

Features

- 1/3 bias, 1/4 duty, 32x4 pattern,
- 3.0V LCD driver
- Built-in sound generator
- RC oscillator
- Auto power off mode

General Description

HT113SA is a mini-casino LCD game designed by HOLTEK. The HT113SA consists of five games namely, Poker, Black Jack, Baccarat, Slots and Deuces.

LCD Pattern

| | | |
|--|--|---|
| <p> WIN</p> <p>BLACK JACK</p> <p>POKER</p> <p>DOUBLE SPLIT</p> <p>INSURANCE</p> <p>DRAW or HOLD</p> |  | <p style="text-align: center;">DEALER PLAYER</p> <p style="text-align: center;">\$ </p> |
|  | | <p style="text-align: center;">HOLD HOLD HOLD HOLD HOLD</p> |

Functional Description

Key description

- **RESET**

When this key is pressed, the whole system restarts, 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 used to turn the power on. When pressed again, the power is turned off.

- **MUTE**

This key alternately puts the music in the OFF or ON modes.

- **GAME**

This key is for game selection. There are five games to be selected, namely Black Jack, Poker, Baccarat, Deuces and Slots. When this key is pressed, one of SEL1~SEL5 is displayed on the screen.

SEL1 denotes that Black Jack is selected.

SEL2 denotes that Poker is selected.

SEL3 denotes that Baccarat is selected.

SEL4 denotes that Deuces is selected.

SEL5 denotes that Slot Machine is selected.

The game is initially set with Black Jack as default whenever the system is activated.

- **START/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 | B&J | BACCARAT | SLOTS | DEUCES |
|------|--------------|-------|-----------|----------|-------|--------|
| KEY1 | | HOLD1 | INSURANCE | TIE | | HOLD1 |
| KEY2 | | HOLD2 | | DEALER | | HOLD2 |
| KEY3 | | HOLD3 | DOUBLE | PLAYER | | HOLD3 |
| KEY4 | BET_D | HOLD4 | STAND | BET_D | BET_D | HOLD4 |
| KEY5 | BET_U | HOLD5 | | BET_U | BET_U | HOLD5 |

- **When 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 score by 1 (1 is the minimum) when the bets are already on the screen.

- **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 score by 1 (1 is the minimum score) when the bets are already on the screen.**

- **BLACK JACK GAME**

- **DEAL**

This key is pressed to deal the cards.

- **STAND**

This key is pressed to stop card-dealing.

- **INSURANCE**

This key is pressed to select INSURANCE.

- **DOUBLE**

This key is pressed to select DOUBLE.

* Refer to the Black Jack game description for the conditions in 3 and 4.

- **POKER GAME**

- **DEAL**

After selecting which cards to bet on, pressing this key begins re-dealing the cards to

the unselected positions (see the following for the selection).

- HOLD1~HOLD5

These keys are used to reserve the cards. HOLD1 (KEY1) is situated at the leftmost side, and HOLD5 at the rightmost side. In that order, KEY1~KEY5 are arranged from left to right to correspond with the LCD pad.

- BACCARAT GAME

- DEAL

This key is pressed to deal the cards.

- PLAYER

(PLAY) This key is pressed to bet on the player.

- DEALER

(BANK) This key is pressed to bet on the dealer.

- TIE

(PUSH) This key is pressed to bet on a tie.

- DEUCES GAME

- DEAL

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

- HOLD1~HOLD5

These keys are used to reserve the cards. HOLD1 (KEY1) is situated at the leftmost side, and HOLD5 at the rightmost side. In that order, KEY1~KEY5 is arranged from left to right to correspond with the LCD pad.

- SLOTS GAME

- DEAL

This key is pressed to spin the pictures.

Operational description

- Right after the batteries are installed, the system goes into the DEMO mode. The pre-set 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 continue playing. The mode remains the same as that before turning off the power. In other words, if the power is turned off in the DEMO mode, this mode is on the screen when the power is turned on again.

- The betting strategies are in the following: 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 when the BET_U (KEY5) key is subsequently pressed. On the other hand, the bet is decremented by 1 when the BET_D (KEY4) is subsequently 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 the bet is laid.

- BLACK JACK

- Black Jack is one of the most common games in casinos. The rules for this game are quite easy. The player wins when 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 to 10 are scored according to their corresponding face values. As for the cards J, Q, K, their values are all scored as 10. The value of the card ACE 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 with 2 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 two conditions which may then appear:

- **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 the equivalent of his/her present bet 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 insurance. And the game continues.

- **DOUBLE**

When the total value of the player's two cards sum up to 11, (s)he may lay the bet on one-more-card-dealt-only. However, the player needs to double his/her present bet. Such a bet is for the player's sake, 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.

When one or possibly two of the above conditions take place, the exact symbol, namely INSURANCE or DOUBLE, will flash. At this time, the player has the choice of one or none of these conditions. However, the player is not advised 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 can be dealt. The dealer can then deal additional cards to himself. The rules are quite 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).....2

A score of less than 21 for 5 cards.....1
 the player's score is greater than the dealer's.....1

• **POKER (SHOW HAND)**

- After the bets have been made, five cards are dealt by pressing the DEAL key. At this time, DRAW or HOLD flashes. 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 indicates 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 betting rates for losing are calculated in the following ways:

- pair (jacks or better)
 - 1 times the number of units betted
- two pairs
 - 2 times the number of units betted
- three of a kind
 - 3 times the number of units betted
- straight
 - 5 times the number of units betted
- flush
 - 8 times the number of units betted
- full house
 - 35 times the number of units betted
- four of a kind
 - 100 times the number of units betted
- straight flush
 - 500 times the number of units betted
- royal flush
 - 1000 times the number of units betted

• **BACCARAT**

This game is an ancient card game that originates from Europe. Baccarat consists of three ways of betting, namely DEALER, PLAYER, and TIE. However, only one of the three betting ways can be selected at a time. After the bets have been made, four cards are dealt. The first and third cards are dealt to the player whereas the second and fourth cards to the dealer. The aim of this game is to make the total value of the two cards sum up to 9 or as near as possible to 9. The value of the card ACE is scored as 1. The values of the cards 2-9 are scored according to their corresponding face values. As for the cards 10, J, Q, and K, their values are all scored as 0. No more cards can be dealt when the sum of the two cards is 8 or 9, which is called NATURAL. However, a third card can be dealt if necessary. The rule for the order of card-dealing is always the

player first. The following explains the rules for dealing the third card:

- ♦ Player
 - 1-2-3-4-5-0
the third card is dealt
 - 6,7
no cards are to be dealt
 - 8-9
NATURAL

♦ Dealer
When the player holds two cards only, the third card is dealt to the dealer when the sum of his two cards is 0~5, and the sum of the player's is 6 or 7. However, no more cards are dealt to the dealer when the total value of his/her two cards is 6~9.

When the player holds three cards, no more cards are dealt to the dealer when the sum of his two cards is 6, 7 or 8. Otherwise, the third card can be dealt to the dealer. Win or lose is decided by the total value of the cards held. The winner's score is the one nearest 9. As for the betting rate of losing, it is 1 times the number of the units betted (i.e., 1 x (Number of Units)).

If the scores of the dealer's and player's are the same, it is called a "TIE". At this time, the one who bets on TIE is the winner. The betting rate of losing is 8 times the number of units betted.

When selecting the way to bet on, the screen displays the following:

When DEALER is betted on, BANK is shown.

When TIE is betted on, PUSH is shown.

When PLAYER is betted on, PLAY is shown.

- DEUCES
 - ♦ After the bets have been 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 indicates that these cards are to be reserved for betting. Otherwise, cards are to be re-dealt by pressing the DEAL key. When the value of one of the cards is 2, that "2" can be any number ranging from a~k depending on the player's preference, and then on the basis of the five cards, the rates for winning and losing are calculated in the following ways:
 - three of a kind
2 times the number of units betted
 - straight
4 times the number of units betted
 - flush
6 times the number of units betted
 - full house
10 times the number of units betted
 - 4 of a kind
10 times the number of units betted
 - straight flush
20 times the number of units betted
 - 5 of a kind
50 times the number of units betted
 - royal flush w/2's
100 times the number of units betted
 - 4 deuces
500 times the number of units betted
 - royal flush
1000 times the number of units betted

• SLOTS

- After the bets have been made, pressing the DEAL key starts a game. The numbers 'a', 'g', 'd' on the LCD screen simulate the 'BAR' spinning. Right after the three numbers stop spinning, the scores won are calculated in the following ways:

| | | | Betting Rates of Loss |
|-------------------|-------------------|-------------------|-----------------------|
| BAR BAR BAR | BAR BAR BAR | BAR BAR BAR | 500 |
| BAR BAR | BAR BAR | BAR BAR | 50 |
| BAR | BAR | BAR | 10 |
| ANY BAR | ANY BAR | ANY BAR | 2 |

- To change the game type, press the GAME key. At this time, the money to gamble with remains the same as in the previous deal.

Counting methods

- The betting rates of lose for BLACK JACK
BLACK JACK.....2
the sum of 5 cards less than 21.....1
the sum of the player's is greater than that of the dealer's.....1
- the betting rates of winning for POKER
 - pair (jacks or better)
1 times the number of units betted
 - two pairs
2 times the number of units betted
 - three of a kind
3 times the number of units betted
 - straight
5 times the number of units betted

- flush
8 times the number of units betted
- full house
35 times the number of units betted
- four of a kind
100 times the number of units betted
- straight flush
500 times the number of units betted
- royal flush
1000 times the number of units betted
- BACCARAT
 - When the bet is on the dealer or the player, the betting rate of losing is 1 times the number of units betted.
 - When the bet is on TIE, the betting rate of losing is 8 times the number of units betted.
- The betting rates of winning for DEUCES
 - three of a kind
2 times the number of units betted
 - straight
4 times the number of units betted
 - flush
6 times the number of units betted
 - full house
10 times the number of units betted
 - 4 of a kind
10 times the number of units betted
 - straight flush
20 times the number of units betted
 - 5 of a kind
50 times the number of units betted
 - royal flush w/2's
100 times the number of units betted
 - 4 deuces
500 times the number of units betted
 - royal flush
1000 times the number of units betted

- The betting rates of losing for SLOTS

| | | | Betting Rates of Loss |
|-------------------|-------------------|-------------------|------------------------------|
| BAR BAR BAR | BAR BAR BAR | BAR BAR BAR | 500 |
| BAR BAR | BAR BAR | BAR BAR | 50 |
| BAR | BAR | BAR | 10 |
| ANY BAR | ANY BAR | ANY BAR | 2 |

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

Sound effects

- Sounds 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
- Sound when SLOT MACHINE is spun

Voice sound effects (coupled with the external HT8125B 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

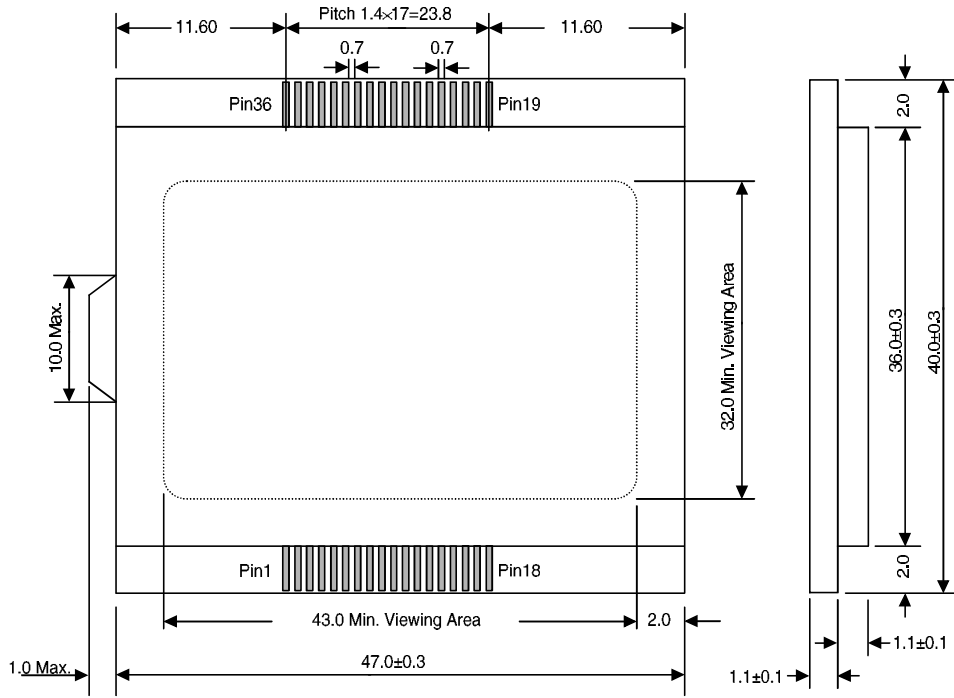


LCD Pattern Contrast Table

| 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 | D2F | D2D | SEG26 |
| 61 | 10 | H4 | B7 | E4 | A7 | SEG27 |
| 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 | D5F | 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 | D3F | D3D | SEG9 |
| 44 | 29 | D2C | D2B | D2A | T2 | SEG10 |
| 45 | 30 | D1C | D1B | D1A | DE | SEG11 |
| 46 | 31 | D1E | D1G | D1F | D1D | SEG12 |
| 47 | 32 | S | D9E | D9F | T1 | SEG13 |
| 48 | 33 | WIN | D8E | D8F | SP | SEG14 |
| 49 | 34 | M | BJ | P0 | DO | SEG15 |
| 50 | 35 | IN | D7E | D7F | DH | SEG16 |
| 51 | 36 | H1 | B1 | E1 | A1 | SEG17 |

LCD Package Outline

Unit : mm



Specifications:

Top polarizer: Transmissive (46.00mm×39.00mm)

Bottom polarizer: Transmissive (46.00mm×35.00mm)

Storage temperature: -20°C to 70°C

Operating temperature: -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 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 $5.5V$ Input Voltage..... $V_{SS}-0.3V$ to $V_{DD}+0.3V$
 Storage Temperature..... $-50^{\circ}C$ to $125^{\circ}C$ Operating Temperature..... $0^{\circ}C$ to $70^{\circ}C$

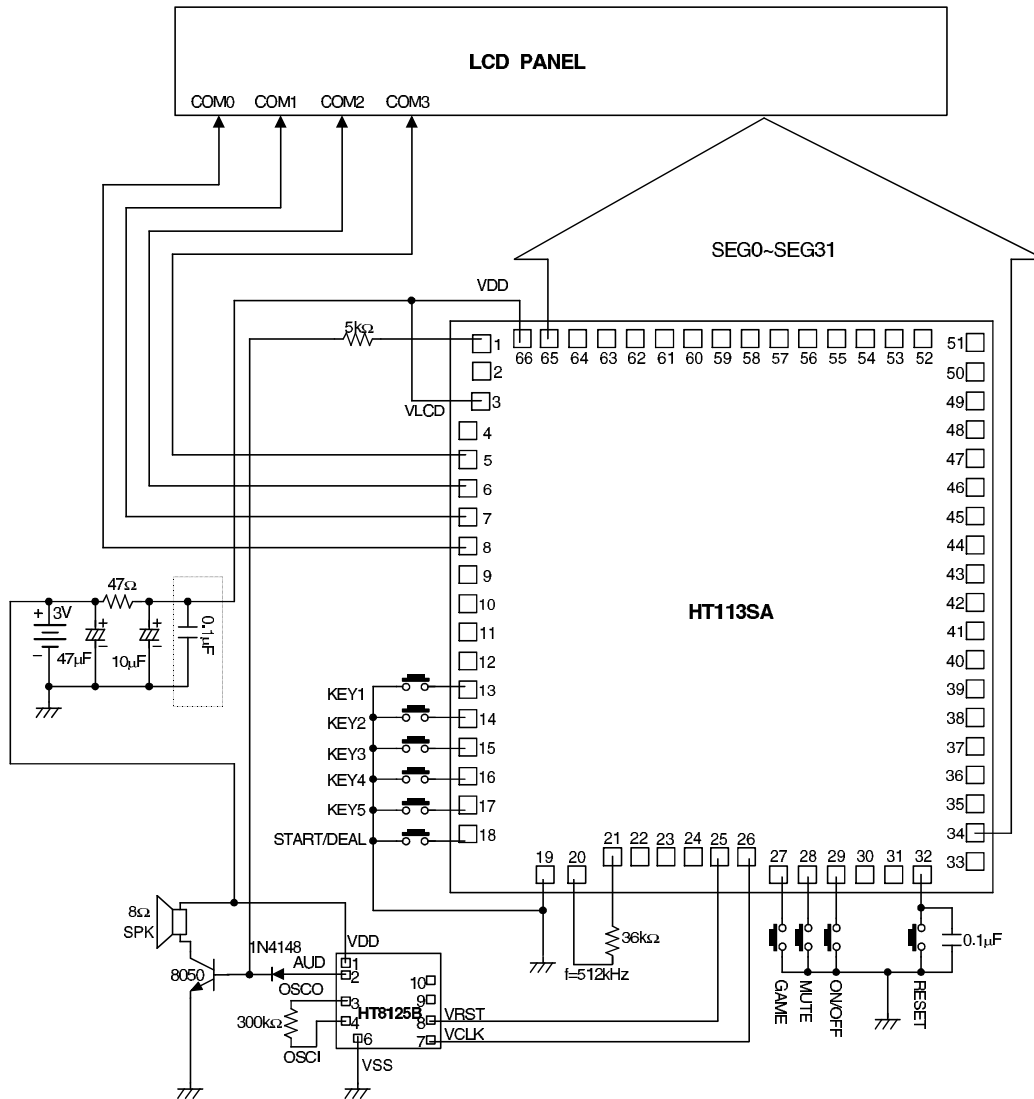
*Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions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

Electrical Characteristics
 $T_a=25^{\circ}C$

| 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 | $R=36k\Omega$ | — | 512 | — | kHz |

Application Circuits

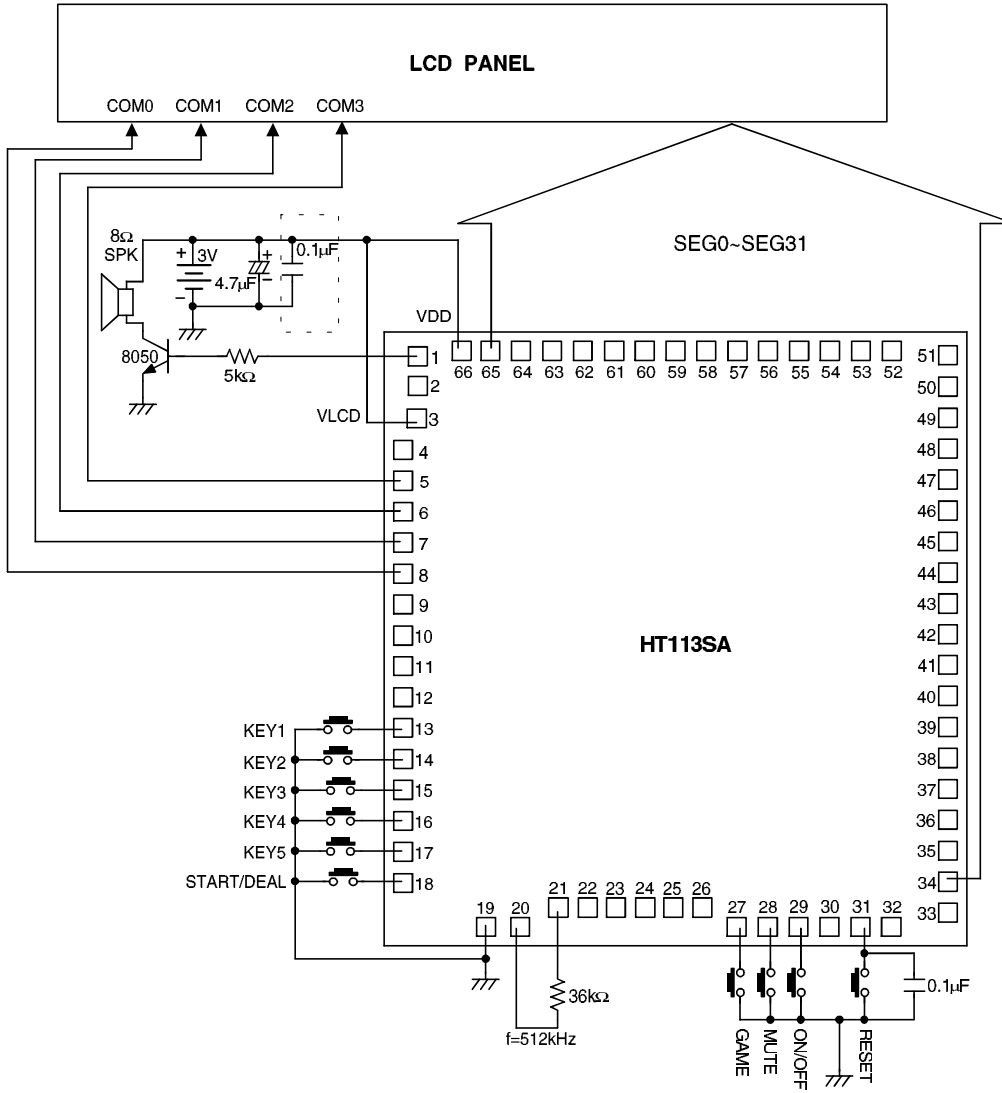
Speaker application with voice



Notes: The capacitor in dash block is recommended.

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

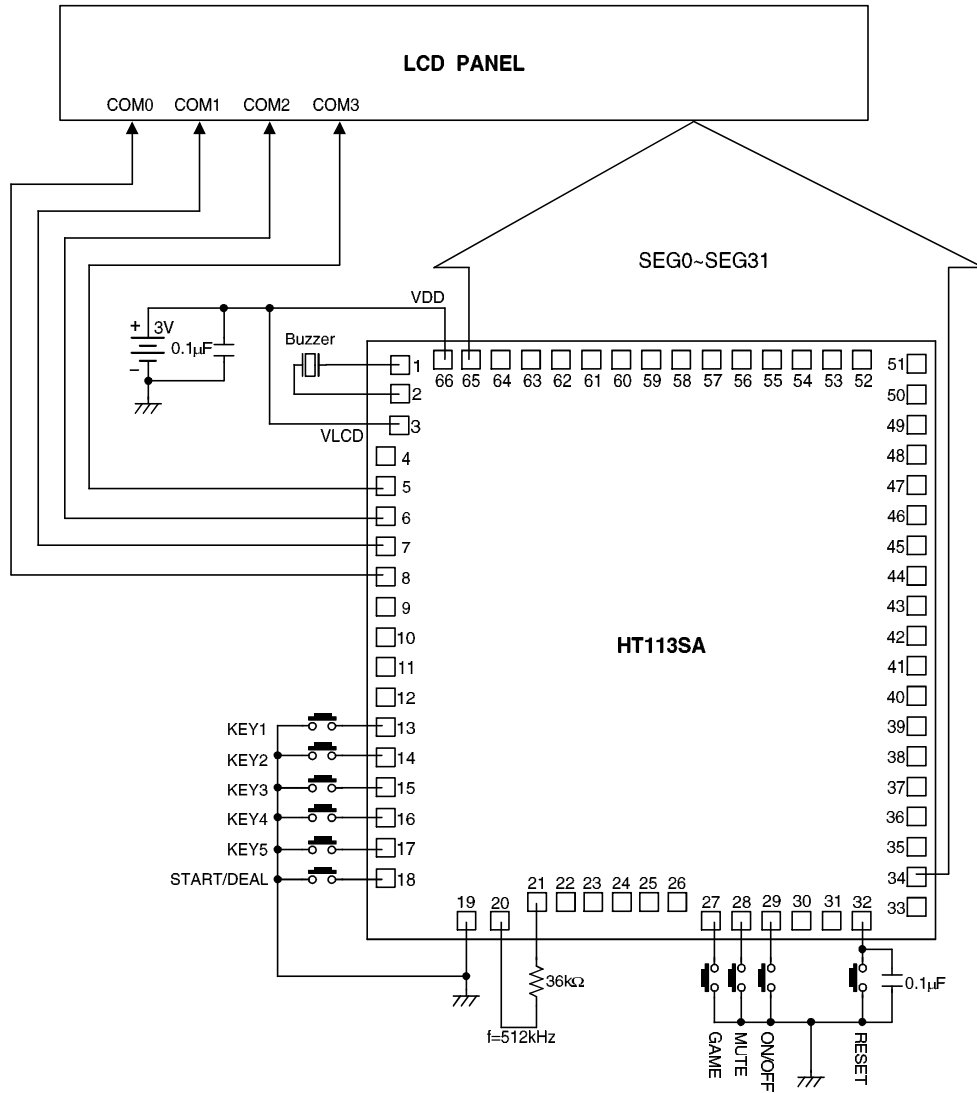
Speaker application without voice



Notes: The capacitor in dash 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.