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Ark Chip AMT630A Register Settings

Doc. Version 1.0

06.09.2016

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Ark Chip AMT630A Register Settings ⊙L

OSD settings

OSD group registers: 0xB6

INDEX_RAM_ADD_L

FB00H	index ram addr	写 index ram 地址，低 8bit

Index RAM address low byte

INDEX_RAM_ADD_H

FB0DH	index_ram_addr_hb	[0]　写 index ram 地址，高 1bit [7:1]　Reserved

Index RAM address high byte

INDEX_RAM_DATA_L

FB01H	index ram data	写 index ram 数据，低 8bit

Index RAM data low byte

INDEX_RAM_DATA_H

FB0EH	Index_ram_data_hb	[1:0]　写 index ram 数据，高 2bit [7:2]　Reserved

Index RAM data high byte

EACH_ICON_COLOR

FB10H	Index_color_data	写 index ram color data，8bit，用来表示每个 ICON 的前景色与背景色选择。 [2:0]：选择前景色调色盘 [6:4]：选择背景色调色盘

Index ram color.
[2-0] foreground color.
[6-4] background color.
0- Transparent
1- RED
2- GREEN
3- BLUE
4- YELLOW
5- GREY
6- WHITE
7- BLACK

FONT_RAM_ADD_L

FB02H	font ram addr	写 font ram 地址，低 8bit

Font RAM address low byte

FONT_RAM_ADD_H

FB0FH	Font_ram_addr_hb	[3:0]　写 font ram 地址，高 4bit [7:4]　Reserved

Font RAM address high byte

FONT_RAM_DATA_L

FB04H	font ram data	写 font ram 低 8 位数据

Font RAM data low byte

FONT_RAM_DATA_H

FB03H	font ram data	写 font ram 高 4 位数据

Font RAM data high byte

OSD_CON1

FB05H	osd_con1	[0] osdc_en : osd block 0 使能。0 无效，1 有效 [1] osdc1_en : osd block 1 使能。0 无效，1 有效 [2] osdc2_en : osd block 2 使能。0 无效，1 有效 [3] osdc3_en : osd block 3 使能。0 无效，1 有效 [4] osdc4_en : osd block 4 使能。0 无效，1 有效 [5] osd_bl_en : 闪烁区域使能 0 无效 1 有效 [6] osdc_color_sel : color index select for 5 osd block 0: color from color index ram; 1: select front and back color. [7] osdc_bitmap_en : bitmap enable for 5 osd block, when set 1 it means there are bitmap font in font ram, when set 0 it means there are not bitmap font in font ram.

AMT630A has 5 OSD block, each of them can be used independently.
OSD_CON1 [0-4] controls visibility of OSD Blocks.
[0] OSD block_0: "0" Disable, "1" enable
[1] OSD block_1: "0" Disable, "1" enable
[2] OSD block_2: "0" Disable, "1" enable
[3] OSD block_3: "0" Disable, "1" enable
[4] OSD block_4: "0" Disable, "1" enable

[5] OSD blink enable
"0" Disable blinking, "1" Enable blinking

[6] OSD color select
If "1" all OSD has same background and foreground color.
If "0" every OSD has different background and foreground color.

OSD_CON2

FB06H	osd_con2	[5:0] osd_blink : osd 闪烁区域闪烁频率调节 [6] osd_mix_en：osd 与 video 混合使能 [7] osd_mix_mode : OSD 的与 VIDEO blending 模式选择，1：整块 OSD 与 VIDEO 混合；0：OSD 背景色与 VIDEO 混合，该种模式只支持普通 OSD。

[5-0] OSD blink frequency.
[6] OSD mix enable:
"0" OSD and video alpha blending disable.
"1" OSD and video alpha blending enable.
[7] OSD mix mode:
"0" only background color alpha blending with video.
"1" foreground and background alpha blending with video.

OSD_SIZE_X_BK0

FB07H	osdc_sizex	[6:0] osd block 0 水平方向最大字符数
		[7] Reserved

OSD block_0 width

OSD_SIZE_Y_BK0

FB08H	osdc_sizey	[5:0] osd block 0 垂直方向最大字符数
		[7:6] Reserved

OSD block_0 height

OSD_POS_X_L_BK0

FB0AH	osdc_posx	确定 osd block 0 起始点像素的水平位置的低 8 位

OSD block_0 x position

OSD_POS_Y_L_BK0

FB0BH	osdc_posy	确定 osd block 0 起始点像素的垂直位置的低 8 位

OSD block_0 y position

OSD_POS_XY_H_BK0

FB09H	osdc_posx	[2:0] 确定 osd block 0 起始点像素的水平位置的高 3 位
	osdc_posy	[6:4] 确定 osd block 0 起始点像素的垂直位置的高 3 位

[2-0] OSD block_0 x position multiplier.
[6-4] OSD block_0 y position multiplier.

OSD_SIZE_X_BK1

FB12H	Osdc1_sizex	[6:0] osd block 1 水平方向最大字符数

OSD block_1 width

OSD_SIZE_Y_BK1

FB13H	Osdc1_sizey	[5:0] osd block 1 垂直方向最大字符数

OSD block_1 height

OSD_POS_X_L_BK1

FB15H	Osdc1_posx	确定 osd block 1 起始点像素的水平位置的低 8 位

OSD block_1 x position

OSD_POS_Y_L_BK1

FB16H	Osdc1_posy	确定 osd block 1 起始点像素的垂直位置的低 8 位

OSD block_1 y position

OSD_POS_XY_H_BK1

FB14H	Osdc1_posy	[2:0] 确定 osd block 1 起始点像素的水平位置的高 2 位
	Osdc1_posx	[6:4] 确定 osd block 1 起始点像素的垂直位置的高 2 位
		[7] 确定 osd block 1 对应的 index ram 起始地址高 1 位

[2-0] OSD block_1 x position multiplier.
[6-4] OSD block_1 y position multiplier.

INDEXRAM_ADD_BK1_START

FB17H	Osdc1_index_start_a	确定 osd block 1 对应的 index ram 起始地址低 8 位

Index RAM block_1 start address.

OSD_SIZE_X_BK2

FB18H	Osdc2_sizex	[6:0] osd block 2 水平方向最大字符数

OSD block_2 width

OSD_SIZE_Y_BK2

FB19H	Osdc2_sizey	[5:0] osd block 2 垂直方向最大字符数

OSD block_2 height

OSD_POS_X_L_BK2

FB1BH	Osdc2_posx	确定 osd block 2 起始点像素的水平位置的低 8 位

OSD block_2 x position

OSD_POS_Y_L_BK2

FB1CH	Osdc2_posy	确定 osd block 2 起始点像素的垂直位置的低 8 位

OSD block_2 y position

OSD_POS_XY_H_BK2

FB1AH	Osdc2_posx Osdc2_posy	[2:0] 确定 osd block 2 起始点像素的水平位置的高 2 位 [6:4] 确定 osd block 2 起始点像素的垂直位置的高 2 位 [7] 确定 osd block 2 对应的 index ram 起始地址高 1 位

[2-0] OSD block_2 x position multiplier.
[6-4] OSD block_2 y position multiplier.

INDEXRAM_ADD_BK2_START

FB1DH	Osdc2_index_start_a	确定 osd block 2 对应的 index ram 起始地址低 8 位

Index RAM block_2 start address.

OSD_SIZE_X_BK3

FB1EH	Osdc3_sizex	[6:0] osd block 3 水平方向最大字符数

OSD block_3 width

OSD_SIZE_Y_BK3

FB1FH	Osdc3_sizey	[5:0] osd block 3 垂直方向最大字符数

OSD block_3 height

OSD_POS_X_L_BK3

FB21H	Osdc3_posx	确定 osd block 3 起始点像素的水平位置的低 8 位

OSD block_3 x position

OSD_POS_Y_L_BK3

FB22H	Osdc3_posy	确定 osd block 3 起始点像素的垂直位置的低 8 位

OSD block_3 y position

OSD_POS_XY_H_BK3

FB20H	Osdc3_posx Osdc3_posy	[2:0] 确定 osd block 3 起始点像素的水平位置的高 2 位 [6:4] 确定 osd block 3 起始点像素的垂直位置的高 2 位 [7] 确定 osd block 3 对应的 index ram 起始地址高 1 位

[2-0] OSD block_3 x position multiplier.
[6-4] OSD block_3 y position multiplier.

INDEXRAM_ADD_BK3_START

FB23H	Osdc3_index_start_a	确定 osd block 3 对应的 index ram 起始地址低 8 位

Index RAM block_3 start address.

OSD_SIZE_X_BK4

FB24H	Osdc4_sizex	[6:0] osd block 4 水平方向最大字符数

OSD block_4 width

OSD_SIZE_Y_BK4

FB25H	Osdc4_sizey	[5:0] osd block 4 垂直方向最大字符数

OSD block_4 height

OSD_POS_X_L_BK4

FB27H	Osdc4_posx	确定 osd block 4 起始点像素的水平位置的低 8 位

OSD block_4 x position

OSD_POS_Y_L_BK4

FB28H	Osdc4_posy	确定 osd block 4 起始点像素的垂直位置的低 8 位

OSD block_4 y position

OSD_POS_XY_H_BK4

FB26H	Osdc4_posx Osdc4_posy	[2:0] 确定 osd block 4 起始点像素的水平位置的高 2 位 [6:4] 确定 osd block 4 起始点像素的垂直位置的高 2 位 [7] 确定 osd block 4 对应的 index ram 起始地址高 1 位

[2-0] OSD block_4 x position multiplier.
[6-4] OSD block_4 y position multiplier.

INDEXRAM_ADD_BK4_START

FB29H	Osdc4_index_start_a	确定 osd block 4 对应的 index ram 起始地址低 8 位

Index RAM block_4 start address.

OSD_alpha_bright

FB0CH	osd_alpha_bright	[2:0]osd_alpha：5 块 osd 与 video 混合参数 [7:3]osd_bright：5 块 osd 亮度调节参数

[2-0] osd_alpha: OSD and video alpha blending transparency.
[7-3] osd_bright: OSD brightness.

OSD_COLOR

FB2AH	osdc_clr	5 块 osd 调色盘选择 ，在 osdc_color_sel 为 1 时有效 [7:4] 选择背景色　　[3:0] 选择前景色

[3-0] OSD foreground color
[7-4] OSD background color

0- Transparent
1- RED
2- GREEN
3- BLUE
4- YELLOW
5- GREY
6- WHITE
7- BLACK

OSD_H_MIRROR

FB35H	osd_h_mirror & blink_block_sel	[2:0] blink_block_sel：osd 闪烁块选择，当 osd_bl_en 为 1 时有效 0：osd block 0 闪烁；1：osd block 1 闪烁；2：osd block 2 闪烁；3：osd block 3 闪烁；4：osd block 4 闪烁；ohers：osd block 0 闪烁。 [3] hsyn_edge_sel: 输入行同步上升沿、下降沿选择，用来定位 osd 位置； 1： 选择下降沿； 0： 选择上升沿； [4] osd_bitmap_cr0_touming_sel：OSD 的 bitmap 调色盘 cr0 是否为透明选择， 1：不透明，为调色盘 cr0 的颜色；0：透明 [5] vsyn_edge_sel: 输入场同步上升沿、下降沿选择，用来定位 osd 位置； 1： 选择下降沿； 0： 选择上升沿；

[2-0] blink_block_sel: selects blinking block.

Ark Chip AMT630A Register Settings

Video Process Registers

VP group registers: 0xB4

CONTRAST_REG

0xD3	80h	[7:0]	Contrast	Contrast	图像效果相关，开放调试。

Adjust contrast.

BRIGHT_REG

0xD4	80h	[7:0]	Brightness	Brightness	图像效果相关，开放调试。

Adjust brightness.

SATURATION_REG

0xD6	3Fh	[7:0]	Saturation	Saturation	图像效果相关，开放调试。

Adjust Color.

VDE_REG

0xD2	4Fh	[7]	vde_test_vector_sel	VDE test vector select 0-output normal signal 1-output test vecotr(controlled by [3:0])
		[6:4]	vde_protect_sel	YCbCr dat format control in VDE module. Description is the same as rgb_protect_sel
		[3:0]	vde_out_sel	VDE output select

This register switch screen to test mode.

[7] vde_test_vector_sel

"0" Normal working mode, video signal on screen.

"1" Test mode, Test signal on screen.

[3-0] test signal select.

0: RED

1: GREEN

2: BLUE

3: GREY

4: BLACK

5: WHITE

Ark Chip AMT630A Register Settings (OL)

IC2 communication with AMT630A

AMT630A has 3 byte command array.

1. Byte register group address

   Every register group has different registers

   For example Video process group address 0xB4.

2. Byte sub register address

   Sub registers described in datasheet.

   For example brightness register address 0xD4

0xD4	80h	[7:0]	Brightness	Brightness	图像效果相关，开放调试。

3. Byte Register value
   Register value which you want to set.

   Example command array to set brightness value 100,
   0xB4,0xD4,0x64

Connecting to AMT630A

To connect AMT630A you can use this function.

```
void connect()
{
  write_register(0xBE,0xC6,0x40);
  write_register(0xB6,0x78,0x02);
}
```

Ark Chip AMT630A Register Settings ⓄⓁ

OSD Settings

AMT630A has Font RAM and Font ROM.

Font ROM stores internal Fonts,

Those fonts are included in AMT630A.

All font size are 16X22.

As you can see in the picture Fonts have a sequence, to select fonts, font address should be entered to INDEX_RAM_DATA_H and INDEX_RAM_DATA_L registers, for example "A" font address 11.

Font RAM is for user-defined fonts.

Font RAM address starts from 0x01C0.

AMT630A has 5 OSD block, all of them can be used independently.

All font color can be set to same or different color.

For more details please study demo codes.