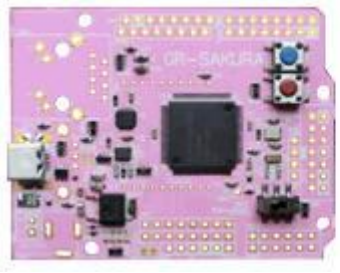
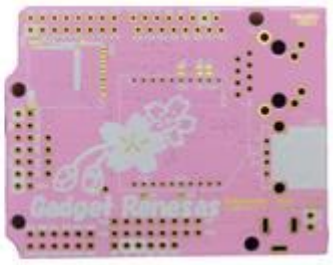
Gadget Renesas

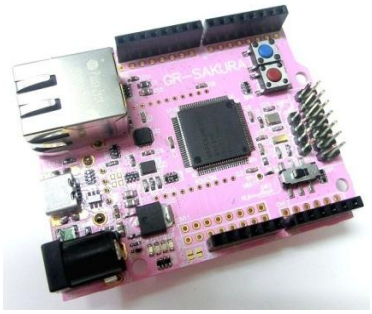
Preceding overview of the GR-SAKURA family information Wakamatsu Tsusho Co.,ltd

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 (http://japan.renesas.com/gr/) 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



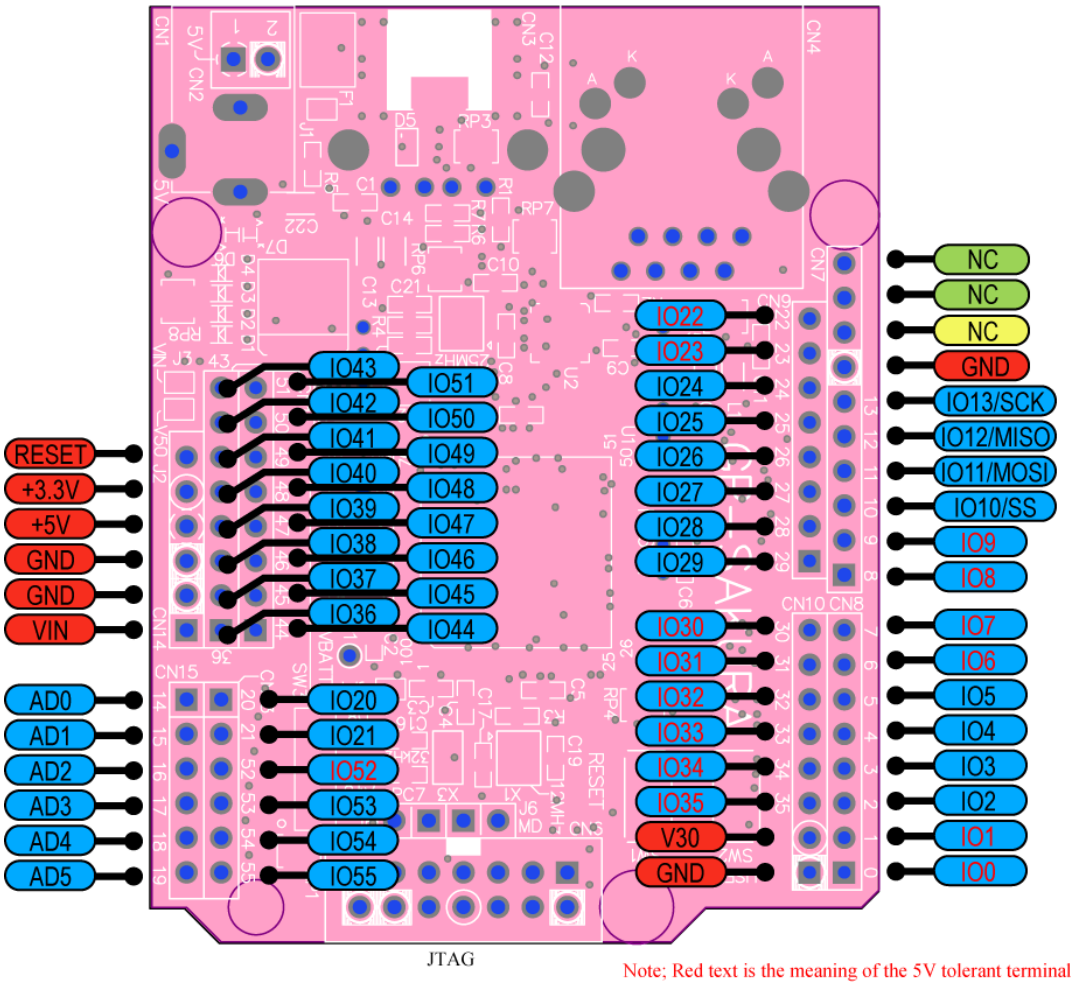
GR-SAKURA-FULL Board

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 connecter is bundled in the box. So you can solder it when needed.

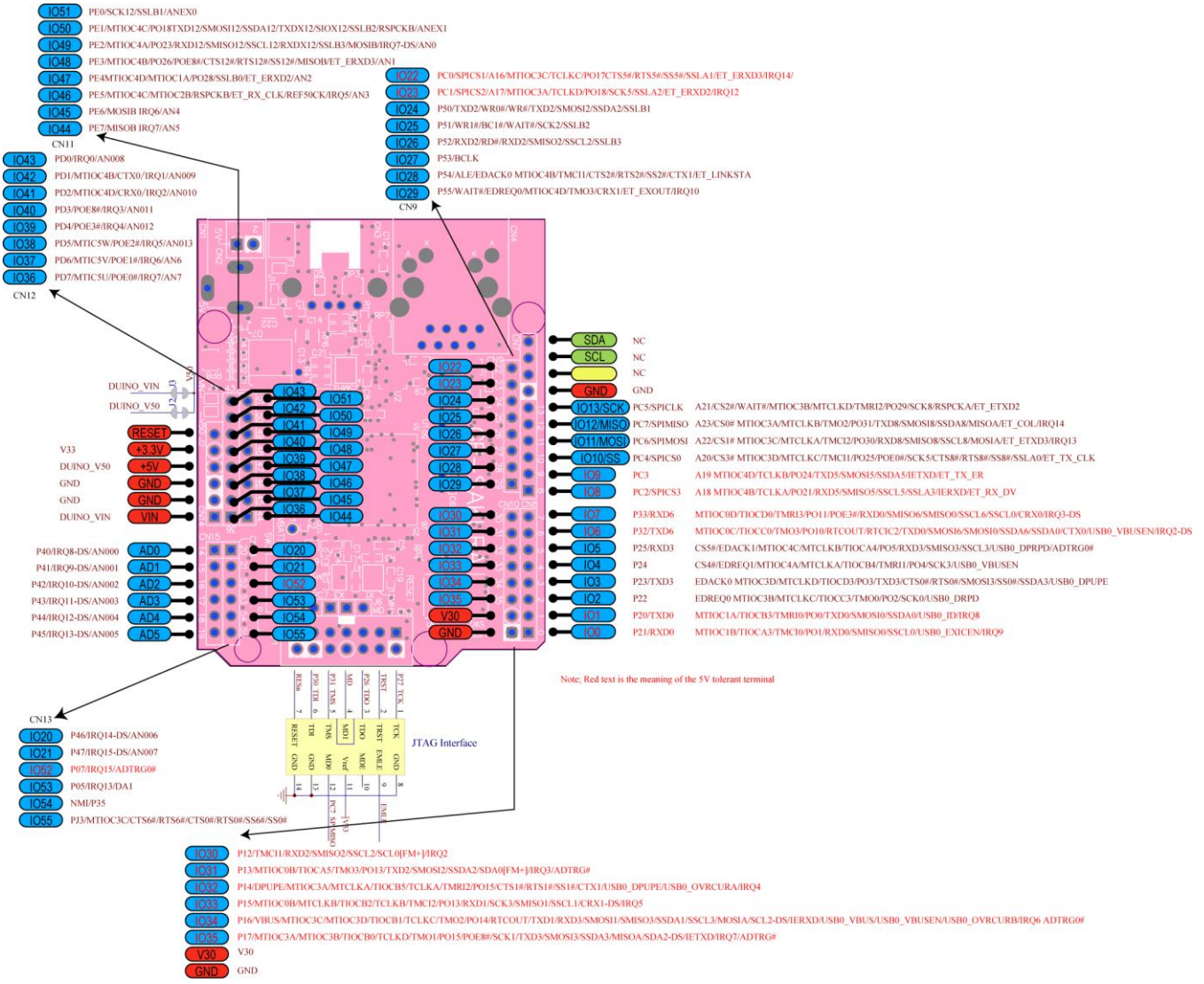
Summary of the GR-SAKURA board

Microcontroller:	**RX63N(R5F563NBDDFP)**
Operating Voltage:	**5V**
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


IO51 PE0/SCK12/SSLB1/ANEX0
IO50 PE1/MTIOC4C/PO18TXD12/SMOSI12/SSDA12/TXDX12/SIOX12/SSLB2/RSPCKB/ANEX1
IO49 PE2/MTIOC4A/PO23/RXD12/SMISO12/SSCL12/RXDX12/SSLB3/MOSIB/IRQ7-DS/AN0
IO48 PE3/MTIOC4B/PO26/POE8#/CTS12#/RTS12#/SS12#/MISOB/ET_ERXD3/AN1
IO47 PE4MTIOC4D/MTIOC1A/PO28/SSLB0/ET_ERXD2/AN2
IO46 PE5/MTIOC4C/MTIOC2B/RSPCKB/ET_RX_CLK/REF50CK/IRQ5/AN3
IO45 PE6/MOSIB IRQ6/AN4
IO44 PE7/MISOB IRQ7/AN5
CN11
IO43 PD0/IRQ0/AN008
IO42 PD1/MTIOC4B/CTX0/IRQ1/AN009
IO41 PD2/MTIOC4D/CRX0/IRQ2/AN010
IO40 PD3/POE8#/IRQ3/AN011
IO39 PD4/POE3#/IRQ4/AN012
IO38 PD5/MTIC5W/POE2#/IRQ5/AN013
IO37 PD6/MTIC5V/POE1#/IRQ6/AN6
IO36 PD7/MTIC5U/POE0#/IRQ7/AN7
CN12
IO27 PC0/SPICS1/A16/MTIOC3C/TCLKC/PO17CTS5#/RTS5#/SS5#/SSLA1/ET_ERXD3/IRQ14/
IO23 PC1/SPICS2/A17/MTIOC3A/TCLKD/PO18/SCK5/SSLA2/ET_ERXD2/IRQ12
IO24 P50/TXD2/WR0#/WR#/TXD2/SMOSI2/SSDA2/SSLB1
IO25 P51/WR1#/BC1#/WAIT#/SCK2/SSLB2
IO26 P52/RXD2/RD#/RXD2/SMISO2/SSCL2/SSLB3
IO27 P53/BCLK
IO28 P54/ALE/EDACK0 MTIOC4B/TMCI1/CTS2#/RTS2#/SS2#/CTX1/ET_LINKSTA
IO29 P55/WAIT#/EDREQ0/MTIOC4D/TMO3/CRX1/ET_EXOUT/IRQ10
CN9
SDA NC
SCL NC
NC
GND GND
IO13/SCK PC5/SPICLK A21/CS2#/WAIT#/MTIOC3B/MTCLKD/TMRI2/PO29/SCK8/RSPCKA/ET_ETXD2
IO12/MISO PC7/SPIMISO A23/CS0# MTIOC3A/MTCLKB/TMO2/PO31/TXD8/SMOSI8/SSDA8/MISOA/ET_COL/IRQ14
IO11/MOSI PC6/SPIMOSI A22/CS1# MTIOC3C/MTCLKA/TMCI2/PO30/RXD8/SMISO8/SSCL8/MOSIA/ET_ETXD3/IRQ13
IO10/SS PC4/SPICS0 A20/CS3# MTIOC3D/MTCLKC/TMCI1/PO25/POE0#/SCK5/CTS8#/RTS8#/SS8#/SSLA0/ET_TX_CLK
IO9 PC3 A19 MTIOC4D/TCLKB/PO24/TXD5/SMOSI5/SSDA5/IETXD/ET_TX_ER
IO8 PC2/SPICS3 A18 MTIOC4B/TCLKA/PO21/RXD5/SMISO5/SSCL5/SSLA3/IERXD/ET_RX_DV
IO7 P33/RXD6 MTIOC0D/TIOCD0/TMRI3/PO11/POE3#/RXD0/SMISO6/SMISO0/SSCL6/SSCL0/CRX0/IRQ3-DS
IO6 P32/TXD6 MTIOC0C/TIOCC0/TMO3/PO10/RTCOUT/RTCIC2/TXD0/SMOSI6/SMOSI0/SSDA6/SSDA0/CTX0/USB0_VBUSEN/IRQ2-DS
IO5 P25/RXD3 CS5#/EDACK1/MTIOC4C/MTCLKB/TIOCA4/PO5/RXD3/SMISO3/SSCL3/USB0_DPRPD/ADTRG0#
IO4 P24 CS4#/EDREQ1/MTIOC4A/MTCLKA/TIOCB4/TMRI1/PO4/SCK3/USB0_VBUSEN
IO3 P23/TXD3 EDACK0 MTIOC3D/MTCLKD/TIOCD3/PO3/TXD3/CTS0#/RTS0#/SMOSI3/SS0#/SSDA3/USB0_DPUPE
IO2 P22 EDREQ0 MTIOC3B/MTCLKC/TIOCC3/TMO0/PO2/SCK0/USB0_DRPD
IO1 P20/TXD0 MTIOC1A/TIOCB3/TMRI0/PO0/TXD0/SMOSI0/SSDA0/USB0_ID/IRQ8
IO0 P21/RXD0 MTIOC1B/TIOCA3/TMCI0/PO1/RXD0/SMISO0/SSCL0/USB0_EXICEN/IRQ9
Note; Red text is the meaning of the 5V tolerant terminal
DUINO_VIN
DUINO_V50
RESET
V33
+3.3V
DUINO_V50
+5V
GND
GND
GND
DUINO_VIN
VIN
P40/IRQ8-DS/AN000 AD0
P41/IRQ9-DS/AN001 AD1
P42/IRQ10-DS/AN002 AD2
P43/IRQ11-DS/AN003 AD3
P44/IRQ12-DS/AN004 AD4
P45/IRQ13-DS/AN005 AD5
IO20 IO21 IO52 IO53 IO54 IO55
IO22 IO23 IO24 IO25 IO26 IO27 IO28 IO29
IO30 IO31 IO32 IO33 IO34 IO35 V30 GND
CN13
IO20 P46/IRQ14-DS/AN006
IO21 P47/IRQ15-DS/AN007
IO52 P07/IRQ15/ADTRG0#
IO53 P05/IRQ13/DA1
IO54 NMI/P35
IO55 PJ3/MTIOC3C/CTS6#/RTS6#/CTS0#/RTS0#/SS6#/SS0#
JTAG Interface
RESET GND TDI GND TMS MD0 Vref MDE EMLE GND
IO30 P12/TMC11/RXD2/SMISO2/SSCL2/SCL0[FM+]/IRQ2
IO31 P13/MTIOC0B/TIOCA5/TMO3/PO13/TXD2/SMOSI2/SSDA2/SDA0[FM+]/IRQ3/ADTRG#
IO32 P14/DPUPE/MTIOC3A/MTCLKA/TIOCB5/TCLKA/TMRI2/PO15/CTS1#/RTS1#/SS1#/CTX1/USB0_DPUPE/USB0_OVRCURA/IRQ4
IO33 P15/MTIOC0B/MTCLKB/TIOCB2/TCLKB/TMCI2/PO13/RXD1/SCK3/SMISO1/SSCL1/CRX1-DS/IRQ5
IO34 P16/VBUS/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 P17/MTIOC3A/MTIOC3B/TIOCB0/TCLKD/TMO1/PO15/POE8#/SCK1/TXD3/SMOSI3/SSDA3/MISOA/SDA2-DS/IETXD/IRQ7/ADTRG#
V30 V30
GND GND

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/ TMRI3/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/ TMRI1/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/ TMRI0/PO0	TXD0/SMOSI0/ SSDA0/USB0_ID	IRQ8	
IO0	27	P21		MTIOC1B/ TIOCA3/ TMCI0/PO1	RXD0/SMISO0/ SSCL0/ USB0_EXICEN	IRQ9	
SDA							
SCL							
NC							
GND							
IO13/SCK	47	PC5	A21/CS2#/ WAIT#	MTIOC3B/ MTCLKD/ TMRI2/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/ TMCI2/PO30	RXD8/SMISO8/ SSCL8/MOSIA/ ET_ETXD3	IRQ13	
IO10/SS	48	PC4	A20/CS3#	MTIOC3D/ MTCLKC/ TMCI1/PO25/ POE0#	SCK5/CTS8#/ RTS8#/SS8#/ SSLA0/ET_TX_CLK		
IO9	49	PC3	A19	MTIOC4D/ TCLKB/ PO24	TXD5/SMOSI5/ SSDA5/IETXD/ 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、SCIc、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/ SSCL2/SSLB3		
IO27	41	P53	BCLK				
IO28	40	P54	ALE/EDACK0	MTIOC4B/ TMCI1	CTS2#/RTS2#/ SS2#/CTX1/ ET_LINKSTA		
IO29	39	P55	WAIT#/ EDREQ0	MTIOC4D/ TMO3	CRX1/ET_EXOUT	IRQ10	

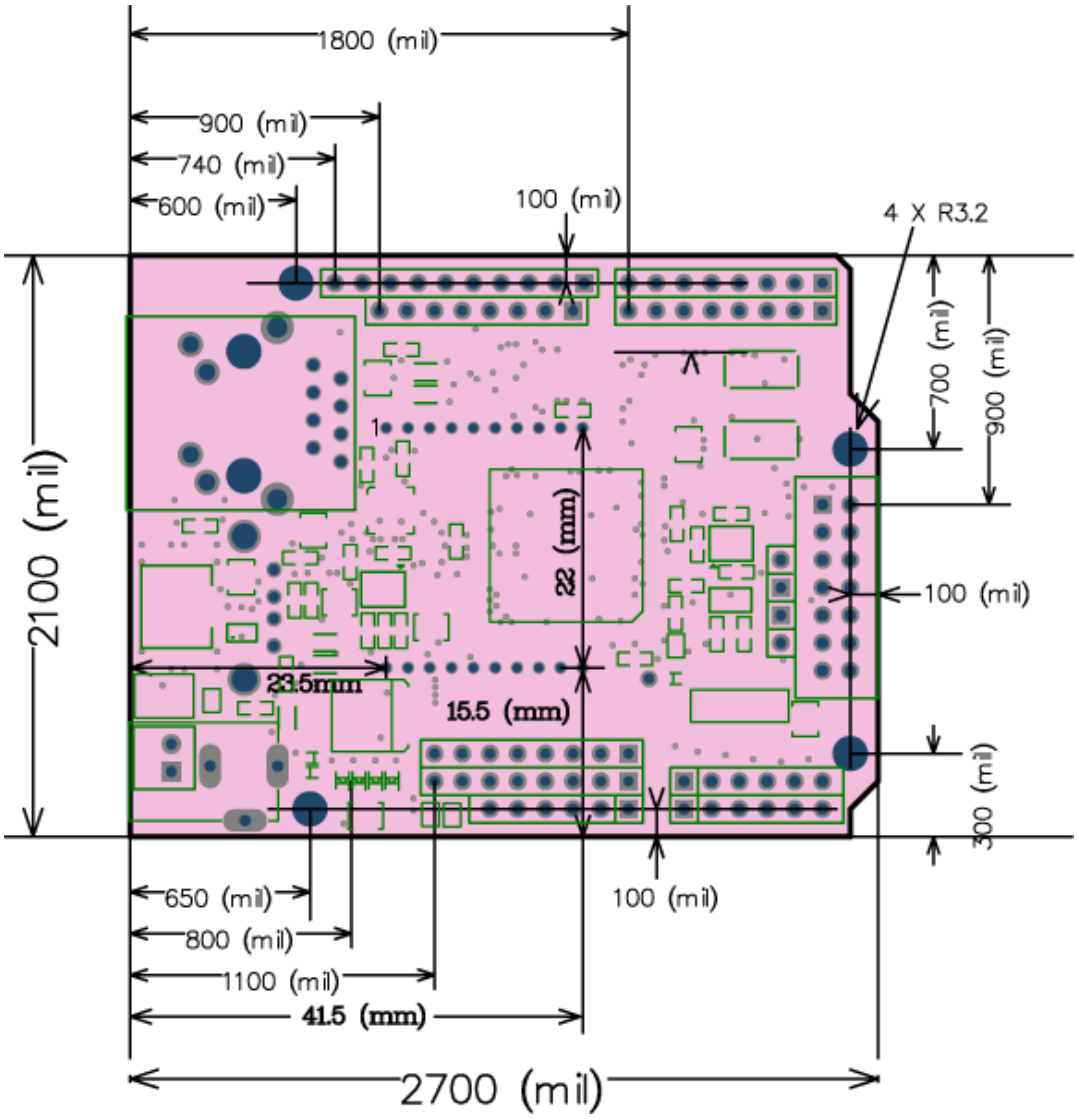
CN10	Pin Number 100 pin LQFP	I/O port	bus EXDMAC	Timer (MTU、TPU、TMR、PPG、RTC、POE)	Communications (ETHERC、SCIc、SCId、RSPI、RIIC、CAN、IEB、USB)	Interrupt	S12AD、AD、DA
IO30	34	P12		TMCI1	RXD2/SMISO2/ SSCL2/SCL0[FM+]	IRQ2	
IO31	33	P13		MTIOC0B/ TIOCA5/TMO3/ PO13	TXD2/SMOSI2/ SSDA2/SDA0[FM+]	IRQ3	ADTRG#
IO32	32	P14		MTIOC3A/ MTCLKA/ TIOCB5/ TCLKA/TMRI2/ PO15	CTS1#/RTS1#/ SS1#/CTX1/ USB0_DPUPE/ USB0_OVRCURA	IRQ4	
IO33	31	P15		MTIOC0B/ MTCLKB/ TIOCB2/ TCLKB/TMCI2/ 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	ピン番号 100 ピン LQFP	I/O ポート	バス EXDMAC	タイマ (MTU、TPU、TMR、PPG、RTC、POE)	通信 (ETHERC、SCIc、SCId、RSPI、RIIC、CAN、IEB、USB)	割り込み	S12AD、AD、DA
IO44	78	PE0	D8[A8/D8]		SCK12/SSLB1		ANEX0
IO45	77	PE1	D9[A9/D9]	MTIOC4C/ PO18	TXD12/SMOSI12/ SSDA12/TXDX12/ SIOX12/SSLB2/ RSPCKB		ANEX1
IO46	76	PE2	D10[A10/D10]	MTIOC4A/ PO23	RXD12/SMISO12/ SSCL12/RXDX12/ SSLB3/MOSIB	IRQ7-DS	AN0
IO47	75	PE3	D11[A11/D11]	MTIOC4B/ PO26/ POE8#	CTS12#/RTS12#/ SS12#/MISOB/ ET_ERXD3		AN1
IO48	74	PE4	D12[A12/D12]	MTIOC4D/ MTIOC1A/ PO28	SSLB0/ET_ERXD2		AN2
IO49	73	PE5	D13[A13/D13]	MTIOC4C/ MTIOC2B	RSPCKB/ ET_RX_CLK/ REF50CK	IRQ5	AN3
IO50	72	PE6	D14[A14/D14]		MOSIB	IRQ6	AN4
IO51	71	PE7	D15[A15/D15]		MISOB	IRQ7	AN5

CN12	ピン番号 100 ピン LQFP	I/O ポート	バス EXDMAC	タイマ（MTU、TPU、TMR、PPG、RTC、POE）	通信（ETHERC、SCIc、SCId、RSPI、RIIC、CAN、IEB、USB）	割り込み	S12AD、AD、DA
IO36	86	PD0	D0[A0/D0]			IRQ0	AN008
IO37	85	PD1	D1[A1/D1]	MTIOC4B	CTX0	IRQ1	AN009
IO38	84	PD2	D2[A2/D2]	MTIOC4D	CRX0	IRQ2	AN010
IO39	83	PD3	D3[A3/D3]	POE8#		IRQ3	AN011
IO40	82	PD4	D4[A4/D4]	POE3#		IRQ4	AN012
IO41	81	PD5	D5[A5/D5]	MTIC5W/ POE2#		IRQ5	AN013
IO42	80	PD6	D6[A6/D6]	MTIC5V/ POE1#		IRQ6	AN6
IO43	79	PD7	D7[A7/D7]	MTIC5U/ POE0#		IRQ7	AN7

CN13	ピン番号 100 ピン LQFP	I/O ポート	バス EXDMAC	タイマ（MTU、TPU、TMR、PPG、RTC、POE）	通信（ETHERC、SCIc、SCId、RSPI、RIIC、CAN、IEB、USB）	割り込み	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/ TMCI3/PO7	SCK1/RSPCKB		
2	16	TRST#	P34		MTIOC0A/ TMCI3/ 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/ TMCI2/ PO9/ RTCIC1	CTS1#/RTS1#/ SS1#/SSLB0/ USB0_DPUPE	IRQ1-DS	
6	20	TDI	P30		MTIOC4B/ TMRI3/ 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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