Features

- 1/3 bias, 1/4 duty, 32×4 pattern, 3.0V LCD driver
- 13 kinds of built-in sound effects
- RC oscillator
- Auto off function

General Description

HT113RA is a mini-casino LCD game designed by HOLTEK. This has two games namely, Poker and Black Jack. For Black Jack, the player wins if his/her total score is greater than the dealer's. However, the player loses the game when his/her total score is over 21. For Poker, bets are made, then five cards are dealt. On the basis of the five cards, the rates for winning and losing are calculated. The built-in sound effects can be combined with an external speech chips.

LCD Pattern

Functional Description

Key description

• RESET

When this key is pressed, the whole system restarts and the score and game round are cleared to zero. When the RESET key and ON/OFF key are pressed at the same time, and then the RESET key is released, all the pattern dots are shown on the screen. This function is for LCD testing.

• ON/OFF

This key is pressed to turn the power on. When pressed again, the power is turned off.

• MUTE

This key puts the music in the OFF mode. When pressed again, the music resumes.

• GAME

This key is for game selection. When this key is pressed, the player can choose either Poker or Black Jack. The device is initially set with Black Jack as the default game whenever the system is activated.

• STAND/DEAL

This key is used to start a game or to deal the cards. When it is in the DEMO mode, pressing this key starts a game. On the other hand, when the game is in progress, it deals the cards.

• KEY1~KEY5

	When betting	POKER	BLACK JACK
KEY1	VOID	HOLD1	INSURANCE
KEY2	VOID	HOLD2/ SMALL	SPLIT
KEY3	VOID	HOLD3/ DOUBLE	DOUBLE
KEY4	BET_D	HOLD4/ BIG	STAND
KEY5	BET_U	HOLD5/ TAKE	VOID

There are three different conditions for betting:

• DEAL

When this key is pressed, the bets must have already been made. The cards then start to be dealt. At this time, if the player fails to press BET_U or BET_D, pressing DEAL may restore his/her previous bet, which is pre-set to 1.

• BET_U

By pressing this key, the screen changes to display the bets in place of the current stake. However, pressing this key will increase the betting score by 1 (100 is the maximum) when the bets are already on the screen.

• BET_D

By pressing this key, the screen changes to display the bets in place of the current stake. However, pressing this key will decrease the betting by 1 (1 is the minimum bet) when the bets are already on the screen.

• POKER GAME

  ⬧ DEAL

    After selecting which cards to bet on, pressing this key begins re-dealing the cards to the unselected positions (see following for selection).

  ⬧ HOLD1~HOLD5

    HOLD1 (KEY1) is situated at the left most side, and HOLD5 at the right most side. Given that order, KEY1~KEY5 are arranged from left to right to correspond with the LCD pad.

  ⬧ SMALL

    This key is pressed when the player guess that the card value is less than 7.

  ⬧ BIG

    This key is pressed when the player guess that the card value is greater than 7.

∗ DOUBLE

After winning, the player can press this key to decide that the game is a greater-than-7 or a less-than-7 card value guessing game. Meanwhile, the bets are either gained or lost doubly.

⋆ TAKE

When winning, pressing this key obtains the score.

• BLACK JACK GAME

⋆ DEAL

This key is pressed to deal the cards.

⋆ STAND

When this key is pressed, no more cards are dealt.

⋆ INSURANCE

This key is pressed to select INSURANCE.

⋆ DOUBLE

This key is pressed to select DOUBLE.

⋆ SPLIT

This key is pressed to select SPLIT.

Operational description

• Right after the batteries are installed, the system goes into the DEMO mode. The default game is BLACK JACK. By pressing the START key, the game begins. And the money to gamble with amounts to 2000 units. However, if activity has been suspended for more than 2 minutes, power is automatically turned off. To turn on the power, press the ON/OFF key. The player can resume playing. The mode remains the same as that before the power was turned off. In other words, if the power is turned off in the DEMO mode, this mode is on the screen after the power is turned on.

• POKER and BLACK JACK have the same betting strategies. First, the money to gamble with is displayed and the symbol $ flashes on the screen. Then, by pressing BET_U (KEY5) or BET_D (KEY4), the previous bets are shown. The bet is incremented by 1 whenever the BET_U (KEY5) key is pressed. On the other hand, the bet is decremented by 1 whenever the BET_D (KEY4) is pressed. After the bets have been made, press the DEAL key to start dealing the cards. However, if the player fails to press the BET_U or BET_D key, pressing the DEAL key restores the bet to the previous one. The bet is pre-set to 1 if it is the first time to lay the bet.

• BLACK JACK

⋆ BLACK JACK is one of the most common games in casinos. The rules for this game are quite easy. The player wins as long as his/her total score is greater than the dealer's. However, the player loses the game when his/her total score is over 21.

⋆ The values of the cards 2~10 are scored according to their corresponding face values. As for the cards J, Q, K, their values are all scored as 10. Finally, the value of the ACE card can be scored either as 1 or 11 depending on the player's preference.

⋆ After the bets are made, the dealer and player are dealt two cards each on the first deal. The dealer's first card is covered. So, the player can only see the dealer's second card. The following explains three conditions which may then appear:

– DOUBLE

When the total value of the player's two cards amounts to 11, (s)he may lay the bet on one-more-card-dealt-only. However, the player should lay the bet two times larger than his/her present one. Such a bet is for the player's advantage, since (s)he is quite likely to get the full score of 21 and win the BLACK JACK game by holding a score of 11. As long as the total value of his/her three cards is greater than that of the dealer's, the player wins the game and gains the bet two times larger than his/hers.

﹣ INSURANCE

When the dealer's second card is an ACE, it is quite possible that the dealer will win BLACK JACK. In this case, the player may pay half of the bets to buy insurance. The dealer, if he wins BLACK JACK, will refund all the bets to the player. If not, the dealer will confiscate the 1/2 bets. And the game goes on running.

﹣ SPLT

When the two cards held by the player have the same value, (s)he may lay the bet on any one of his/her two cards. Nevertheless, the player still has to lay another bet for the other unbetted card.

When one or possibly two of the above three conditions take place, the exact symbol, namely INSURANCE, DOUBLE, or SPLIT, will flash. At this time, the player has the choice of one or none of these conditions. However, the player is not suggested to bet if his/her money to gamble with is not sufficient for that bet.

⬧ If there is no special case, pressing the DEAL key deals the cards. However, when the STAND (KEY4) key is pressed, no more cards are dealt. The dealer can then deal additional cards to himself. The rules are pretty easy. The dealer is required to deal himself another card if the sum of his current cards is less than 17. Otherwise, if the sum is 17 or greater, he is not required to deal himself any more cards.

⬧ The various betting rates of loss are listed in the following:

BLACK JACK (a score of 21 for two cards)	1.5
A score of less than 21 for 5 cards	0.5
A score of 7 for 3 cards	3.0
The player's score greater than the dealer's	1.0

• POKER (SHOW HAND)

⬧ After the bets are made, five cards are dealt by pressing the DEAL key. Below each card is a HOLD symbol. The player may keep the desired cards by pressing the appropriate number of keys up to five keys. When the cards are highlighted, it signifies that these cards are to be reserved for betting. Otherwise, cards are to be re-dealt by pressing the DEAL key. On the basis of the five cards, the rates for winning and losing are calculated in the following ways:

﹣ pair (jacks or better), 1 time

﹣ two pairs, 2 times

﹣ three of a kind, 3 times

﹣ straight, 5 times

﹣ flush, 8 times

﹣ full house, 35 times

﹣ four of a kind, 100 times

﹣ straight flush, 500 times

﹣ royal flush, 1000 times

⬧ On winning, the player can obtain the score by pressing the TAKE (KEY 5) key, and the next game will start immediately. Or by pressing the DOUBLE (KEY 4) key, the big-or-small card value guessing game comes into play. In this card value guessing game, the card at the right most of the five cards is covered on the screen. The four remaining cards are the same as those at the previous four deals. The player may press the BIG (KEY 4) or SMALL (KEY 2) key to guess that the value of the covered card is greater or less than 7. If 7 turns out to be the score, the player wins no matter whether his/her guess is greater or less than 7. The rate for winning is two times his/her original bet whereas the player loses the entire bet if the wrong guess is made.

- The total number of cards is 52. The cards are re-shuffled until the number of undealt cards is less than 10. The shuffling is shown by the individual highlighting of the 5 cards on the right hand corner of the screen.

- By pressing the GAME key, the player can change the game type, but still maintains the current stake.

Counting methods

- The betting rates of loss for BLACK JACK

BLACK JACK	1.5
The sum of 5 cards less than 21	0.5
The sum of 3 cards is 7	3.0
The sum of the player's card is greater than that of the dealer's	1.0

- The betting rates of winning for POKER
  - Pair (jacks or better) 1 time
  - Two pairs 2 times
  - Three of a kind 3 times
  - Straight 5 times
  - Flush 8 times
  - Full house 35 times
  - Four of a kind 100 times
  - Straight flush 500 times
  - Royal flush 1000 times

- When the money to gamble with reaches 999999, no more scores can be added.

- When the bet is an odd number, the digits which are produced by the losing rates are rounded off to the nearest whole number.

Sound effects

- Sound when the cards are dealt

- Sound for prompting the user to press the keys

- Music for winning a score

- Sound for POKER, J PAIR or BETTER prompting

- Sound when the wrong key is pressed

- Sound for shuffling

- Music when the score is BLACK JACK

- Sound for losing BLACK JACK

- Music for winning BLACK JACK

- Sound for losing POKER

- Music for winning POKER

- Music for game start

- Music for game over

Voice sound effects (coupled with the external HT-8125B speech IC):

- Sound for shuffling

- Sound for dealing

- Sound when the money is put in

- Sound for money dropping

- Sound for losing

- Sound for winning

LCD Display Label

LCD Pattern Contrast Table

Pad No.	Pin No.	COM0	COM1	COM2	COM3	SEGMENT
52	1	D7D	D7H	D7G	D7A	SEG18
53	2	B2	D7C	D7B	A2	SEG19
54	3	H2	B3	E2	A3	SEG20
55	4	D8D	D8H	D8G	D8A	SEG21
56	5	B4	D8C	D8B	A4	SEG22
57	6	H3	B5	E3	A5	SEG23
58	7	D9D	D9H	D9G	D9A	SEG24
59	8	B6	D9C	D9B	A6	SEG25
60	9	D2E	D2G	D3F	D2C	SEG26
61	10	H4	B7	E4	A7	SEG27

Pad No.	Pin No.	COM0	COM1	COM2	COM3	SEGMENT
62	11	D10D	D10H	D10G	D10A	SEG28
63	12	B8	D10C	D10B	A8	SEG29
64	13	H5	B9	E5	A9	SEG30
65	14	D11D	D11H	D11G	D11A	SEG31
8	15	COM0	—	—	—	COM0
7	16	—	COM1	—	—	COM1
6	17	—	—	COM2	—	COM2
5	18	—	—	—	COM3	COM3
34	19	B10	D11C	D11B	A10	SEG0
35	20	D10E	D11E	D11F	D10F	SEG1
36	21	D6E	D6G	D6F	D6D	SEG2
37	22	D6C	D6B	D6A	T5	SEG3
38	23	D5C	D5B	D5A	PL	SEG4
39	24	D5E	D5G	B5F	D5D	SEG5
40	25	D4C	D4B	D4A	T4	SEG6
41	26	D4E	D4G	D4F	D4D	SEG7
42	27	D3C	D3B	D3A	T3	SEG8
43	28	D3E	D3G	D2A	D3D	SEG9
44	29	D2C	D2E	D1A	T2	SEG10
45	30	D1C	D1B	D1F	DE	SEG11
46	31	D1E	D1G	D9F	D1D	SEG12
47	32	S	D9E	D8F	T1	SEG13
48	33	WIN	D8E	PO	SP	SEG14
49	34	M	BJ	D7E	DO	SEG15
50	35	IN	D7E	E1	DH	SEG16
51	36	H1	B1	D7F	A1	SEG17

LCD Package Outline

Unit : mm
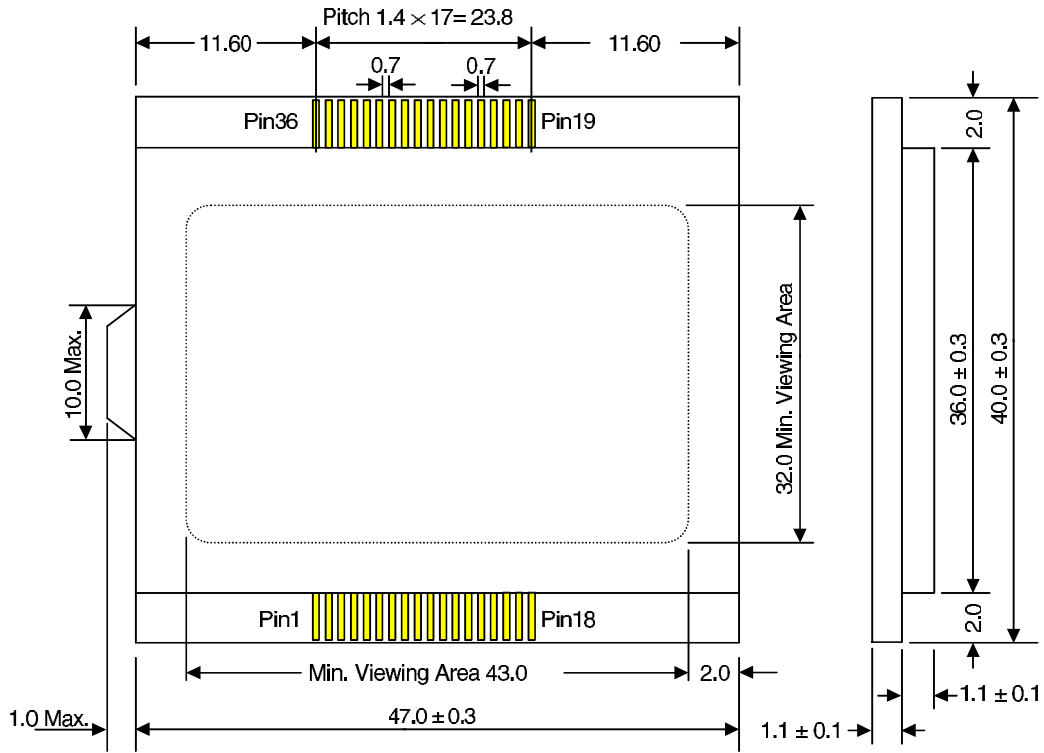
Specifications

Top Polarizer: Transmissive (46.00 mm × 39.00 mm)

Bottom Polarizer: Transmissive (46.00 mm × 35.00mm)

Storage Temp: −20°C to +70°C

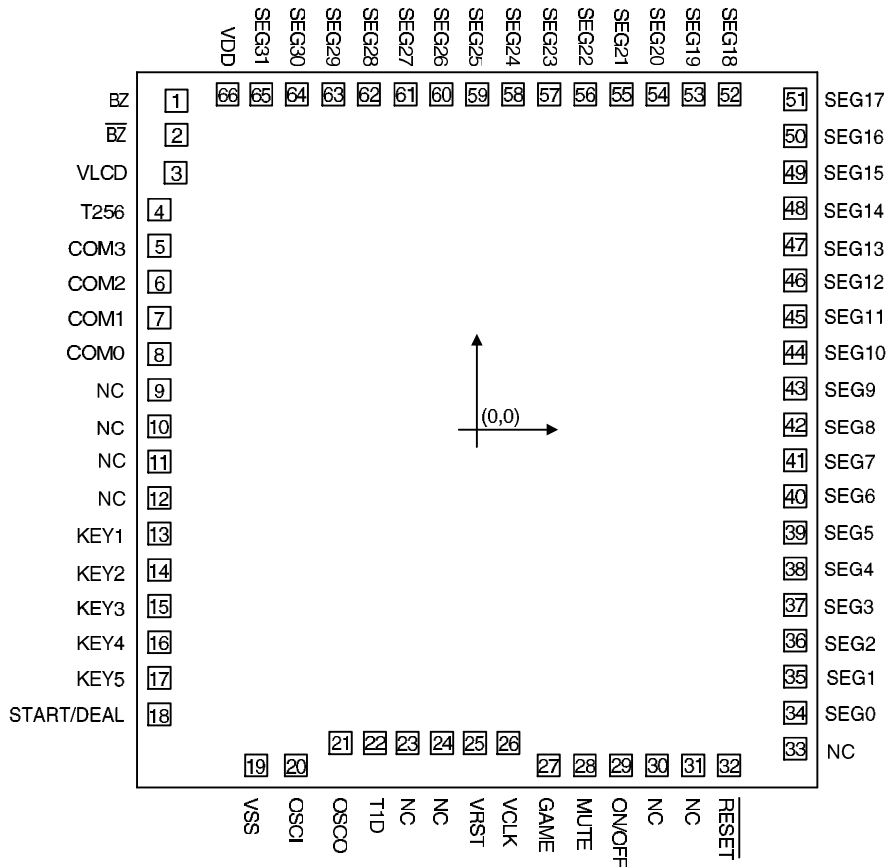Operating Temp: −10°C to +60°C

Viewing Angle: 6 O'clock

Drive Condition: 3V, 1/4 Duty, 1/3 Bias

Display Mode: Tn, Positive Mode

Pad Assignment

Chip Size : $2780 \times 2990 \ (\mu m)^2$

* 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

Absolute Maximum Ratings*

Supply Voltage .... V_{DD}–0.3V to 5.5V   Storage Temperature .... –50°C to 125°C

Input Voltage .... V_{SS}–0.3V to V_{DD}+0.3V   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.
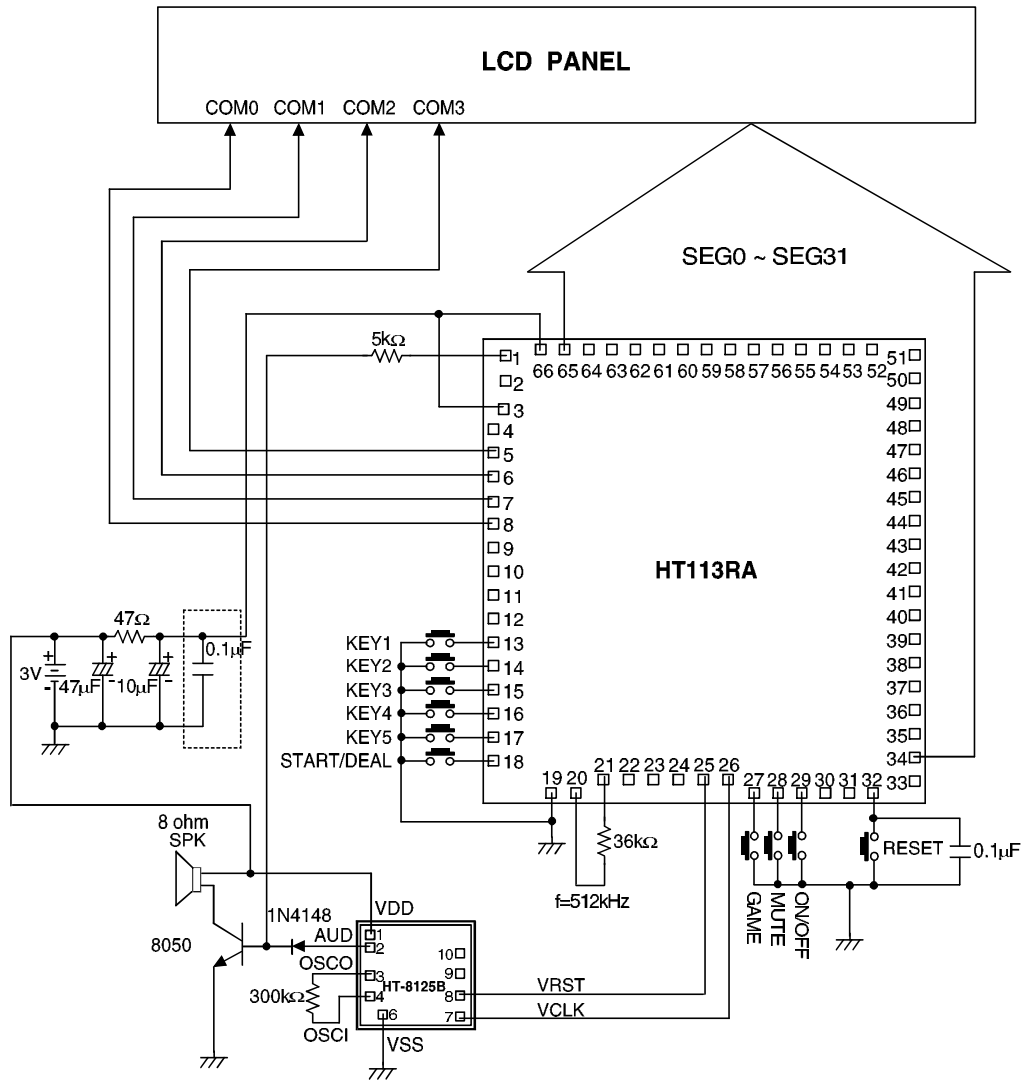
Electrical Characteristics

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}=512kHz	—	300	500	μA
I_{STB}	Standby Current	3V	System Halt	—	1	5	μA
V_{LCD}	LCD Supply Voltage	3V	—	—	3	—	V
f_{SYS}	Operating Frequency	3V	R= 36kΩ	—	512	—	kHz

Application Circuits

Speaker application with voice

Note: The capacitor in the dotted block is recommended.

The IC substrate should be connected to VSS in the PCB layout artwork.
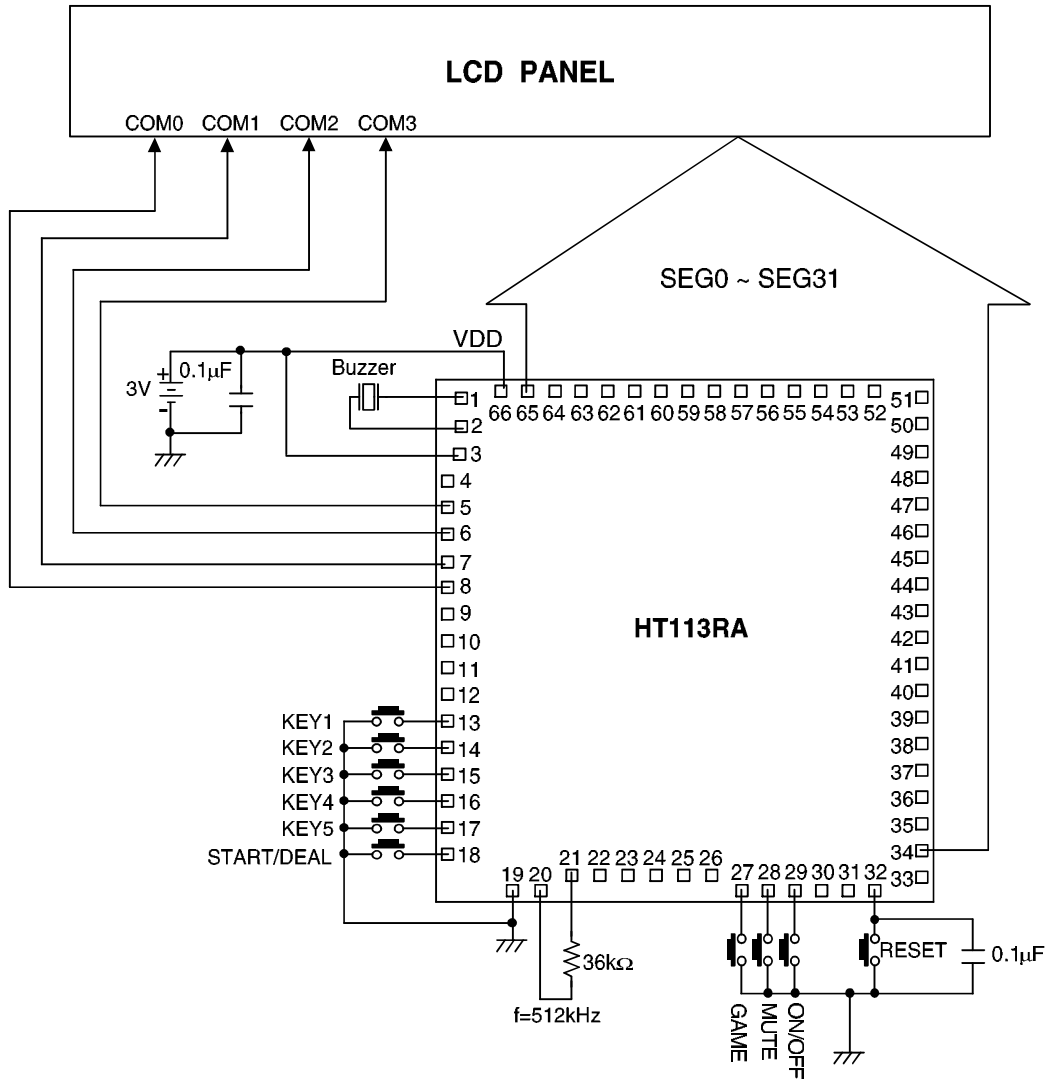
Speaker application without voice
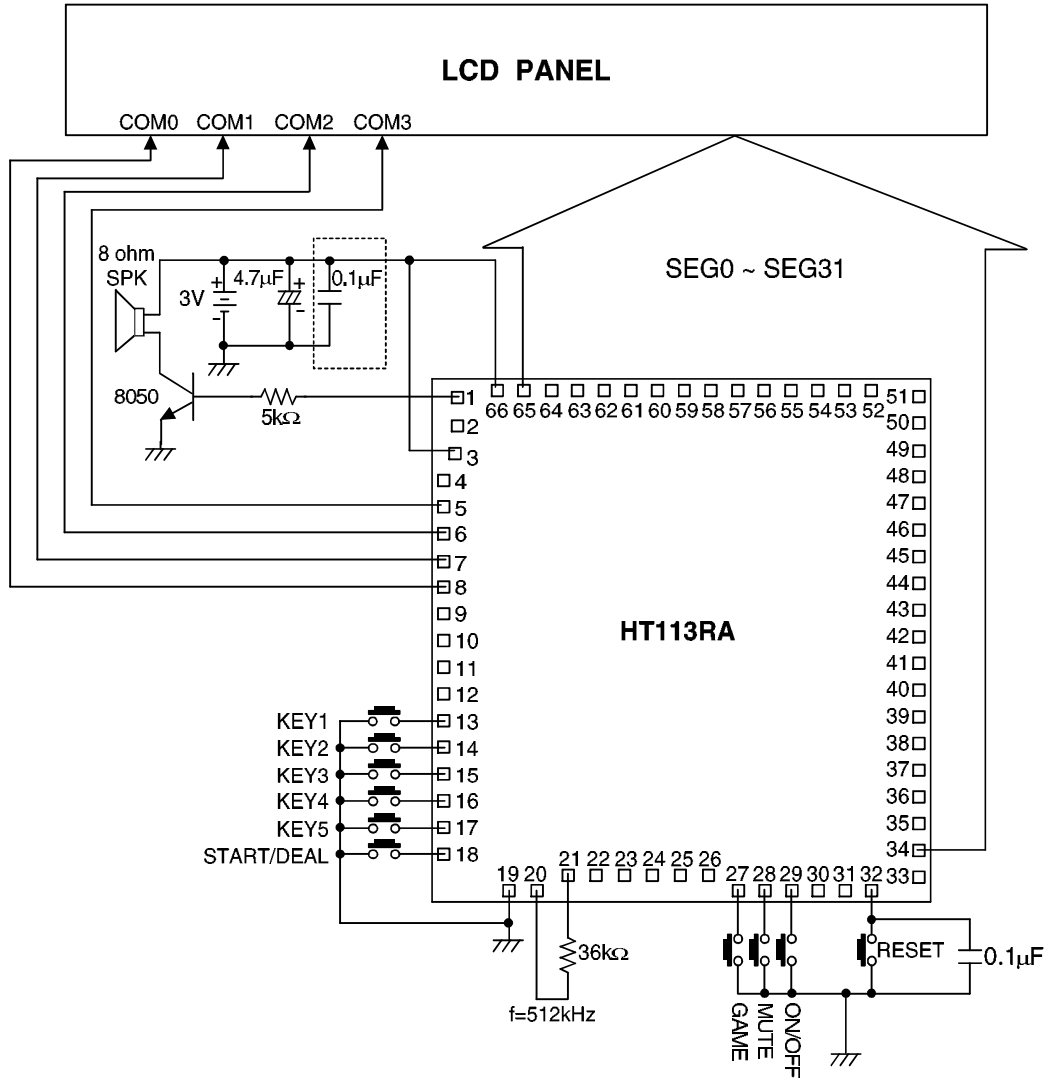
Note: The capacitor in the dotted block is recommended.

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

Buzzer application without voice

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