



Advanced Analog Technology, Inc.

AAT7205

Details are subject to change without notice.

8+1-CHANNEL BUFFER FOR TFT LCD

FEATURES

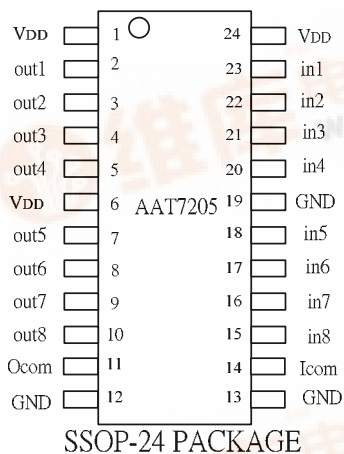
- 8 Channels with Output Current: $\pm 30\text{mA}$ (MAX)
- 1 V_{com} with Output Current: $\pm 100\text{mA}$ (MAX)
- Unity Gain Buffer Capable of Driving Large Capacitive Loads
- Input Range Matched to LCD Reference Requirements
- Specified for -20°C to $+85^{\circ}\text{C}$...6.5V to 16V
- SSOP-24 Package

GENERAL DESCRIPTION

The AAT7205 is specially designed for thin film transistor liquid crystal display (TFT LCD). It is a buffer with 8+1 channels which delivers output current up to 30mA. This device is equipped with a V_{com} buffer circuit, two rail-to-rail buffer amplifier circuits, and 6 buffer amplifiers circuits. Each buffer is capable of driving heavy capacitive loads and offers fast load current (V_{com} : 100mA, the others: 30mA).

PIN CONFIGURATION

TOP VIEW





PIN DESCRIPTION

| PIN NO. | NAME | I/O | DESCRIPTION |
|----------------|------------------|------------|-------------------------|
| 1 | V _{DD} | I | Power Supply |
| 2 | out1 | O | Buffer Channel 1 Output |
| 3 | out2 | O | Buffer Channel 2 Output |
| 4 | out3 | O | Buffer Channel 3 Output |
| 5 | out4 | O | Buffer Channel 4 Output |
| 6 | V _{DD} | I | Power Supply |
| 7 | out5 | O | Buffer Channel 5 Output |
| 8 | out6 | O | Buffer Channel 6 Output |
| 9 | out7 | O | Buffer Channel 7 Output |
| 10 | out8 | O | Buffer Channel 8 Output |
| 11 | O _{com} | O | Com Buffer Output |
| 12 | GND | I | Ground |
| 13 | GND | I | Ground |
| 14 | I _{com} | I | Com Buffer Input |
| 15 | in8 | I | Buffer Channel 8 Input |
| 16 | in7 | I | Buffer Channel 7 Input |
| 17 | in6 | I | Buffer Channel 6 Input |
| 18 | in5 | I | Buffer Channel 5 Input |
| 19 | GND | I | Ground |
| 20 | in4 | I | Buffer Channel 4 Input |
| 21 | in3 | I | Buffer Channel 3 Input |
| 22 | in2 | I | Buffer Channel 2 Input |
| 23 | in1 | I | Buffer Channel 1 Input |
| 24 | V _{DD} | I | Power Supply |

**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 |
| Output Voltage | V_O | -0.5 to $V_{DD} + 0.5$ | V |
| Output Loading Current for Gamma Rail-to-Rail Buffer | I_L | ± 30 | mA |
| Output Loading Current for Com Buffer | | ± 100 | mA |
| Maximum Junction Temperature | T_J | +125 | °C |
| Operating Temperature | T_C | -20 to +85 | °C |
| Storage Temperature | $T_{storage}$ | -45 to +125 | °C |
| Lead Temperature (Soldering for 10 Seconds) | --- | 260 | °C |

Note1: Values beyond absolute maximum ratings may cause permanent damage to the device.



ELECTRICAL CHARACTERISTICS ($V_{DD}=10V$, $T_C=25^{\circ}C$ UNLESS OTHERWISE SPECIFIED)

POWER SUPPLY PERFORMANCE

| PARAMETER | | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|------------------------------|-------|--------------------------------------|-----|-----|-----|-------|
| Power Supply Rejection Ratio | PSRR | V_{DD} is Moved from 6.5V to 15.5V | | 80 | | dB |
| Supply Current | I_S | | | 7.4 | | mA |

INPUT CHARACTERISTICS

| PARAMETER | | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|----------------------|----------|--|-----|-----|-----|-------|
| Input Offset Voltage | V_{OS} | $V_I = V_{DD}/2$, $V_O = V_{DD}/2$ | | 2 | 12 | mV |
| Input Bias Current | I_B | $V_I = V_{DD}/2$, $V_O = V_{DD}/2$ | | 2 | 50 | nA |



ELECTRICAL CHARACTERISTICS ($V_{DD}=10V$, $T_C=25^{\circ}C$ UNLESS OTHERWISE SPECIFIED) (CONT.)

OUTPUT CHARACTERISTICS

| PARAMETER | | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|--------------------------------------|----------|---|------|-----------|------|-------|
| Output Swing Low | V_{OL} | $I_L = 5mA$ (Buffer 1,8) $V_I = 0V$ | | 0.08 | 0.15 | V |
| | | $I_L = 10mA$ (Buffer 2,3,4,5,6,7) $V_I = 1V$ | | 1.02 | 1.05 | V |
| Output Swing High | V_{OH} | $I_L = -5mA$ (Buffer 1,8) $V_I = 10V$ | 9.85 | 9.92 | | V |
| | | $I_L = -10mA$ (Buffer 2,3,4,5,6,7) $V_I = 9V$ | 8.95 | 8.98 | | V |
| Output Swing (Buffer 2,3,4,5,6,7) | V_{OL} | $I_L = 10mA$ $V_I = 5V$ | | 5.02 | 5.04 | V |
| | V_{OH} | $I_L = -10mA$ $V_I = 5V$ | 4.96 | 4.98 | | V |
| Output Swing (COM) | V_{OL} | $I_L = 50mA$ $V_I = 5V$ | | 5.03 | 5.05 | V |
| | V_{OH} | $I_L = -50mA$ $V_I = 5V$ | 4.95 | 4.97 | | V |
| Short Circuit Current | I_{SC} | (Buffer 2~7) | | ± 70 | | mA |
| | | (Com Buffer, Buffer1,8) | | ± 180 | | mA |

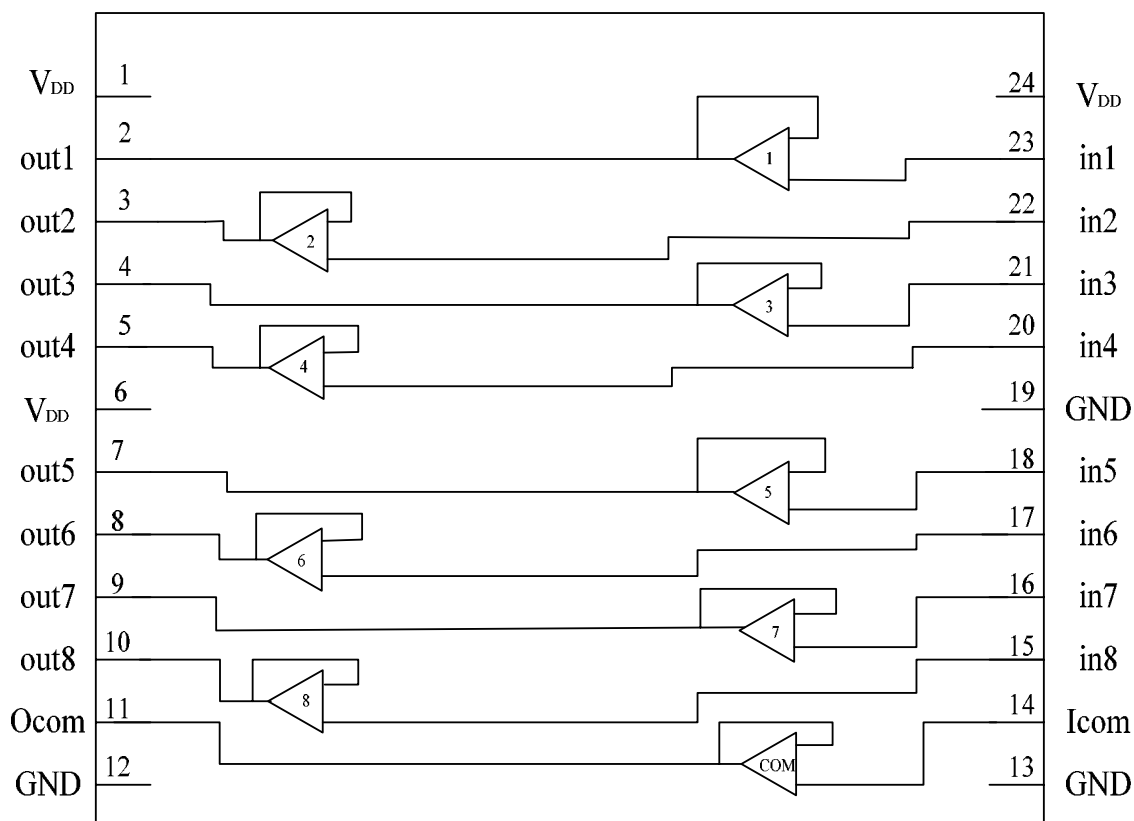
AC Characteristics

| Parameter | | Test Conditions | Min | Typ | Max | Units |
|--------------------|-------|---------------------------------|-----|-----|-----|------------|
| Slew Rate [Note 2] | SR | $V_I = 2V$ to $8V$, 20% to 80% | | 1 | | V/ μs |
| Settling Time | t_s | $V_I = 4.5V$ to $5.5V$ 0.1% | | 5 | | μs |
| | | $V_I = 5.5V$ to $4.5V$ 0.1% | | | | |

Note 2: Slew rate is measured on rising and falling edges.

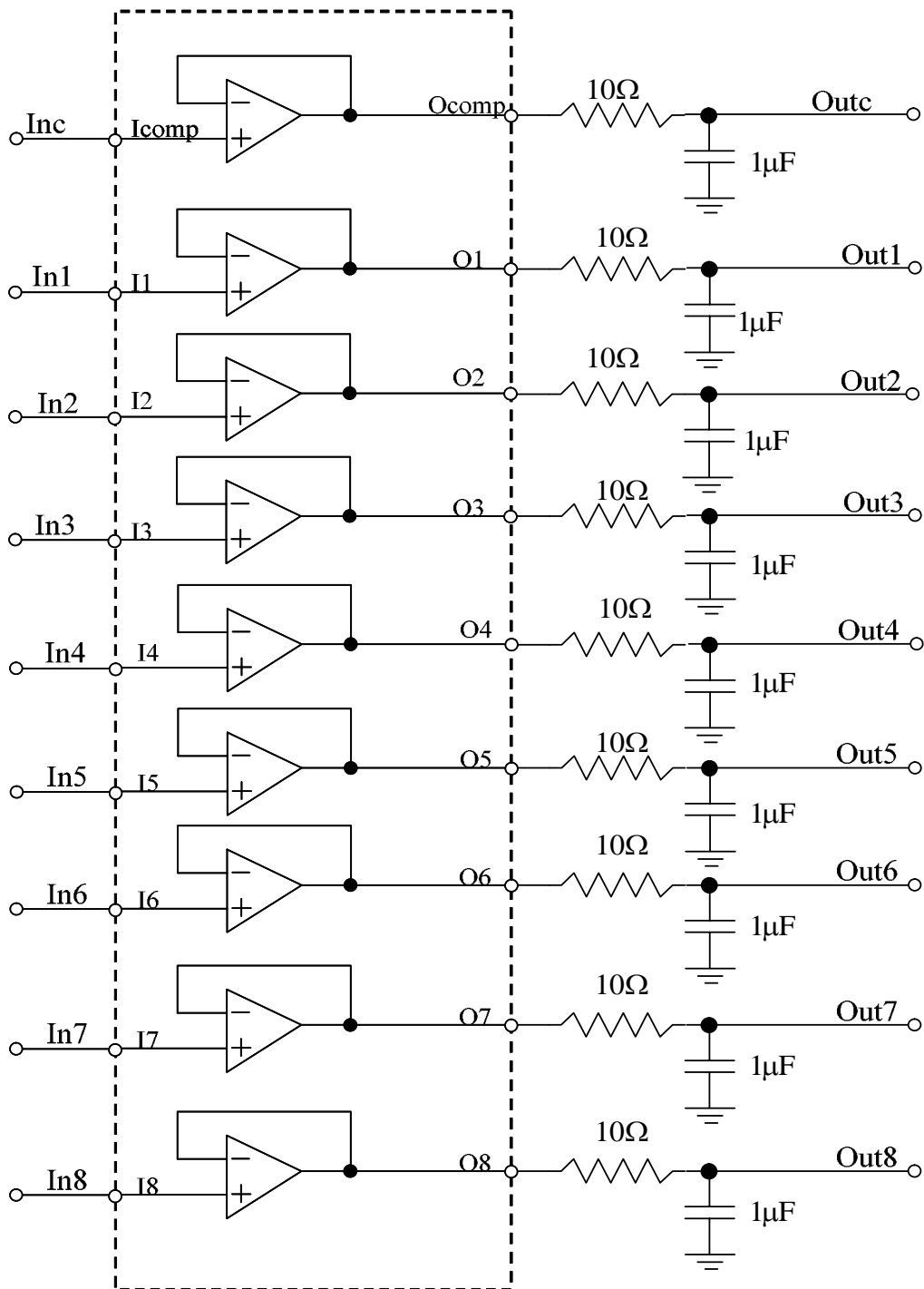


BLOCK DIAGRAM



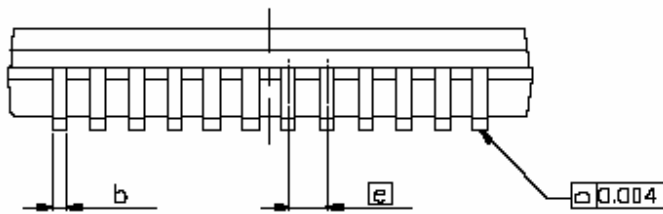
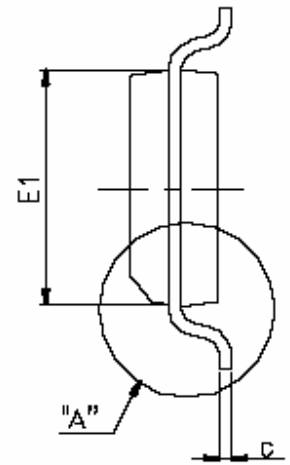
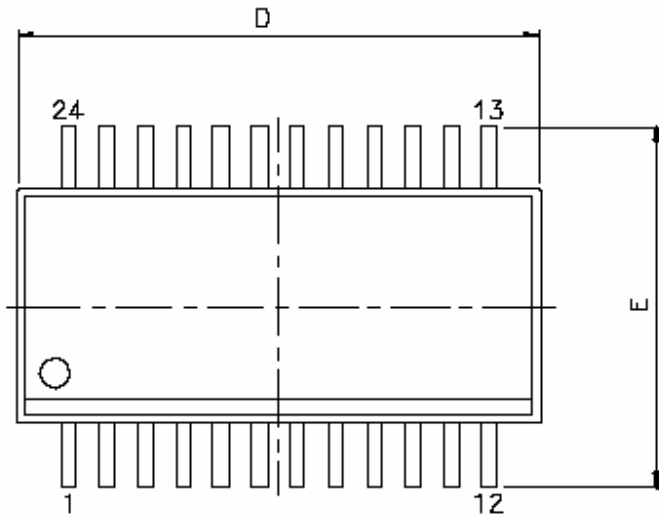


APPLICATION CIRCUIT



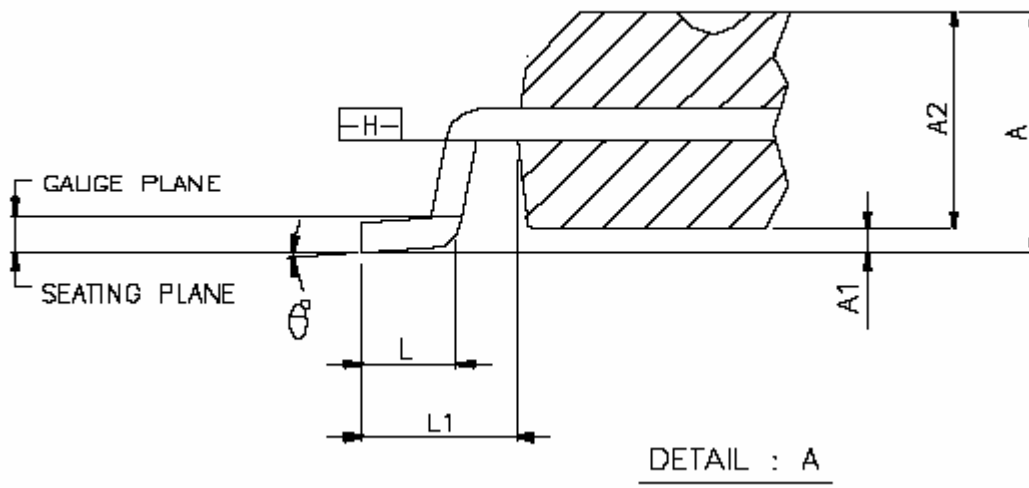


PACKAGE DIMENSION
SSOP-24 PACKAGE





PACKAGE DIMENSION (CONT.)
SSOP-24 PACKAGE



| SYMBOL | DIMENSION IN INCHES | | |
|----------------|---------------------|-------|-------|
| | MIN | TYP | MAX |
| A | 0.053 | 0.064 | 0.069 |
| A1 | 0.004 | 0.006 | 0.010 |
| A2 | - | - | 0.060 |
| D | 0.336 | 0.340 | 0.344 |
| E | 0.228 | 0.236 | 0.244 |
| E1 | 0.150 | 0.154 | 0.157 |
| b | 0.008 | - | 0.012 |
| C | 0.007 | - | 0.010 |
| e | 0.025 BASIC | | |
| L | 0.015 | 0.025 | 0.050 |
| L1 | 0.041 BASIC | | |
| θ° | 0° | - | 8° |

Note:

1. JEDEC OUTLINE: MO-137 AE
2. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSIONS OR GATE BURRS. MOLD PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED 0.006" PER SIDE. DIMENSION E1 DOES NOT INCLUDE INTERLEAD MOLD PROTRUSIONS. INTERLEAD MOLD PROTRUSIONS SHALL NOT EXCEED 0.010° PER SIDE.
3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION/INTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.004" TOTAL IN EXCESS OF b DIMENSION AT MAXIMUM MATERIAL CONDITION. DAMBAR INTRUSION SHALL NOT REDUCE DIMENSION b BY MORE THAN 0.002° AT LEAST.



ORDERING INFORMATION

AAT xxxxx-xx-x

AAT Part Number

Package Code 2
T=Taping Reel
Blank=Tube or Tray

Remark:
T=Taping Reel
PS.
Ssop24→2,500pcs/reel

Blank=Tube

Package Code 1
Ssop24: S11