



NXP system basis chip family UJA107xA

Latest SBCs make automotive networked ECUs more flexible, more scalable

These second-generation CAN/LIN System Basis Chips (SBCs) optimize performance, power consumption, and cost in electronic control units (ECUs) for a broad range of automotive applications.

Key features

- ▶ ISO11898-2 and ISO11898-5 compliant HS-CAN transceiver
- ▶ LIN2.1, LIN2.0 and J2602 compliant LIN transceiver
- ▶ Scalable voltage regulator (3.3 or 5 V)
- ▶ Separate voltage regulator for CAN transceiver
- ▶ 2 wake-up inputs with cyclic biasing option
- ▶ Very low Standby mode current: 75 μ A (typ) with V1 active
- ▶ Very low Sleep mode current: 55 μ A (typ)
- ▶ Full wake-up capability in Standby and Sleep mode
- ▶ Operation down to 4.5 V BAT $\geq$ 4b pulse (cranking) robustness
- ▶ Excellent ESD protection: $\pm$ 8 kV HBM, $\pm$ 6 kV IEC 61000-4-2
- ▶ Excellent EMC performance for robust, interference-free operation in the car
- ▶ Integrated failsafe functions: Watchdog, Limp Home, Global Enable
- ▶ Compact Dark Green HTSSOP32 package (6.1 x 11 mm)

Key applications

- ▶ Body control modules
- ▶ Climate control
- ▶ Seat control
- ▶ Electric power steering (EPS)
- ▶ Adaptive lighting
- ▶ Rain/light sensors
- ▶ Parking assistance
- ▶ Transmission control

NXP's UJA107xA SBCs vastly simplify ECU design and layout, reducing required board space, and improving quality and reliability, while significantly reducing the overall ECU cost.

Today's new cars have over 50 ECUs on board, so it's imperative for OEMs to select components that are compact, cost-efficient, and reliable over the long term. The robust, highly flexible UJA107xA family meets these requirements, helping OEMs bring advanced safety and comfort features to vehicles in all segments of the worldwide automotive market.

The UJA107xA family offers a very high level of integration, performance, and scalability. Each device integrates industry-leading CAN and LIN transceivers along with a scalable voltage regulator for the on-board microcontroller and peripherals.

In addition, the UJA107xA family features SPI microcontroller interfacing and an integrated watchdog. Two independent wake ports enable the ECU to wake out of low power mode.



The entire family is pin-to-pin compatible and uses the same compact Dark Green HTSSOP32 package. All UJA107xA SBCs can be offered with a 3.3 or 5 V power supply, and with or without a watchdog, for optimal fit.

The block diagram illustrates the internal architecture of the UJA1078A microcontroller. The central component is the **SYSTEM CONTROLLER**, which is connected to various internal and external blocks. Internal components include **V1 UV** and **V2 UV** (voltage monitors), **EXT. PNP CTRL** (external PNP control), **OSC** (oscillator), and **TEMP** (temperature sensor). External components include **WAKE** (wake-up logic), **LIN1** and **LIN2** (LIN bus controllers), and **HS-CAN** (high-speed CAN controller). The diagram also shows the connection of the **BAT** (battery) and **GND** (ground) pins to the internal circuitry. The **SYSTEM CONTROLLER** is connected to the **WAKE** block, which in turn is connected to the **WAKE1** and **WAKE2** pins. The **SYSTEM CONTROLLER** is also connected to the **LIN1** and **LIN2** blocks, which are connected to the **LIN1** and **LIN2** pins. The **SYSTEM CONTROLLER** is connected to the **HS-CAN** block, which is connected to the **HS-CAN** pins. The **SYSTEM CONTROLLER** is also connected to the **OSC** and **TEMP** blocks. The **SYSTEM CONTROLLER** is connected to the **EXT. PNP CTRL** block, which is connected to the **EXT. PNP CTRL** pins. The **SYSTEM CONTROLLER** is connected to the **V1 UV** and **V2 UV** blocks, which are connected to the **V1** and **V2** pins. The **SYSTEM CONTROLLER** is connected to the **W1** and **W2** pins. The **SYSTEM CONTROLLER** is connected to the **W3** and **W4** pins. The **SYSTEM CONTROLLER** is connected to the **W5** and **W6** pins. The **SYSTEM CONTROLLER** is connected to the **W7** and **W8** pins. The **SYSTEM CONTROLLER** is connected to the **W9** and **W10** pins. The **SYSTEM CONTROLLER** is connected to the **W11** and **W12** pins. The **SYSTEM CONTROLLER** is connected to the **W13** and **W14** pins. The **SYSTEM CONTROLLER** is connected to the **W15** and **W16** pins. The **SYSTEM CONTROLLER** is connected to the **W17** and **W18** pins. 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Product no.	Description	MCU supply	Watchdog	Package
UJA1078A	HS-CAN and dual LIN/J2602 SBC	3.3 or 5 V	Optional	HTSSOP32
UJA1075A	HS-CAN and LIN/J2602 SBC	3.3 or 5 V	Optional	HTSSOP32
UJA1076A	HS-CAN SBC	3.3 or 5 V	Optional	HTSSOP32
UJA1079A	LIN/J2602 SBC	3.3 or 5 V	Optional	HTSSOP32