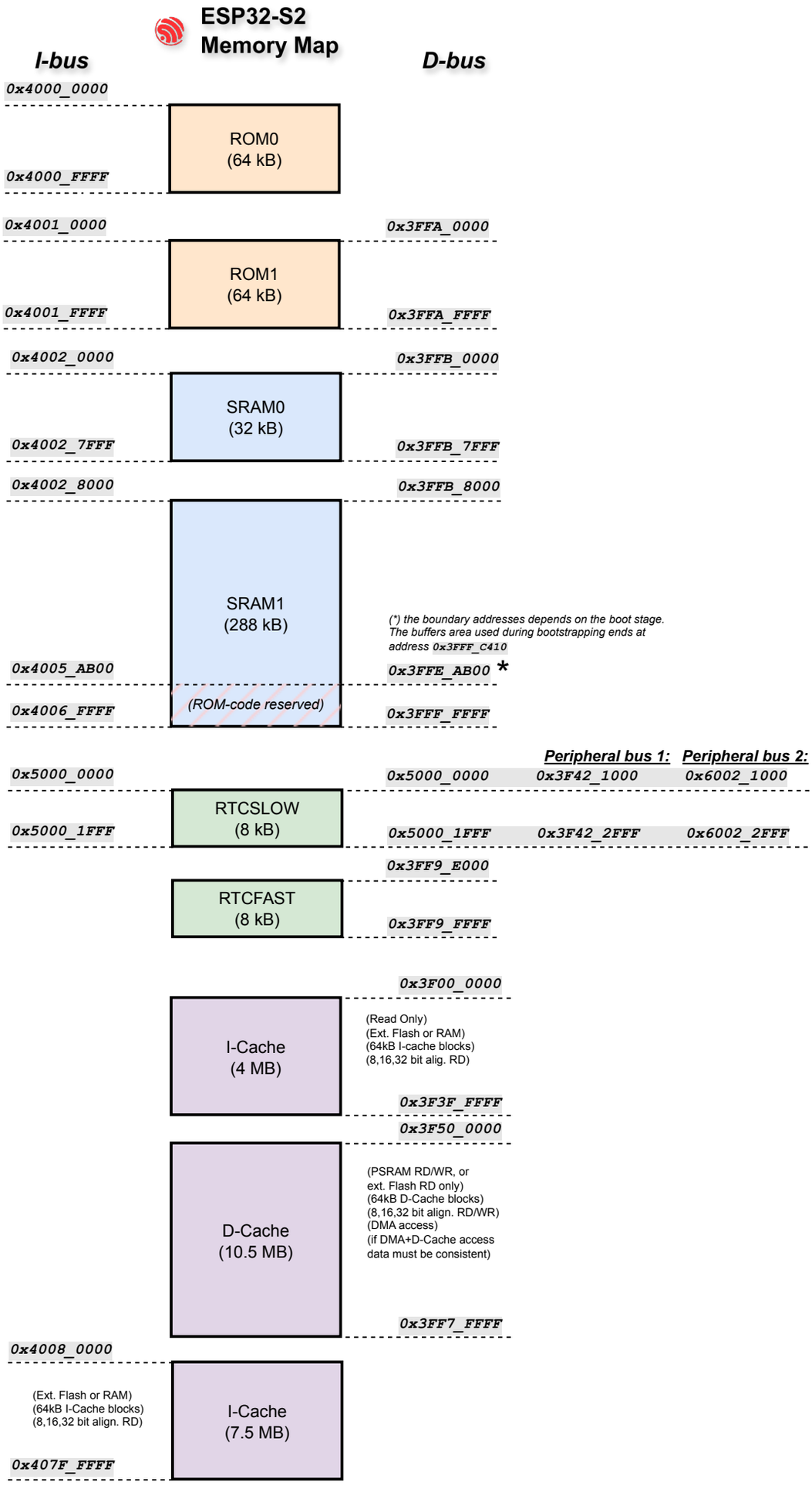
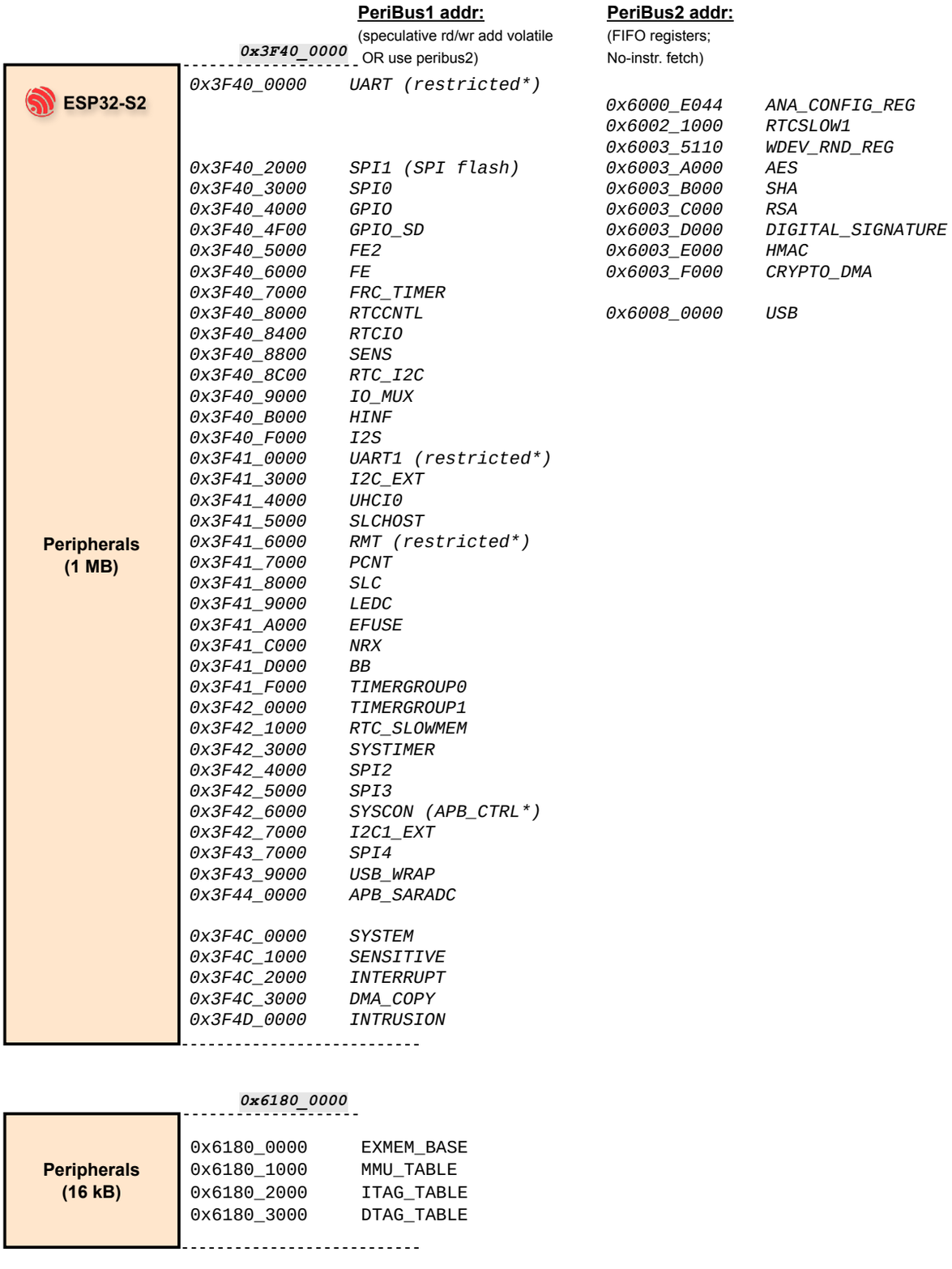

ESP32-S2
Memory Map
I-bus
D-bus
0x4000_0000
ROM0
(64 kB)
0x4000_FFFF
0x4001_0000
0x3FFA_0000
ROM1
(64 kB)
0x4001_FFFF
0x3FFA_FFFF
0x4002_0000
0x3FFB_0000
SRAM0
(32 kB)
0x4002_7FFF
0x3FFB_7FFF
0x4002_8000
0x3FFB_8000
SRAM1
(288 kB)
(*) the boundary addresses depends on the boot stage.
The buffers area used during bootstrapping ends at address 0x3FFF_C410
0x4005_AB00
0x3FFE_AB00 *
(ROM-code reserved)
0x4006_FFFF
0x3FFF_FFFF
Peripheral bus 1:
Peripheral bus 2:
0x5000_0000
0x5000_0000
0x3F42_1000
0x6002_1000
RTCSLOW
(8 kB)
0x5000_1FFF
0x5000_1FFF
0x3F42_2FFF
0x6002_2FFF
0x3FF9_E000
RTCFAST
(8 kB)
0x3FF9_FFFF
0x3F00_0000
I-Cache
(4 MB)
(Read Only)
(Ext. Flash or RAM)
(64kB I-cache blocks)
(8,16,32 bit alig. RD)
0x3F3F_FFFF
0x3F50_0000
D-Cache
(10.5 MB)
(PSRAM RD/WR, or
ext. Flash RD only)
(64kB D-Cache blocks)
(8,16,32 bit align. RD/WR)
(DMA access)
(if DMA+D-Cache access
data must be consistent)
0x3FF7_FFFF
0x4008_0000
(Ext. Flash or RAM)
(64kB I-Cache blocks)
(8,16,32 bit align. RD)
I-Cache
(7.5 MB)
0x407F_FFFF


PeriBus1 addr:
(speculative rd/wr add volatile OR use peribus2)
PeriBus2 addr:
(FIFO registers; No-instr. fetch)
0x3F40_0000
ESP32-S2
0x3F40_0000 UART (restricted*)
0x3F40_2000 SPI1 (SPI flash)
0x3F40_3000 SPI0
0x3F40_4000 GPIO
0x3F40_4F00 GPIO_SD
0x3F40_5000 FE2
0x3F40_6000 FE
0x3F40_7000 FRC_TIMER
0x3F40_8000 RTCCNTL
0x3F40_8400 RTCIO
0x3F40_8800 SENS
0x3F40_8C00 RTC_I2C
0x3F40_9000 IO_MUX
0x3F40_B000 HINF
0x3F40_F000 I2S
0x3F41_0000 UART1 (restricted*)
0x3F41_3000 I2C_EXT
0x3F41_4000 UHCI0
0x3F41_5000 SLCHOST
0x3F41_6000 RMT (restricted*)
0x3F41_7000 PCNT
0x3F41_8000 SLC
0x3F41_9000 LEDC
0x3F41_A000 EFUSE
0x3F41_C000 NRX
0x3F41_D000 BB
0x3F41_F000 TIMERGROUP0
0x3F42_0000 TIMERGROUP1
0x3F42_1000 RTC_SLOWMEM
0x3F42_3000 SYSTIMER
0x3F42_4000 SPI2
0x3F42_5000 SPI3
0x3F42_6000 SYSCON (APB_CTRL*)
0x3F42_7000 I2C1_EXT
0x3F43_7000 SPI4
0x3F43_9000 USB_WRAP
0x3F44_0000 APB_SARADC
0x3F4C_0000 SYSTEM
0x3F4C_1000 SENSITIVE
0x3F4C_2000 INTERRUPT
0x3F4C_3000 DMA_COPY
0x3F4D_0000 INTRUSION
Peripherals (1 MB)
0x6000_E044 ANA_CONFIG_REG
0x6002_1000 RTCSLOW1
0x6003_5110 WDEV_RND_REG
0x6003_A000 AES
0x6003_B000 SHA
0x6003_C000 RSA
0x6003_D000 DIGITAL_SIGNATURE
0x6003_E000 HMAC
0x6003_F000 CRYPTO_DMA
0x6008_0000 USB
0x6180_0000
0x6180_0000 EXMEM_BASE
0x6180_1000 MMU_TABLE
0x6180_2000 ITAG_TABLE
0x6180_3000 DTAG_TABLE
Peripherals (16 kB)

Blk#	Bits	Purpose
0	640	SYSTEM
1	288	MAC,SPI_PAD,SYS_DATA0
2	352	SYS_DATA_PART1
3	352	USR_DATA*
4	352	KEY0_DATA*
5	352	KEY1_DATA*
6	352	KEY2_DATA*
7	352	KEY3_DATA*
8	352	KEY4_DATA*
9	352	KEY5_DATA*
10	352	SYS_DATA_PART2

(*) RD/WR can be disabled