

AVR SPI_TPI pinout

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Rev. A

AT90

	TQFP/QFN	SPI for TQFP/QFN
AT90USB82 AT90USB162	32 (VQFP) TQFP 0,8 MM	16 mosi 17 miso 29 sck 24 reset 1 xtal1 4 vcc 3 gnd

	TQFP/QFN	SPI for TQFP/QFN
AT90USB646 AT90USB647 AT90USB1286 AT90USB1287 AT90CAN32 AT90CAN64 AT90CAN128	64 TQFP 0,8 MM	12 mosi 13 miso 11 sck 20 reset 24 xtal1 21,52 vcc 22,53,63 gnd

	SOIC	SPI for SOIC	QFN	SPI for QFN
AT90PWM1 AT90PWM2 AT90PWM2B AT90PWM216	24	5 mosi 4 miso 12 sck 2 reset 10 xtal1 6 vcc 7 gnd	32 - - -	2 mosi 1 miso 12 sck 31 reset 10 xtal1 4 vcc 5 gnd

	SOIC	SPI for SOIC	QFN	SPI for QFN
AT90PWM3 AT90PWM3B AT90PWM316	32	6 mosi 5 miso 16 sck 3 reset 14 xtal1 8 vcc 9 gnd	32	2 mosi 1 miso 12 sck 31 reset 10 xtal1 4 vcc 5 gnd

	SO	SPI for SO	QFN	SPI for QFN
AT90PWM81 AT90PWM161	20	12 mosi 19 miso 13 sck 2 reset 7 xtal1 5 vcc 6 gnd	32	15 mosi 27 miso 19 sck 31 reset 7 xtal1 5 vcc 6 gnd

Attiny

	SOT-23	TPI for SOT-23	UDFN	TPI for UDFN
Attiny4 Attiny5 Attiny9 Attiny10	6	1 tpi_data 3 tpi_clk 6 reset 5 vcc 2 gnd	8	5 tpi_data 1 tpi_clk 6 reset 7 vcc 4 gnd

	UDFN/SOIC 150	TPI for UDFN/SOIC 150	SOIC 150	TPI for SOIC 150
Attiny102 Attiny104	8	3 tpi_data 2 tpi_clk 4 reset 1 vcc 8 gnd	14	3 tpi_data 2 tpi_clk 4 reset 1 vcc 14 gnd

	PDIP/SOIC	SPI for PDIP/SOIC	QFN/MLF	SPI for QFN/MLF	QFN/MLF	SPI for QFN/MLF
Attiny13	8	5 mosi 6 miso 7 sck 1 reset 8 vcc 4 gnd	10	6 mosi 7 miso 9 sck 1 reset 10 vcc 5 gnd	20	11 mosi 12 miso 14 sck 1 reset 15 vcc 8 gnd

	SOIC	SPI for SOIC	QFN/MLF	SPI for QFN/MLF
Attiny1634	20	20 mosi (di) 19 miso (do) 16 sck (scl) 14 reset 11 vcc 10 gnd	20	18 mosi (di) 17 miso (do) 14 sck (scl) 12 reset 9 vcc 8 gnd

	TSSOP/SOIC	SPI for TSSOP/SOIC	TPI for TSSOP/SOIC	VQFN	SPI for VQFN	TPI for VQFN
Attiny20	14	3 mosi 5 miso 6 sck 4 reset 1 vcc 14 gnd	3 tpi_data 2 tpi_clk 4 reset 1 vcc 14 gnd	20	12 mosi 14 miso 15 sck 13 reset 9 vcc 8 gnd	12 tpi_data 11 tpi_clk 13 reset 9 vcc 8 gnd

Package types **UFBGA** and **WLCSP** are not represented.

	PDIP/SOIC	SPI for PDIP/SOIC	QFN/MLF	SPI for QFN/MLF
Attiny24 Attiny44 Attiny84	14	7 mosi 8 miso 9 sck 4 reset 1 vcc 14 gnd	20	16 mosi 20 miso 1 sck 13 reset 9 vcc 8 gnd

ATmega

	PDIP	SPI for PDIP	TQFP	QFN/MLF	QFN/MLF	SPI for TQFP/QFN/MLF
ATmega8 ATmega48 ATmega88 Atmega168 ATmega328	28	17 mosi 18 miso 19 sck 1 reset 9 xtal1 7 vcc 8,22 gnd	32 0,8 MM	32	- 28 28 28 28	15 mosi 16 miso 17 sck 29 reset 7 xtal1 4,6 vcc 3,5,21 gnd

	TQFP/QFN	SPI for TQFP/QFN
ATmega8U2 ATmega16U2 ATmega32U2	32 TQFP 0,8 MM	16 mosi 17 miso 15 sclk 24 reset 1 xtal1 4 vcc 3 gnd

	TQFP/VFQFN	SPI for TQFP/VFQFN
ATmega48PB ATmega88PB ATmega168PB	32 TQFP 0,8 MM	15 mosi 16 miso 17 sck 29 reset 7 xtal1 4 vcc 5,21 gnd

	TQFP/MLF	SPI for TQFP/MLF
ATmega16M1 ATmega32M1 ATmega64M1	32 TQFP 0,8 MM	2 mosi 1 miso 12 sck 31 reset

		10 xtal1 4 vcc 5 gnd
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	PDIP	SPI for PDIP	TQFP/MLF	SPI for TQFP/MLF
ATmega162	40	6 mosi 7 miso 8 sck 9 reset 19 xtal1 40 vcc 20 gnd	44 TQFP 0,8 MM	1 mosi 2 miso 3 sck 4 reset 15 xtal1 6,17,38 vcc 16,28,39 gnd

	TQFP/QFN	SPI for TQFP/QFN
ATmega16U4 ATmega32U4	44 TQFP 0,8 MM	10 mosi 11 miso 9 sck 13 reset 17 xtal1 14,34 vcc 15,23,35,43 gnd

	TQFP/QFN/MLF	SPI for TQFP/QFN/MLF
ATmega324PB	44 TQFP 0,8 MM	1 mosi 2 miso 3 sck 4 reset 8 xtal1 5 vcc 6,28 gnd

	PDIP	SPI for PDIP	TQFP/QFN/MLF	VQFN	SPI for TQFP/VQFN/QFN/MLF
Atmega16 ATmega164 Atmega32 ATmega324 Atmega644 ATmega1284	40	6 mosi 7 miso 8 sck 9 reset 13 xtal1 10 vcc 11,31 gnd	44 TQFP 0,8 MM	- 44 - 44 44 44	1 mosi 2 miso 3 sck 4 reset 8 xtal1 5,17,38 vcc 6,18,28,39 gnd

Package types **DRQFN** and **VFBGA** are not represented.

	TQFP/MLF/QFN	SPI for TQFP/MLF/QFN
Atmega64 Atmega128 Atmega1281 Atmega2561	64 TQFP 0,8 MM	2 mosi (pdi, rxd0) 3 miso (pdo, txd0) 11 sck 20 reset 24 xtal1 21,52 vcc 22,53,63 gnd

	TQFP/MLF/QFN	SPI for TQFP/MLF/QFN
Atmega165 Atmega325 Atmega645 Atmega169 Atmega329 Atmega649	64 TQFP 0,8 MM	12 mosi 13 miso 11 sck 20 reset 24 xtal1 21,52 vcc 22,53,63 gnd

	TQFP	SPI for TQFP
Atmega640 Atmega1280 Atmega2560 Atmega3250 Atmega6450 Atmega3290 Atmega6490	100 0,8 MM	21 mosi 22 miso 20 sck 30 reset 34 xtal1 10,31,80 vcc 11,32,81 gnd

Package type **CBGA** is not represented.

Number of panels for SPI programming (Mega family)

TQFP package	Num, pcs
100	1
64	2
44	3
32	3