaller design** by SO10 package option

3 Target Application

- Smart Home ▶ Notebook PC, Docking, PC Monitor, TV, Gaming, e-Bike, Satellite internet receivers
- Smart Industry ▶ PLC, Medical equipment, POE switches, Server, Telecom, Lighting

Key Device Parameters

- Interleaved PFC controller
- Programmable phase shedding and burst mode operation
- Dual output over voltage protection
- Inrush current protection
- High power factor (PF) and low total harmonic distortion (THD), also at high input voltages
- Many parameters can be configured during evaluation with the use of a user-friendly graphical user interface (GUI)
- Good phase control over full input voltage range
- Low audible noise
- Package :
  - ✓ SO10 6.2 x 3.9 x 1.75 mm
  - ✓ SO14 8.65 x 3.9 x 1.75 mm
- Junction Temperature : -40° to 150°C
- Supporting "Product Longevity"

Product Longevity

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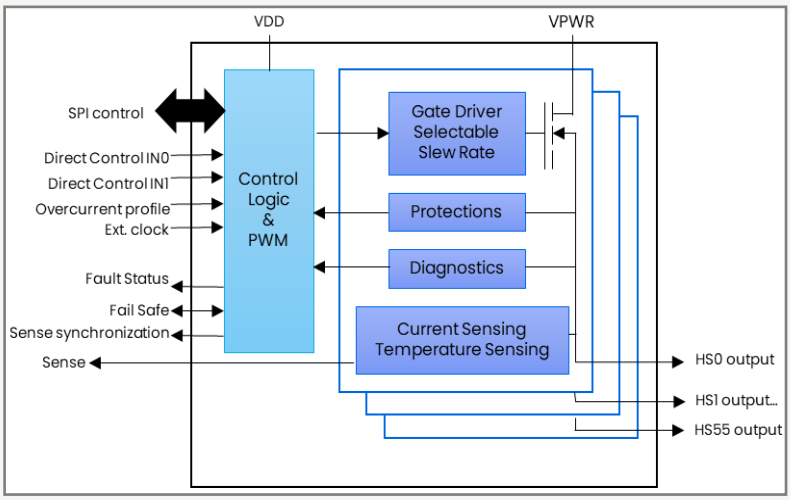
MC33XS2410

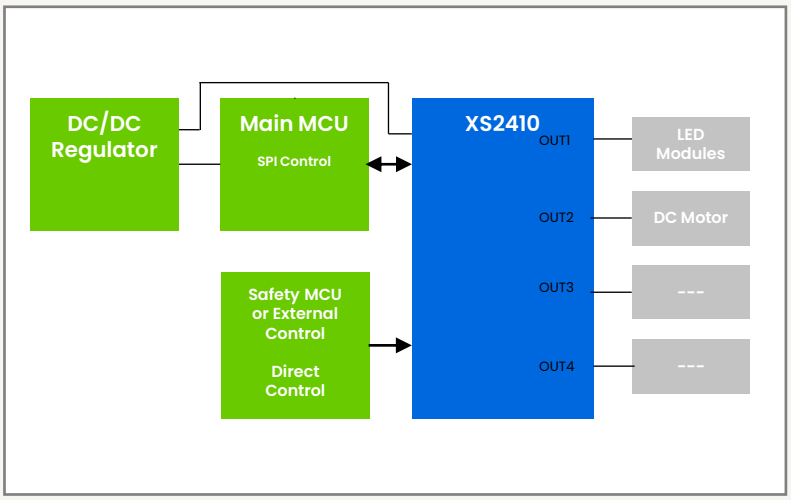
3V to 60V, 4 channel self-protected High-Side Switch

By High integration, MC33XS2410 enables a drastically simplified hardware design and MCU software control

Device Block Diagram



Application Block Diagram



1 Key Features

- Wide operating voltage range **3V-60V**
- **4 fully-protected** 100 mΩ high-side switches
- Output Diagnostic **: 12 bits A/D converter**
- Comply **System ASIL B***

*Automotive Safety Integrity Level

2 Benefit for customers

- **High Flexibility** with Daisy-chainable SPI control
- 12 bit ADC helps **embedded failsafe mode**
- **Reduce BOM** count and **optimized system** design by passive components

3 Target Application

- Automotive
  Trucks, buses, Lighting, wiper motor, DC motor, BMS contactor
  Special engines (Valve control)
- Industrial
  PLC I/O, motor control, emergency lighting

Key Device Parameters

- 4 fully-protected 100 mΩ (at 25 °C) high-side switches
- 4 x 1.8 A DC current (Pd 1.5 W @ Tj 150 °C)
- Power output can be paralleled to setup a dual 50 mΩ
- Wide operating voltage range 3 V-60 V
- Floating power output to drive all types of load
- 10 MHz 16-bit 3.3 V and 5.0 V SPI
- Over-current, short-circuit, and over-temperature protection with programmable auto-retry functions
- Open-load detection (channel in OFF & ON state)
- Output current limitation to clamp inrush current and short circuit current level
- Output diagnostic: 12 bits A/D current, voltage and temp
- PI current loop regulation for proportional solenoid valves
- Package : HTSSOP28 4.4 x 9.7 x 1mm
- Supporting “Product Longevity”

Product Longevity

nxp.com