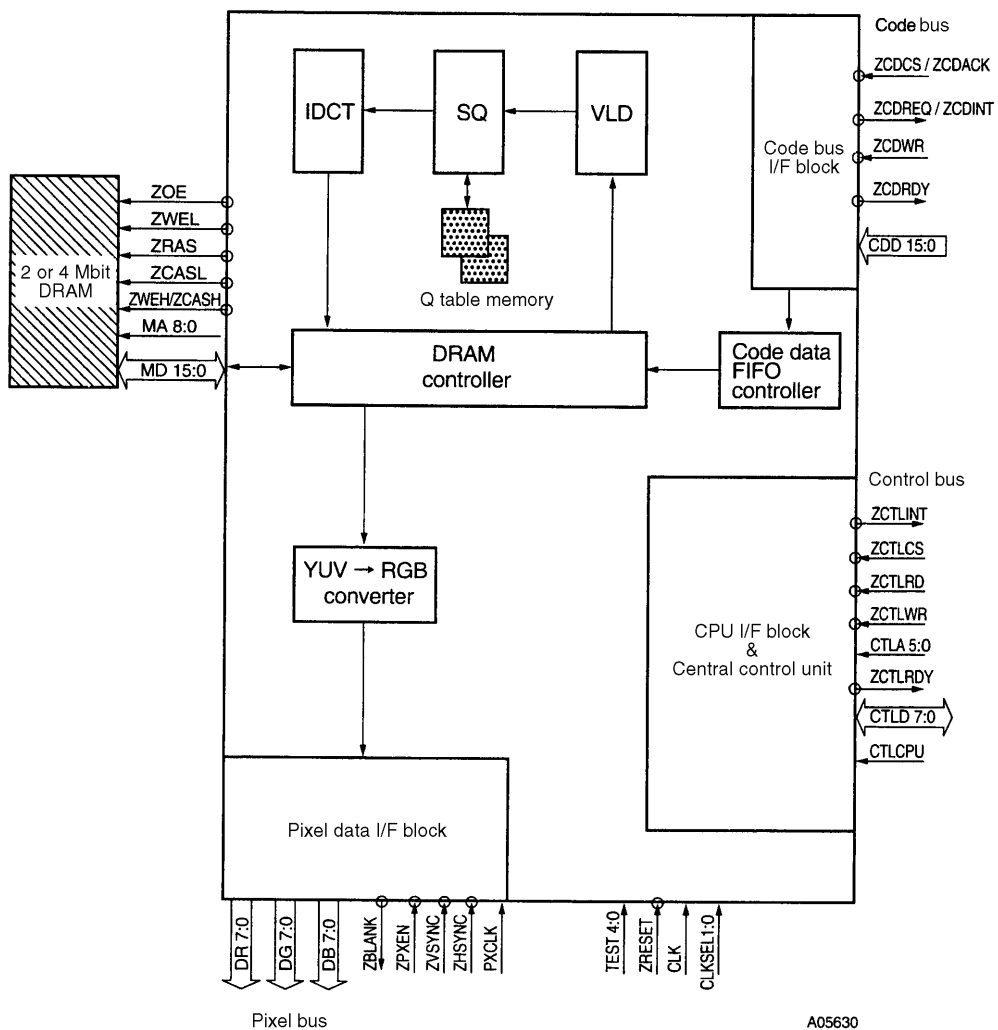


LC82221L

Block Diagram



A05630

Specifications

Electrical Characteristics

Absolute Maximum Ratings at $V_{SS} = 0\text{ V}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{DD}		-0.3 to +4.6	V
Input and output voltage	V_I, V_O		-0.3 to $V_{DD}+0.3$	V
Input and output current	I_I, I_O		-20 to +20	mA
Operating temperature	T_{opr}		-30 to +70	°C
Storage temperature	T_{stg}		-55 to +125	°C

Allowable Operating Ranges at $T_a = -30\text{ to }+70\text{ °C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply voltage	V_{DD}		3.0	3.3	3.6	V
Input voltage	V_{IN}		0		V_{DD}	V

DC Characteristics at $T_a = -30\text{ to }+70\text{ °C}$, $V_{DD} = 3.0\text{ to }3.6\text{ V}$, $V_{SS} = 0\text{ V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input high-level voltage	V_{IH1}	CMOS level inputs: (1)	$0.7 V_{DD}$			V
Input low-level voltage	V_{IL1}				$0.2 V_{DD}$	V
Input high-level voltage	V_{IH2}	CMOS level Schmitt inputs: (2)	$0.75 V_{DD}$			V
Input low-level voltage	V_{IL2}				$0.15 V_{DD}$	V
Input high-level current	I_{IH}	$V_{IN} = V_{DD}$; All input pins (including bus pins)	-10		+10	μA
Input low-level current	I_{IL1}	$V_{IN} = V_{SS}$: (3)	-10		+10	μA
	I_{IL2}	$V_{IN} = V_{DD}$; Pins with pull-up resistors: (4)	-100		-10	μA
Output high-level voltage	V_{OH}	$I_{OH} = -6\text{ mA}$; All output pins (including bus pins)	$V_{DD} - 0.8$			V
Output low-level voltage	V_{OL}	$I_{OL} = 6\text{ mA}$; All output pins (including bus pins)			0.4	V
Output leakage current	I_{OZ}	When set to high-impedance output: (5)	-10		+10	μA
Pull-up resistance	R_{UP}	(6)	70	140	280	kΩ

Applicable Pins

(1) CTLCPU, CTLA, CTLD, CLKSEL, CLK, CDD, TEST, MD, DG, DB, DR, ZPXEN, ZHSYNC, ZVSYNC, PXCLK

(2) ZCTLCS, ZCTLRD, ZCTLWR, ZRESET, ZCDCS, ZCDWR

(3) CTLCPU, CTLA, CTLD, CLKSEL, CLK, CDD, TEST, DG, DB, DR, ZPXEN, ZHSYNC, ZVSYNC, PXCLK, ZCTLCS, ZCTLRD, ZCTLWR, ZRESET, ZCDCS, ZCDWR

(4) MD

(5) ZCTLRDY, CTLD, ZCDRDY, MD, DG, DB, DR

(6) MD

LC82221L

Pin Functions

Pin Number	Pin Name	Type	Description
1	V _{SS}		Ground
2	ZCTLINT	O	Control bus interrupt request
3	ZCTLCS	I	Control bus select
4	ZCTLRD/RW	I	Control bus read or R/W select
5	ZCTLWR/DS	I	Control bus write/data strobe
6	ZCTLRDY	O	Control bus ready (tri-state output)
7	CTLCPU	I	Control bus CPU type selection
8	V _{DD}		+3.3-V power supply
9	V _{SS}		Ground
10		NC	
11		NC	
12	CTLA5	I	Control bus address
13	CTLA4	I	
14	CTLA3	I	
15	CTLA2	I	
16	CTLA1	I	
17	CTLA0	I	
18	V _{DD}		+3.3-V power supply
19	V _{SS}		Ground
20	CTLD7	I/O	Control bus data
21	CTLD6	I/O	
22	CTLD5	I/O	
23	CTLD4	I/O	
24	CTLD3	I/O	
25	CTLD2	I/O	
26	CTLD1	I/O	
27	CTLD0	I/O	
28	V _{DD}		+3.3-V power supply
29	V _{SS}		Ground
30	CLKSEL0	I	Clock divisor setting
31	CLKSEL1	I	CLKSEL1:0 = 00: No divisor, 01: Divisor = 2, 10: Divisor = 3.
32	CLK	I	System (decode) clock input
33		NC	
34	ZRESET	I	Hardware reset
35		NC	
36	V _{SS}		Ground
37	V _{DD}		+3.3-V power supply
38	ZCDCS/ZCDACK	I	Code bus select/code bus DMA acknowledge
39	ZCDINT/ZCDREQ	O	Code bus interrupt/code bus DMA request
40	ZCDWR	I	Code bus data write signal
41	ZCDRDY	O	Code bus ready (tri-state output)
42	CDD15	I	Code bus data (CDD8 to CDD15 are unused in 8-bit mode.*)
43	CDD14	I	
44	CDD13	I	
45	CDD12	I	

Note: * These pins must be pulled up with a resistance of about 10 kΩ.

Continued on next page.

LC82221L

Continued from preceding page.

Pin Number	Pin Name	Type	Description
46	V _{DD}		+3.3-V power supply
47	V _{SS}		Ground
48	CDD11	I	Code bus data
49	CDD10	I	
50	CDD9	I	
51	CDD8	I	
52	CDD7	I	
53	CDD6	I	
54	V _{DD}		+3.3-V power supply
55	V _{SS}		Ground
56	CDD5	I	Code bus data
57	CDD4	I	
58	CDD3	I	
59	CDD2	I	
60	CDD1	I	
61	CDD0	I	
62	V _{SS}		+3.3-V power supply
63	V _{DD}		Ground
64		NC	
65		NC	
66		NC	
67	TEST0	I	Test pins *
68	TEST1	I	
69	TEST2	I	
70	TEST3	I	
71	TEST4	I	
72	V _{SS}		Ground
73	V _{DD}		+3.3-V power supply
74	ZOE	O	Memory output enable
75	ZWEL	O	Memory write enable (L)
76	ZRAS	O	Row address strobe
77	ZCASL	O	Column address strobe (L)
78	ZWEH/ZCASH	O	Memory write enable (H)/column address strobe (H)
79	V _{SS}		Ground
80	MD15	I/O	Frame memory interface data bus
81	MD14	I/O	
82	MD13	I/O	
83	MD12	I/O	
84	MD11	I/O	
85	MD10	I/O	
86	MD9	I/O	
87	MD8	I/O	
88	MD7	I/O	
89	MD6	I/O	
90	V _{DD}		+3.3-V power supply

Note:* These pins must be tied to ground.

Continued on next page.

LC82221L

Continued from preceding page.

Pin Number	Pin Name	Type	Description
91	V _{SS}		Ground
92	MD5	I/O	Frame memory interface data bus
93	MD4	I/O	
94	MD3	I/O	
95	MD2	I/O	
96	MD1	I/O	
97	MD0	I/O	
98	V _{DD}		+3.3-V power supply
99	MA8	O	Frame memory address signals
100	MA7	O	
101	MA6	O	
102	MA5	O	
103	MA4	O	
104	MA3	O	
105	MA2	O	
106	MA1	O	
107	MA0	O	
108	V _{SS}		Ground
109	V _{DD}		+3.3-V power supply
110	DG7	O	Pixel data bus G (U) *
111	DG6	O	
112	DG5	O	
113	DG4	O	
114	DG3	O	
115	DG2	O	
116	DG1	O	
117	DG0	O	
118	V _{SS}		Ground
119	V _{DD}		+3.3-V power supply
120	DB7	O	Pixel data bus B (V) *
121	DB6	O	
122	DB5	O	
123	DB4	O	
124	DB3	O	
125	DB2	O	
126	V _{DD}		+3.3-V power supply
127	V _{SS}		Ground
128	DB1	O	Pixel data bus B (V) *
129	DB0	O	
130	DR7	O	Pixel data bus R (Y) *
131	DR6	O	
132	DR5	O	
133	DR4	O	
134	V _{SS}		Ground

Note: * These pins must be pulled up with a resistance of about 10 kΩ.

Continued on next page.

LC82221L

Continued from preceding page.

Pin Number	Pin Name	Type	Description
135	DR3	O	Pixel data bus R (Y) *
136	DR2	O	
137	DR1	O	
138	DR0	O	
139	ZPXEN	I	Pixel data enable signal
140	ZBLANK	O	Blanking signal
141	ZHSYNC	I	Horizontal synchronizing signal
142	ZVSYNC	I	Vertical synchronizing signal
143	PXCLK	I	Pixel clock
144	V _{DD}		+3.3-V power supply

Note:* These pins must be pulled up with a resistance of about 10 kΩ.

- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of June, 1998. Specifications and information herein are subject to change without notice.