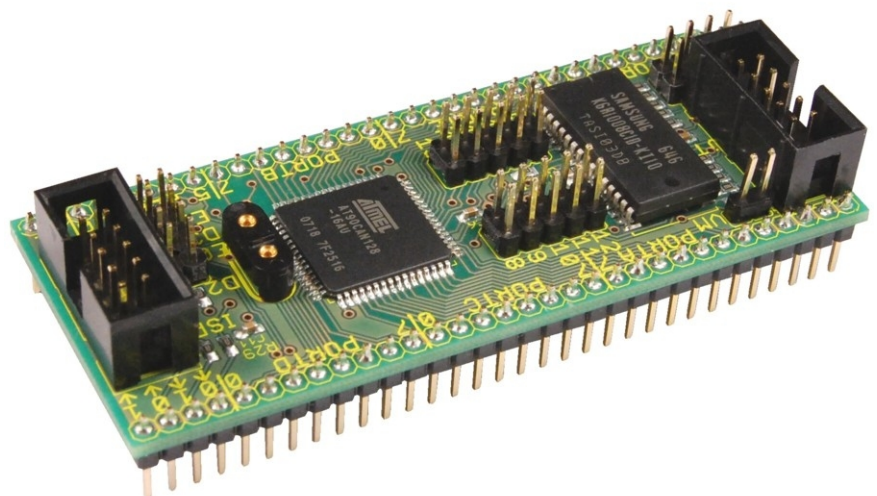
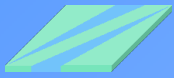


AVR-Development Module with 128K Bytes external SRAM

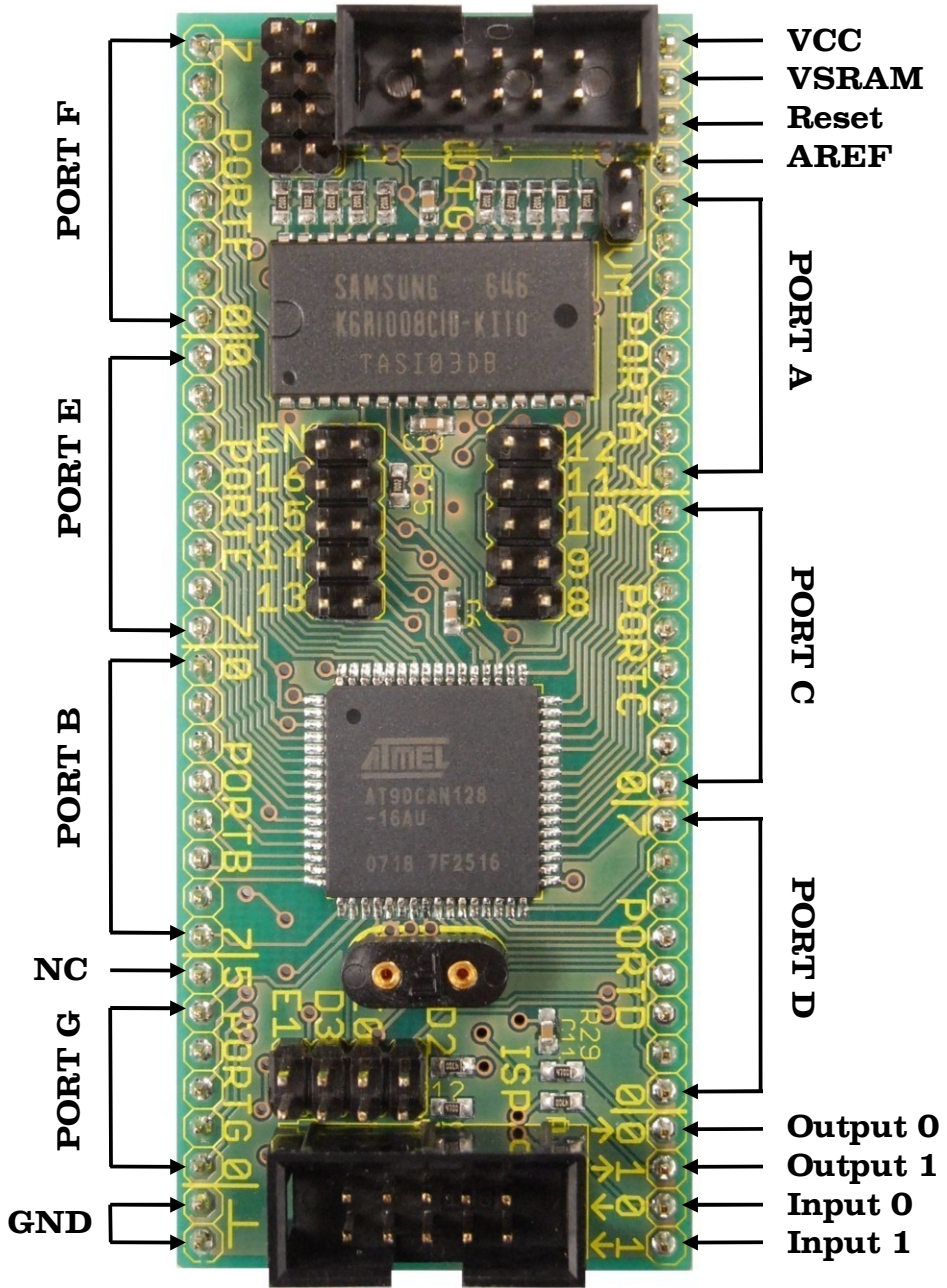
Model: AL-ERAM128_CAN

- **Summary**
- **Measures**
- **Description**
- **Electrical Characteristics**
- **Programming**
- **Settings**

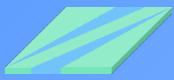




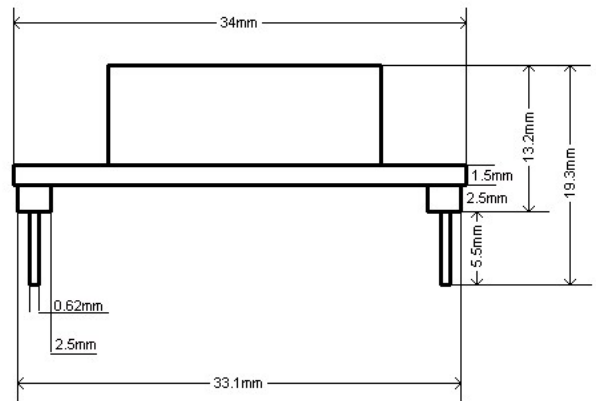
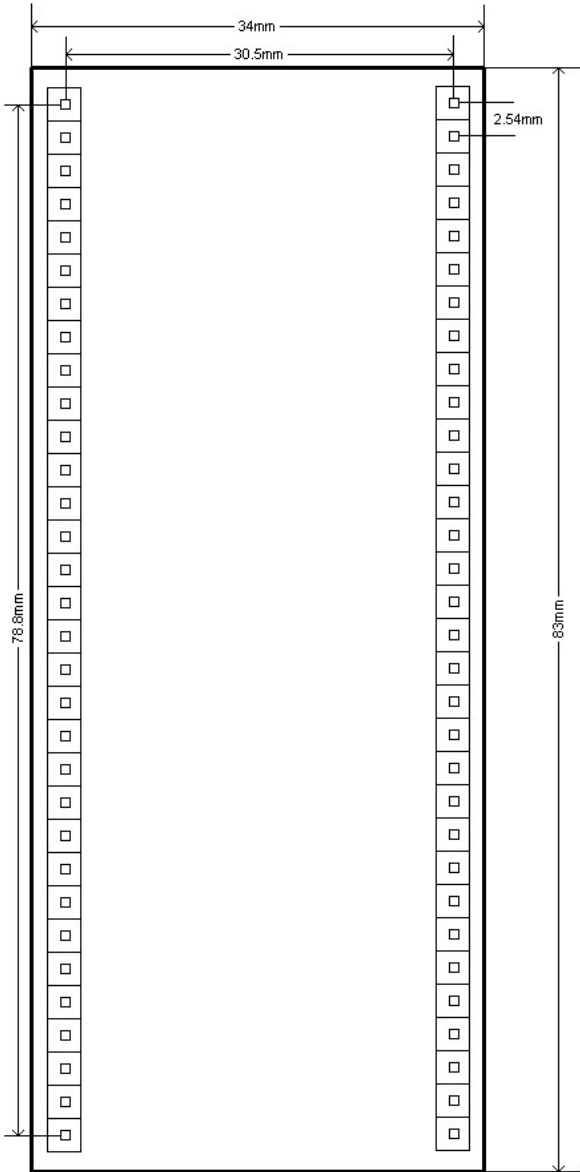
Summary

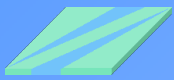


Attention! Polarity reversal and overvoltage may cause a destruction of the electronic components!!!

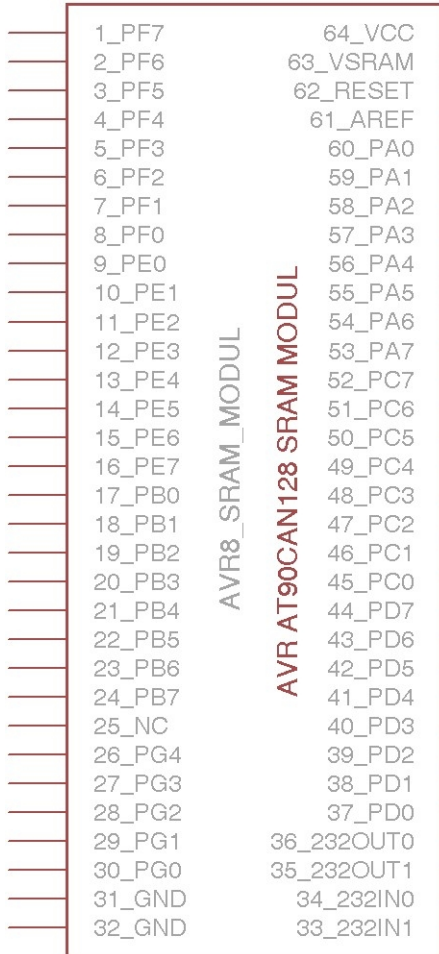


Measures



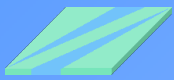


Description



- **Controller:** Atmel AVR AT90CAN128-16AU up to 16 MHz
- **Additional equipping:** 128K Bytes external SRAM
- **External SRAM:** internal or external voltage, ON/OFF switchable
- **Supply voltage:** 5 V
- **Module size:** W x H x D 34 mm x 83 mm x 19.3 mm
- **Quartz socket:** simple and fast quartz exchange
- **PC-Connection:** 2 x RS232, separable with jumpers
- **Compatibility:** compatible with hole matrix board (hole distance 2.54 mm)
- **Circuit:** built on the recommendation of the manufacturer
- **Programming:** ISP or JTAG connector
- **Pin configuration of AVR-Module:** shown at the left picture
- **Pin configuration ISP & JTAG connectors:** 10-pin, standard of Atmel
- **Functionality:** tested, ready for use
- **Conformity:** **RoHS Compliance**
- **Produced in Germany**
- **Description:**

We offer you more flexibility by the development. By means of quartz socket it is possible to choose another frequency easier and faster. External SRAM solves the saving problem, if the internal 4K Bytes SRAM is not enough. Due to Jumper configuration of SRAM there are following setting possible: internal or external voltage, ON/OFF switching of external SRAM and using all occupied ports after the Jumper separation, so that the ports may be used in a normal way, when SRAM is not needed. All pins of micro controller are connected with the pins of module and positioned in the logical order, that makes the development work easier. The circuit of the module is built on the recommendation of the manufacturer: A/D converter, reset, ISP, JTAG, RS232, SRAM. Jumper configuration helps you to make the right settings. A suppressor diode is responsible for the security of AVR-Module. We offer you a very simple installation and use of AVR-Module for the beginner as well as for the advancer.



Electrical Characteristics

	Min	Typ	Max
--	-----	-----	-----

for all modules with	Operating Temperature		
MAX3232EID (actual)	- 40 °C		85 °C
MAX3232IDR (actual)			
MAX202ECSE	0 °C		70 °C
MAX3232ECD			

	Operating Voltage		
• with 5 V version (actual)	4.5 V	5 V	5.5 V
• with 3.3 V version	3.0 V	3.3 V	3.6 V

	Operating Frequency		
• with 5 V version (actual)	0 Hz		16 MHz
• with 3.3 V version	0 Hz		8 MHz

	Maximum DC Current per I/O Pin		
• with 5 V version (actual)			20 mA
• with 3.3 V version			10 mA

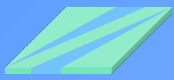
	Maximum Access Time of SRAM		
• with 5 V version (actual)			10 nS
• with 3.3 V version			10 nS

more electrical characteristics you will find on the page 365 in the data sheet [AT90CAN128.pdf](#)

- ▶ Suppressordiode P6SMB6.8A
- ▶ 2-layer Leiterplatte DIN ISO 9001
- ▶ with UL-Approbation
- ▶ double-side mounted
- ▶ SRAM CY7C1019D
- ▶ Latch 74HC573

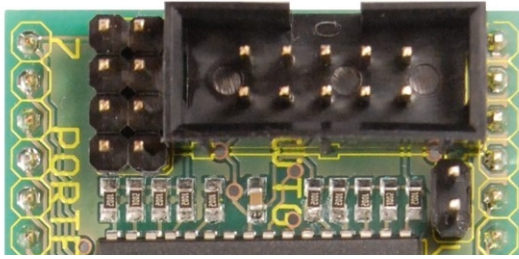
Possible Modifications

- 3.3V Version
- with mounted quartz (without quartz socket)
- without laterally pins

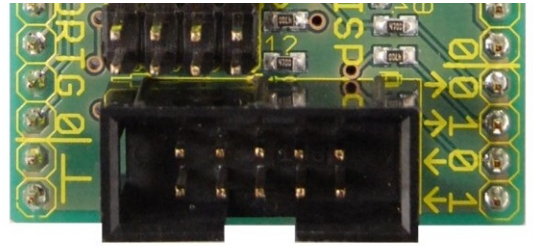


Programming

JTAG ¹



ISP ²



Pin Configuration JTAG-Connector

(9) TDI	(7) VCC	(5) TMS	(3) TDO	(1) TCK
(10) GND	(8)	(6) Reset	(4) VCC	(2) GND

Pin Configuration ISP-Connector

(2) VCC	(4) GND	(6) GND	(8) GND	(10) GND
(1) MOSI	(3) GND	(5) Reset	(7) SCK	(9) MISO

1 When programming with JTAG the JPI-(1-4)-jumpers should be set.

2 When programming with ISP the UART-jumpers JP2-3 and JP2-1 should not be set.

Settings

JTAG-jumpers

JP2-1	Pin: PF7
JP2-2	Pin: PF6
JP2-3	Pin: PF5
JP2-4	Pin: PF4

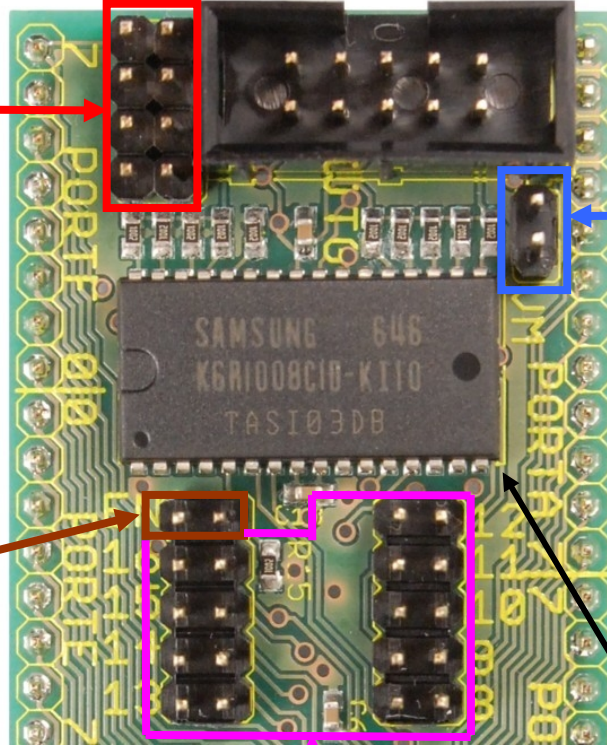
When programming with JTAG the jumpers should be set in the red square.

JP4-5: CS\ Chip-Select.
If jumper is set, SRAM is switched on.
If jumper is not set, SRAM is switched off.

VSRAM-jumper

If **JP3 is set:** internal SRAM power supply. On pin: VSRAM is a supply voltage applied

If **JP3 is not set:** only external SRAM power supply. Therewith the data buffering is possible, but only when the uninterruptible supply is guaranteed.



128K Bytes external SRAM

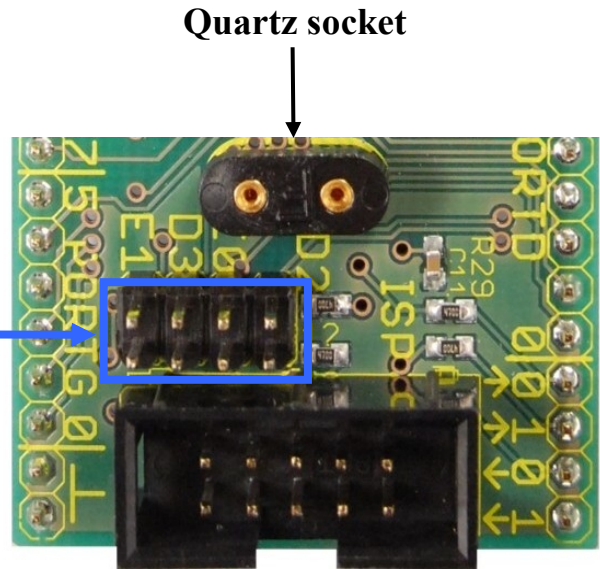
JP1-(1-5) and JP4-(1-4):

When **the jumpers are set**, external SRAM is switched on and as a consequence port A, port C and pins PG0, PG1 and PG2 are busy and cannot be used.

When **the jumpers are not set**, external SRAM is switched off and as a consequence port A, port C and pins PG0, PG1 and PG2 are not busy and can be used.

UARTs-jumpers

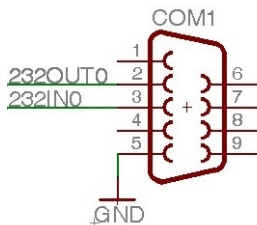
JP5-1	JP5-2	JP5-3	JP5-4
Pin:PE1	Pin:PD3	Pin:PE0	Pin:PD2



The UARTs-pins can be parted from RS232 transceivers with these jumpers.

When programming with ISP the UART-jumpers JP5-3 (PE0) and JP5-1 (PE1) should not be set.

Connection of D-SUB 9-pin female connector (serial port/COM1)



	D-SUB 9-p.	AL-ERAM128_CAN
CH 0 example in the left picture	Pin 2	36_232OUT0
	Pin 3	34_232IN0
	GND	32_GND
CH 1	Pin 2	35_232OUT1
	Pin 3	33_232IN1
	GND	32_GND