

# HT1134A Pin Ball LCD Game

#### **Features**

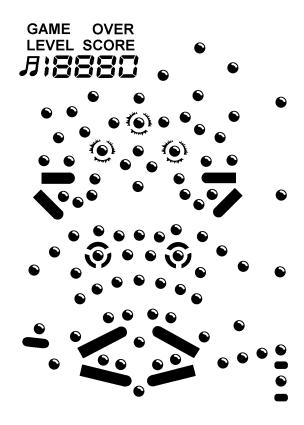
- 1/3 bias, 1/4 duty, 32×4 pattern, 3.0V LCD driver
- 12 kinds of sound effects
- RC oscillator

### **General Description**

HT1134A is an LCD Pin Ball game designed by HOLTEK. It has a built-in sound effect driver to create vivid results. It is much like a real pin ball. This game contains five levels. The higher the level is, the faster is the speed. When the

score reaches a certain number, the level goes up. The highest score is up to 19990. The level can be set up before the game starts. It is not necessary to start from level 1-1.

#### **LCD Pattern**





### **Functional Description**

#### **Key description**

#### RESET

Pressing this key at any time resets the system back to the starting condition and the highest score is cleared.

#### • PAUSE

Pressing this key any time after power on, can temporarily stop the game, freeze the screen and stop the sound effects. Press this key again, and the game will continue. During the pause condition, all the other keys have no effect except OFF and RESET key.

#### OFF

Pressing this key any time after power on, can clear the screen. Except turning on the power again, all the other keys are disabled and the entire system goes into the low power mode. It is similar with the power off condition, however, the highest records are kept.

#### MUTE

This key can turn the sound effects on or off without disturbing the game. When power is on, press this key to turn off the sound effects. Press it again to restore the sound effects.

#### START/ON

When power is off, this key is to turn on the power. When power is on, this key is to restart the game.

#### • LFLIP

Press this key to move up two flips on the left of the screen. When it is released, the flips are moved down.

#### • RFLIP

At the beginning of the game, this functions as in serving a ball. When the ball gets into the activity zone, it becomes a right flip which has the same function as LFLIP.

#### Operational description

There are five levels in this game. Each level has different shifting speed. The higher the level is, the faster is the speed. When START/ON key is pressed, the highest score is shown and the initial level is displayed. Player can press RFLIP to select the level. After that, press START/ON key to start the game. Press RFLIP to serve the ball, when the ball drops, depending on its position press LFLIP or RFLIP to flip the ball and prevent it from dropping to the goal. The strength to serve a ball depends on the length of time alloted in pressing RFLIP key. There is a gate at the bottom left side of the screen. The gate will open or close at intervals. The ball should be prevented from dropping down to the gate when it is open. There are only three balls served in each level. When the score reaches 3000 or 7000, one ball is relatively added as bonus. When power is on, or player has to select a level, or when the game is over, if the player does not press any key at any one of the three conditions, then it automatically goes into free run within one minute. During free run, if START/ON or OFF key is pressed, then the game starts, or the power is off. Otherwise, if the free run lasts about 4 minutes 20 seconds, the power is automatically turned off. The highest score is lost only when RESET key is pressed or when the battery is changed.

#### · LCD test pattern

At any time, press LFLIP or RFLIP key simultaneously with RESET key, then release the RESET key, all the LCD patterns are shown. When LFLIP or RFLIP key is also released, the program goes back to normal.



#### **Counting method**

- 10 score is counted when the ball is touched once with left or right flip.
- 10 score is counted when the ball is touched once with the three circles. 30 score is counted if it gets into any one of the circles.
- 30 score is counted when the ball is passing through the left or the right gate.
- 50 score is counted when the ball gets into the two circles located between screen.
- 30 score is counted when the ball gets into the gate at the bottom left.
- When the ball is served, 10 or 20 or 30 score is counted depending on the path it takes to get into the activity zone. The smaller the strength to serve the ball, the lower is the score.

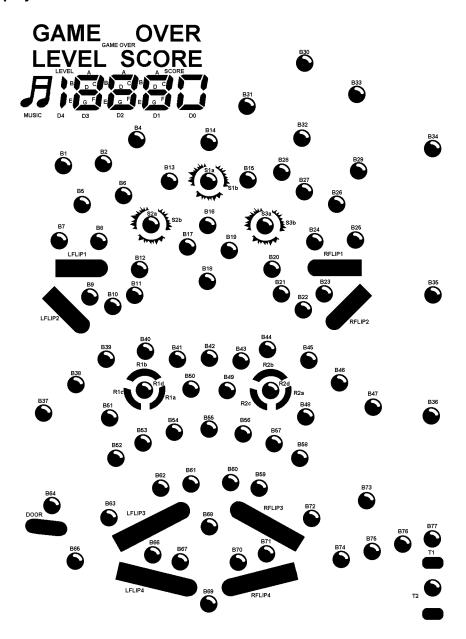
#### Sound effects

There are 12 kinds of sound effects in this game.

- Power on sound
- Game start
- Sound of serving a ball
- Sound that the ball is touched with circle or right or left flip
- Sound that the ball gets into the circle
- Sound that the ball gets into the rotating circle
- Sound that the ball is shifting
- Sound that the ball is in the hole
- Sound that the ball is passing through the gate
- Sound that the ball is dropping into the goal
- · Game over sound
- Sound that the flips flip the ball



# **LCD Display Label**





# **LCD Pattern Contrast Table**

Pad No.	Pin No.	COM1	COM2	COM2 COM3		SEGMENT	
34	1	GAME OVER	D3C	D3D	D3F	1	
35	2	D2A	D2B	D2E	D2G	2	
36	3	SCORE	D2C	D2D	D2F	3	
37	4	D1A	D1B	D1E	D1G	4	
38	5	D0	D1C	D1D	D1F	5	
39	6	B14	B4	B2	B1	6	
40	7	S1B	B13	В6	В5	7	
41	8	S1A	S2B	S2A	В8	8	
42	9	B16	B17	B12	В7	9	
43	10	B19	B18	B11	LFLIP1	10	
44	11	B44	B42	B10	В9	11	
45	12	B43	B41	B40	LFLIP2	12	
46	13	B49	B50 R1B B39		13		
47	14	B55	R1A	R1D	R1C	14	
48	15	B60	B54	4 B51 B38		15	
49	16	B59	B62	2 B53 B37		16	
50	17	RFLIP3	B61 B63 B52		17		
51	18	B71	B68	8 LFLIP3 B64		18	
52	19	B70	B67	B66 DOOR		19	
53	20	RFLIP4	B69	LFLIP4	B65	20	
5	21	_	_	_	COM4	COM4	
6	22	_	_	COM3 —		COM3	
7	23	_	COM2	_	_	COM2	
8	24	COM1	_   _   _		COM1		
8	25	COM1			COM1		
7	26	_	COM2 — —		COM2		
6	27	_	_	COM3	_	COM3	
5	28	_	_		COM4	COM4	
_	29	_	_	_	_	_	
54	30	B76	B77	T1	T2	21	

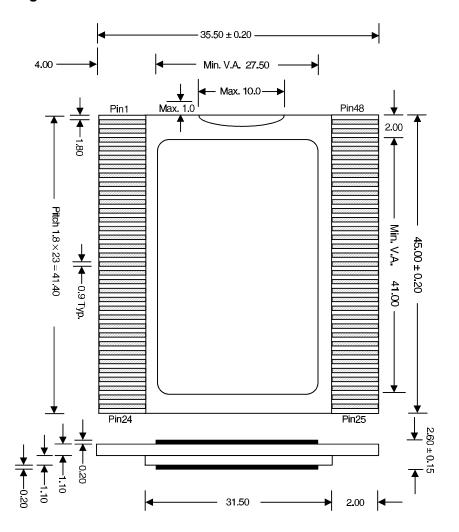


Pad No.	Pin No.	COM1	COM2 COM3 CO		COM4	SEGMENT	
55	31	B74	B75	B72	B73	22	
56	32	R2C	B56	B56 B57 B58		23	
_	33	_	_	_	_	_	
57	34	R2D	R2A	B48	B47	24	
_	35	_	_	_	_	_	
58	36	R2B	B45	B46	B36	25	
_	37	_			_		
_	38	_			_		
_	39	_	_	_	_	_	
59	40	B21	B22 RFLIP2		B35	26	
60	41	B20	B23 RFLIP1 B25		27		
61	42	S3A	B24 B26 B29		28		
_	43	_			_		
_	44	_			_		
62	45	S3B	B28 B27 B34		B34	29	
63	46	B15	B32 B30 B33		30		
64	47	B31	LEVEL D4 MUSIC		31		
65	48	D3A	D3B D3E D3G		32		



# **LCD Package Outline**

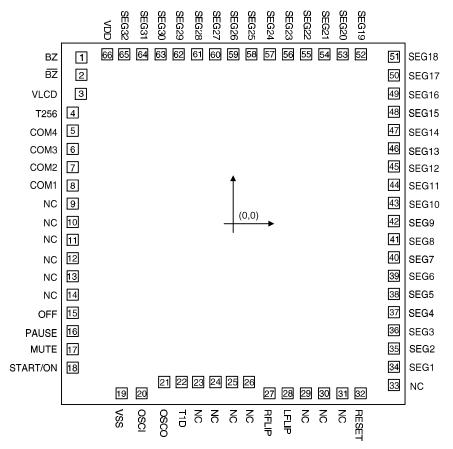
Unit: mm



7



## **Pad Assignment**



Chip size:  $2970\times3000~(\mu\text{m})^2$ 

<sup>\*</sup> The IC substrate should be connected to VSS in the PCB layout artwork.



# **Pad Coordinates**

Pad Coord	Pad Coordinates Unit: μm						
Pad No.	X	Y	Pad No.	X	Y		
1	-1192.10	1305.20	34	1261.10	-1122.30		
2	-1192.10	1169.80	35	1261.10	-979.80		
3	-1196.70	1019.80	36	1261.10	-836.30		
4	-1261.10	873.70	37	1261.10	-693.80		
5	-1261.10	731.20	38	1261.10	-550.30		
6	-1261.10	587.70	39	1261.10	-407.80		
7	-1261.10	445.20	40	1261.10	-264.30		
8	-1261.10	301.70	41	1261.10	-121.80		
9	-1261.10	159.20	42	1261.10	21.70		
10	-1261.10	15.70	43	1261.10	164.20		
11	-1261.10	-126.80	44	1261.10	307.70		
12	-1261.10	-270.30	45	1261.10	450.20		
13	-1261.10	-412.80	46	1261.10	593.70		
14	-1261.10	-556.30	47	1261.10	736.20		
15	-1261.10	-698.80	48	1261.10	879.70		
16	-1261.10	-842.30	49	1261.10	1022.20		
17	-1261.10	-984.80	50	1261.10	1165.70		
18	-1261.10	-1128.30	51	1261.10	1311.20		
19	-876.70	-1331.40	52	1001.00	1331.40		
20	-719.70	-1331.40	53	858.50	1331.40		
21	-542.10	-1241.00	54	715.00	1331.40		
22	-406.70	-1241.00	55	572.50	1331.40		
23	-276.30	-1241.00	56	429.00	1331.40		
24	-140.90	-1241.00	57	286.50	1331.40		
25	-10.50	-1241.00	58	143.00	1331.40		
26	124.90	-1241.00	59	0.50	1331.40		
27	284.90	-1331.40	60	-143.00	1331.40		
28	427.40	-1331.40	61	-285.50	1331.40		
29	570.90	-1331.40	62	-429.00	1331.40		
30	713.40	-1331.40	63	-571.50	1331.40		
31	856.90	-1331.40	64	-715.00	1331.40		
32	999.40	-1331.40	65	-857.50	1331.40		
33	1261.10	-1265.80	66	-990.50	1331.40		

24th Dec '98 9



## **Absolute Maximum Ratings\***

Supply Voltage0.3V to 5.5V	Storage Temperature50°C to 125°C
Input VoltageVSS-0.3V to VDD+0.3V	Operating Temperature0°C to 70°C

<sup>\*</sup>Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

### **Electrical Characteristics**

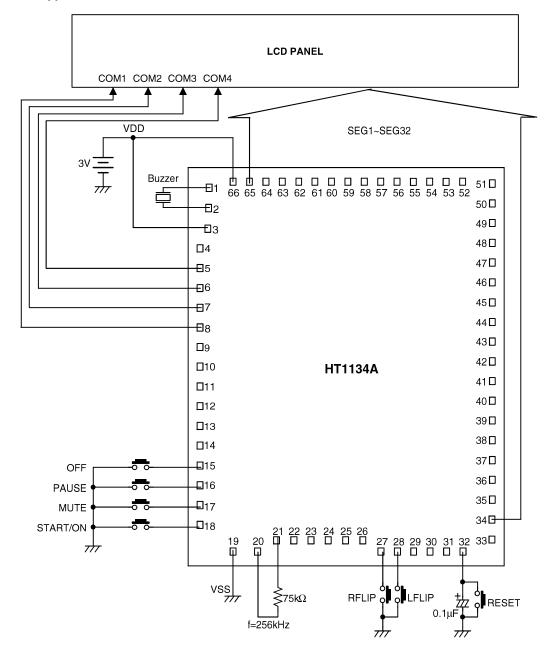
Ta=25°C

Symbol	Parameter	Test Condition		Min.	Tem	Max.	Unit
Symbol	Parameter	V <sub>DD</sub>	Condition	WIIII.	Тур.	Max.	
$V_{\mathrm{DD}}$	Operating Voltage	_	_	2.4	3	3.3	V
$I_{DD}$	Operating Current	3V	No load, f <sub>SYS</sub> =256kHz	_	250	500	μΑ
I <sub>STB</sub>	Standby Current	3V	No load	_	1	5	μΑ
V <sub>LCD</sub>	LCD Supply Voltage	3V	_	_	3	_	V
fsys	Operating Frequency	3V	R=75kΩ	_	256	_	kHz



## **Application Circuits**

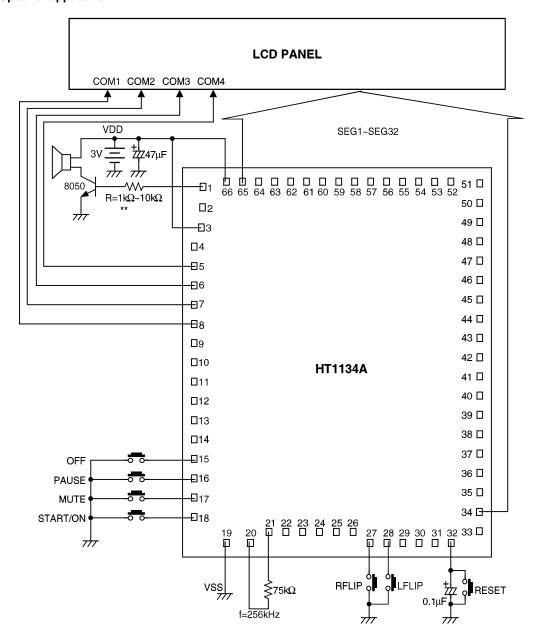
### **Buzzer application**



Note: The IC substrate should be connected to VSS in the PCB layout artwork.



### Speaker application



Notes: The IC substrate should be connected to VSS in the PCB layout artwork.

<sup>\*\*</sup> User can change the volume by changing the resistance  $1k\Omega{\sim}10k\Omega.$