# HT1136A
Football LCD Game

Features

- 1/3 bias, 1/4 duty, 32×4 pattern, 3.0V LCD driver
- Built-in sound generator

- RC oscillator
- Auto power off mode

General Description

HT1136A is a football LCD GAME designed by HOLTEK. By using the play controls an exciting game can develop. In the defense, the player can control any team member; in offense, the player can pass and kick as necessary.
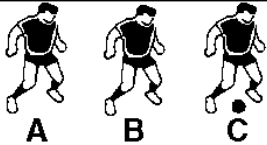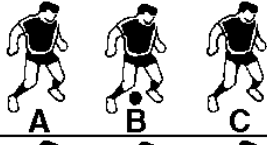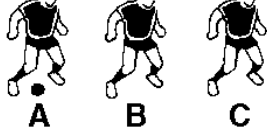
LCD Pattern
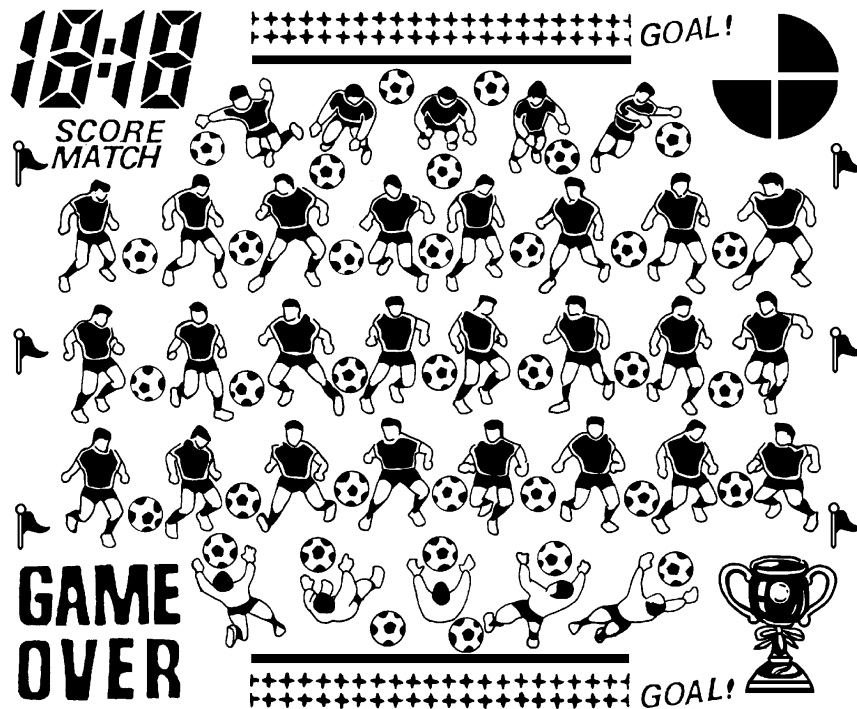
Functional Description

Key description

- RESET

  Press this key to re-initialize the game. The scoreboard is cleared to zero (data is lost) and restarts the game from the beginning.

- START/ON

  When power is off, press this key to start the game. When the game is in progress, pressing this key has no effect.

- MUTE

  Pressing this key can turn off the music and sound effects without disturbing the game. Pressing it again restores the music and sound effects.

- OFF

  Pressing this key at any time can turn off the power. But the highest score is saved.

- PAUSE

  Pressing this key can temporarily stop the game, freeze the screen and stop the sound effects. Press it again and the game continues.

- PASS

  In defense, this key can control the team members (which will be flashing) of the player's side. In offense, pressing this key can pass the ball to the other team member in the player's side. The ball is passed in the direction given in the table.

- KICK

  In defense, this key can select a team member on the player's side, but it's direction is different from the PASS key. For offense, if not in the penalty area, pressing this key can pass the ball to the other team member on the player's side, but the pass direction is different from the PASS key. If within the penalty area of the opponent's side, it is goal shooting of which direction cannot be controlled. The ball is passed to the direction as indicated in the table.

- UP

  It moves the flashing team member upward. If the flashing team member controls the ball, the screen can go to the next.

- DOWN

  It makes the flashing team member move down.

- LEFT

  It makes the flashing team member move to the left, or controls the goal shooting direction in the PK contest.

- RIGHT

  It makes the flashing team member move to the right, or controls the goal shooting direction in the PK contest.

* At both sides' penalty area, there are only two team members. If in defense, it doesn't matter whether PASS or KICK key is pressed, it always shifts the ball from one to the other team member. In offense, at the other side's penalty area, pressing the PASS key means to pass the ball to the other team member, while pressing the KICK key means "goal shooting".

Operational description

- Player assigns team members wearing dark football shirts to contest with the opponents wearing light football shirts who is controlled by the internal computer. Player's team member should defend from the bottom to the top of the screen and defend the opponent's goal shooting at the bottom. During the contest, opponents will use a lot of techniques to intercept the ball and approach the goal on the bottom of the screen. Players can stop the opponents and intercept the ball for a counter-attack.

- Press the START/ON key, the screen then shows the highest score and a prelude (start music) is played. The highest score is shown for 2 seconds and the current level is indicated. Press the START/ON key again and the game starts. With a whistle sound, player begins to attack.

Current condition	Key	Pass direction
A B C	PASS	C → B
	KICK	C → A
A B C	PASS	B → C
	KICK	B → A
A B C	PASS	A → C
	KICK	A → B

- Each half lasts about 3 minutes. On the upper right corner of the screen, there is a time signal to remind the player how much time is left. When only half a minute is left, the time signal flashes. When time is up, the game is over. If player's score is higher than the opponent's, a level is achieved and the pass-through-level music is played. The game goes into the next level. If player's score is lower than the opponent's, the game is over and the game-over music is played. When it is even, a penalty kick contest is added to decide who is the winner. During the contest, if one side is winning by 5 goals, the game is over.

- The football field is divided into five sections. Only one section can be seen on the screen. The five sections are first half, second half, third half and both sides' penalty areas. It is indicated by flags and goal nets.

Section	Sign	Team member
Opponent's penalty area	Opponent's goal net	Two team members from each side and one opponent's goal keeper
First half	Two flags on the t op of the screen	Three team members from each side
Second half	Two flags on the middle of the screen	Three team members from each side
Third half	Two flags on the bottom of the screen	Three team members from each side
Player's penalty area	Player's goal net	Two team members from each side and one player's goal keeper

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- The contest starts from positions in section 3. During the contest, UP, DOWN, LEFT, RIGHT, PASS, and KICK keys can be selected for attack or defense. Each side's team member can move to the next section (but cannot go backward) only in offense. At player's penalty area, press the left or the right key to move the player's goal keeper to protect the goal. When the player is in the opponent's penalty area, the shot to the goal cannot be controlled.

- When time is up and the score is even, a penalty kick contest decides the winner. Each side has 5 shots at goal. If any side wins over 3 balls, then the PK contest is over. If the 5 penalty shots are taken, and the score is still even, each side is given one more deciding penalty kick. During the PK contest, the RIGHT or the LEFT key can be held and then press the KICK key to do goal shooting to the desired direction.

- When the player wins at the 5th, 10th, and 15th half, a championship cup is shown on the screen and music is played. Whenever the championship cup appears, the pace of the remaining contest becomes faster.

- When the game is over, and the total of all the games exceeds the current highest score record, the new total will replace this. When GAME OVER is shown on the screen and if START/ON or OFF key is not pressed, after two minutes it automatically goes into the OFF condition.

Counting method

When a goal is scored, one point is awarded. The score is displayed as a ratio. The left score is the player's and the right score is the opponent's. The highest score is shown by "half" to indicate the highest winning half.

Sound effects

- Game starting music

- Short whistle sound

- Team member moving sound

- Ball moving sound

- Pass through to the next level sound

- Long whistle sound

- Changing screen sound

- Game over sound

- Winning championship cup sound

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LCD Display Label
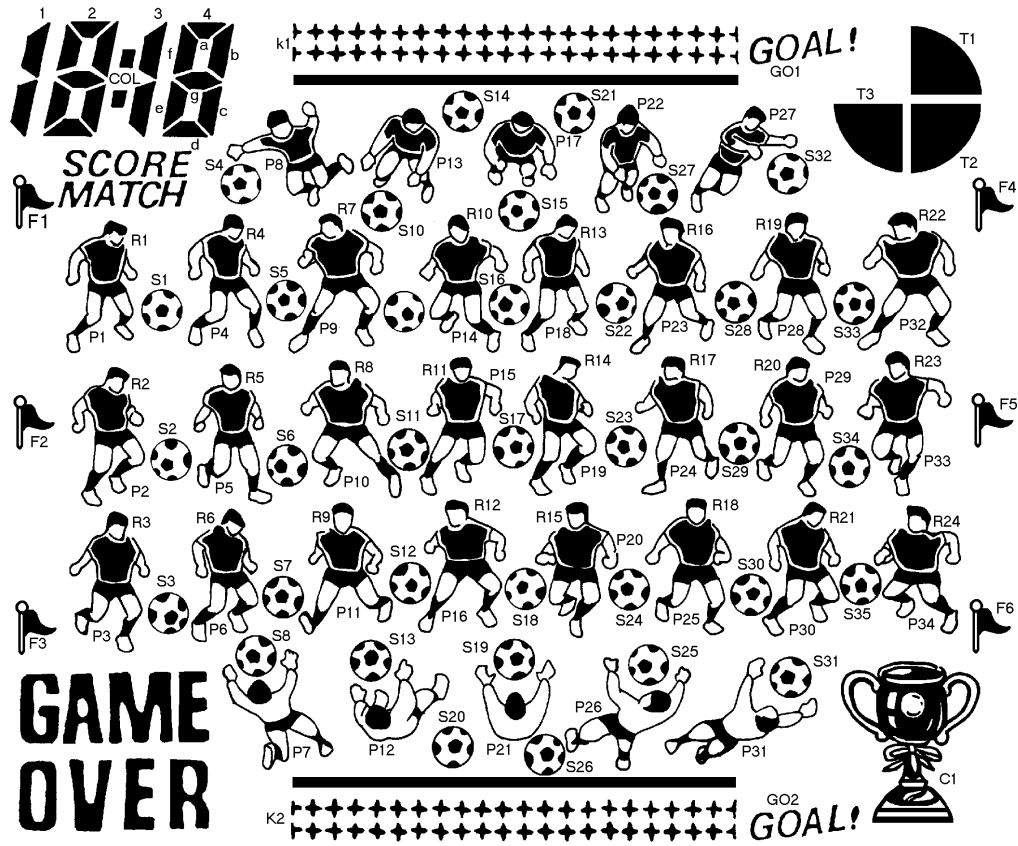
LCD Pattern Contrast Table

| Pad No.	Pin No.	COM0	COM1	COM2	COM3	SEGMENT
5	36	—	—	—	COM3	COM3
6	35	—	—	COM2	—	COM2
7	34	—	COM1	—	—	COM1
8	33	COM0	—	—	—	COM0
34	32	K1	S14	P13	P8	SEG0
35	31	S21	P17	S15	S9	SEG1
36	30	T3	F6	F5	F4	SEG2
37	29	GO1	P34	P33	P32	SEG3
38	28	S32	R24	R23	R22	SEG4
39	27	P27	S35	S34	S33	SEG5
40	26	S27	R21	R20	R19	SEG6
41	25	P22	P30	P29	P28	SEG7
42	24	C1	S30	S29	S28	SEG8
43	23	GO2	P25	P24	P23	SEG9
44	22	S31	R18	R17	R16	SEG10
45	21	P31	S24	S23	S22	SEG11
46	20	K2	—	T2	T1	SEG12
47	19	S25	P20	P19	P18	SEG13
48	18	P26	R15	R14	R13	SEG14
49	17	S26	S18	S17	S16	SEG15
50	16	P21	P16	P15	P14	SEG16
51	15	S19	R12	R11	R10	SEG17
52	14	S20	S12	S11	S10	SEG18
53	13	P12	R9	R8	R7	SEG19
54	12	S13	P11	P10	P9	SEG20
55	11	P7	S7	S6	S5	SEG21
56	10	S8	R6	R5	R4	SEG22
57	9	OVER	P6	P5	P4	SEG23
58	8	S4	S3	S2	S1	SEG24
59	7	MATCH	R3	R2	R1	SEG25

Pad No.	Pin No.	COM0	COM1	COM2	COM3	SEGMENT
60	6	SCORE	P3	P2	P1	SEG26
61	5	1B,C	F3	F2	F1	SEG27
62	4	2D	2F	2G	2E	SEG28
63	3	COL	2A	2B	2C	SEG29
64	2	4D	4F	4G	4E	SEG30
65	1	3B,C	4A	4B	4C	SEG31

LCD Package Outline

Unit : mm

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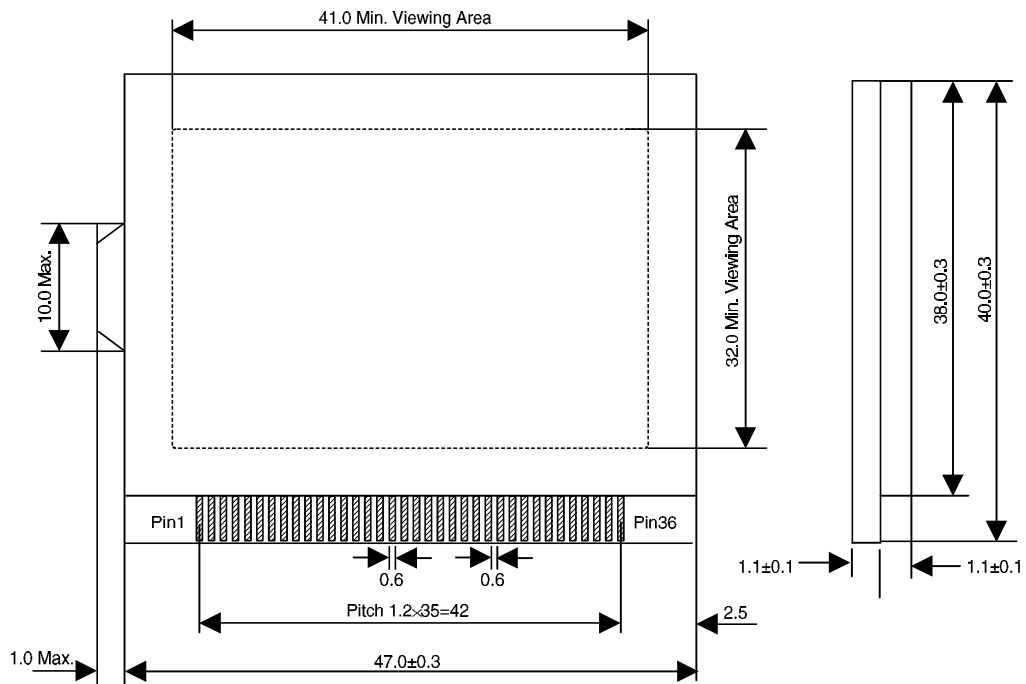
Pad Assignment
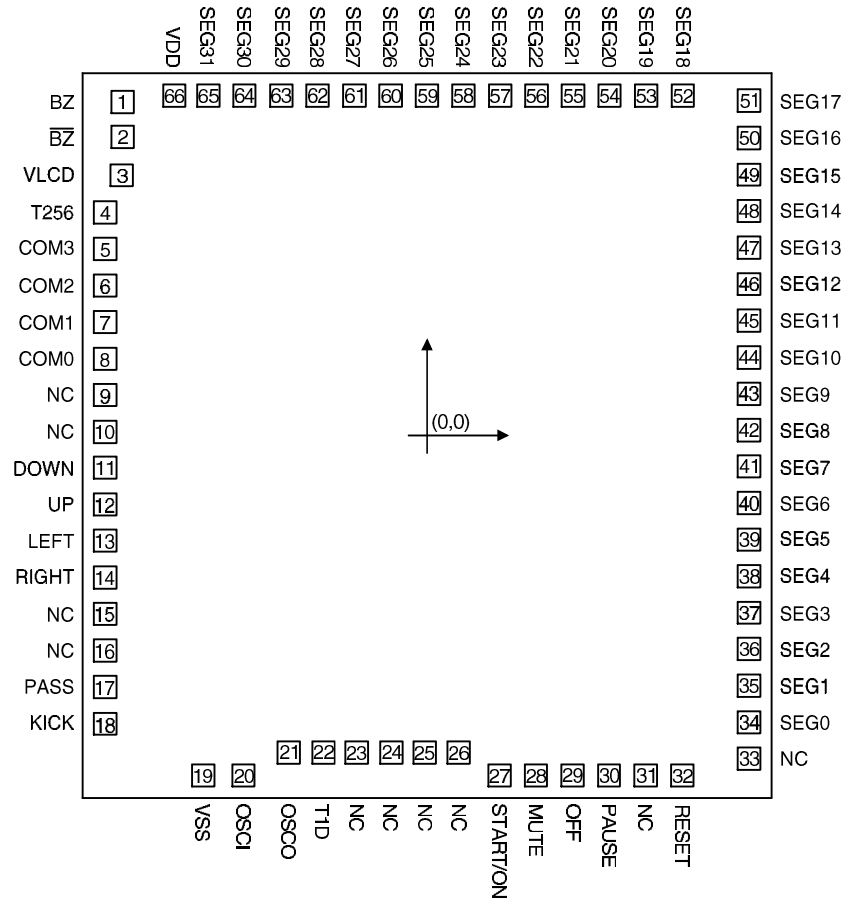
Chip size: 2790×3000 $(\mu m)^2$

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

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

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Absolute Maximum Ratings*

Supply Voltage .... V_{DD}–0.3V to 5.5V   Input Voltage .... V_{SS}–0.3V to V_{DD}+0.3V

Storage Temperature .... –50°C to 125°C   Operating Temperature .... 0°C to 70°C

*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 Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
V_{DD}	Operating Voltage	—	—	2.4	3	3.3	V
I_{DD}	Operating Current	3V	No load, f_{SYS}=230kHz	—	200	330	μA
I_{STB}	Standby Current	3V	No load	—	1μ	5μ	μA
V_{LCD}	LCD Supply Voltage	3V	—	—	3	—	V
f_{SYS}	Operating Frequency	3V	R=82kΩ	—	230	—	kHz

Application Circuits

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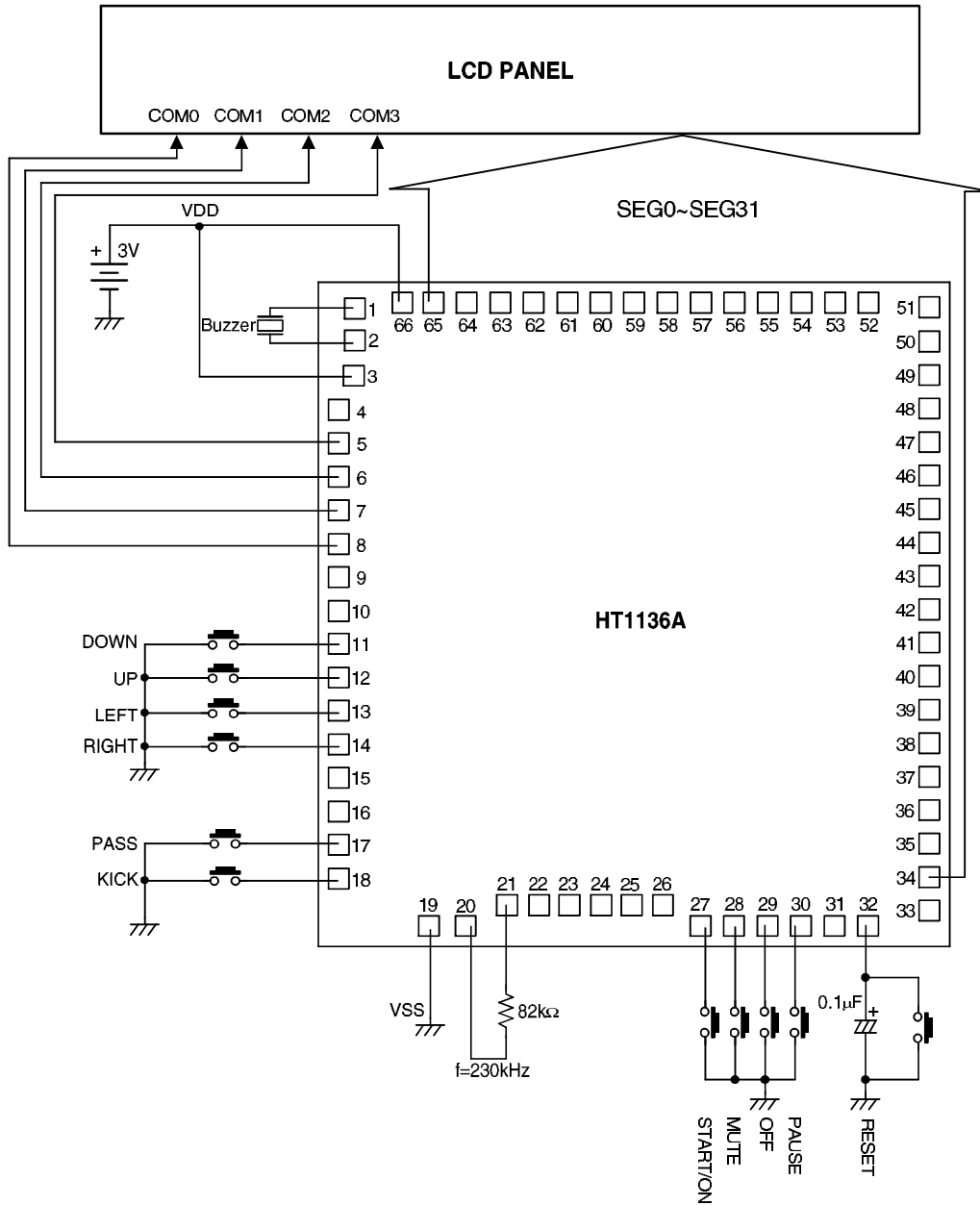
Note: The IC substrate should be connected to VSS in the PCB layout artwork.

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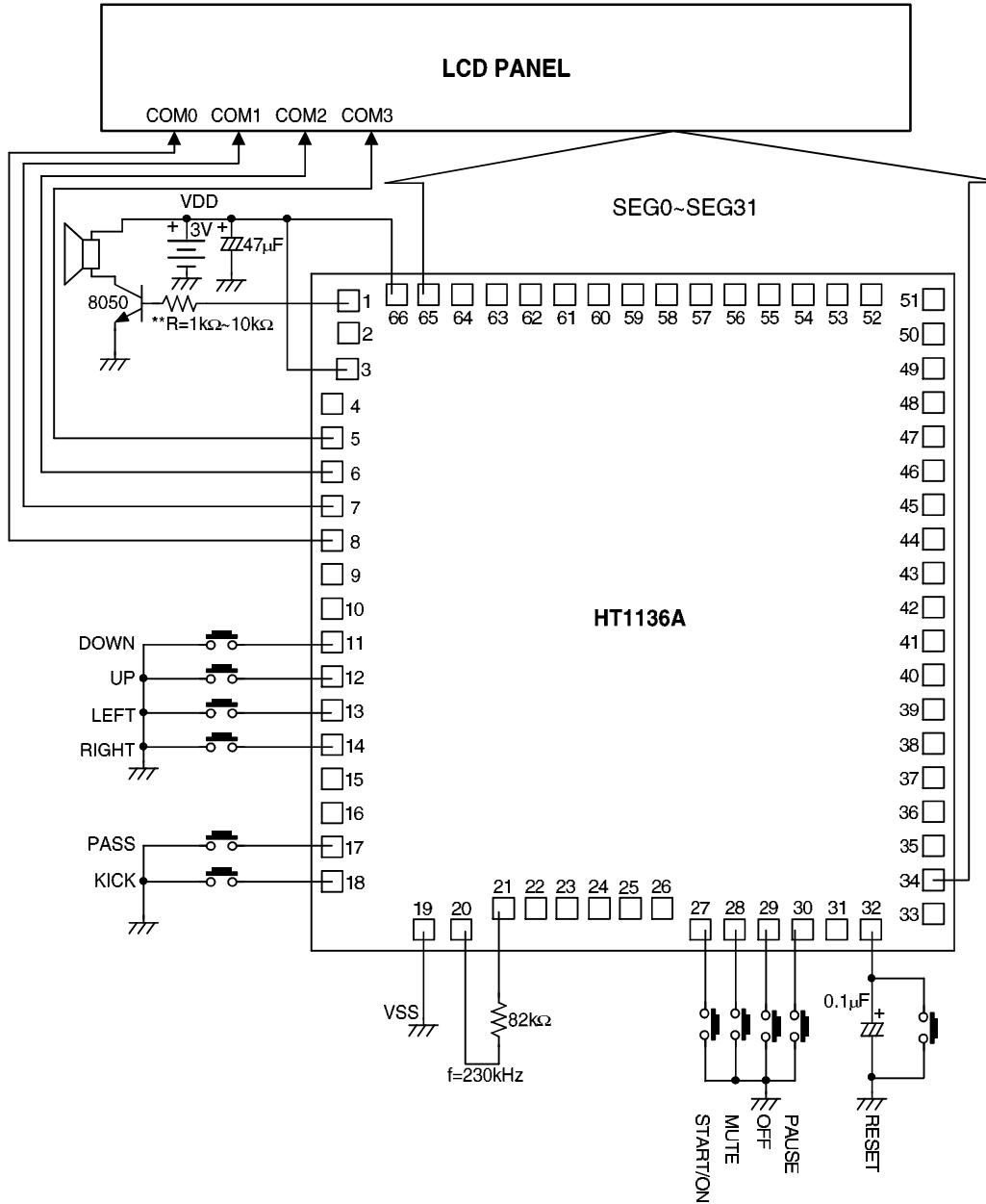
Notes: The IC substrate should be connected to VSS in the PCB layout artwork.

** User can change the volume by changing the resistance 1kΩ~10kΩ.