

CONFIDENTIAL

Table of Contents

1. Overview.....	1
1.1 Overview.....	1
1.2 Support DMAC.....	1
1.3 Function	1
1.4 Reference	3
1.4.1 Standards	3
1.4.2 Related Documents	3
1.5 Restrictions	4
2. Terminology	5
3. Operating Environment.....	6
3.1 Hardware Environment.....	6
3.2 Module Configuration.....	7
3.3 State Transition Diagram	7
4. External Interface.....	8
4.1 Device Node.....	8
4.2 External Function.....	8
4.2.1 dma_request_channel	10
4.2.2 dma_request_chan	11
4.2.3 dma_request_chan_by_mask.....	12
4.2.4 dma_request_slave_channel.....	13
4.2.5 dma_async_device_register.....	13
4.2.6 dma_async_device_unregister.....	14
4.2.7 dma_async_tx_descriptor_init.....	14
4.2.8 dma_find_channel	15
4.2.9 dma_issue_pending_all	15
4.2.10 dma_release_channel.....	16
4.2.11 dma_run_dependencies	16
4.2.12 dma_submit_error	17
4.2.13 dma_sync_wait.....	17
4.2.14 dma_wait_for_async_tx	18
4.2.15 dmaengine_get	18
4.2.16 dmaengine_put	19
4.2.17 dma_cap_clear.....	19
4.2.18 dma_cap_set.....	20
4.2.19 dma_cap_zero.....	20
4.2.20 dma_has_cap	21
4.3 DMA device interface function.....	22
4.3.1 device_alloc_chan_resources	23
4.3.2 device_free_chan_resources.....	23
4.3.3 device_prep_dma_memcpy	24
4.3.4 device_prep_slave_sg.....	24
4.3.5 device_prep_dma_cyclic	25
4.3.6 device_config	26
4.3.7 device_terminate_all	26
4.3.8 device_synchronize	27
4.3.9 device_tx_status	27
4.3.10 device_issue_pending.....	28
4.4 Structure.....	29

CONFIDENTIAL

4.4.1	This module structures	29
4.4.1.1	rcar_dmac_transfer_chunk	29
4.4.1.2	rcar_dmac_hw_desc	29
4.4.1.3	rcar_dmac_desc_page	30
4.4.1.4	rcar_dmac_chan_slave	30
4.4.1.5	rcar_dmac_chan_map	30
4.4.1.6	rcar_dmac_chan	31
4.4.1.7	rcar_dmac	32
4.4.1.8	rcar_dmac_of_data	32
4.4.1.9	usb_dmac_sg	33
4.4.1.10	usb_dmac_desc	33
4.4.1.11	usb_dmac_chan	34
4.4.1.12	usb_dmac	34
4.4.2	DMA Engine Framework structure	35
4.4.2.1	dma_chan	35
4.4.2.2	dma_device	36
4.4.2.3	dma_cap_mask_t	37
4.4.2.4	dma_async_tx_descriptor	38
4.4.2.5	dmaengine_unmap_data	38
4.4.2.6	dma_tx_state	38
4.4.2.7	dma_chan_dev	39
4.4.2.8	dma_chan_percpu	39
4.4.2.9	dma_router	39
4.4.2.10	dma_slave_config	39
4.5	Global Variables and Constants	40
4.5.1	Global Variables	40
4.5.2	Global Constants	40
4.5.2.1	dma_status	40
4.5.2.2	dma_transaction_type	40
4.5.2.3	dma_ctrl_flags	41
4.6	Example of use	42
4.6.1	DMA property	42
4.6.2	Getting channel	42
4.6.3	Preparation of transmission	43
4.6.4	Request DMA transfer	43
4.6.5	Execute DMA transfer	44
4.6.6	Callback process of transmission completion	44
4.6.7	Confirmation of transmission completion	44
4.6.8	Termination	45
5.	Integration	46
5.1	Directory Configuration	46
5.2	Integration Procedure	46
5.3	Device Tree Setting	47
5.4	Option Setting	66
5.4.1	Module Parameters	66
5.4.2	Kernel Parameters	66