Sample Drivers for R8C/M11A

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Application Note: <Sample Drivers for R8C/M11A>

IThis document is designed to describe an outline of various sample driver software created for R8C/M11A.

Table of Contents

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.

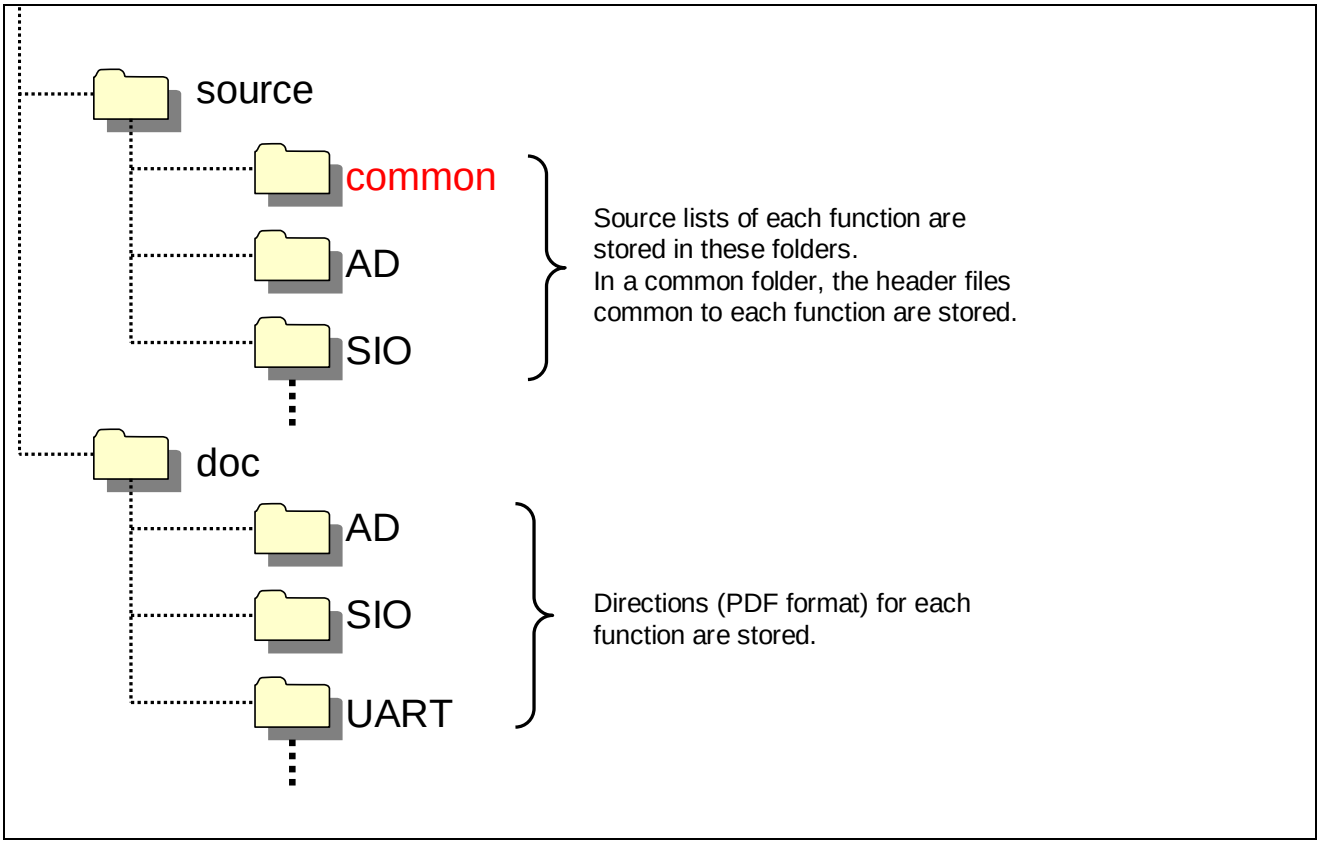

Figure 1 File Composition

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	Souce file
Voltage Monitor 1 Interrupt		Voltage Monitor 1 Interrupt Setting	145	0	R_VDET1_Create	r_vdet1_create.c
KEY ON WAKE UP (KI1-KI3)		KI1-KI3 Key Input Interrupt Setting	205	0	R_KWAKE_Create	r_kwake_create.c
Clock Synchronous Serial 0 Transmission		SI/O0 Setting for Transmission	308	8	R_SIO0_Create_Transmit	r_sio0_create_transmit.c
		SI/O0 Transmit Execution	118	0	R_SIO0_Control_Transmit	r_sio0_control_transmit.c
Clock Synchronous Serial 0 Reception		SI/O0 Setting for Reception	300	8	R_SIO0_Create_Receive	r_sio0_create_receive.c
		SI/O0 Receive Execution	128	0	R_SIO0_Control_Receive	r_sio0_control_receive.c
UART0 Transmission		UART0 Setting for Transmission	341	16	R_UART0_Create_Transmit	r_uart0_create_transmit.c
		UART0 Transmit Execution	148	0	R_UART0_Control_Transmit	r_uart0_control_transmit.c
UART0 Reception		UART0 Setting for Reception	325	20	R_UART0_Create_Receive	r_uart0_create_receive.c
		UART0 Receive Execution	193	0	R_UART0_Control_Receive	r_uart0_control_receive.c
Timer RJ (2)	Timer Mode	Timer Mode Setting	72	0	R_TMR_RJ2_Create_Timer	r_tmr_rj2_create_timer.c
		Starting and Stopping Timer	71	0	R_TMR_RJ2_Control_Timer	r_tmr_rj2_control_timer.c
	Event Counter Mode	Event Counter Mode Setting	320	0	R_TMR_RJ2_Create_ECnt	r_tmr_rj2_create_ecnt.c
		Starting and Stopping Event Counter Mode	76	0	R_TMR_RJ2_Control_ECnt	r_tmr_rj2_control_ecnt.c
	Pulse Width Measurement Mode	Pulse Width Measurement Mode Setting	209	0	R_TMR_RJ2_Create_PWidth	r_tmr_rj2_create_pwidth.c
		Starting and Stopping Pulse Width Measurement	71	0	R_TMR_RJ2_Control_PWidth	r_tmr_rj2_control_pwidth.c
	Pulse Period Measurement Mode	Pulse Period Measurement Mode Setting	209	0	R_TMR_RJ2_Create_PPeriod	r_tmr_rj2_create_pperiod.c
		Starting and Stopping Pulse Period Measurement	71	0	R_TMR_RJ2_Control_PPeriod	r_tmr_rj2_control_pperiod.c
	Pulse Output Mode	Pulse Output Mode Setting	173	0	R_TMR_RJ2_Create_POutput	r_tmr_rj2_create_poutput.c
		Pulse Output Process	96	0	R_TMR_RJ2_Control_POutput	r_tmr_rj2_control_poutput.c
Timer RB (2)	Timer Mode	Timer Mode Setting	91	0	R_TMR_RB2_Create_Timer	r_tmr_rb2_create_timer.c
		Starting and Stopping Timer	92	0	R_TMR_RB2_Control_Timer	r_tmr_rb2_control_timer.c
	Programmable Waveform Mode	Programmable Waveform Generation Mode Setting	127	0	R_TMR_RB2_Create_PWave	r_tmr_rb2_create_pwave.c
		Programmable Waveform Generation Process	107	0	R_TMR_RB2_Control_PWave	r_tmr_rb2_control_pwave.c
	Programmable One-Shot Generation Mode	Programmable One-Shot Generation Mode Setting	222	0	R_TMR_RB2_Create_POneshot	r_tmr_rb2_create_poneshot.c
		Programmable One-Shot Generation Process	38	0	R_TMR_RB2_Control_POneshot	r_tmr_rb2_control_poneshot.c
	Programmable Wait One-Shot Generation Mode	Programmable Wait One-Shot Generation Mode Setting	214	0	R_TMR_RB2_Create_PWOneshot	r_tmr_rb2_create_pwoneshot.c
		Programmable Wait One-Shot Generation Process	65	0	R_TMR_RB2_Control_PWOneshot	r_tmr_rb2_control_pwoneshot.c
Timer RC	Common for All Modes	Common Setting for All Modes	344	0	R_TMR_RC_Create	r_tmr_rc_create.c
	Shared Register Setting Process	Shared Register Setting	59	0	R_TMR_RC_Create_Reg	r_tmr_rc_create_reg.c
	Timer RC Execution Process	Timer RC Count Start Process	152	0	R_TMR_RC_Control	r_tmr_rc_control.c
	Timer Mode (Input Capture)	Timer Mode (Input Capture) Setting	454	0	R_TMR_RC_Create_ICap	r_tmr_rc_create_icap.c
	Timer Mode (Output Compare)	Timer Mode (Output Compare) Setting	486	0	R_TMR_RC_Create_OCmp	r_tmr_rc_create_ocmp.c
	PWM Mode	PWM Mode Setting	250	0	R_TMR_RC_Create_Pwm	r_tmr_rc_create_pwm.c
	PWM2 Mode	PWM2 Mode Setting	199	0	R_TMR_RC_Create_Pwm2	r_tmr_rc_create_pwm2.c
AD Conversion	Basic Setting	AD Conversion Setting	128	0	R_ADC_Create	r_adc_create.c
	One-Shot Mode	Conversion Start Process	168	0	R_ADC_Control_Oneshot	r_adc_control_oneshot.c
	Repeat Mode	Conversion Start Process	171	0	R_ADC_Control_Repeat	r_adc_control_repeat.c
	Single Sweep Mode	Conversion Start Process	153	0	R_ADC_Control_SSweep	r_adc_control_ssweep.c
	Repeat Sweep Mode	Conversion Start Process	153	0	R_ADC_Control_RSweep	r_adc_control_rsweep.c
	A/D Data Read Process	A/D Conversion Data Read Process	43	4	R_ADC_Read	r_adc_read.c
Comparator B1 Interrupt		Comparator B1 Setting	167	0	R_CMP_B1_Create	r_cmp_b1_create.c
		Comparator B1 Control	40	0	R_CMP_B1_Control	r_cmp_b1_control.c
INT0 Interrupt		INT0 Setting	75	0	R_INT0_Create	r_int0_create.c
		INT0 Control	64	0	R_INT0_Control	r_int0_control.c
INT1 Interrupt		INT1 Setting	75	0	R_INT1_Create	r_int1_create.c
		INT1 Control	64	0	R_INT1_Control	r_int1_control.c
INT2 Interrupt		INT2 Setting	71	0	R_INT2_Create	r_int2_create.c
		INT2 Control	64	0	R_INT2_Control	r_int2_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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