

Luban-lite 内存使用介绍

“工业芯、匠芯创”

报告人：刘可亮

日期：2024-05-24



平台	DRAM	SRAM	PSRAM	CMA	
D21xxBx	64M	X	X	32M	CMA可供系统使用, 配合mpp heap一块调大
D21xxCx	128M	X	X	32M	
D13xxAx	X	512KB	4M	4M	SW-R可以共享CMA
D13xxBx	X	1M	8M	8M	
D13xxCx	X	1M	16M	8M	
D12xxAx	X	X	4M	2	
D12xxBx	X	X	8M	6	
G73x	X	1M	X	756K	

me: Board options > Mem Options

> DRAM parameter

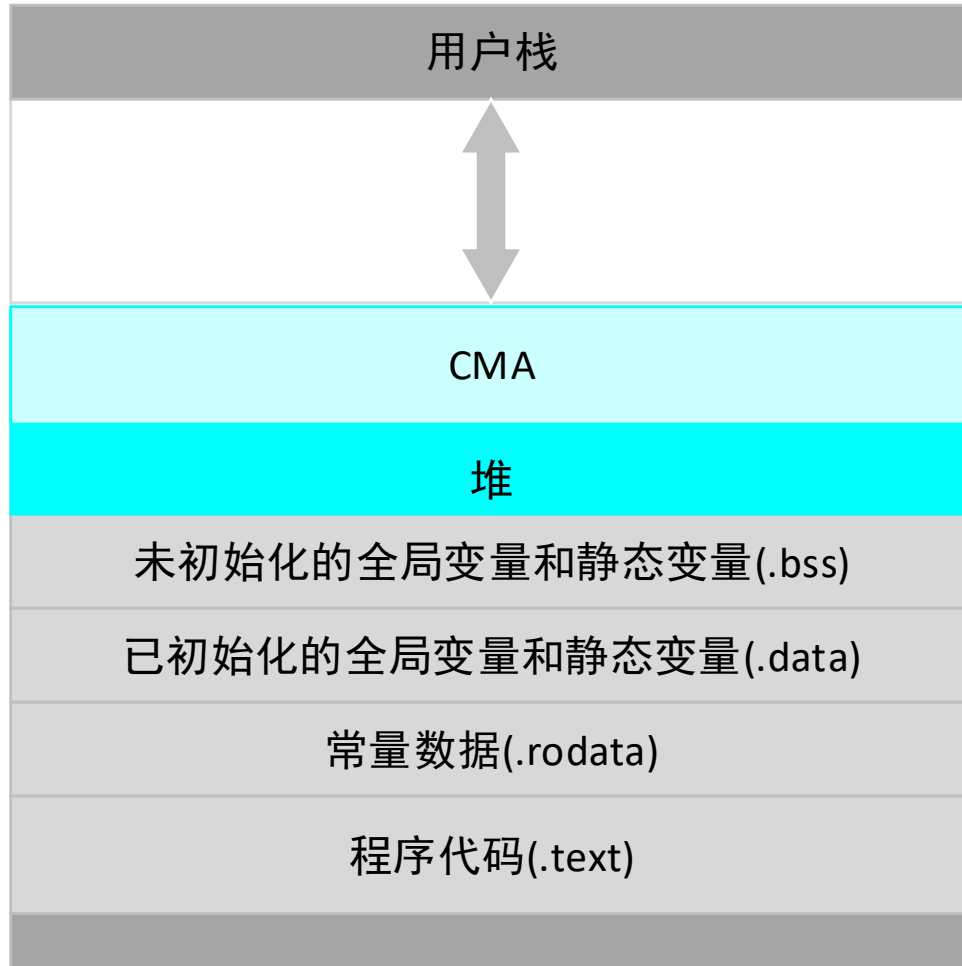
```
(0x8000000) DRAM Total Size  
(0x2000000) CMA mem size
```

> SRAM parameter

```
(0x100000) SRAM Total Size  
[ ] Enable TCM (Tightly Coupled Memory)  
SRAM_S1 Size (0K) --->  
(0x0) Software size in SRAM_S1  
(0x40000) Bootloader reserve size (NEW)
```

> PSRAM parameter

```
(0x800000) PSRAM size  
(0x0) Software size in PSRAM
```



Board options > Mem Options > Interrupt stack size

Rt-Thread options > RT-Thread Components > Set main thread stack size

Rt-Thread options > RT-Thread Components > MSH: command shell > The stack size for thread

DE 是强需求

```
Section .text (SRAM_S0) --->  
Section .rodata (SRAM_S0) --->  
Section .data (SRAM_S0) --->  
Section .bss (PSRAM) --->
```

Board options > Mem Options > ELF Sections memory location

```
riscv64-unknown-elf-objcopy -O binary output/d21x_demo128-nand_rt-thread_helloworld/images/d21x.elf
riscv64-unknown-elf-size output/d21x_demo128-nand_rt-thread_helloworld/images/d21x.elf
  text    data    bss     dec     hex filename
966688  12880  237592 1217160 129288 output/d21x_demo128-nand_rt-thread_helloworld/images/d21x.elf
python3 /luban-lite/tools/scripts/linked_size.py -m /luban-lite/
```

```
~/d21x/luban-lite$ scons --list-mem
scons: Reading SConscript files ...
output/d21x_demo128-nand_rt-thread_helloworld/images/d21x.elf Memory layout:
```

Region	Start	End	Length
dram	0x40000000	- 0x48000000	0x08000000
└─ dram_sw	0x40000000	- 0x46000000	0x06000000
└─┬─ dram_sw_static	0x40000000	- 0x40129e18	0x00129e18
└─┬─┬─ .text	0x40000000	- 0x400b6ab0	0x000b6ab0
└─┬─┬─┬─ .rodata	0x400b6ab0	- 0x400ec020	0x00035570
└─┬─┬─┬─┬─ .bss	0x400f0000	- 0x40129e18	0x00039e18
└─┬─┬─┬─┬─┬─ dram_sw_heap	0x40129e18	- 0x46000000	0x05ed61e8
└─┬─┬─┬─┬─┬─┬─ .heap_sys	0x40129e18	- 0x46000000	0x05ed61e8
└─┬─ dram_cma	0x46000000	- 0x48000000	0x02000000
└─┬─┬─ dram_cma_heap	0x46000000	- 0x48000000	0x02000000
└─┬─┬─┬─ .heap_cma	0x46000000	- 0x48000000	0x02000000

```
aic /> free
memheap          pool size  max used size  available size
-----
heap_cma         8322232   6005296   3898528   // available size 表示的是 Free 内存的大小
heap_sys         343560    97084     261700
```

```
aic /> memheaptrace

memory heap address:
name      : heap_cma
heap_ptr: 0x40010368
free      : 0x0036d098
max_used: 0x00586510
size      : 0x007efc98

--memory used information --
[0x40010368 - 2M] main      // 该段内存被 main 进程使用
[0x402683a4 - 2K] main
[0x40268bc0 - 16K] main
[0x4026cc7c - 359K]       // 空白的表示, 该段内存是 Free 状态
[0x402c6a54 - 1M] LVGL   // 该段内存被 LVGL 进程使用
```

```
Rt-Thread options --->
  RT-Thread Kernel --->
    Memory Management --->
      [*] Enable memory trace
```

让使用更简单

Sincere Cooperation For A Win-win Situation



Luban-lite 技术交流群



13726219952



Jun.chen@artinchip.com