

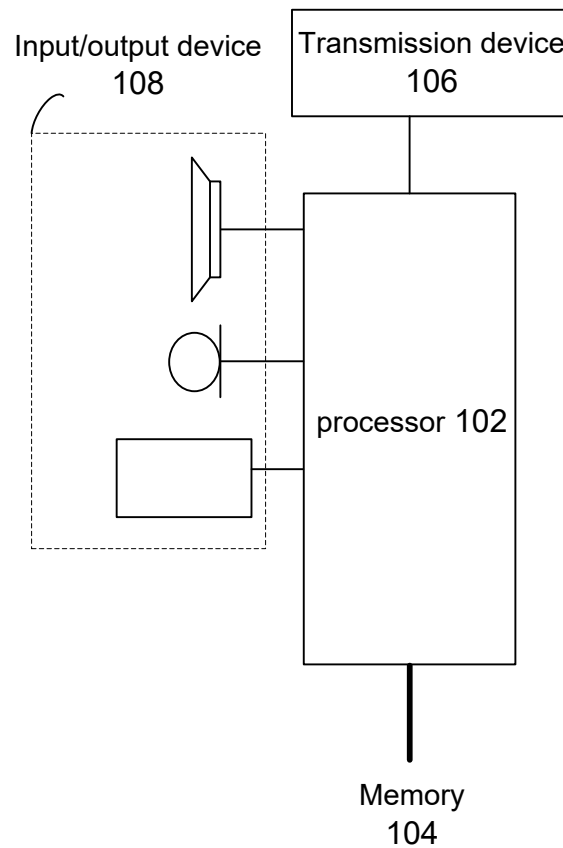


Fig. 1

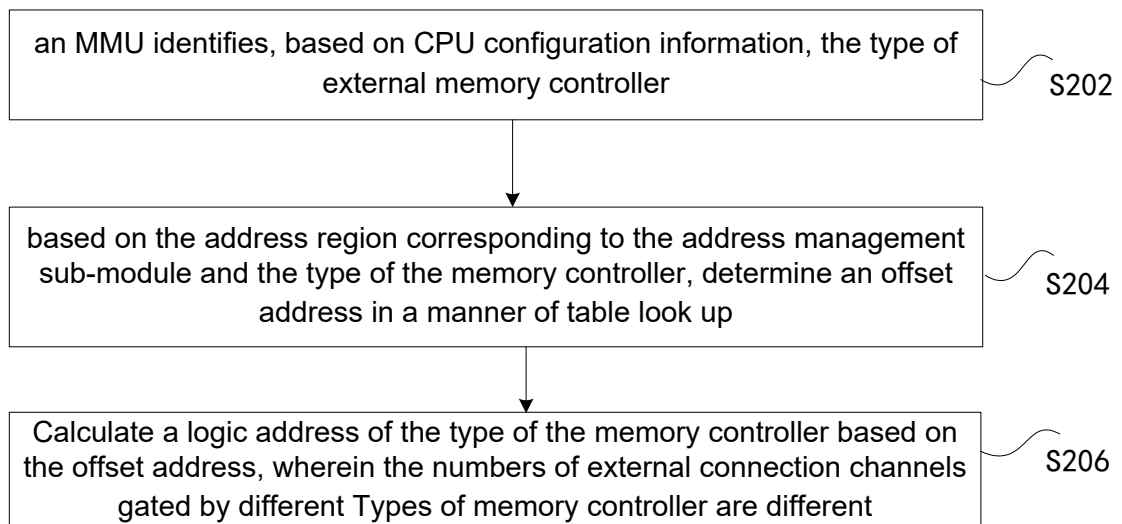


Fig. 2

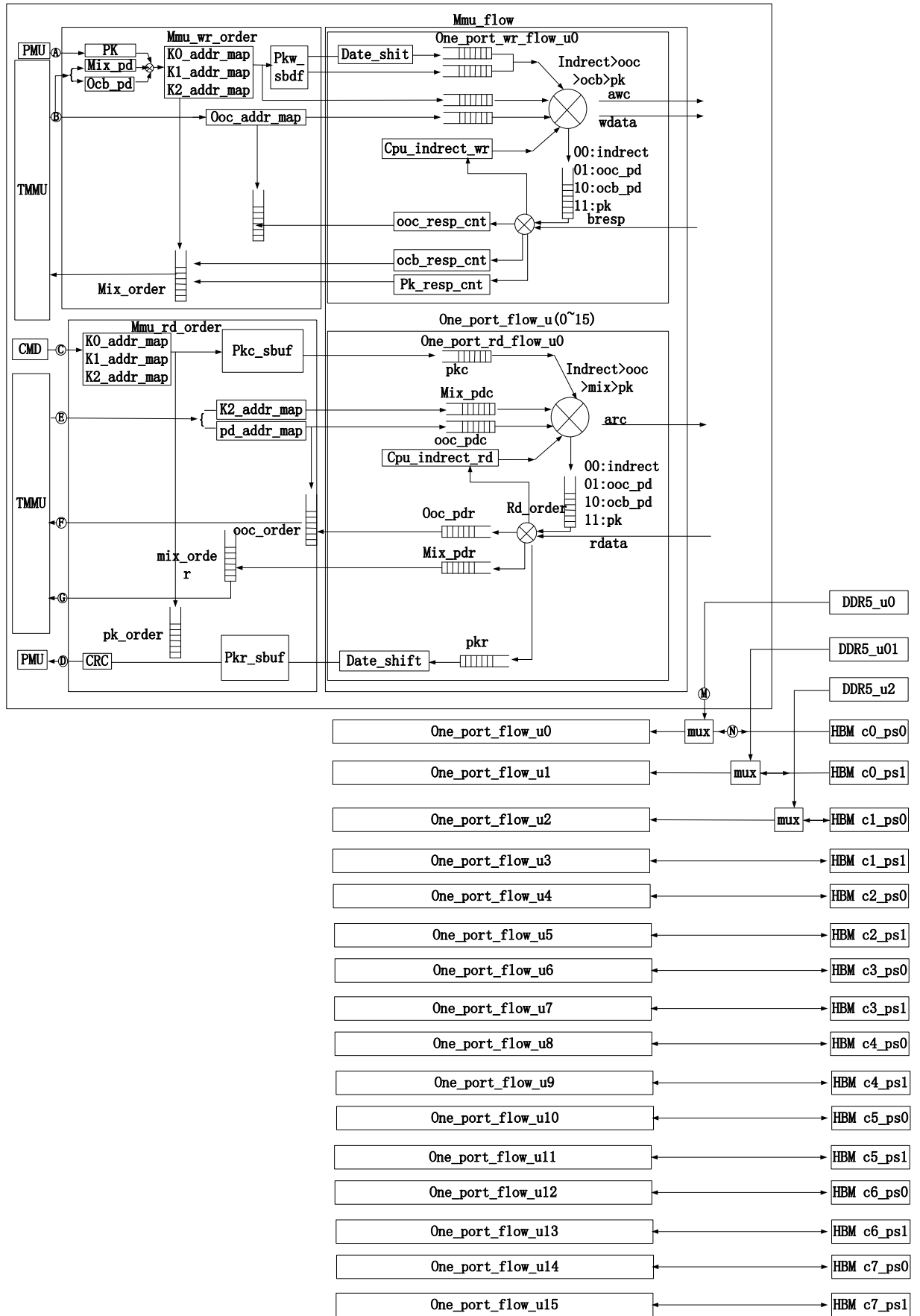


Fig. 3

|                                      |                                               |            |          |       |            |
|--------------------------------------|-----------------------------------------------|------------|----------|-------|------------|
| Laddr[6+rowbits+bankbits:7+bandbits] | Laddr[6+bankbits:8]                           | Laddr[7:3] | Laddr[2] | Psgnt | Laddr[1:0] |
| RA[rowbits-1:0]                      | SID <sup>2</sup> , BA3 <sup>2</sup> .BA1, BA0 | CA[5:1]    | BA2      | BA4   | Unused     |

Fig. 4

|                     |       |       |       |       |       |       |     |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|---------------------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| MMU address         | 25    | 24    | 23    | 22    | 21    | ...   | 11  | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3    | 2    | 1    | 0    |      |      |      |      |      |      |
| AXI_ADDR            | A[31] | A[30] | A[29] | A[28] | A[27] | A[26] | ... | A[16] | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9] | A[8] | A[7] | A[6] | A[5] | A[4] | A[3] | A[2] | A[1] | A[0] |
| Laddr               |       |       |       |       | L[24] | L[23] | ... | L[13] | L[12] | L[11] | L[10] | L[9]  | L[8]  | L[7]  | L[6] | L[5] | L[4] | L[3] | L[2] | L[1] | L[0] |      |      |      |
| Granularity address |       |       |       |       | RA13  | RA12  | ... | RA2   | RA1   | RA0   | BG1   | BA1   | BA0   | CA5   | CA4  | CA3  | CA2  | BG0  | CA1  | CA0  |      |      |      |      |

Fig. 5

|                     |       |       |       |       |       |       |     |       |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|---------------------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| MMU address         | 25    | 24    | 23    | 23    | 21    | ...   | 12  | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3    | 2    | 1    | 0    |      |      |      |      |      |      |
| AXI_ADDR            | A[31] | A[30] | A[29] | A[28] | A[27] | A[26] | ... | A[17] | A[16] | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9] | A[8] | A[7] | A[6] | A[5] | A[4] | A[3] | A[2] | A[1] | A[0] |
| Laddr               |       |       |       | L[24] | L[24] | L[23] | ... | L[14] | L[13] | L[12] | L[11] | L[10] | L[9]  | L[8]  | L[7]  | L[6] | L[5] | L[4] | L[3] | L[2] | L[1] | L[0] |      |      |      |
| Granularity address |       |       |       | RA13  | RA12  | RA11  | ... | RA2   | RA1   | RA0   | BG2   | BG1   | BA1   | BA0   | CA5   | CA4  | CA3  | CA2  | BG0  | CA1  | CA0  |      |      |      |      |

Fig. 6

|                     |       |       |       |       |       |     |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|---------------------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| MMU address         | 25    | 24    | 23    | 22    | ...   | 11  | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3    | 2    | 1    | 0    |      |      |      |      |      |      |
| AXI_ADDR            | A[31] | A[30] | A[29] | A[28] | A[27] | ... | A[16] | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9] | A[8] | A[7] | A[6] | A[5] | A[4] | A[3] | A[2] | A[1] | A[0] |
| Laddr               |       |       |       | L[25] | L[24] | ... | L[13] | L[12] | L[11] | L[10] | L[9]  | L[8]  | L[7]  | L[6] | L[5] | L[4] | L[3] | L[2] | L[1] | L[0] |      |      |      |
| Granularity address |       |       |       | RA14  | RA13  | ... | RA2   | RA1   | RA0   | BG1   | BA1   | BA0   | CA5   | CA4  | CA3  | CA2  | BG0  | CA1  | CA0  |      |      |      |      |

Fig. 7

|                     |       |       |       |       |       |       |     |       |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|---------------------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| MMU address         | 25    | 24    | 23    | 22    | 21    | ...   | 12  | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3    | 2    | 1    | 0    |      |      |      |      |      |      |
| AXI_ADDR            | A[31] | A[30] | A[29] | A[28] | A[27] | A[26] | ... | A[17] | A[16] | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9] | A[8] | A[7] | A[6] | A[5] | A[4] | A[3] | A[2] | A[1] | A[0] |
| Laddr               |       |       | L[25] | L[24] | L[24] | L[23] | ... | L[14] | L[13] | L[12] | L[11] | L[10] | L[9]  | L[8]  | L[7]  | L[6] | L[5] | L[4] | L[3] | L[2] | L[1] | L[0] |      |      |      |
| Granularity address |       |       | RA14  | RA13  | RA12  | RA11  | ... | RA2   | RA1   | RA0   | BG2   | BG1   | BA1   | BA0   | CA5   | CA4  | CA3  | CA2  | BG0  | CA1  | CA0  |      |      |      |      |

Fig. 8

|       |       |       |       |    |    |      | 0~16K-1 |       |     |       |       |       |       |       |       |      |      |      |      | 0-11 |  |  |  |
|-------|-------|-------|-------|----|----|------|---------|-------|-----|-------|-------|-------|-------|-------|-------|------|------|------|------|------|--|--|--|
| T[16] | T[15] | T[14] | T[13] | 0  | 0  | C[2] | T[9]    | T[8]  | ... | B[1]  | T[12] | B[0]  | T[10] | T[11] | C[1]  | C[0] | 0    | 0    | 0    | 0    |  |  |  |
| ↓     | ↓     | ↓     | ↓     | ↓  | ↓  | ↓    | ↓       | ↓     |     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓    | ↓    | ↓    | ↓    | ↓    |  |  |  |
| 29    | 28    | 27    | 26    | 25 | 24 | 23   | 22      | 21    | ... | 10    | 9     | 8     | 7     | 6     | 5     | 4    | 3    | 2    | 1    | 0    |  |  |  |
| PS ID |       |       |       |    |    |      | A[27]   | A[26] | ... | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9] | A[8] | A[7] | A[6] | A[5] |  |  |  |
| CH2   | CH1   | CH0   | PS    |    |    |      | RA13    | RA12  | ... | RA1   | RA0   | BG1   | BA1   | BA0   | CA5   | CA4  | CA3  | CA2  | BG0  | CA1  |  |  |  |

Fig. 9

|              |    |       |       |       |       |       |     |       |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |
|--------------|----|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| 0            | 0  | T[14] | T[13] | C[2]  | C[1]  | T[9]  | ... | T[0]  | T[12] | B[3]  | T[10] | C[0]  | T[16] | T[15] | B[2]  | B[1]  | B[0]  | T[11] | 0    | 0    | 0    | 0    |      |      |      |      |      |
| ↓            | ↓  | ↓     | ↓     | ↓     | ↓     | ↓     |     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓    | ↓    | ↓    | ↓    |      |      |      |      |      |
| 29           | 28 | 27    | 26    | 25    | 24    | 23    | ... | 14    | 13    | 12    | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4     | 3    | 2    | 1    | 0    |      |      |      |      |      |
| 3 channelIDs |    |       |       | A[30] | A[29] | A[28] | ... | A[19] | A[18] | A[17] | A[16] | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9]  | A[8] | A[7] | A[6] | A[5] | A[4] | A[3] | A[2] | A[1] | A[0] |
|              |    |       |       | RA13  | RA12  | RA11  | ... | RA2   | RA1   | RA0   | BA1   | BA0   | BG2   | BG1   | CA9   | CA8   | CA7   | CA6   | CA5  | CA4  | BG0  | CA3  | CA2  | CA1  | CA0  |      |      |

Fig. 10

|              |    |       |       |       |       |       |       |     |       |       |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |
|--------------|----|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0            | 0  | T[14] | T[13] | C[2]  | C[1]  | T[9]  | T[8]  | ... | T[2]  | T[1]  | B[3]  | B[2]  | B[1]  | B[0]  | T[10] | T[16] | T[15] | T[0]  | T[12] | T[11] | C[0] | 0    | 0    | 0    | 0    |      |      |      |      |      |
| ↓            | ↓  | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     |     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓     | ↓    | ↓    | ↓    | ↓    | ↓    |      |      |      |      |      |
| 29           | 28 | 27    | 26    | 25    | 24    | 23    | 22    | ... | 16    | 15    | 14    | 13    | 12    | 11    | 10    | 9     | 8     | 7     | 6     | 5     | 4    | 3    | 2    | 1    | 0    |      |      |      |      |      |
| 3 channel ID |    |       |       | A[30] | A[29] | A[28] | A[27] | ... | A[21] | A[20] | A[19] | A[18] | A[17] | A[16] | A[15] | A[14] | A[13] | A[12] | A[11] | A[10] | A[9] | A[8] | A[7] | A[6] | A[5] | A[4] | A[3] | A[2] | A[1] | A[0] |
|              |    |       |       | RA14  | RA13  | RA12  | RA11  | ... | RA5   | RA4   | RA3   | RA2   | RA1   | RA0   | BA1   | BA0   | BG1   | CA9   | CA8   | CA7   | CA6  | CA5  | CA4  | CA3  | BG0  | CA2  | CA1  | CA0  |      |      |

Fig. 11

| 128K chunk address |       |       |       |                           |       |       |      |      |      |      |      |      |      |      |      | One chunk includes 16 Blks |      |      |      | One Blk includes 2 cells |      |      |      |  |  |  |
|--------------------|-------|-------|-------|---------------------------|-------|-------|------|------|------|------|------|------|------|------|------|----------------------------|------|------|------|--------------------------|------|------|------|--|--|--|
| T[16]              | T[15] | T[14] | T[13] | T[12]                     | T[11] | T[10] | T[9] | T[8] | T[7] | T[6] | T[5] | T[4] | T[3] | T[2] | T[1] | T[0]                       | B[3] | B[2] | B[1] | B[0]                     | d[2] | d[1] | C[0] |  |  |  |
| 23                 | 22    | 21    | 20    | 19                        | 18    | 17    | 16   | 15   | 14   | 13   | 12   | 11   | 10   | 9    | 8    | 7                          | 6    | 5    | 4    | 3                        | 2    | 1    | 0    |  |  |  |
| 16 linked list IDs |       |       |       | 8 sub-linked list numbers |       |       |      |      |      |      |      |      |      |      |      |                            |      |      |      |                          |      | 0    |      |  |  |  |

Fig. 12

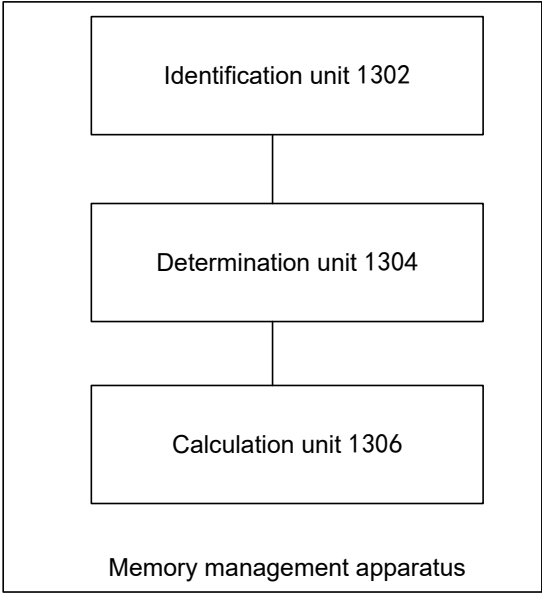


Fig. 13