# ALVIDI
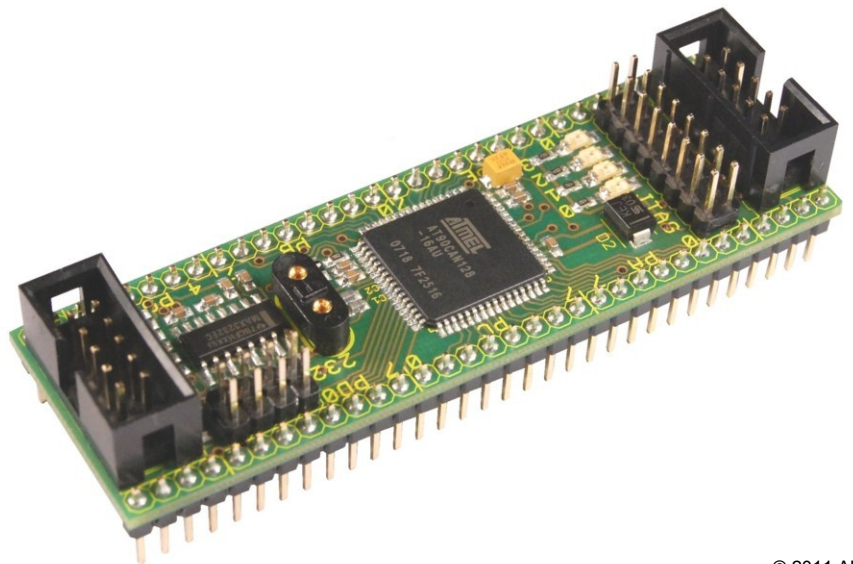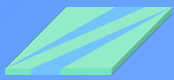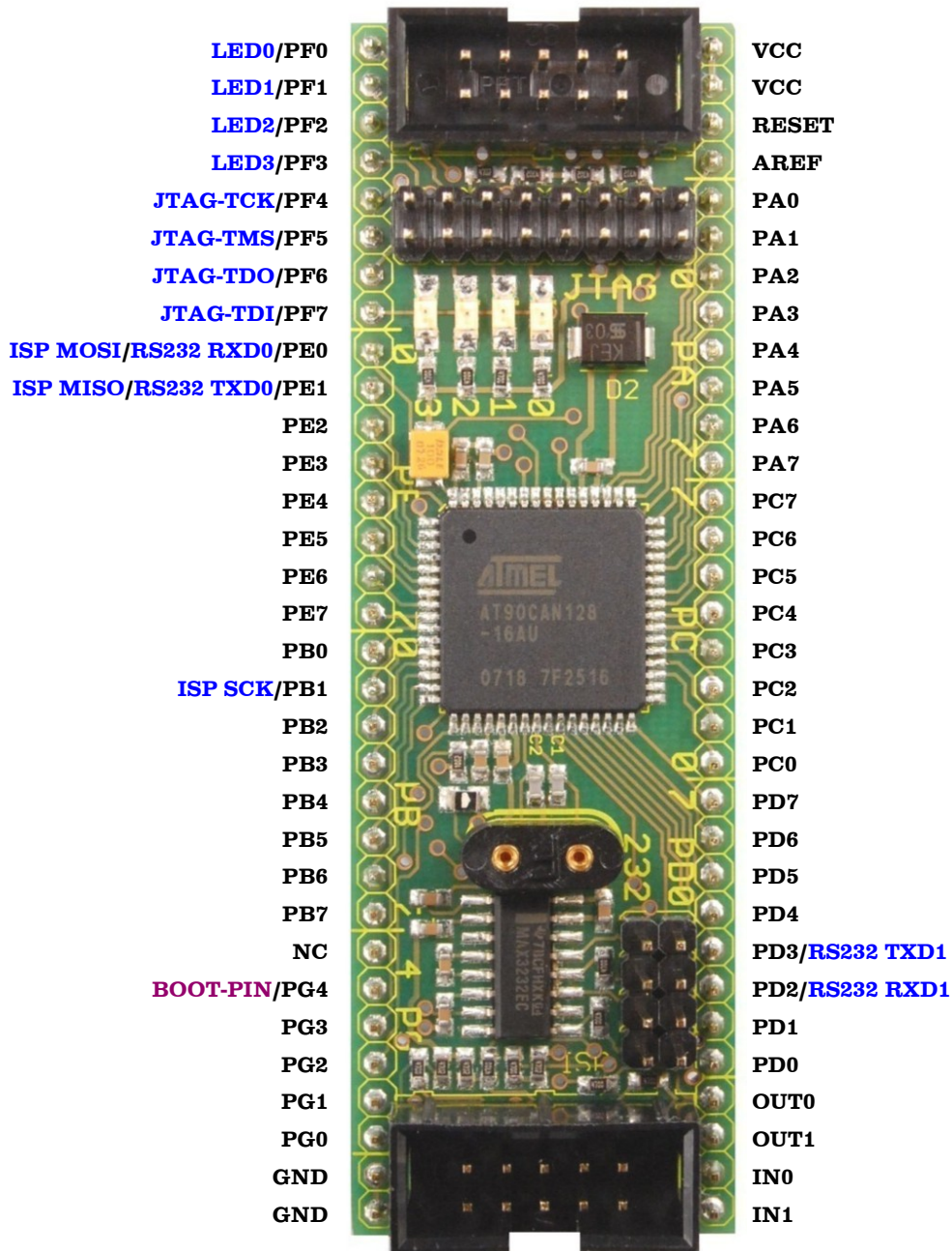
# AVR-Development Module

## Model: AL-AVREB_CAN

- **Summary**
- **Measures**
- **Description**
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- **Programming**
- **Settings**
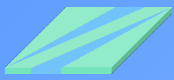
# Summary



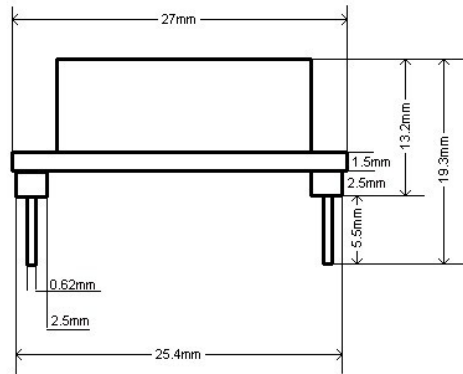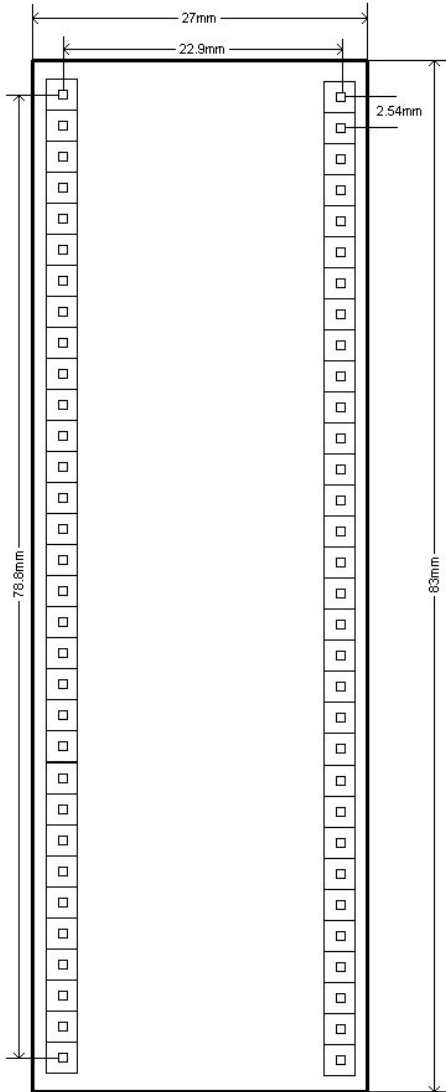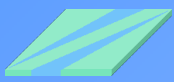| | |
|---|---|
| LED0/PF0 | VCC |
| LED1/PF1 | VCC |
| LED2/PF2 | RESET |
| LED3/PF3 | AREF |
| JTAG-TCK/PF4 | PA0 |
| JTAG-TMS/PF5 | PA1 |
| JTAG-TDO/PF6 | PA2 |
| JTAG-TDI/PF7 | PA3 |
| ISP MOSI/RS232 RXD0/PE0 | PA4 |
| ISP MISO/RS232 TXD0/PE1 | PA5 |
| PE2 | PA6 |
| PE3 | PA7 |
| PE4 | PC7 |
| PE5 | PC6 |
| PE6 | PC5 |
| PE7 | PC4 |
| PB0 | PC3 |
| ISP SCK/PB1 | PC2 |
| PB2 | PC1 |
| PB3 | PC0 |
| PB4 | PD7 |
| PB5 | PD6 |
| PB6 | PD5 |
| PB7 | PD4 |
| NC | PD3/RS232 TXD1 |
| BOOT-PIN/PG4 | PD2/RS232 RXD1 |
| PG3 | PD1 |
| PG2 | PD0 |
| PG1 | OUT0 |
| PG0 | OUT1 |
| GND | IN0 |
| GND | IN1 |

All description in **BLUE** concern the internal connection

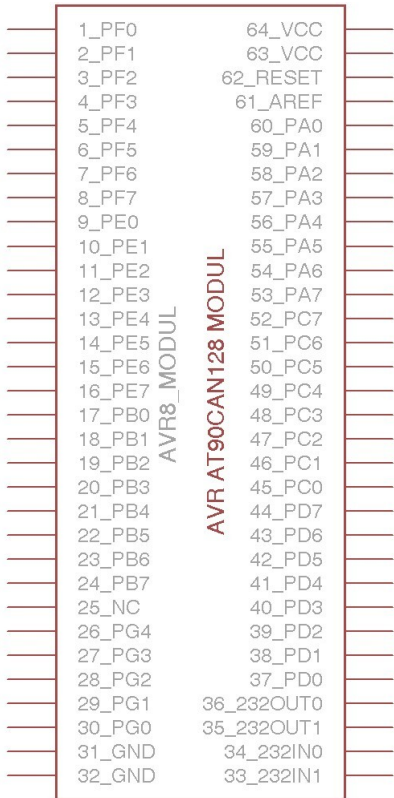**Attention! Polarity reversal and overvoltage may cause a destruction of the electronic components!!!**

# Measures

# Description

```
1_PF0            64_VCC
2_PF1            63_VCC
3_PF2            62_RESET
4_PF3            61_AREF
5_PF4            60_PA0
6_PF5            59_PA1
7_PF6            58_PA2
8_PF7            57_PA3
9_PE0            56_PA4
10_PE1           55_PA5
11_PE2           54_PA6
12_PE3           53_PA7
13_PE4           52_PC7
14_PE5           51_PC6
15_PE6           50_PC5
16_PE7           49_PC4
17_PB0           48_PC3
18_PB1           47_PC2
19_PB2           46_PC1
20_PB3           45_PC0
21_PB4           44_PD7
22_PB5           43_PD6
23_PB6           42_PD5
24_PB7           41_PD4
25_NC            40_PD3
26_PG4           39_PD2
27_PG3           38_PD1
28_PG2           37_PD0
29_PG1           36_232OUT0
30_PG0           35_232OUT1
31_GND           34_232IN0
32_GND           33_232IN1
```

AVR8_MODUL
AVR AT90CAN128 MODUL

- **Controller:** Atmel AVR AT90CAN128-16AU up to 16 MHz

- **Supply voltage:** 3 - 5V

- **Module size:** W x H x D  27mm x 83mm x 19.3mm

- **Quartz socket:** simple and fast quartz exchange

- **PC-Connection:** 2  x  RS232, separable with jumpers

- **Compatibility:** compatible with IC-Socket 64-pin and hole matrix board

- **Pin-Distance**: 2.54 mm

- **LED:** 4 LEDs, separable with jumpers

- **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. IC-Socket makes possible the fast installation of AVR-Module and fits the hole matrix board with the hole distance 2.54 mm. 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, LEDs. 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 ℃** | | **85 ℃** |
| MAX3232IDR            (actual) | | | |
| MAX3232ECD | 0 ℃ | | 70 ℃ |

|  | | | |
|---|---|---|---|
|  | **Operating Voltage** | | |
| ● with maximum frequency 16 MHz | 4.5 V | | 5.5 V |
| ● with maximum frequency 8 MHz | 3.0 V | | 5.5 V |

|  | | | |
|---|---|---|---|
|  | **Maximum DC Current per I/O Pin** | | |
| ● with operating voltage 5 V | | | 20 mA |
| ● with operating voltage 3 V | | | 10 mA |

more electrical characteristics you will find on the page 365 in the data sheet <u>AT90CAN128.pdf</u>
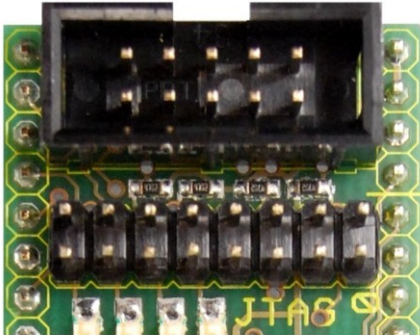
► Voltage Suppressor P6SMB6.8A

► 2-layer PCB DIN ISO 9001

► with UL-Approbation

► 4x LED yellow 2V 20 mA 140° 39 mcd

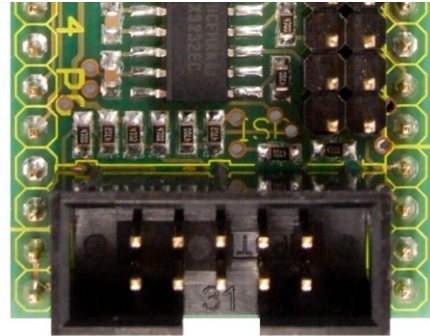**Possible Modifications**

¤ 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 JPl-(1-4)-jumpers should be set.

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

# Settings
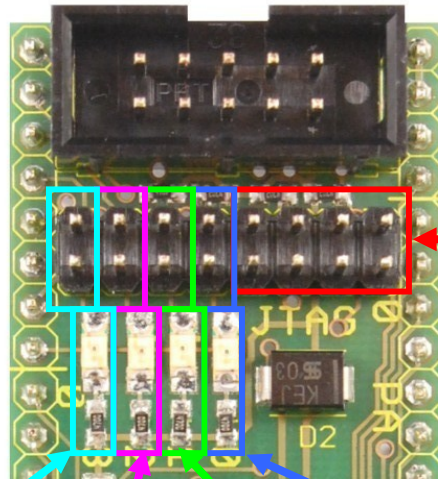


JTAG-jumpers JP1-(1-4)

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

| LED-jumper 3 +LED 3 (yellow) +resistor<br><br>Jumper is connected to the pin PF3 | LED-jumper 2 +LED 2 (yellow) +resistor<br><br>Jumper is connected to the pin PF2 | LED-jumper 1 +LED 1 (yellow) +resistor<br><br>Jumper is connected to the pin PF1 | LED-jumper 0 +LED 0 (yellow) +resistor<br><br>Jumper is connected to the pin PF0 |
|---|---|---|---|

## Jumpers set-up

| JP1-8 | JP1-7 | JP1-6 | JP1-5 | JP1-4 | JP1-3 | JP1-2 | JP1-1 |
|---|---|---|---|---|---|---|---|
| LED 3 Pin PF3 | LED 2 Pin PF2 | LED 1 Pin PF1 | LED 0 Pin PF0 | TDI Pin PF7 | TDO Pin PF6 | TMS Pin PF5 | TCK Pin PF4 |

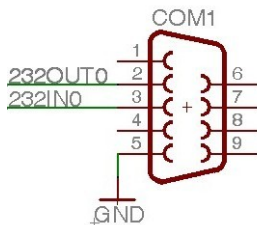# Quartz socket
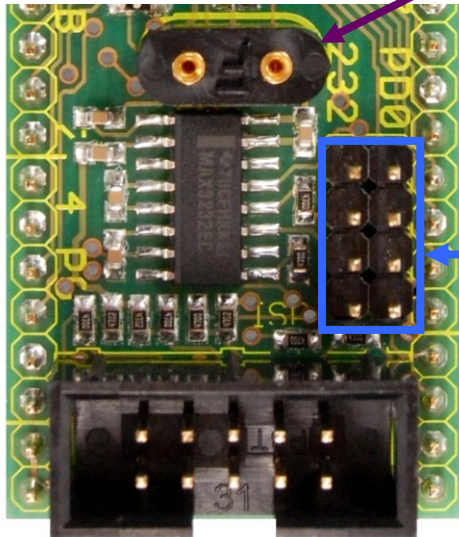


## UARTs-jumpers

| | |
|---|---|
| JP2-4 | PD2 |
| JP2-3 | PE0 |
| JP2-2 | PD3 |
| JP2-1 | PE1 |

The UARTs-pins can be parted from RS232 transceivers with these jumpers.
**When programming with ISP the UART-jumpers JP2-3 (PE0) and JP2-1 (PE1) should not be set.**

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



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