

Sample Drivers for R8C/LA6A

R01AN0500EJ0000

Rev.1.00

Application Note: <Sample Drivers for R8C/LA6A>

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This document is designed to describe an outline of various sample driver software created for R8C/LA6A.

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1. File Composition of Sample Driver Software

- This document of sample driver software consists of a source list and directions (* pdf format) for each function. On decompression of a downloaded file, a “source” folder and a “doc” folder are generated. In the sub folders in the “source” folder, source lists of each function are stored. In the sub folders in the “doc” folder, directions for each function are stored.

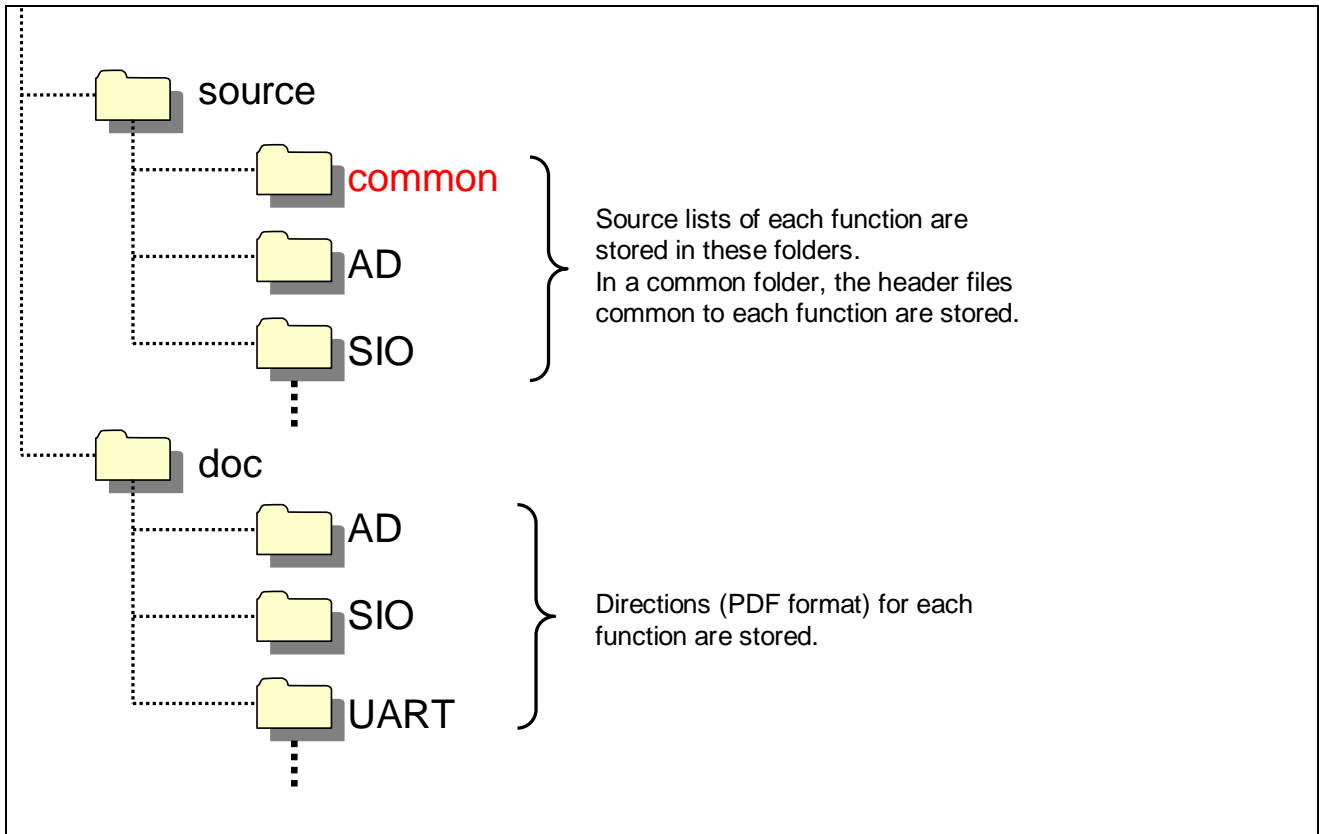


Figure 1 File Composition

2. Lists of Sample Driver Software

- The tables below show the lists of sample driver software described in this document.

Table 2-1 A List of Sample Driver Software (1)

Types of Drivers	Process Summary	ROM (byte)	RAM (byte)	Function Name	Source file	
Voltage Monitor 1 Interrupt	Voltage Monitor 1 Interrupt Setting	167	0	R.VDET1_Create	r.vdet1_create.c	
Voltage Monitor 2 Interrupt	Voltage Monitor 2 Interrupt Setting	162	0	R.VDET2_Create	r.vdet2_create.c	
KEY ON WAKE UP (KI0-KI7)	KI0-KI7 Key Input Interrupt Setting	206	0	R.KWAKE_Create	r.kwake_create.c	
Clock Synchronous Serial 0 Transmission	SI/O0 Setting for Transmission	136	8	R.SIO0_Create_Transmit	r.sio0_create_transmit.c	
	SI/O0 Transmit Execution	124	0	R.SIO0_Control_Transmit	r.sio0_control_transmit.c	
Clock Synchronous Serial 0 Reception	SI/O0 Setting for Reception	127	8	R.SIO0_Create_Receive	r.sio0_create_receive.c	
	SI/O0 Receive Execution	126	0	R.SIO0_Control_Receive	r.sio0_control_receive.c	
Clock Synchronous Serial 2 Transmission	SI/O2 Setting for Transmission	371	8	R.SIO2_Create_Transmit	r.sio2_create_transmit.c	
	SI/O2 Transmit Execution	124	0	R.SIO2_Control_Transmit	r.sio2_control_transmit.c	
Clock Synchronous Serial 2 Reception	SI/O2 Setting for Reception	371	8	R.SIO2_Create_Receive	r.sio2_create_receive.c	
	SI/O2 Receive Execution	126	0	R.SIO2_Control_Receive	r.sio2_control_receive.c	
UART0 Transmission	UART0 Setting for Transmission	173	16	R.UART0_Create_Transmit	r.uart0_create_transmit.c	
	UART0 Transmit Execution	128	0	R.UART0_Control_Transmit	r.uart0_control_transmit.c	
UART0 Reception	UART0 Setting for Reception	160	20	R.UART0_Create_Receive	r.uart0_create_receive.c	
	UART0 Receive Execution	201	0	R.UART0_Control_Receive	r.uart0_control_receive.c	
UART2 Transmission	UART2 Setting for Transmission	416	16	R.UART2_Create_Transmit	r.uart2_create_transmit.c	
	UART2 Transmit Execution	128	0	R.UART2_Control_Transmit	r.uart2_control_transmit.c	
UART2 Reception	UART2 Setting for Reception	416	20	R.UART2_Create_Receive	r.uart2_create_receive.c	
	UART2 Receive Execution	201	0	R.UART2_Control_Receive	r.uart2_control_receive.c	
SSU Transmission (Master)	SSU Setting for Transmit Master	339	3	R.SSU_Create_MTransmit	r.ssu_create_mtransmit.c	
	SSU Transmit Master Status Check/ Erase	64	3	R.SSU_Status_MTransmit	r.ssu_status_mreceive.c	
	SSU Transmit Master Process Execution	213	19	R.SSU_Control_MTransmit	r.ssu_control_mtransmit.c	
	SSU Receive Master Process Execution	339	2	R.SSU_Create_MReceive	r.ssu_create_mreceive.c	
SSU Reception (Master)	SSU Receive Master Status Check/ Erase	93	2	R.SSU_Status_MReceive	r.ssu_status_mtransmit.c	
	SSU Receive Master Process Execution	211	18	R.SSU_Control_MReceive	r.ssu_control_mreceive.c	
	SSU Setting for Transmit Slave	502	3	R.SSU_Create_STransmit	r.ssu_create_stransmit.c	
	SSU Transmit Slave Process Execution	249	19	R.SSU_Control_STransmit	r.ssu_control_stransmit.c	
SSU Reception (Slave)	SSU Setting for Receive Slave	502	2	R.SSU_Create_SReceive	r.ssu_create_sreceive.c	
	SSU Receive Slave Process Execution	247	18	R.SSU_Control_SReceive	r.ssu_control_sreceive.c	
UART2 Simplified IIC-BUS Control (Single Master)	UART2 Simplified IIC-BUS Setting (Single Master)	363	8	R.IIC_UART2_Create_SMaster	r.iic_uart2_create_smaster.c	
	UART2 Simplified IIC-BUS Status Check/ Erase (Single Master)	468	16	R.IIC_UART2_Status_SMaster	r.iic_uart2_status_smaster.c	
	UART2 Simplified IIC-BUS Process Execution (Single Master)	63	8	R.IIC_UART2_Control_SMaster	r.iic_uart2_control_smaster.c	
IIC-BUS Control (Single Master)	IIC-BUS Setting (Single Master)	276	6	R.IIC_Create_SMaster	r.iic_create_smaster.c	
	IIC-BUS Status Check/ Erase (Single Master)	69	6	R.IIC_Status_SMaster	r.iic_status_smaster.c	
	IIC-BUS Process Execution (Single Master)	515	14	R.IIC_Control_SMaster	r.iic_control_smaster.c	
UART2 Simplified IIC-BUS Control (Slave)	UART2 Simplified IIC-BUS Setting (Slave)	357	3	R.IIC_UART2_Create_Slave	r.iic_uart2_create_slave.c	
	UART2 Simplified IIC-BUS Process Execution (Slave)	485	11	R.IIC_UART2_Control_Slave	r.iic_uart2_control_slave.c	
IIC-BUS Control (Slave)	IIC-BUS Setting (Slave)	248	3	R.IIC_Create_Slave	r.iic_create_slave.c	
	IIC-BUS Process Execution (Slave)	374	11	R.IIC_Control_Slave	r.iic_control_slave.c	
	Timer Mode Setting	77	0	R.TMR_RJ0_Create_Timer	r.tmr_rj0_create_timer.c	
Timer RJ (0)	Timer Mode	Starting and Stopping Timer	51	0	R.TMR_RJ0_Control_Timer	r.tmr_rj0_control_timer.c
		Event Counter Mode Setting	377	0	R.TMR_RJ0_Create_ECnt	r.tmr_rj0_create_ecnt.c
	Event Counter Mode	Starting and Stopping Event Counter Mode	56	0	R.TMR_RJ0_Control_ECnt	r.tmr_rj0_control_ecnt.c
		Pulse Width Measurement Mode Setting	176	0	R.TMR_RJ0_Create_PWidth	r.tmr_rj0_create_pwidth.c
	Pulse Width Measurement Mode	Starting and Stopping Pulse Width Measurement	51	0	R.TMR_RJ0_Control_PWidth	r.tmr_rj0_control_pwidth.c
		Pulse Period Measurement Mode Setting	176	0	R.TMR_RJ0_Create_PPeriod	r.tmr_rj0_create_pperiod.c
	Pulse Period Measurement Mode	Starting and Stopping Pulse Period Measurement	51	0	R.TMR_RJ0_Control_PPeriod	r.tmr_rj0_control_pperiod.c
		Pulse Output Mode Setting	128	0	R.TMR_RJ0_Create_POOutput	r.tmr_rj0_create_poutput.c
	Pulse Output Mode	Pulse Output Process	72	0	R.TMR_RJ0_Control_POOutput	r.tmr_rj0_control_poutput.c
		Timer Mode Setting	77	0	R.TMR_RJ1_Create_Timer	r.tmr_rj1_create_timer.c
Timer RJ (1)	Timer Mode	Starting and Stopping Timer	51	0	R.TMR_RJ1_Control_Timer	r.tmr_rj1_control_timer.c
		Event Counter Mode Setting	360	0	R.TMR_RJ1_Create_ECnt	r.tmr_rj1_create_ecnt.c
	Event Counter Mode	Starting and Stopping Event Counter Mode	56	0	R.TMR_RJ1_Control_ECnt	r.tmr_rj1_control_ecnt.c
		Pulse Width Measurement Mode Setting	176	0	R.TMR_RJ1_Create_PWidth	r.tmr_rj1_create_pwidth.c
	Pulse Width Measurement Mode	Starting and Stopping Pulse Width Measurement	51	0	R.TMR_RJ1_Control_PWidth	r.tmr_rj1_control_pwidth.c
		Pulse Period Measurement Mode Setting	176	0	R.TMR_RJ1_Create_PPeriod	r.tmr_rj1_create_pperiod.c
	Pulse Period Measurement Mode	Starting and Stopping Pulse Period Measurement	51	0	R.TMR_RJ1_Control_PPeriod	r.tmr_rj1_control_pperiod.c
		Pulse Output Mode Setting	128	0	R.TMR_RJ1_Create_POOutput	r.tmr_rj1_create_poutput.c
	Pulse Output Mode	Pulse Output Process	72	0	R.TMR_RJ1_Control_POOutput	r.tmr_rj1_control_poutput.c
		Timer Mode Setting	77	0	R.TMR_RJ2_Create_Timer	r.tmr_rj2_create_timer.c
Timer RJ (2)	Timer Mode	Starting and Stopping Timer	51	0	R.TMR_RJ2_Control_Timer	r.tmr_rj2_control_timer.c

Table 2-2 A List of Sample Driver Software (2)

Types of Drivers	Process Summary	ROM (byte)	RAM (byte)	Function Name	Source file	
Timer RB (0)	Timer Mode	81	0	R.TMR_RB0_Create_Timer	r.tmr.rb0.create.timer.c	
	Programmable Waveform Mode	Starting and Stopping Timer	51	0	R.TMR_RB0_Control_Timer	r.tmr.rb0.control.timer.c
		Programmable Waveform Generation Mode Setting	142	0	R.TMR_RB0_Create_PWave	r.tmr.rb0.create.pwave.c
	Programmable One-Shot Generation Mode	Programmable Waveform Generation Process	66	0	R.TMR_RB0_Control_PWave	r.tmr.rb0.control.pwave.c
		Programmable One-Shot Generation Mode Setting	218	0	R.TMR_RB0_Create_POneshot	r.tmr.rb0.create.poneshot.c
	Programmable Wait One-Shot Generation Mode	Programmable One-Shot Generation Process	36	0	R.TMR_RB0_Control_POneshot	r.tmr.rb0.control.poneshot.c
		Programmable Wait One-Shot Generation Mode Setting	215	0	R.TMR_RB0_Create_PWOneshot	r.tmr.rb0.create.pwoneshot.c
		Programmable Wait One-Shot Generation Process	41	0	R.TMR_RB0_Control_PWOneshot	r.tmr.rb0.control.pwoneshot.c
	Timer RB (1)	Timer Mode	81	0	R.TMR_RB1_Create_Timer	r.tmr.rb1.create.timer.c
		Programmable Waveform Mode	Starting and Stopping Timer	51	0	R.TMR_RB1_Control_Timer
Programmable Waveform Generation Mode Setting			126	0	R.TMR_RB1_Create_PWave	r.tmr.rb1.create.pwave.c
Programmable One-Shot Generation Mode		Programmable Waveform Generation Process	66	0	R.TMR_RB1_Control_PWave	r.tmr.rb1.control.pwave.c
		Programmable One-Shot Generation Mode Setting	202	0	R.TMR_RB1_Create_POneshot	r.tmr.rb1.create.poneshot.c
Programmable Wait One-Shot Generation Mode		Programmable One-Shot Generation Process	36	0	R.TMR_RB1_Control_POneshot	r.tmr.rb1.control.poneshot.c
		Programmable Wait One-Shot Generation Mode Setting	199	0	R.TMR_RB1_Create_PWOneshot	r.tmr.rb1.create.pwoneshot.c
		Programmable Wait One-Shot Generation Process	41	0	R.TMR_RB1_Control_PWOneshot	r.tmr.rb1.control.pwoneshot.c
Timer RC		Common for All Modes	214	0	R.TMR_RC_Create	r.tmr.rc.create.c
		Shared Register Setting Process	59	0	R.TMR_RC_Create_Reg	r.tmr.rc.create.reg.c
	Timer RC Execution Process	100	0	R.TMR_RC_Control	r.tmr.rc.control.c	
	Timer Mode (Input Capture)	398	0	R.TMR_RC_Create_ICap	r.tmr.rc.create.icap.c	
	Timer Mode (Output Compare)	399	0	R.TMR_RC_Create_OCmp	r.tmr.rc.create.ocmp.c	
	PWM Mode	148	0	R.TMR_RC_Create_Pwm	r.tmr.rc.create.pwm.c	
	PWM2 Mode	205	0	R.TMR_RC_Create_Pwm2	r.tmr.rc.create.pwm2.c	
	Output Compare Mode	Output Compare Mode Setting	67	0	R.TMR_RH_Create_OCmp	r.tmr.rh.create.ocmp.c
		Output Compare Output Process	101	0	R.TMR_RH_Control_OCmp	r.tmr.rh.control.ocmp.c
	Real-Time Clock Basic Setting	Real-Time Clock Mode Setting	121	0	R.TMR_RH_Create_Rtc	r.tmr.rh.create rtc.c
Real-Time Clock Control	Starting and Stopping Real-Time Clock Mode	38	0	R.TMR_RH_Control_Rtc	r.tmr.rh.control rtc.c	
Real-Time Clock Data Setting	Real-Time Clock Data Setting (Year/Month/Day/Day-of-the-Week/Hour/Minute/Second)	82	0	R.TMR_RH_Create_Time	r.tmr.rh.create.time.c	
Real-Time Clock Interrupt Setting	Real-Time Clock Interrupt Setting	243	0	R.TMR_RH_Create_Int	r.tmr.rh.create.int.c	
Real-Time Clock Alarm Setting	Alarm Data Setting (Day-of-the-Week/Hour/Minute)	141	0	R.TMR_RH_Create_Alarm	r.tmr.rh.create.alarm.c	
Real-Time Clock Automatic Correction Setting	Automatic Correction Setting	59	0	R.TMR_RH_Create_Adjust	r.tmr.rh.create.adjust.c	
Real-Time Clock Reset Control	Starting Real-Time Clock Reset	22	0	R.TMR_RH_Control_Reset	r.tmr.rh.control.reset.c	
AD Conversion	Basic Setting	AD Conversion Setting	142	0	R.ADC_Create	r.adc.create.c
	One-Shot Mode	Conversion Start Process	199	0	R.ADC_Control_Oneshot	r.adc.control.oneshot.c
	Repeat Mode 0	Conversion Start Process	202	0	R.ADC_Control_Repeat0	r.adc.control.repeat0.c
	Repeat Mode 1	Conversion Start Process	202	0	R.ADC_Control_Repeat1	r.adc.control.repeat1.c
	Single Sweep Mode	Conversion Start Process	272	0	R.ADC_Control_SSweep	r.adc.control.sweep.c
	Repeat Sweep Mode	Conversion Start Process	272	0	R.ADC_Control_RSweep	r.adc.control.rsweep.c
	A/D Data Read Process	A/D Conversion Data Read Process	357	16	R.ADC_Read	r.adc.read.c
	Gain Amplifier	Gain Amplifier Setting	27	0	R.ADC_Create_GainAmp	r.adc.create.gainamp.c
	Comparator B1 Interrupt	Comparator B1 Setting	160	0	R.CMP_B1_Create	r.cmp.b1.create.c
		Comparator B1 Control	56	0	R.CMP_B1_Control	r.cmp.b1.control.c
Comparator B3 Interrupt	Comparator B3 Setting	160	0	R.CMP_B3_Create	r.cmp.b3.create.c	
	Comparator B3 Control	56	0	R.CMP_B3_Control	r.cmp.b3.control.c	
INT0 Interrupt	INT0 Setting	82	0	R.INT0_Create	r.int0.create.c	
	INT0 Control	73	0	R.INT0_Control	r.int0.control.c	
INT1 Interrupt	INT1 Setting	86	0	R.INT1_Create	r.int1.create.c	
	INT1 Control	73	0	R.INT1_Control	r.int1.control.c	
INT2 Interrupt	INT2 Setting	86	0	R.INT2_Create	r.int2.create.c	
	INT2 Control	73	0	R.INT2_Control	r.int2.control.c	
INT3 Interrupt	INT3 Setting	86	0	R.INT3_Create	r.int3.create.c	
	INT3 Control	73	0	R.INT3_Control	r.int3.control.c	
INT4 Interrupt	INT4 Setting	82	0	R.INT4_Create	r.int4.create.c	
	INT4 Control	73	0	R.INT4_Control	r.int4.control.c	
INT5 Interrupt	INT5 Setting	82	0	R.INT5_Create	r.int5.create.c	
	INT5 Control	73	0	R.INT5_Control	r.int5.control.c	
INT6 Interrupt	INT6 Setting	82	0	R.INT6_Create	r.int6.create.c	
	INT6 Control	73	0	R.INT6_Control	r.int6.control.c	
INT7 Interrupt	INT7 Setting	82	0	R.INT7_Create	r.int7.create.c	
	INT7 Control	73	0	R.INT7_Control	r.int7.control.c	

3. Usage Outlines of Sample Driver Software

- Source lists of each function are attached to this document.
A source file of the function to be used can be diverted without any change.
Header files (*.h) required for use of each function are stored in the same folders where each function is stored.
Common header files such as a definition file of a special function register, etc. are stored in a .source/common folder.
For the details of how to use each function, please refer to the descriptions of each function before actual use.

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Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Jan.31, 2011	—	First edition issued

General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

1. Handling of Unused Pins

Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable.

When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

Before changing from one product to another, i.e. to one with a different type number, confirm that the change will not lead to problems.

- The characteristics of MPU/MCU in the same group but having different type numbers may differ because of the differences in internal memory capacity and layout pattern. When changing to products of different type numbers, implement a system-evaluation test for each of the products.

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