



Details are subject to change without notice

10+1-Channel Buffer for TFT LCD

Features

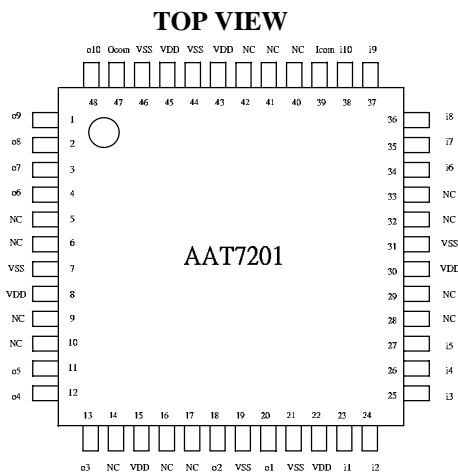
- 10 Channels with Output Current: $\pm 30\text{mA}$ (MAX)
- 1 V_{com} with Output Current: $\pm 100\text{mA}$ (MAX)
- Unity Gain Buffer Capable of Driving Large Capacitive Loads
- Input Range Matched to LCD Reference Requirements
- V_{DD} Specified for 6.5V to 16.0V
- TQFP48 Package

General Description

The AAT7201 is a 10+1-channel buffer designed to increase the driving capability for thin film transistor liquid crystal display (TFT LCD). This device includes a V_{com} buffer circuit, four rail-to-rail buffer amplifier circuits and six buffer amplifier circuits. Each buffer is capable of driving heavy capacitive loads and offering fast current loading (V_{com} : 100mA, the others: 30mA).

AAT7201 comes in a space-saving TQFP48 package, which makes it an ideal component in LCD TV and monitors.

Pin Configuration



TQFP48

**Pin Description**

Pin No.	Name	I/O	Description
1	o9	O	Buffer Channel 9 Output
2	o8	O	Buffer Channel 8 Output
3	o7	O	Buffer Channel 7 Output
4	o6	O	Buffer Channel 6 Output
5	NC	-	-
6	NC	-	-
7	GND	I	Ground
8	V _{DD}	I	Power Supply
9	NC	-	-
10	NC	-	-
11	o5	O	Buffer Channel 5 Output
12	o4	O	Buffer Channel 4 Output
13	o3	O	Buffer Channel 3 Output
14	NC	-	-
15	V _{DD}	I	Power Supply
16	NC	-	-
17	NC	-	-
18	o2	O	Buffer Channel 2 Output
19	GND	I	Ground
20	o1	O	Buffer Channel 1 Output
21	GND	I	Ground
22	V _{DD}	I	Power Supply
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	NC	-	-
29	NC	-	-
30	V _{DD}	I	Power Supply



Pin Description (Cont.)

Pin No.	Name	I/O	Description
31	GND	I	Ground
32	NC	-	-
33	NC	-	-
34	i6	I	Buffer Channel 6 Input
35	i7	I	Buffer Channel 7 Input
36	i8	I	Buffer Channel 8 Input
37	i9	I	Buffer Channel 9 Input
38	i10	I	Buffer Channel 10 Input
39	I _{com}	I	Com Buffer Input
40	NC	-	-
41	NC	-	-
42	NC	-	-
43	V _{DD}	I	Power Supply
44	GND	I	Ground
45	V _{DD}	I	Power Supply
46	GND	I	Ground
47	O _{com}	O	Com Buffer Output
48	o10	O	Buffer Channel 10 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
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

Note 1: Value 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} varies from 6.5V to 16.0V	-	80	-	dB
Supply Current	I_S		-	9	-	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

Output Characteristics

Parameter		Test Conditions	Min	Typ	Max	Unit
Output Swing Low	V_{OL}	$I_L = 5mA$ (Buffer 1, 2, 9, 10) $V_I = 0V$	-	0.08	0.15	V
		$I_L = 10mA$ (Buffer 3, 4, ..., 7, 8) $V_I = 1V$	-	1.02	1.05	V
Output Swing High	V_{OH}	$I_L = -5mA$ (Buffer 1, 2, 9, 10) $V_I = 10V$	9.85	9.92	-	V
		$I_L = -10mA$ (Buffer 3, 4, ..., 7, 8) $V_I = 9V$	8.95	8.98	-	V
Output Swing (Buffer 3, 4, ..., 7, 8)	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 1~10)	-	± 70	-	mA
		(Com Buffer)	-	± 180	-	mA



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

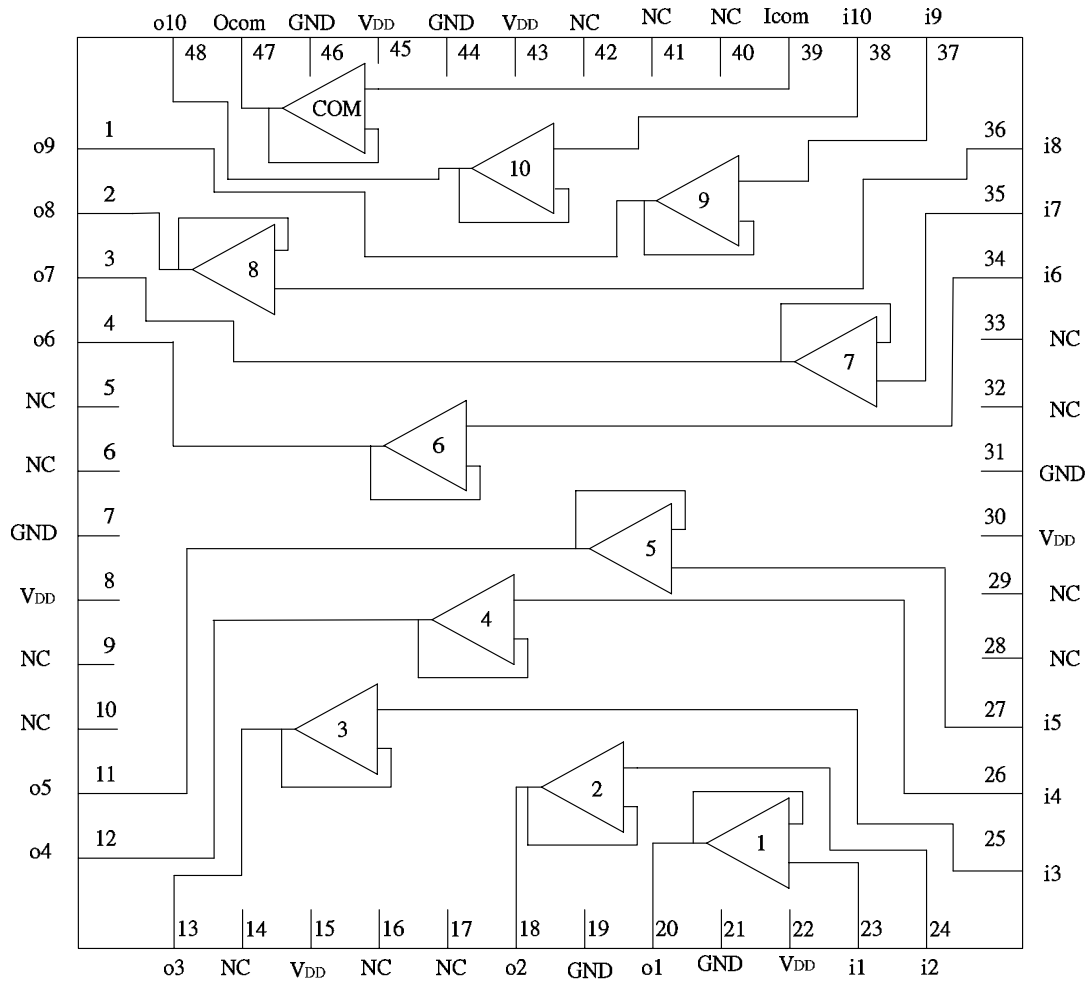
AC Characteristics

Parameter		Test Conditions	Min	Typ	Max	Units
Slew Rate (Note 2)	SR	$V_I=2V$ to $8V$, 20% to 80%	-	1	-	$V/\mu s$
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.

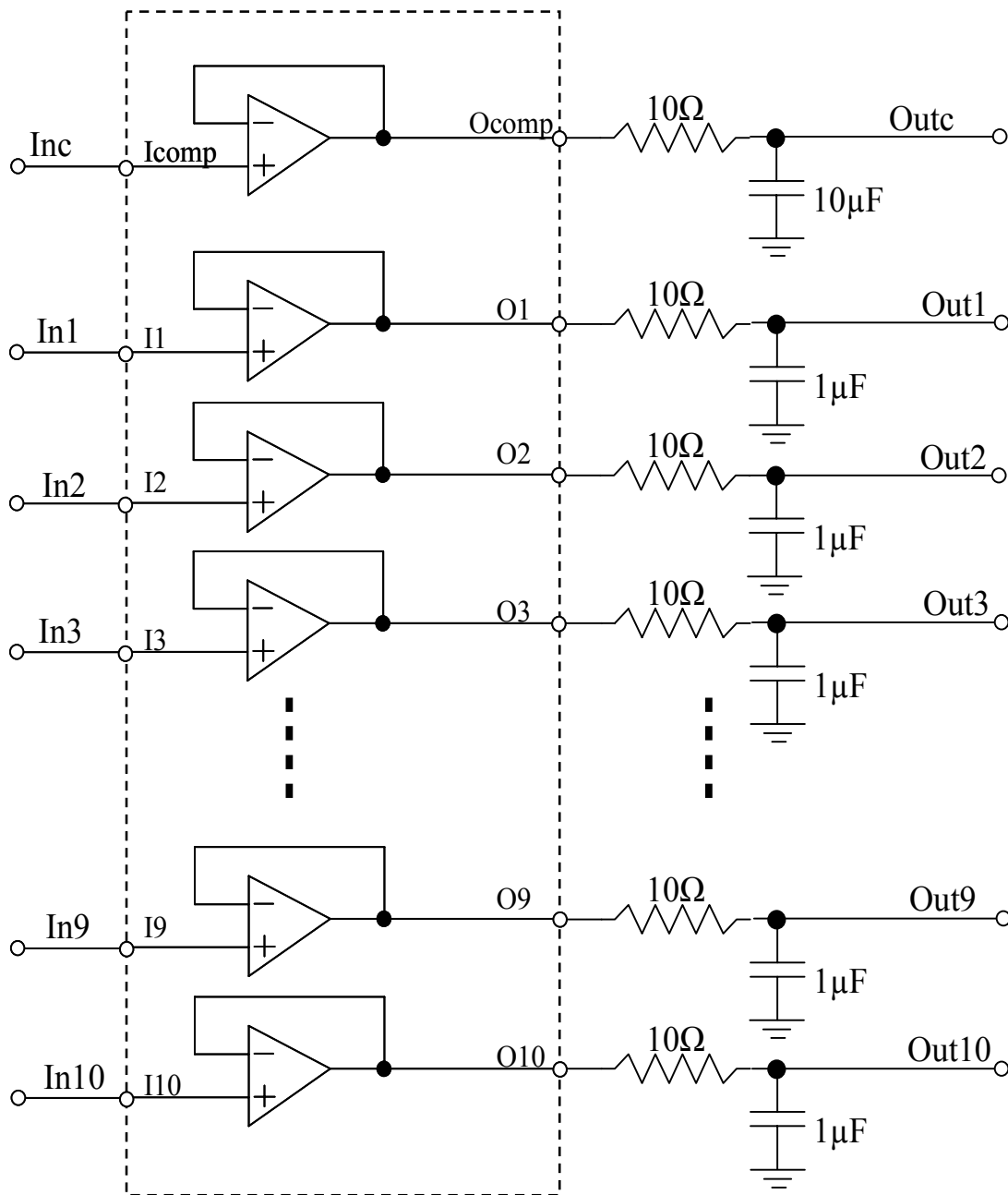


Block Diagram





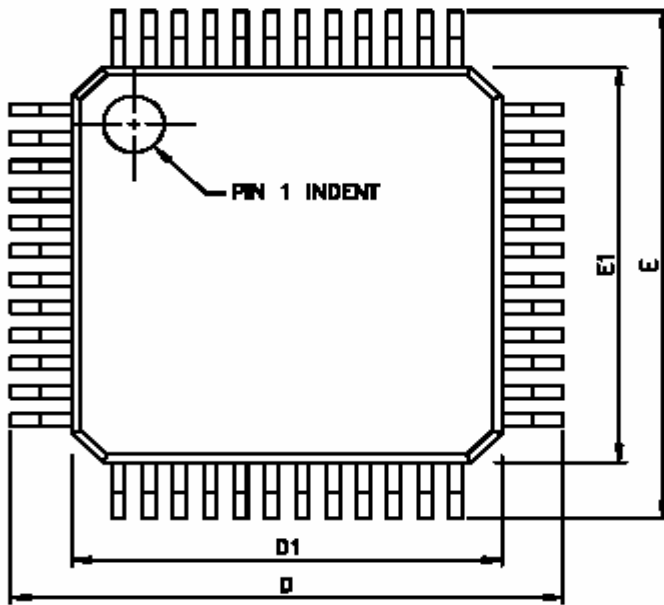
Application Circuit



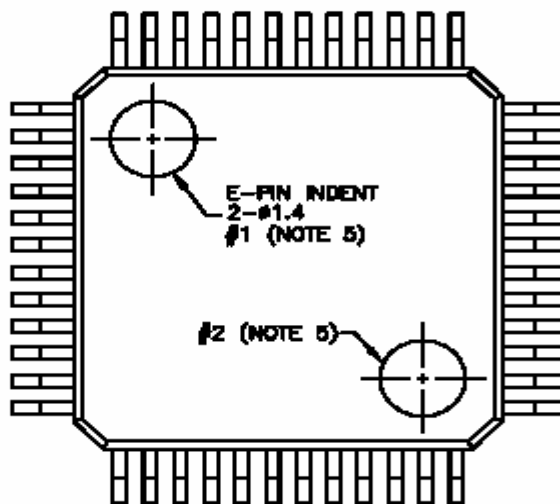


Package Dimension
TQFP48

TOP VIEW

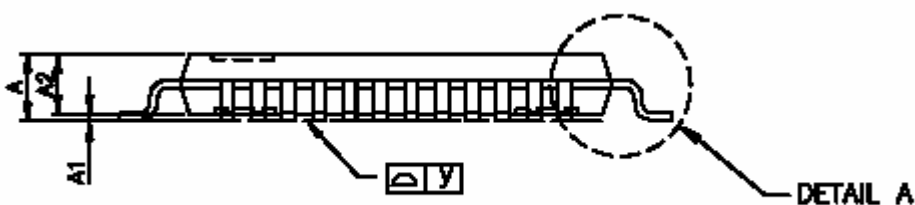
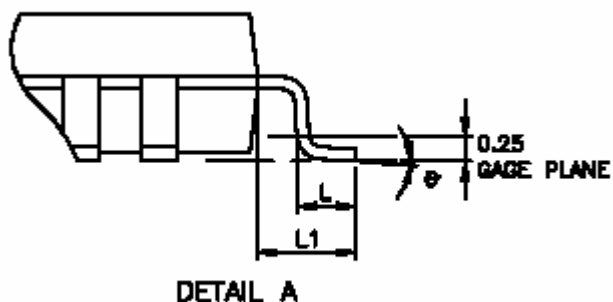


BOTTOM VIEW





Package Dimension (Cont.)
TQFP48



NOTE:

1. CONTROLLING DIMENSION: MILLIMETER
2. LEAD FRAME MATERIAL: COPPER C7025
3. PACKAGE DIMENSION EXCLUSIVE MOLDING FLASH ALLOWABLE PROTRUSION IS 0.25 MILLIMETERS PER SIDE.
4. DIMENSION b DOES NOT INCLUDE DAMBER PROTRUSION. ALLOWABLE DAMBER PROTRUSION SHALL NOT CAUSE THE LEAD WIDTH TO EXCEED THE MAXIMUM b DIMENSION BY MORE THAN 0.08 MILLIMETERS.
5. BOTTOM E-PIN INDENT ARE MARKED AS BELOW



X : A, B, C, ...
 Y : 1 ~ 12
 NO : DENOTE MOLD SET NUMBER

6. ALL EDGE CORNERS HAVE TO BE R 0.20 MAX.
7. JEDEC NUMBER: MS-026

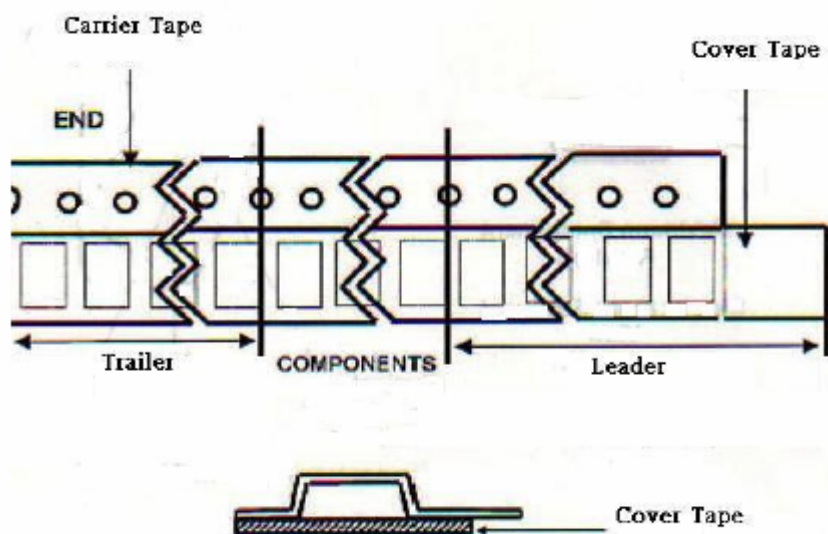
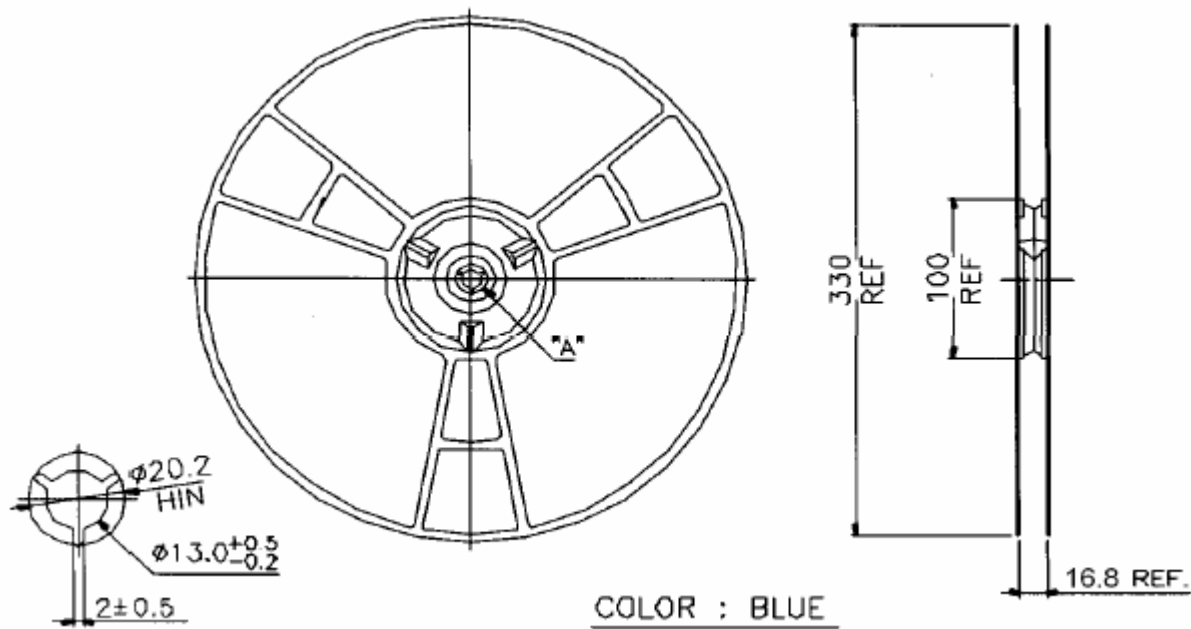


Package Dimension (Cont.)
TQFP48

SYMBOL	DIMENSIONS IN MILLIMETERS		
	MIN	TYP	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	-
θ	0° C	3.5° C	7.0° C
y	0.0	-	0.08

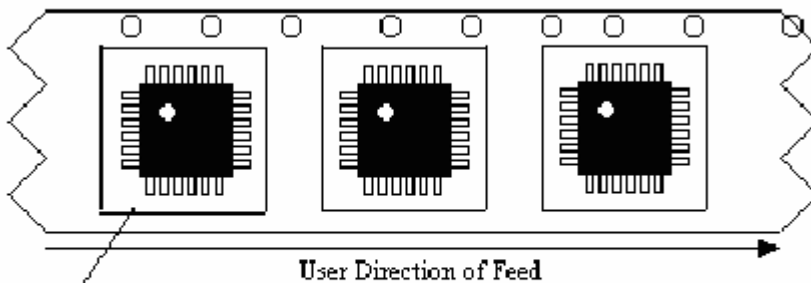
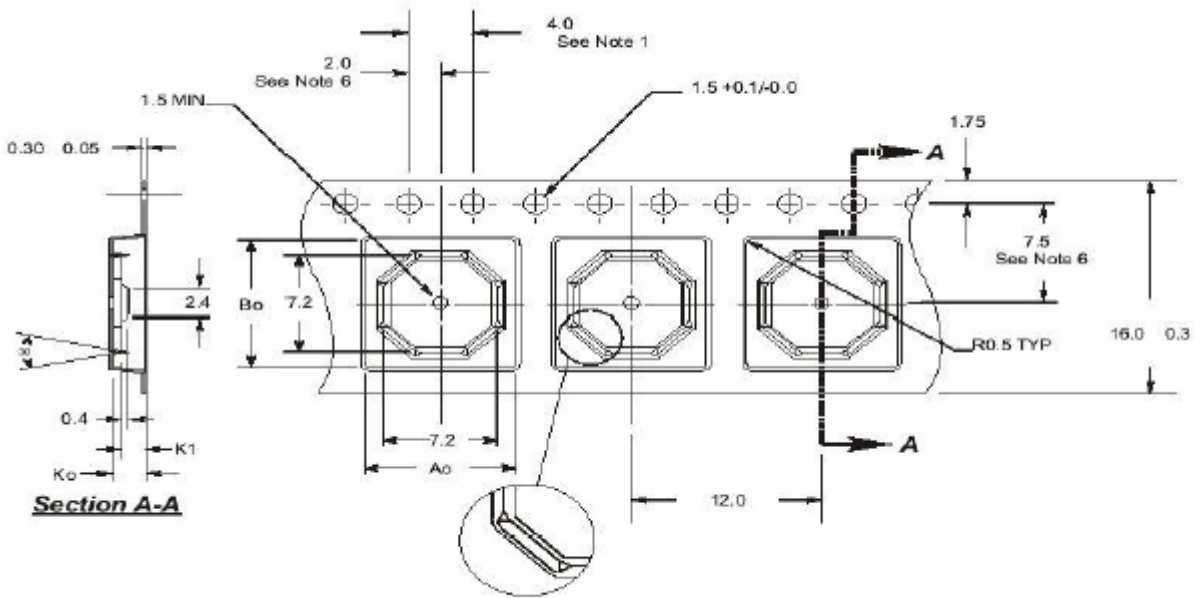


Tape and Reel





Tape and Reel (Cont.)



Pin #1
Adjacent to
Sprocket Holes

Ao = 9.50 mm
Bo = 9.50 mm
Ko = 2.00 mm
K1 = 1.45 mm



Tape and Reel (Cont.)

NOTE:

- 1. 10 SPROCKET HOLE PITCH CUMULATIVE TOLERANCE .02
- 2. CAMBER NOT TO EXCEED 1 MILLIMETER IN 100 MILLIMETERS
- 3. MATERIAL: PS+C
- 4. A₀ AND B₀ MEASURED ON A PLANE 0.3 MILLIMETERS ABOVE THE BOTTOM OF THE POCKET
- 5. K₀ MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
- 6. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED AS TRUE POSITION OF POCKET, NOT POCKET HOLE.

Ordering Information

AAT xxxxx-xx-x

AAT Part Number

Package Code 1
TQFP48: T3

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

Remark:
T=Taping Reel
TQFP48→ 1,000pcs/reel

Blank=Tube