



1/10" VGA CMOS Image Sensor

GC0312

DataSheet

V1.0

2014-03-14

GalaxyCore Inc.

	H				
P0:0x94	Direction diff TH	4	0x05	RW	[5] NA [4:0] Direction diff TH
P0:0x95	Edge1 effect Edge2 effect	8	0x45	RW	[7:4] edge1 effect [3:0] edge2 effect
P0:0x96	Edge_max Edge_th	8	0x82	RW	[7:4] edge max [3:0] edge threshold

RGB gamma

Address	Name	Width	Default Value	R/W	Description
P0:0xbf	RGB_Gamma_0	8	0x10	RW	Each out value of knee_i. Knee0=0
P0:0xc0	RGB_Gamma_1	8	0x20	RW	Knee1=8
P0:0xc1	RGB_Gamma_2	8	0x38	RW	Knee2=16
P0:0xc2	RGB_Gamma_3	8	0x4e	RW	Knee3=24
P0:0xc3	RGB_Gamma_4	8	0x63	RW	Knee4=32
P0:0xc4	RGB_Gamma_5	8	0x76	RW	Knee5=40
P0:0xc5	RGB_Gamma_6	8	0x87	RW	Knee6=48
P0:0xc6	RGB_Gamma_7	8	0xa2	RW	Knee7=64
P0:0xc7	RGB_Gamma_8	8	0xb8	RW	Knee8=80
P0:0xc8	RGB_Gamma_9	8	0xca	RW	Knee9=96
P0:0xc9	RGB_Gamma_10	8	0xd8	RW	Knee10=112
P0:0xca	RGB_Gamma_11	8	0xe3	RW	Knee11=128
P0:0xcb	RGB_Gamma_12	8	0xeb	RW	Knee12=144
P0:0xcc	RGB_Gamma_13	8	0xf0	RW	Knee13 =160
P0:0xcd	RGB_Gamma_14	8	0xf8	RW	Knee14 = 192

P0:0xce	RGB_Gamma_15	8	0xfd	RW	Knee15 = 224
P0:0xcf	RGB_Gamma_16	8	0xff	RW	Knee16 = 256

YCP

Address	Name	Width	Default Value	R/W	Description
P0:0xd0	Global saturation	8	0x40	RW	Global saturation
P0:0xd1	saturation_Cb	8	0x20	RW	Cb saturation
P0:0xd2	saturation_Cr	8	0x20	RW	Cr saturation
P0:0xd3	luma_contrast	8	0x40	RW	Luma_contrast
P0:0xd4	Contrast_center	8	0x80	RW	Contrast center value
P0:0xd5	Luma_offset	8	0x00	RW	Add offset on luma value
P0:0xd6	skin_Cb_center	8	0xe8	RW	Cb criteria for skin detection
P0:0xd7	skin_Cr_center	8	0x20	RW	Cr criteria for skin detection
P0:0xd8	Reserved	6	0x18	RW	Reserved
P0:0xd9	Reserved	8	0xe3	RW	Reserved
P0:0xda	Fixed_Cb	8	0x00	RW	Fixed_Cb
P0:0xdb	Fixed_Cr	8	0x00	RW	Fixed_Cr
P0:0xdd	Reserved	8	0x38	RW	Reserved
P0:0xde	Reserved	6	0x38	RW	Reserved

AEC

Address	Name	Width	Default Value	R/W	Description
P0:0x4f	AEC_EN	1	0x00	RW	[0] AEC_en
P1:0x01	Reserved	3	0x00	RW	Reserved
P1:0x05	AEC_center_x1	8	0x20	RW	[7:0] AEC_center_x1
P1:0x06	AEC_center_x2	8	0x40	RW	[7:0] AEC_center_x2
P1:0x07	AEC_center_y1	8	0x40	RW	[7:0] AEC_center_y1
P1:0x08	AEC_center_y2	8	0x60	RW	[7:0] AEC_center_y2
P1:0x09	Reserved	8	0x00	RW	Reserved
P1:0x0a	AEC_mode1	8	0x01	RW	[7:3] Reserved [2] gain mode [1:0] skip mode

P1:0x0b	AEC_mode2	8	0x21	RW	[7] fix target [6:4] AEC take action every N frame [3:0] Reserved
P1:0x0c	AEC_mode3	8	0x01	RW	[7] Reserved [6:4] center weight mode [3:2] skin weight mode [1] NA [0] Reserved
P1:0x0d	AEC_mode4	8	0x00	RW	Reserved
P1:0x0e	Reserved	8	0x45	RW	Reserved
P1:0x0f	Reserved	8	0x65	RW	Reserved
P1:0x10	Reserved	8	0x65	RW	Reserved
P1:0x11	Reserved	8	0x40	RW	AEC outdoor slope
P1:0x12	Reserved	8	0x51	RW	Reserved
P1:0x13	AEC_target_Y	8	0x50	RW	expected luminance value
P1:0x14	Y_average	8	0x10	RO	Current frame luminance average
P1:0x15	Reserved	8	0x80	RW	Reserved
P1:0x16	Reserved	8	0xe0	RW	Reserved
P1:0x17	Reserved	8	0xe0	RW	Reserved
P1:0x18	AEC_mode	8	0x91	RW	[7:4] AEC slow margin [2:0] AEC slow speed
P1:0x19	AEC_mode	8	0x95	RW	[7:4] AEC fast margin [2:0] AEC fast speed
P1:0x1a	AEC_mode	8	0x96	RW	Gain change criteria
P1:0x1b	Reserved	8	0x01	RW	Reserved
P1:0x1c	Reserved	8	0x11	RW	Reserved
P1:0x1d	Reserved	7	0x07	RW	Reserved
P1:0x1e	Reserved	8	0x61	RW	Reserved
P1:0x1f	AEC_max_pre_dg_gain	8	0x30	RW	AEC_max_pre_dg_gain
P1:0x20	AEC_max_post_dg_gain	8	0xc0	RW	AEC_max_post_dg_gain
P1:0x21	Reserved	8	0x14	RW	Reserved
P1:0x22	Reserved	8	0x80	RW	Reserved
P1:0x23	Reserved	8	0x40	RW	Reserved
P1:0x24	Reserved	8	0x60	RW	Reserved
P1:0x25	AEC_anti_flicker_step[11:8]	4	0x01	RW	[7:4] NA [3:0] AEC anti flicker step[11:8]
P1:0x26	AEC_anti_flicker_step[7:0]	8	0x68	RW	AEC anti flicker step[7:0]
P1:0x27	AEC_exp_level_	4	0x04	RW	[7:4] NA

	1[11:8]				[3:0] AEC exp level1[11:8]
P1:0x28	AEC_exp_level_1[7:0]	8	0x38	RW	AEC exp level1[7:0]
P1:0x29	AEC_exp_level_2[11:8]	4	0x05	RW	[7:4] NA [3:0] AEC exp level2[11:8]
P1:0x2a	AEC_exp_level_2[7:0]	8	0xa0	RW	AEC exp level2[7:0]
P1:0x2b	AEC_exp_level_3[11:8]	4	0x09	RW	[7:4] NA [3:0] AEC exp level3[11:8]
P1:0x2c	AEC_exp_level_3[7:0]	8	0xd8	RW	AEC exp level_3[7:0]
P1:0x2d	AEC_exp_level_4[11:8]	4	0x0e	RW	[7:4] NA [3:0] AEC exp level 4[11:8]
P1:0x2e	AEC_exp_level_4[7:0]	8	0x10	RW	AEC exp level 4 [7:0]
P1:0x2f	AEC_exp_level_5[11:8]	4	0x00	RW	[7:4] NA [3:0] AEC exp level 5[11:8]
P1:0x30	AEC_exp_level_5[7:0]	8	0xe0	RW	AEC exp level 5 [7:0]
P1:0x31	AEC_exp_level_6[11:8]	4	0x0c	RW	[7:4] NA [3:0] AEC exp level 6[11:8]
P1:0x32	AEC_exp_level_6[7:0]	8	0x20	RW	AEC exp level 6[7:0]
P1:0x33	AEC_exp_level_7[11:8]	4	0x0c	RW	[7:4] NA [3:0] AEC exp level7[11:8]
P1:0x34	AEC_exp_level_7[7:0]	8	0x20	RW	AEC exp level 7[7:0]
P1:0x35	AEC_max_dg_gain1	8	0x40	RW	5.3bits, AEC max dg gain1,x8
P1:0x36	AEC_max_dg_gain2	8	0x40	RW	5.3bits, AEC max dg gain2,x8
P1:0x37	AEC_max_dg_gain3	8	0x40	RW	5.3bits, AEC max dg gain3,x8
P1:0x38	AEC_max_dg_gain4	8	0x40	RW	5.3bits, AEC max dg gain4,x8
P1:0x39	AEC_max_dg_gain5	8	0x40	RW	5.3bits, AEC max dg gain5,x8
P1:0x3a	AEC_max_dg_gain6	8	0x40	RW	5.3bits, AEC max dg gain6,x8
P1:0x3b	AEC_max_dg_gain7	8	0x40	RW	5.3bits, AEC max dg gain7,x8
P1:0x3c	AEC_max_exp_	6	0x20	RW	[5:4] Max level setting

	level AEC_exp_min_l [11:8]				[3:0] exp min[11:8]
P1:0x3d	AEC_exp_min_l [7:0]	8	0x04	RW	AEC_exp_min_l[7:0]
P1:0x3e	Reserved	8	0x40	RW	Reserved
P1:0x3f	Reserved	6	0x5a	RW	Reserved
P1:0x40	Reserved	8	0x80	RW	Reserved
P1:0x41	Reserved	8	0xb5	RW	Reserved
P1:0x42	Reserved	8	0x00	RW	Reserved
P1:0x43	Reserved	8	0x6a	RW	Reserved
P1:0x04	Reserved	8	0xff	RW	Reserved
P1:0x03	Reserved	7	0x70	RW	Reserved
P1:0x44	Reserved	3	0x03	RW	Reserved

AWB

Address	Name	Width	Default Value	R/W	Description
P1:0x50	AWB_PRE_mod e	8	0xc0	RW	Reserved
P1:0x51	AWB_Parametr e	8	0x80	RW	AWB_Parametre
P1:0x52	AWB_Parametr e	8	0x01	RW	
P1:0x53	AWB_Parametr e	8	0x80	RW	AWB_Parametre
P1:0x54	AWB_Parametr e	8	0x0f	RW	
P1:0x55	AWB_Parametr e	8	0x00	RW	AWB_Parametre
P1:0x56	AWB_Parametr e	8	0x00	RW	AWB_Parametre
P1:0x58	AWB_Parametr e	8	0x00	RW	AWB_Parametre
P1:0x59	AWB_PRE_RGB _low	8	0x01	RW	RGB pixel low THD
P1:0x5a	AWB_PRE_RGB _high	8	0xf0	RW	RGB pixel high THD
P1:0x5b	AWB_Parametr e	8	0x00	RW	AWB_Parametre
P1:0x5c	Reserved	8	0xf0	RW	Reserved

P1:0x5d	Reserved	8	0x01	RW	Reserved
P1:0x60	Reserved	4	0x00	RW	Reserved
P1:0x61	Reserved	8	0xdc	RW	Reserved
P1:0x62	Reserved	8	0xca	RW	Reserved
P1:0x63	Reserved	8	0x80	RW	Reserved
P1:0x64	Reserved	8	0xa0	RW	Reserved
P1:0x65	Reserved	8	0x40	RW	Reserved
P1:0x66	Reserved	4	0x04	RW	Reserved
P1:0x67	Reserved	8	0x04	RW	Reserved
P1:0x68	Reserved	8	0xc0	RW	Reserved
P1:0x69	Reserved	8	0x40	RW	Reserved
P1:0x6a	Reserved	8	0x20	RW	Reserved
P1:0x6b	Reserved	8	0x41	RW	Reserved
P1:0x6c	Reserved	8	0x00	RW	Reserved
P1:0x6d	AWB_every_N	8	0x12	RW	AWB_every_N
P1:0x6e	Reserved	8	0x00	RW	Reserved
P1:0x6f	Reserved	8	0xa0	RW	Reserved
P1:0x70	Reserved	8	0x50	RW	Reserved
P1:0x76	AWB_R_gain_limit	8	0x70	RW	Channel gain limit for R, G, B.
P1:0x77	AWB_G_gain_limit	8	0x58	RW	
P1:0x78	AWB_B_gain_limit	8	0x78	RW	
P1:0x79	AWB_R_gain_output_high_limit	8	0x50	RW	outdoor R high limit
P1:0x7a	AWB_G_gain_output_high_limit	8	0x58	RW	outdoor G high limit
P1:0x7b	AWB_B_gain_output_high_limit	8	0x46	RW	outdoor B high limit

LSC

Address	Name	Width	Default Value	R/W	Description
P1:0xc1	LSC_row_center	7	0x60	RW	LSC row center
P1:0xc2	LSC_col_center	8	0x80	RW	LSC col center
P1:0xc3	LSC_b4_sign	1	0x00	RW	[0] sign of b4
P1:0xc4	LSC_red_b2	8	0x20	RW	b2 for channel red
P1:0xc5	LSC_green_b2	8	0x20	RW	b2 for channel green

P1:0xc6	LSC_blue_b2	8	0x20	RW	b2 for channel blue
P1:0xc7	LSC_red_b4	8	0x20	RW	b4 for channel red
P1:0xc8	LSC_green_b4	8	0x20	RW	b4 for channel green
P1:0xc9	LSC_blue_b4	8	0x20	RW	b4 for channel blue
P1:0xdc	Reserved	8	0x20	RW	Reserved
P1:0xdd	Reserved	8	0x10	RW	Reserved
P1:0xdf	Reserved	4	0x08	RW	Reserved

Measure Window

Address	Name	Width	Default Value	R/W	Description
P1:0xcc	C_big_win_x0	8	0x04	RW	Window setting for AEC & AWB
P1:0xcd	C_big_win_y0	8	0x02	RW	
P1:0xce	C_big_win_x1	8	0x60	RW	
P1:0xcf	C_big_win_y1	8	0x90	RW	

AUTO_CC

Address	Name	Width	Default Value	R/W	Description
P1:0xd0	CC_CT1_11	8	0x40	RW	CC_CT1
P1:0xd1	CC_CT1_12	8	0x00	RW	
P1:0xd2	CC_CT1_13	8	0x00	RW	
P1:0xd3	CC_CT1_21	8	0x00	RW	
P1:0xd4	CC_CT1_22	8	0x40	RW	
P1:0xd5	CC_CT1_23	8	0x00	RW	
P1:0xd6	CC_CT2_11	8	0x40	RW	CC_CT2
P1:0xd7	CC_CT2_12	8	0x00	RW	
P1:0xd8	CC_CT2_13	8	0x00	RW	
P1:0xd9	CC_CT2_21	8	0x00	RW	
P1:0xda	CC_CT2_22	8	0x40	RW	
P1:0xdb	CC_CT2_23	8	0x00	RW	