UJA1169A MINI HS-CAN SYSTEM BASIS CHIP (SBC) FAMILY WITH 250 MA VOLTAGE REGULATOR

Housed in small, leadless HVSON20 packages, UJA1169A SBC product family devices offer a highly integrated solution with HS-CAN interface with CAN FD support up to 5 Mbit/s. Variants within the family provide additional functions, including a watchdog, an optional external 5 V sensor supply, partial networking support and more.

KEY FEATURES AND CUSTOMER BENEFITS

- ISO 11898-2:2016 and SAE J2284-1 to SAE J2284-5 compliant HS-CAN, including CAN FD active communication up to 5 Mbit/s
- Optional partial networking and CAN FD passive support
- Autonomous bus biasing according to ISO 11898-6
- Fully integrated 3.3 V or 5 V low-dropout regulator with 250 mA output current capability
- Enhanced thermal distribution with external PNP transistor
- Optional protected 5V sensor supply variant for off-board usage
- Standby and Sleep mode with very low supply current
- Remote and local wake-up capability
- LIMP home output to signal system failures
- Mode control via the serial peripheral interface (SPI) bus
- Watchdog with Window, Timeout and Autonomous modes and microcontroller-independent clock source
- Easy and secure customer-programmable configuration of selected functions via non-volatile memory
- Support for microcontroller RAM retention down to a battery voltage of 2 V
- Leadless HVSON20 package (3.5 mm x 5.5 mm) with improved automated optical inspection (AOI) capability and low thermal resistance
- Hardware and software compatible with the UJA1169 product family
- Qualified in accordance with the AEC-Q100 Rev-G standard

DESIGNED FOR AUTOMOTIVE APPLICATIONS

- Sunroof control modules
- Seat control modules
- Gear shift control
- Midsize body control computers
- Center stack modules
- Climate control modules
- Front and rear view cameras
- Electronic steering column modules
- Tire pressure monitoring
- Matrix front lighting control
- Steering wheel control switch

UJA1169A FUNCTIONAL DESCRIPTION

The UJA1169A mini high-speed CAN SBC family contains an ISO11898-2:2016 and SAE J2284-1 to J2284-5 compliant HS-CAN transceiver. These SBCs also include CAN FD active communication up to 5 Mbit/s together with an integrated 3.3 V or 5 V low-dropout regulator supply (V1) for a microcontroller and/or other loads, scalable up to 250 mA. It also features a watchdog and an SPI. The UJA1169A SBC can be operated in very low-current Standby and Sleep modes with bus and local wake-up capability.

The device is available in six variants (see table below). The UJA1169ATK, UJA1169ATK/F, UJA1169ATK/3 and UJA1169ATK/F/3 variants feature a second onboard 5 V LDO regulator (V2) that supplies the internal CAN transceiver and can also be used to supply additional onboard hardware. The UJA1169ATK/X and UJA1169ATK/X/F SBCs are equipped with a 5 V supply (VEXT) for off-board components. VEXT is short-circuit proof to the battery, ground and negative voltages. The integrated CAN transceiver is supplied internally via V1, in parallel with the microcontroller.

Orderable Part	LDO (5 V)	LDO (3.3 V)	External 5 V Supply	Partial Networking	CAN FD Active	CAN FD Passive
UJA1169ATKZ	250 mA				5 Mbit/s	
UJA1169ATK/XZ	250 mA		100 mA		5 Mbit/s	
UJA1169ATK/FZ	250 mA			X	5 Mbit/s	X
UJA1169ATK/X/FZ	250 mA		100 mA	X	5 Mbit/s	X
UJA1169ATK/3Z		250 mA			5 Mbit/s	
UJA1169ATK/F/3Z		250 mA		X	5 Mbit/s	X

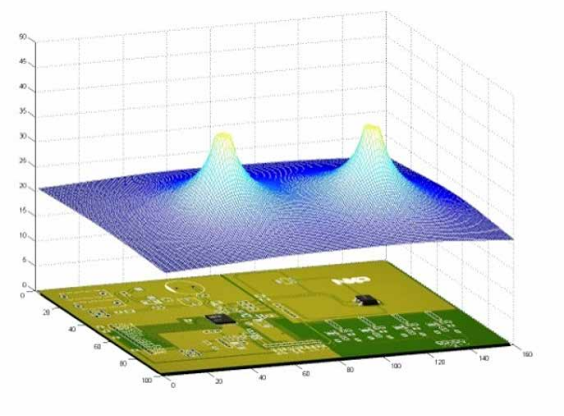
EXTENSIVE FEATURES

The UJA1169A product family is designed with a unique fast internal push-pull regulator, offering thermal management via an optional external PNP transistor.

The external control loop stays stable, independently of the physical location of the PNP and the detailed characteristic of that PNP.

For a better distribution of the power dissipation on the PCB, this feature allows more distance between the UJA1169A SBC and the PNP in order to prevent thermal hot-spots, as shown in the picture below.

THE UJA1169A REDUCES PCB HOTSPOTS

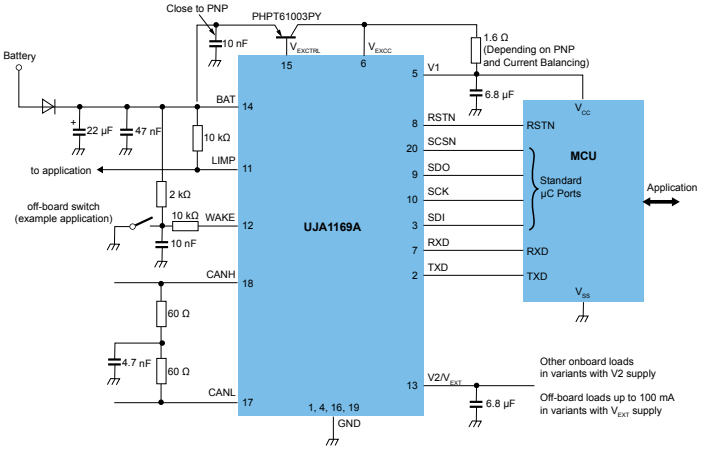


PARTIAL NETWORKING AND CAN FD PASSIVE

The UJA1169ATK/F, UJA1169ATK/X/F and UJA1169ATK/F/3 variants support ISO 11898-2:2016 compliant CAN partial networking with a selective wake-up function. A dedicated implementation of the partial networking protocol has been embedded into these variants as well.

This function is called "CAN FD-passive" and is the ability to ignore CAN FD frames while waiting for a valid wake-up frame in sleep and standby mode. This additional feature of CAN FD-passive partial networking is an exceptional fit for networks that support both CAN FD and CAN 2.0 communications. It allows normal CAN controllers that do not need to communicate CAN FD messages to remain in partial networking Sleep and Standby mode during CAN FD communication without generating bus errors.

UJA1169A APPLICATION DIAGRAM



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