



Preliminary AAT7202

12+1-Channel Buffer for TFT LCD

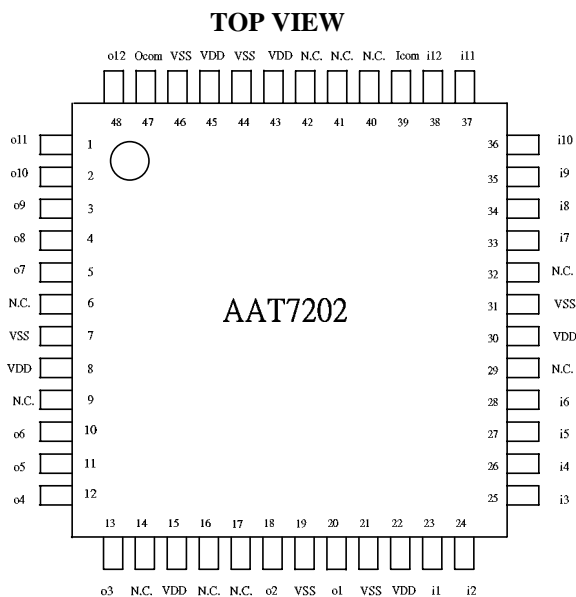
Features

- 12 Channels with Output Current:  $\pm 30\text{mA}$  (MAX)
- 1 Vcom with Output Current:  $\pm 100\text{mA}_{(MAX)}$
- Unity Gain Buffer Capable of Driving Large Capacitive Loads
- Input range Matched to LCD Reference Requirements
- Specified for  $-20^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ ...6.5V to 16V
- TQFP-48 Pins

General Description

The AAT7202 consists of 12+1 channel buffers target toward the needs of thin film transistor liquid crystal display (TFT LCD). This device consist of a Vcom buffer circuits, four rail to rail buffer amplifiers circuits and 8 buffer amplifiers circuits. Each buffer is capable of driving heavy capacitive loads and offers fast load current (Vcom : 100mA, the others : 30mA).

Pin Configuration



**Pin Description**

Pin #	Name	I/O	Description
1	o11	O	Buffer Channel 11 Output
2	o10	O	Buffer Channel 10 Output
3	o9	O	Buffer Channel 9 Output
4	o8	O	Buffer Channel 8 Output
5	o7	O	Buffer Channel 7 Output
6	N.C.		
7	VSS	I	Ground
8	VDD	I	Power
9	N.C.		
10	o6	O	Buffer Channel 6 Output
11	o5	O	Buffer Channel 5 Output
12	o4	O	Buffer Channel 4 Output
13	o3	O	Buffer Channel 3 Output
14	N.C.		
15	VDD	I	Power
16	N.C.		
17	N.C.		
18	o2	O	Buffer Channel 2 Output
19	VSS	I	Ground
20	o1	O	Buffer Channel 1 Output
21	VSS	I	Ground
22	VDD	I	Power
23	i1	I	Buffer Channel 1 Input
24	i2	I	Buffer Channel 2 Input
25	i3	I	Buffer Channel 3 Input
26	i4	I	Buffer Channel 4 Input
27	i5	I	Buffer Channel 5 Input
28	i6	I	Buffer Channel 6 Input
29	N.C.		
30	VDD	I	Power

\*To be continued



Pin #	Name	I/O	Description
31	VSS	I	Ground
32	N.C.		
33	i7	I	Buffer Channel 7 Input
34	i8	I	Buffer Channel 8 Input
35	i9	I	Buffer Channel 9 Input
36	i10	I	Buffer Channel 10 Input
37	i11	I	Buffer Channel 11 Input
38	i12	I	Buffer Channel 12 Input
39	Icom	I	Com Buffer Input
40	N.C.		
41	N.C.		
42	N.C.		
43	VDD	I	Power
44	VSS	I	Ground
45	VDD	I	Power
46	VSS	I	Ground
47	Ocom	O	Com Buffer Output
48	o12	O	Buffer Channel 12 Output

**Absolute Maximum Ratings**

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Supply voltage	$V_{DD}$	+18	V
Input Voltage	$V_I$	-0.5 to $V_{DD} + 0.5$	V
Maximum Junction Temperature	$T_J$	+125	°C
Operating Temperature	$T_{opc}$	-40 to +85	°C
Storage Temperature	$T_{stg}$	-65 to 150	°C
Lead Temperature(Soldering,10 second)	---	260	°C

**Note1:**

Value beyond absolute maximum ratings may cause permanent damage to the device.



**Electrical Characteristics** ( $V_{DD}=10V$ ,  $T_A=25^{\circ}C$  unless otherwise specified.)

**Power Supply Performance**

Parameter		Test Conditions	Min	Typ	Max	Units
Power Supply Rejection Ratio[2]	PSRR	$V_{DD}$ is moved from 6.5V to 15.5V		80		dB
Supply Current	$I_S$			9		mA

**Input Characteristics**

Parameter		Test Conditions	Min	Typ	Max	Units
Input Offset Voltage	$V_{OS}$	$V_{in}=V_{DD}/2$ , $V_{out}=V_{DD}/2$		2	12	mV
Input Bias Current	$I_B$	$V_{in}=V_{DD}/2$ , $V_{out}=V_{DD}/2$		2	50	nA

**Output Characteristics**

Parameter		Test Conditions	Min	Typ	Max	Units
Output Swing Low	$V_{OL}$	$I_L=5mA$ (Buffer 1,2,11,12) $V_{in}=0v$		0.08	0.15	V
		$I_L=10mA$ (Buffer 3,4,...,9,10) $V_{in}=1v$		1.02	1.05	V
Output Swing High	$V_{OH}$	$I_L=-5mA$ (Buffer 1,2,11,12) $V_{in}=10v$	9.85	9.92		V
		$I_L=-10mA$ (Buffer 3,4,...,9,10) $V_{in}=9v$	8.95	8.98		V
Output Swing (buffer 3,4,...,9,10)	$V_{OL}$	$I_L=10mA$ $V_{in}=5v$		5.02	5.04	V
	$V_{OH}$	$I_L=-10mA$ $V_{in}=5v$	4.96	4.98		V
Output Swing (COM)	$V_{OL}$	$I_L=50mA$ $V_{in}=5v$		5.03	5.05	V
	$V_{OH}$	$I_L=-50mA$ $V_{in}=5v$	4.95	4.97		V
Short Circuit Current	$I_{SC}$	(Buffer 1~12 )		$\pm 70$		mA
		(Com Buffer)		$\pm 180$		mA

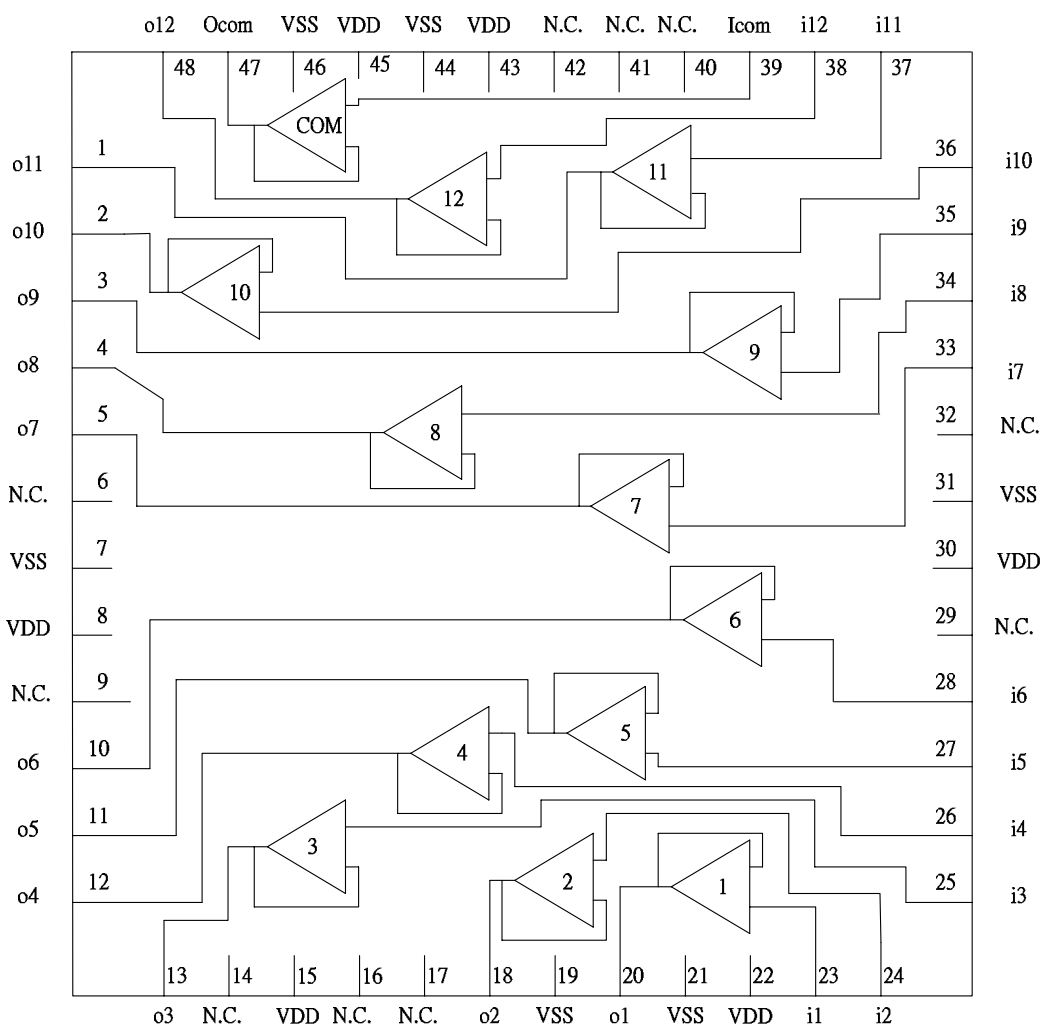


AC Characteristics

Parameter		Test Conditions	Min	Typ	Max	Units
Slew Rate[2]	SR	Vin=2V to 8V, 20% to 80%		1		V/ $\mu$ s
Settling Time	t <sub>s</sub>	Vin=4.5v to 5.5v 0.1% Vin=5.5v to 4.5v 0.1%		5		$\mu$ s

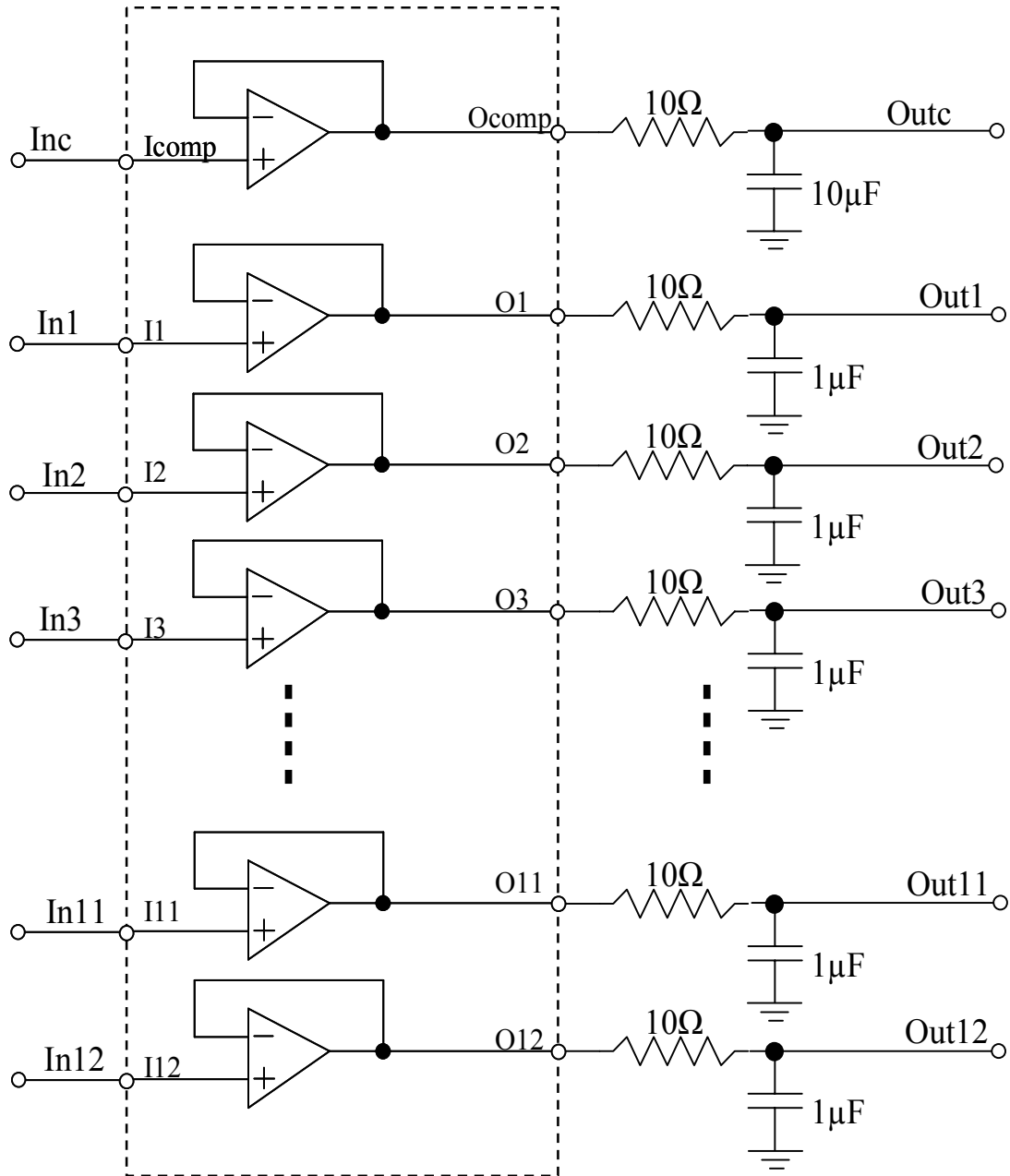
Note2: Slew rage is measured on rising and falling edges.

Function Block Diagram



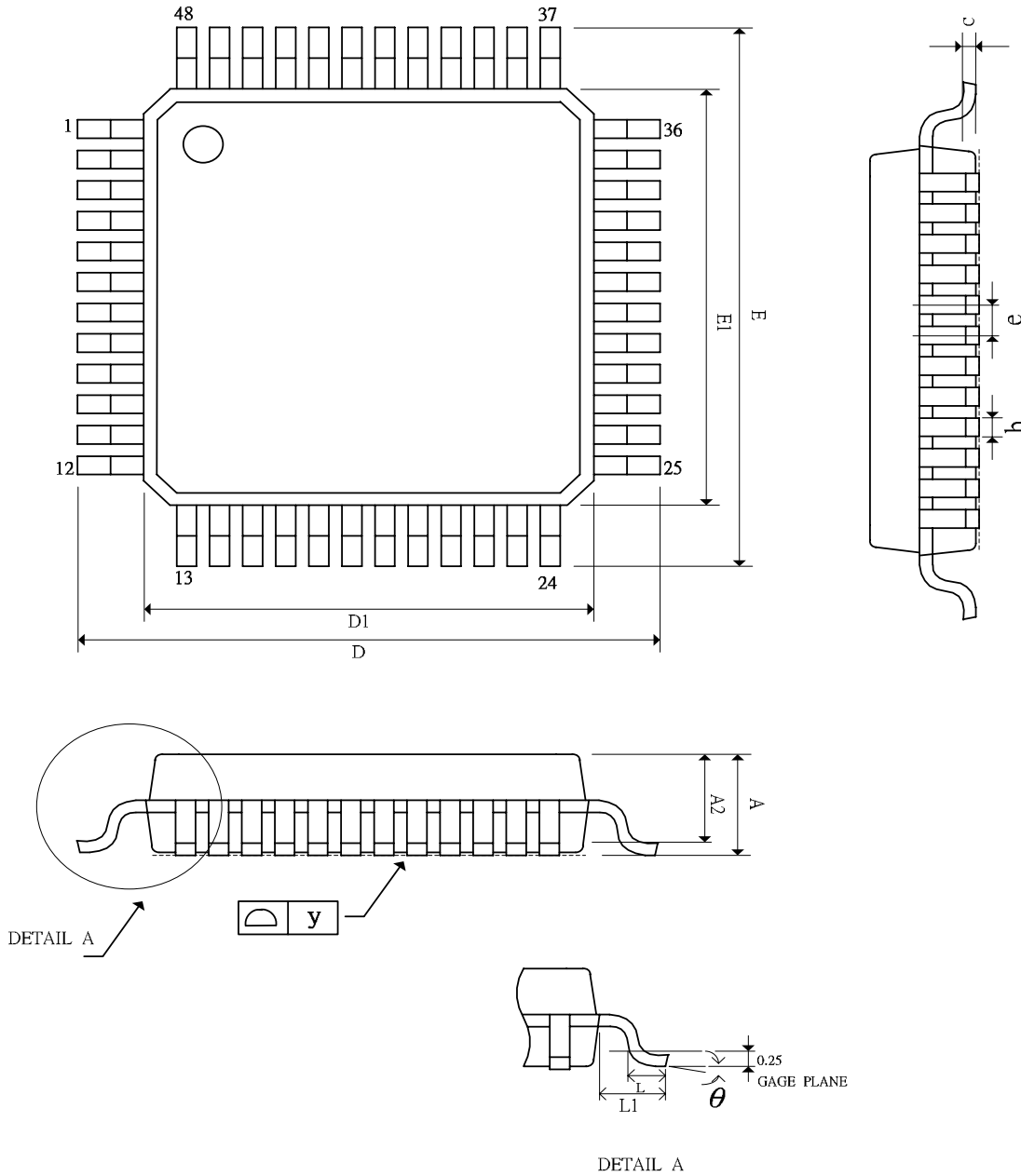


Application Circuit





Package Dimension (Dimensions shown in millimeters)







SYMBOL	DIMENSIONS IN MILLIMETERS		
	MIN.	NOM.	MAX.
A	---	---	1.20
A1	0.05	---	0.15
A2	0.95	1.00	1.05
b	0.17	0.22	0.27
C	0.09	---	0.20
E	---	9.00	---
E1	---	7.00	---
D	---	9.00	---
D1	---	7.00	---
e	---	0.50	---
L	0.45	0.60	0.75
L1	---	1.00	---
	0°	3.5°	7°
y	0.0	---	0.08