



CUSTOMER APPROVAL SHEET

Company Name

MODEL AUO429FN01P

CUSTOMER Title : Panox Display

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Product Specification

4.3" COLOR AMOLED MODULE

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MODEL NAME: AUO429FN01P

Trial-run sample P/N: 92.04H59.000

MP product P/N: 92.04H59.000

< □ > Preliminary Specification

< > Final Specification

Note: The content of this specification is subject to change.

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Record of Revision

Version	Revise Date	Page	Content
0.0	JULY 26, 2013		First Draft
0.1	SEPT 27,2013	16	Add Life Time and Carton Test Condition
		17	Add Packing information.
0.2	OCT 03,2013	9	Update Initial code setting.
		16	Update Carton Test Condition
		17	Update Packing information.
0.3	OCT 14,2013		POL update backup material
		18	Main POL: Nitto NOB-EJDCVSSH. Thickness 0.163mm \pm 0.02mm Backup POL: Sumika SRCZ41FPL2HC2/ CSEW450148YB 0.16mm \pm 0.03mm
0.4	NOV 19,2013	10	Add E9 Register setting
			Remove EE Register setting
0.5	NOV 27,2013	9	Update Initial code setting \rightarrow Brightness control/ Dimming function control
0.6	DEC 13,2013	7	Add Electrical Characteristics
		8	Modify Power on sequence
		10	Add E1 Register setting
		11	Modify B0 Register setting
		11	Modify BE Register setting

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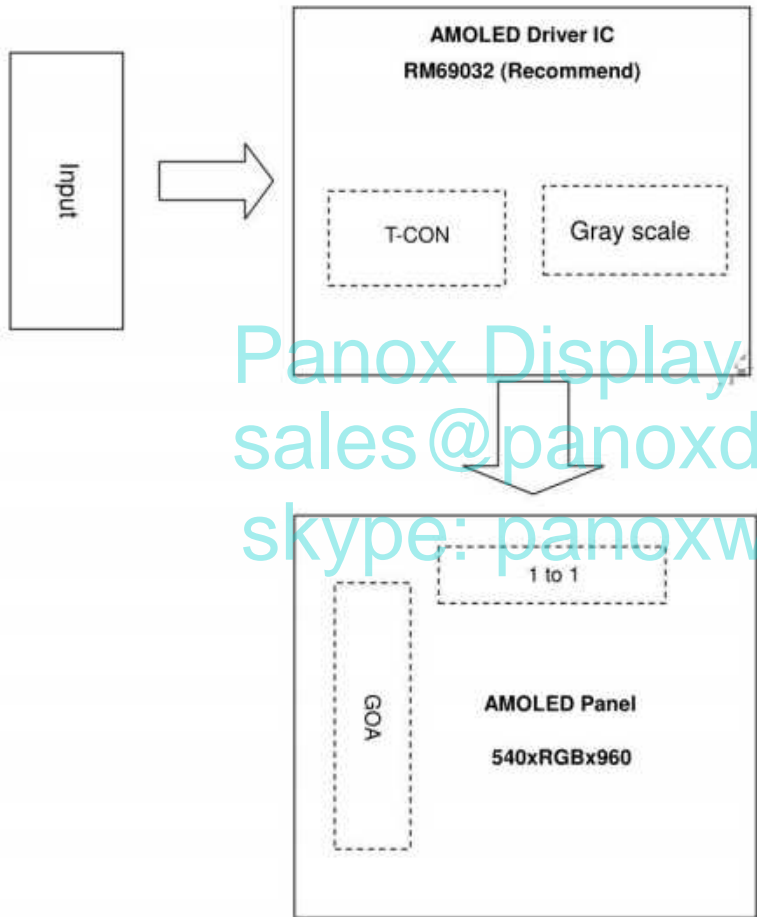
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A. General Specification

Physical Specifications

Item	Description	Single LCM	Remark
1	Screen Size (inch)	4.3	
2	Driving Method	DC	
3	Display Mode	OLED	
4	Display Resolution (dot)	540xRGBx960	
5	Active Area (mm)	53.46(H)×95.04(V)	
6	Dot Pitch (mm)	0.033(H)×0.099(V)	
7	Display Color	16.7M	
8	Driver IC		Recommend RM69032
9	Interface		RGB/MIPI
10	Brightness(nits)		Recommend 250
11	Outline Dimension (mm)	57.26x103.87x0.77	

Block Diagram



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Fig. 1 Block diagram

B. Electrical Specifications

1. Fan out pin assignment — AMOLED Panel Input/Output Signal Interface

1	Dummy	33	VDD_DET	65	DGND	97	D1
2	OVSS	34	DIOPWR	66	VDDIO	98	D0
3	OVSS	35	VGSP	67	SCL	99	DE
4	OVSS	36	VGSP	68	SDA	100	PCLK
5	OVSS	37	VGMP	69	MUX13	101	HS
6	OVSS	38	VGMP	70	PMOS[0]	102	VS
7	OVSS	39	DGND	71	PMOS[1]	103	ERR
8	Dummy	40	DVDD	72	CGM[2]	104	VDDIO
9	OVDD	41	AGND	73	CGM[1]	105	DGND
10	OVDD	42	LANSEL0	74	CGM[0]	106	VDD
11	OVDD	43	LANSEL1	75	D23	107	AVDD
12	OVDD	44	DSWAP0	76	D22	108	AVEE
13	OVDD	45	DSWAP1	77	D21	109	DGND
14	OVDD	46	PSWAP	78	D20	110	DVDD
15	Dummy	47	DSTB_SEL	79	D19	111	MVDDA
16	D3_P1	48	I2C_SA0	80	D18	112	VDD
17	D3_P1	49	IM3	81	D17	113	MVDDL
18	D3_P2	50	IM2	82	D16	114	AGND
19	D3_P2	51	IM1	83	D15	115	HSSI_D22_P
20	VSS3D	52	IM0	84	D14	116	HSSI_D22_N
21	VSS3D	53	SWIRE	85	D13	117	AGND
22	BVP3D	54	OLED_EN	86	D12	118	HSSI_D1_P
23	MTP_PWR	55	EXB1T	87	D11	119	HSSI_D1_N
24	VGL	56	TE_L	88	D10	120	AGND
25	VGLR	57	VSEL	89	D9	121	HSSI_CLK_P
26	VGHR	58	SDO	90	D8	122	HSSI_CLK_N
27	VCL	59	SDI	91	D7	123	AGND
28	VREF	60	DCX	92	D6	124	HSSI_D0_P
29	AGND	61	WRX	93	D5	125	HSSI_D0_N
30	VDD	62	RDX	94	D4	126	AGND
31	VDDR	63	CSX	95	D3	127	HSSI_D21_P
32	VSSR	64	RESX	96	D2	128	HSSI_D21_N

129	AGND	161	C14P	193	C41P	225	Dummy
130	VDDR	162	C14P	194	C41P	226	OVSS
131	TE_R	163	C14P	195	C41N	227	OVSS
132	AGND	164	C14N	196	C41N	228	OVSS
133	VREFCP	165	C14N	197	C51N	229	OVSS
134	VGHR	166	C14N	198	C51N	230	OVSS
135	EXTP	167	C32P	199	C51P	231	OVSS
136	CSP	168	C32P	200	C51P		
137	EXTN	169	C32P	201	VGH		
138	CSN	170	C32N	202	VGH		
139	AGND	171	C32N	203	VGHR		
140	C11P	172	C32N	204	VGHR		
141	C11P	173	VCL	205	VGLR		
142	C11N	174	VCL	206	VGLR		
143	C11N	175	C31P	207	VGL		
144	C12P	176	C31P	208	VGL		
145	C12P	177	C31N	209	AGND		
146	C12N	178	C31N	210	AGND		
147	C12N	179	C21P	211	DVDD		
148	C13N	180	C21P	212	DVDD		
149	C13N	181	C21N	213	VREFP		
150	C13P	182	C21N	214	VREFP		
151	C13P	183	C22P	215	Dummy		
152	AVDD	184	C22P	216	VREFN		
153	AVDD	185	C22N	217	VREFN		
154	AVDD	186	C22N	218	Dummy		
155	VDD	187	AVEE	219	OVDD		
156	VDD	188	AVEE	220	OVDD		
157	VDD	189	Vddb	221	OVDD		
158	AGND	190	Vddb	222	OVDD		
159	AGND	191	AGND	223	OVDD		
160	AGND	192	AGND	224	OVDD		

2. Absolute maximum ratings (VSS=0V) (Note 1)

Item	Symbol	Min.	Max.	Unit	Remark
Operating temperature (Ambient)	Topr	-40	+85	□	
Storage temperature (Ambient)	Tstg	-55	+105	□	

Note 1: If the module exceeds the absolute maximum ratings, it may be damaged permanently. Also, if the module operates with the absolute maximum ratings for a long time, the reliability may drop.

C. Electrical Characteristics

1. Typical Operating Conditions

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Input power supply	V _{DDIO}	1.65	1.80	3.30	V	
Analog power supply	V _{DD}	2.80	3.00	3.20	V	
OVDD power supply	OVDD	4.55	4.60	4.65	V	Note1
OVSS power supply	OVSS	-4.33	-4.40	-4.47	V	Note1
Input Signal Voltage	H Level	V _{IH}	0.8*V _{DDIO}	-	V _{DDIO}	V
	L Level	V _{IL}	0	-	0.2*V _{DDIO}	V
Output Signal Voltage	H Level	V _{OH}	0.7*V _{DDIO}	-	V _{DDIO}	V
	L Level	V _{OL}	0	-	0.3*V _{DDIO}	V

Note 1 : Suggestion use STOD13AS (STMicroelectronics)

2. Current Consumption

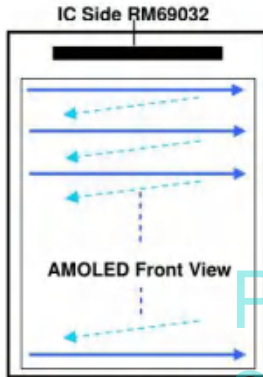
Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark	
Panel Power	P _{NE}	OVDD:4.6V	-	405.0	1350.0	mW	Note1	
	I _{MT}	OVSS:-4.4V	-	64.2	150.0	mA	Note1	
IC	Normal	V _{DD} : 3.0V V _{DDIO} :1.8V	P _{VDD}	81.8	102.3	122.7	mW	Note2
			I _{VDD}	26.6	33.3	39.9	mA	Note2
			P _{VDDIO}	18.5	23.2	27.8	uW	Note2
			I _{VDDIO}	9.8	12.3	14.7	uA	Note2

Note 1: Typ value is EL power in 30% max brightness condition.

Note 2: Testing in white pattern.

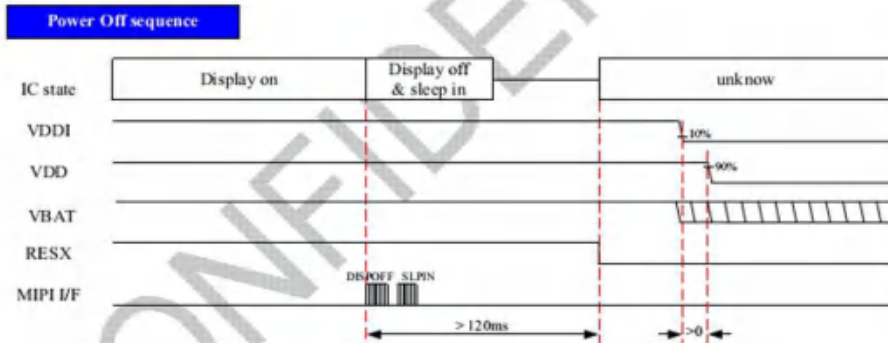
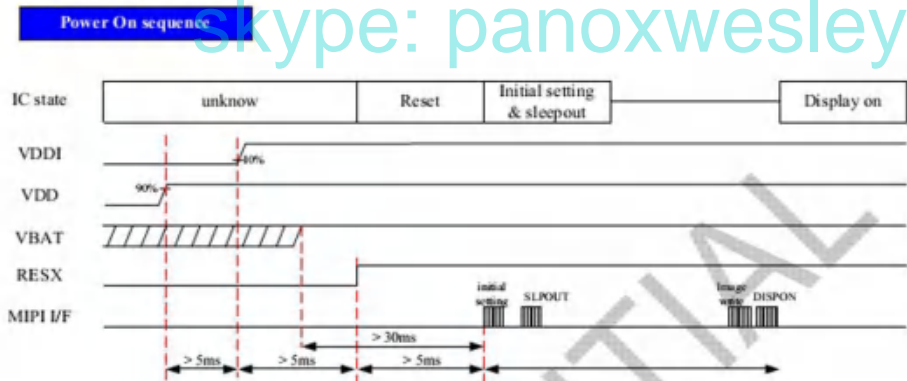
E. Recommended Initial code and Power On/Off sequence for RM69032.

(1) Panel Scan direction



(2) I/O Power on/off Sequence.

a. MIPI Power on/off sequence



Note : VBAT is the power of power IC (for OVDD/OVSS)

(3) Initial setting

Recommended Power on Initial Sequence								
Step	Instruction/Parameters	Delay time	R/W	MIPI Data Type	Address		Data hex.	Description
					MIPI	Others		
1	Turn on V _{DD}							VDD=3.0V
2	Turn on V _{DDI}							VDDI=1.8V
3	Delay	no limit						
4	REST pin low	20us						
6	REST pin high							
7	Delay	5 ms						
8			W	0x39	F0	F000	55	
9			W			F001	AA	
10			W			F002	52	
11			W			F003	08	
12			W	0x39	BD	F004	00	
13			W			BD00	01	
14			W			BD01	5A	
15			W			BD02	14	
16			W	0x39	C8	BD03	14	
17			W			BD04	00	
18			W			C800	80	
19			W			C801	12	
20			W	0x39	C8	C802	00	
21			W			C803	00	
22			W			C804	01	
23			W			C805	00	
24			W	0x39	C9	C806	0E	
25			W			C900	80	
26			W			C901	12	
27			W			C902	00	
28			W	0x39	C9	C903	00	
29			W			C904	01	
30			W			C905	00	
31			W			C906	0E	
32			W	0x39	CA	CA00	83	
33			W			CA01	D6	
34			W			CA02	00	
35			W			CA03	00	

36		W			CA04	01
37		W			CA05	00
38		W			CA06	0E
39		W			CB00	83
40		W			CB01	D5
41		W			CB02	00
42		W	0x39	CB	CB03	00
43		W			CB04	01
44		W			CB05	00
45		W			CB06	0E
46					D100	80
47		W	0x39	D1	D101	10
48					D102	20
49					D200	80
50		W	0x39	D2	D201	09
51					D202	24
52		W	0x15	D0	D000	22
53		W			F000	55
54		W			F001	AA
55		W	0x39	F0	F002	52
56		W			F003	08
57		W			F004	02
58		W	0x39	FE	FE00	08
59		W			FE01	50
60		W			ED00	48
61		W			ED01	00
62		W			ED02	E0
63		W	0x39	ED	ED03	13
64		W			ED04	08
65		W			ED05	00
66		W			ED06	0C
67		W			C300	F2
68		W	0x39	C3	C301	95
69		W			C302	04
70		W			E900	00
71		W	0x39	E9	E901	36
72		W			E902	0B
73		W	0x15	CA	CA00	04
74		W	0x15	E1	E100	00
75		W	0x39	F0	F000	55

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76			W			F001	AA	
77			W			F002	52	
78			W			F003	08	
79			W			F004	01	
80			W			B000	00	
81			W	0x39	B0	B001	00	
82			W			B002	00	
83			W			B400	07	
84			W	0x39	B4	B401	07	
85			W			B402	07	
86			W			B500	07	
87			W	0x39	B5	B501	07	
88			W			B502	07	
89			W			B600	44	
90			W	0x39	B6	B601	44	
91			W			B602	44	
92			W			B900	04	
93			W	0x39	B9	B901	04	
94			W			B902	04	
95			W			BA00	34	
96			W	0x39	BA	BA01	34	
97			W			BA02	34	
98			W			BE00	22	
99			W	0x39	BE	BE01	30	
100			W			BE02	70	
101			W	0x15	35	3500	00	
102			W	0x15	36	3600	02	
103			W	0x15	C0	C000	20	
104			W			C200	17	
105			W			C201	17	
106			W	0x39	C2	C202	17	
107			W			C203	17	
108			W			C204	17	
109			W			C205	15	
110	Turn on peripheral packet			0x32				Video Turn On
111	Sleep out		W	0x05	11	1100	00	
112	Delay	300 ms						
113	Display on		W	0x05	29	2900	00	

Recommended Power off Mode Sequence							
Instruction/Parameters	Delay time	R/W	MIPI Data Type	Address		Data hex.	Description
				MIPI	Others		
DIPOFF		W	0x05	28	2800	00	
SLPIN		W	0x05	10	1000	00	
delay	120ms						
Power off							

F. Reliability Test Items

Category	No.	Test items	Conditions	Remark
Reliability (Environment)	1	High Temp. Operation	Ta= 60□ 168hrs	Ta: Ambient temperature.
	2	High Temp. Storage	Ta= 70□ 168hrs	Non-operation
	3	Low Temp. Operation	Ta= -20□ 168hrs	
	4	Low Temp. Storage	Ta= -30□ 168hrs	Non-operation
	5	High Temp./Humi. Operation	Ta= 40□ 95% RH 168hrs	
	6	Thermal Shock	□30□~70□. Dwell for 30 min. 50 cycles.	Non-operation
Reliability (OLED)	7	OLED Lifetime (LT95)	Luminance should be larger than 95% of initial luminance after 100 hrs operating at 25°C	
	8	OLED Lifetime (LT50)	Luminance should be larger than 50% of initial luminance after 2000 hrs operating at 25°C	
Carton Test	9	Carton Random vibration	Wave Form: Random Direction: X · Y · Z axis Duration: 30 minutes/ axis Test PSD Condition: 1.5Grms, 10~200Hz, total time: 90 mins (30 mins/axis for X, Y, Z)	
	10	Carton Drop Test	Height: 61cm 1 corner, 3 edges, 6 surfaces.	

G. Packing



H. Outline Dimension

