

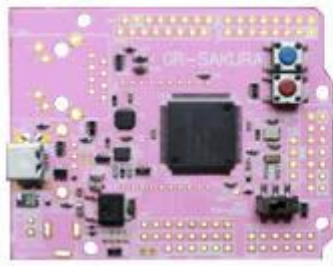
A GR-Sakura is one of the Gadget Renesas board series. This is an Arduino compatible board based on RX63N series 32-bit MCU, which is a successor MCU of RX62N, has on-chip flash memory and enhanced communication functions, including an ethernet controller and USB 2.0 Host/Function. The on-chip flash memory of RX63N is programmable by USB mass storage mode, and the on-chip flash memory of RX63N is visible as a drive on your PC.

The compiler for Rx63N on Cloud is a GNU base, and is supported by Renesas([www xxx.xxxx.xxxx](http://www.xxx.xxxx.xxxx) --- TBD) and, also the Applet on the Android smart phone makes it possible to build an application with a module plug-in your own application. In this way, anyone can build a system without complex programming.

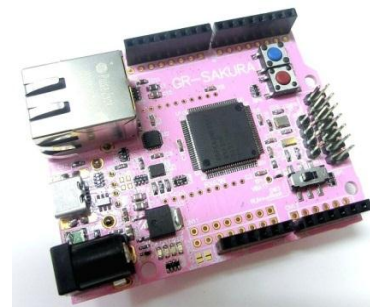
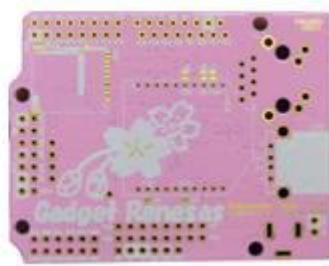
The GR-SAKURA board has a USB-function connector.

The GR-SAKURA board has the through hall for the pin header compatible with Arduino, for pin headers for Rx63N, USB-host connector, LAN connector (RJ-45), and XBee.

The board has a foot pattern for shed of the micro-SD.



GR-SAKURA Board



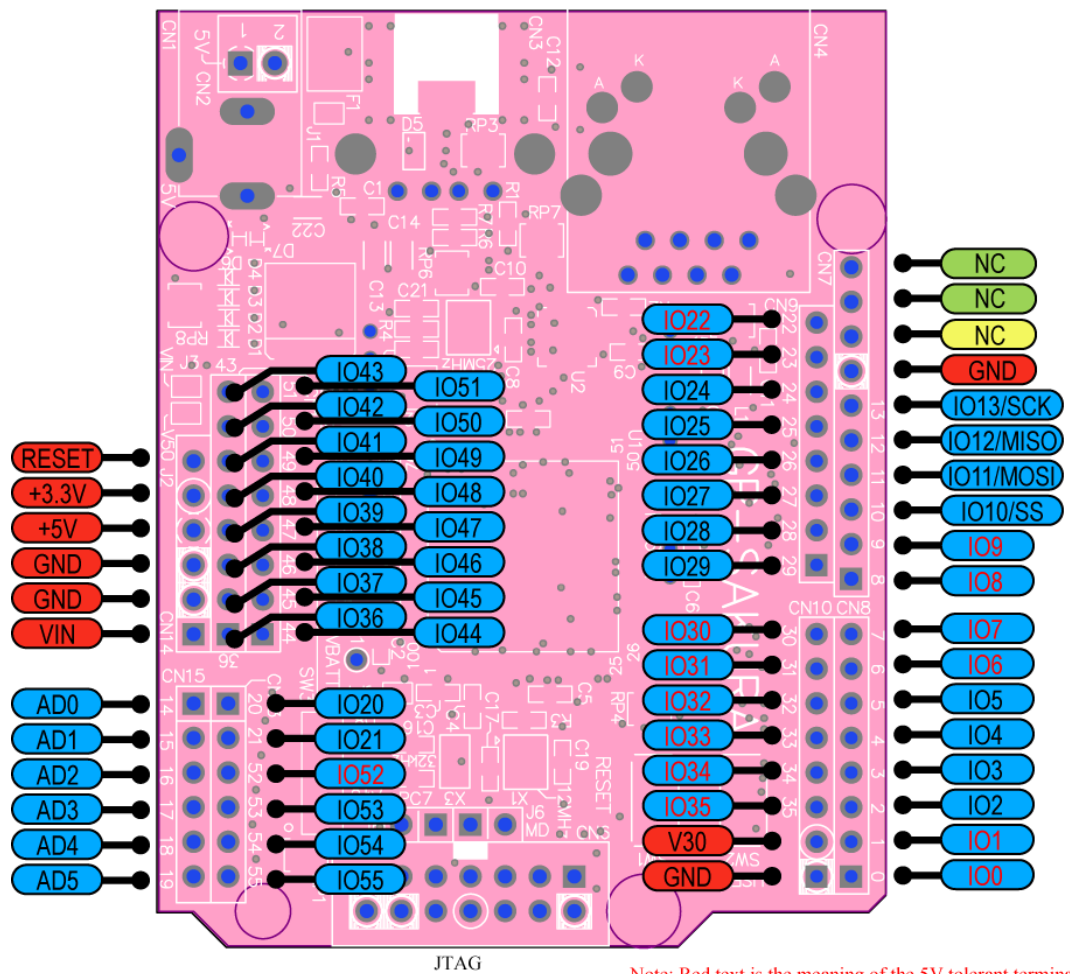
GR-SAKURA-FULL Board

The GR-SAKURA-FULL board comes with LAN connector (RJ-45), 5V DC-Jack, and micro-SD shed, which are soldered on the board. The USB-host connector is bundled in the box. So you can solder it when needed.

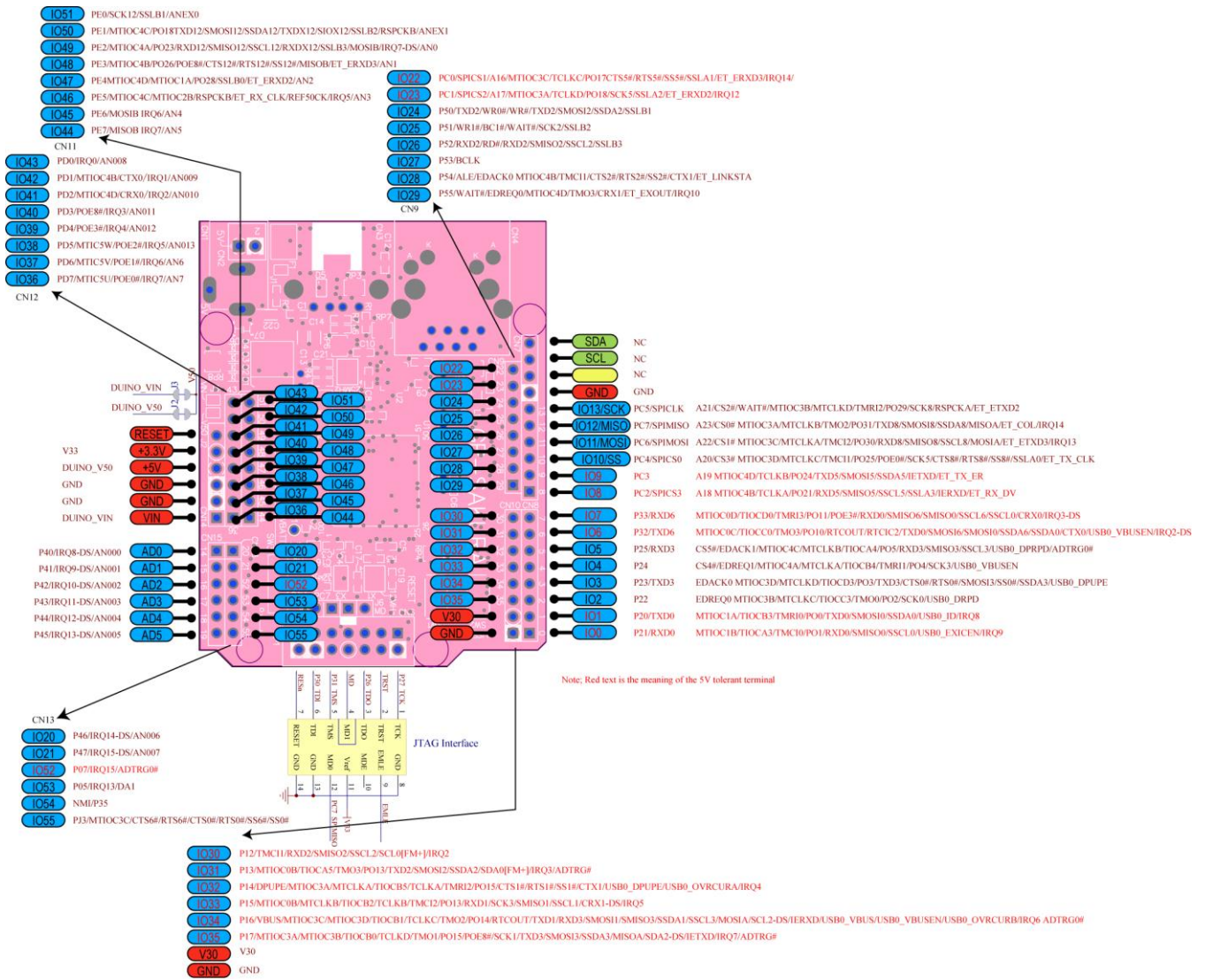
Summary of the GR-SAKURA board

Microcontroller:	RX63N(R5F563NBDDFP)
Operating Voltage:	3.3V
Clock Speed:	96MHz
Digital I/O Pins:	55
Analog Input Pins:	16
Flash Memory:	1MB
RAM:	128KB
USB- Function:	(mini-B)

Summary of Pin and Pin Functions:



Note: Red text is the meaning of the 5V tolerant terminal



List of Pin and Pin Functions

CN15	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCIC, SCID, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA
AD0	95	P40				IRQ8-DS	AN000
AD1	93	P41				IRQ9-DS	AN001
AD2	92	P42				IRQ10-DS	AN002
AD3	91	P43				IRQ11-DS	AN003
AD4	90	P44				IRQ12-DS	AN004
AD5	89	P45				IRQ13-DS	AN005
IO7	17	P33		MTIOC0D/ TIOCD0/ TMR3/PO11/ POE3#	RXD6/RXD0/ SMISO6/SMISO0/ SSCL6/SSCL0/ CRX0	IRQ3-DS	
IO6	18	P32		MTIOC0C/ TIOCC0/ TMO3/ PO10/ RTCOUT/ RTCIC2	TXD6/TXD0/ SMOSI6/SMOSI0/ SSDA6/SSDA0/ CTX0 / USB0_VBUSEN	IRQ2-DS	
IO5	23	P25	CS5#/ EDACK1	MTIOC4C/ MTCLKB/ TIOCA4/PO5	RXD3/SMISO3/ SSCL3/ USB0_DPRPD		ADTRG0#
IO4	24	P24	CS4#/ EDREQ1	MTIOC4A/ MTCLKA/ TIOCB4/ TMR11/PO4	SCK3/ USB0_VBUSEN		
IO3	25	P23	EDACK0	MTIOC3D/ MTCLKD/ TIOCD3/ PO3	TXD3/CTS0#/ RTS0#/SMOSI3/ SS0#/SSDA3/ USB0_DPUPE		
IO2	26	P22	EDREQ0	MTIOC3B/ MTCLKC/ TIOCC3/ TMO0/ PO2	SCK0/USB0_DRPD		
IO1	28	P20		MTIOC1A/ TIOCB3/ TMR10/PO0	TXD0/SMOSI0/ SSDA0/USB0_ID	IRQ8	
IO0	27	P21		MTIOC1B/ TIOCA3/ TMC10/PO1	RXD0/SMISO0/ SSCL0/ USB0_EXICEN	IRQ9	

SDA							
SCL							
NC							
GND							
IO13/SCK	47	PC5	A21/CS2#/ WAIT#	MTIOC3B/ MTCLKD/ TMR12/PO29	SCK8/RSPCKA/ ET_ETXD2		
IO12/MISO	45	PC7	A23/CS0#	MTIOC3A/ MTCLKB/ TMO2/PO31	TXD8/SMOSI8/ SSDA8/MISOA/ ET_COL	IRQ14	
IO11/MOSI	46	PC6	A22/CS1#	MTIOC3C/ MTCLKA/ TMC12/PO30	RXD8/SMISO8/ SSCL8/MOSIA/ ET_ETXD3	IRQ13	
IO10/SS	48	PC4	A20/CS3#	MTIOC3D/ MTCLKC/ TMC11/PO25/ POE0#	SCK5/CTS8#/ RTS8#/SS8#/ SSLA0/ET_TX_CLK		
IO9	49	PC3	A19	MTIOC4D/ TCLKB/ PO24	TXD5/SMOSI5/ SSDA5/ETXD/ ET_TX_ER		
IO8	50	PC2	A18	MTIOC4B/ TCLKA/ PO21	RXD5/SMISO5/ SSCL5/SSLA3/ IERXD/ET_RX_DV		

CN9	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCId, SCId, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA
IO22	52	PC0	A16	MTIOC3C/ TCLKC/PO17	CTS5#/RTS5#/ SS5#/SSLA1/ ET_ERXD3	IRQ14	
IO23	51	PC1	A17	MTIOC3A/ TCLKD/PO18	SCK5/SSLA2/ ET_ERXD2	IRQ12	
IO24	44	P50	WR0#/WR#		TXD2/SMOSI2/ SSDA2/SSLB1		
IO25	43	P51	WR1#/BC1#/ WAIT#		SCK2/SSLB2		
IO26	42	P52	RD#		RXD2/SMISO2/ SSL2/SSLB3		
IO27	41	P53	BCLK				
IO28	40	P54	ALE/EDACK0	MTIOC4B/ TMC1	CTS2#/RTS2#/ SS2#/CTX1/ ET_LINKSTA		
IO29	39	P55	WAIT#/ EDREQ0	MTIOC4D/ TMO3	CRX1/ET_EXOUT	IRQ10	

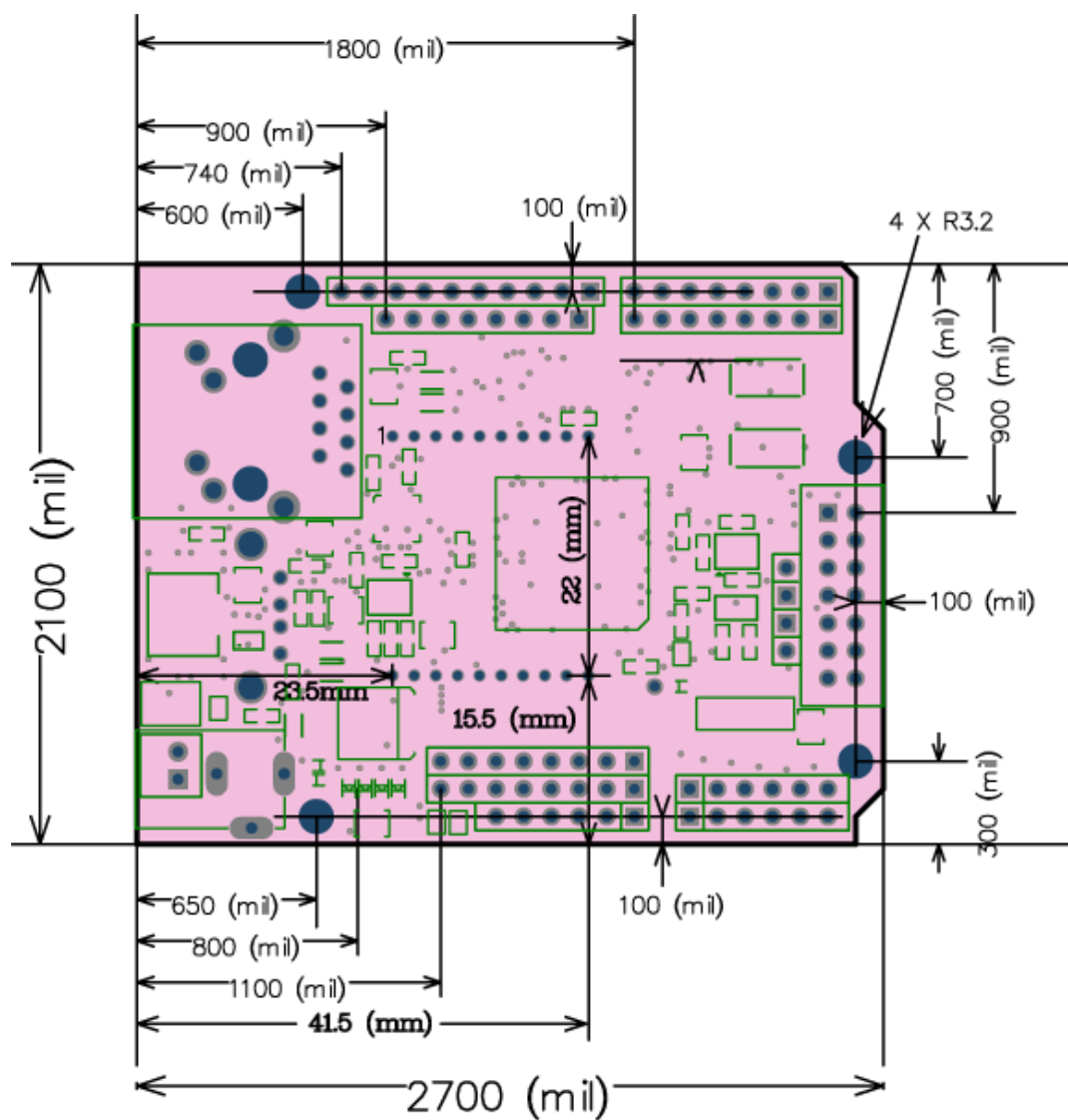
CN10	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCId, SCId, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA
IO30	34	P12		TMC1	RXD2/SMISO2/ SSL2/SCL0[FM+]	IRQ2	
IO31	33	P13		MTIOC0B/ TIOCA5/TMO3/ PO13	TXD2/SMOSI2/ SSDA2/SDA0[FM+]	IRQ3	ADTRG#
IO32	32	P14		MTIOC3A/ MTCLKA/ TIOCB5/ TCLKA/TMR12/ PO15	CTS1#/RTS1#/ SS1#/CTX1/ USB0_DPUPE/ USB0_OVRCURA	IRQ4	
IO33	31	P15		MTIOC0B/ MTCLKB/ TIOCB2/ TCLKB/TMC12/ PO13	RXD1/SCK3/ SMISO1/SSCL1/ CRX1-DS	IRQ5	
IO34	30	P16		MTIOC3C/ MTIOC3D/ TIOCB1/ TCLKC/TMO2/ PO14/RTCOUT	TXD1/RXD3/ SMOSI1/SMISO3/ SSDA1/SSCL3/ MOSIA/SCL2-DS/ IERXD/ USB0_VBUS/ USB0_VBUSEN/ USB0_OVRCURB	IRQ6	ADTRG0#
IO35	29	P17		MTIOC3A/ MTIOC3B/ TIOCB0/ TCLKD/TMO1/ PO15/POE8#	SCK1/TXD3/ SMOSI3/SSDA3/ MISOA/SDA2-DS/ IETXD	IRQ7	ADTRG#
V30							
GND							

CN11	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCId, SCId, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA
IO51	78	PE0	D8[A8/D8]		SCK12/SSLB1		ANEX0
IO50	77	PE1	D9[A9/D9]	MTIOC4C/ PO18	TXD12/SMOSI12/ SSDA12/TXD12/ SIOX12/SSLB2/ RSPCKB		ANEX1
IO49	76	PE2	D10[A10/D10]	MTIOC4A/ PO23	RXD12/SMISO12/ SSCL12/RXD12/ SSLB3/MOSIB	IRQ7-DS	AN0
IO48	75	PE3	D11[A11/D11]	MTIOC4B/ PO26/ POE8#	CTS12#/RTS12#/ SS12#/MISOB/ ET_ERXD3		AN1
IO47	74	PE4	D12[A12/D12]	MTIOC4D/ MTIOC1A/ PO28	SSLB0/ET_ERXD2		AN2
IO46	73	PE5	D13[A13/D13]	MTIOC4C/ MTIOC2B	RSPCKB/ ET_RX_CLK/ REF50CK	IRQ5	AN3
IO45	72	PE6	D14[A14/D14]		MOSIB	IRQ6	AN4
IO44	71	PE7	D15[A15/D15]		MISOB	IRQ7	AN5

CN12	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCIC, SCID, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA
IO43	86	PD0	D0[A0/D0]			IRQ0	AN008
IO42	85	PD1	D1[A1/D1]	MTIOC4B	CTX0	IRQ1	AN009
IO41	84	PD2	D2[A2/D2]	MTIOC4D	CRX0	IRQ2	AN010
IO40	83	PD3	D3[A3/D3]	POE8#		IRQ3	AN011
IO39	82	PD4	D4[A4/D4]	POE3#		IRQ4	AN012
IO38	81	PD5	D5[A5/D5]	MTIC5W/ POE2#		IRQ5	AN013
IO37	80	PD6	D6[A6/D6]	MTIC5V/ POE1#		IRQ6	AN6
IO36	79	PD7	D7[A7/D7]	MTIC5U/ POE0#		IRQ7	AN7

CN13	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCIC, SCID, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA
IO20	88	P46				IRQ14-DS	AN006
IO21	87	P47				IRQ15-DS	AN007
IO52	98	P07				IRQ15	ADTRG0#
IO53	100	P05				IRQ13	DA1
IO54	15	P35				NMI	
IO55	4	PJ3		MTIOC3C	CTS6#/RTS6#/ CTS0#/RTS0#/ SS6#/SS0#		

JTAG	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU, TPU, TMR, PPG, RTC, POE)	Communications (ETHERC, SCIC, SCID, RSPI, RIIC, CAN, IEB, USB)	Interrupt	S12AD, AD, DA	Pin Number 100 pin LQFP
1	21	TCK/FINEC	P27	CS7#	MTIOC2B/ TMC13/PO7	SCK1/RSPCKB		
2	16	TRST#	P34		MTIOC0A/ TMC13/ PO12/ POE2#	SCK6/SCK0/ USB0_DPRPD	IRQ4	
3	22	TDO	P26	CS6#	MTIOC2A/ TMO1/PO6	TXD1/CTS3#/ RTS3#/SMOSI1/ SS3#/SSDA1/ MOSIB		
4	7	MD/FINED						
5	19	TMS	P31		MTIOC4D/ TMC12/ PO9/ RTCIC1	CTS1#/RTS1#/ SS1#/SSLB0/ USB0_DPUPE	IRQ1-DS	
6	20	TDI	P30		MTIOC4B/ TMR13/ PO8/ RTCIC0/POE8#	RXD1/SMISO1/ SSCL1/MISOB/ USB0_DRPD	IRQ0-DS	
7	10	RES#						
8	GND							
9	2	EMLE						
10	NC							
11	VCC V33							
12	45		PC7	A23/CS0#	MTIOC3A/ MTCLKB/ TMO2/PO31	TXD8/SMOSI8/ SSDA8/MISOA/ ET_COL	IRQ14	
13	GND							
14	GND							



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