Bluetooth HANDS FREE BOX

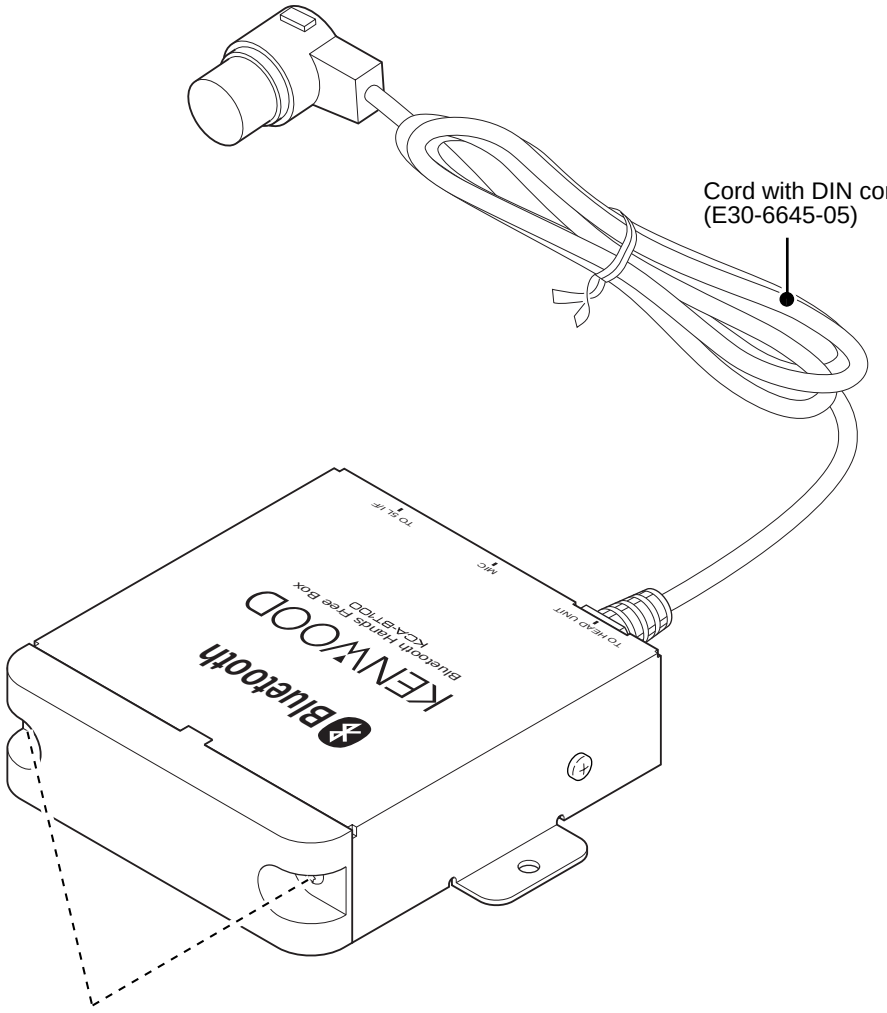
# KCA-BT100

## SERVICE MANUAL

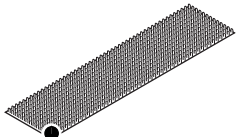
KENWOOD

Kenwood Corporation

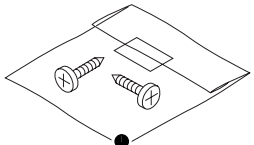

B53-0472-00 (N) 955



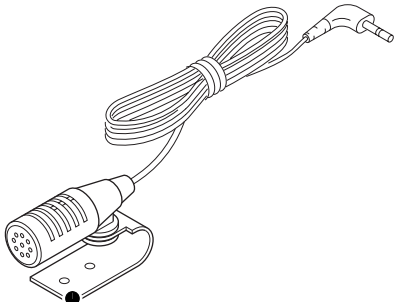

About removing the 2 hexagonal head screws :
“TORX T8 Screwdriver” is necessary.



Magic tape
(H30-0600-04)



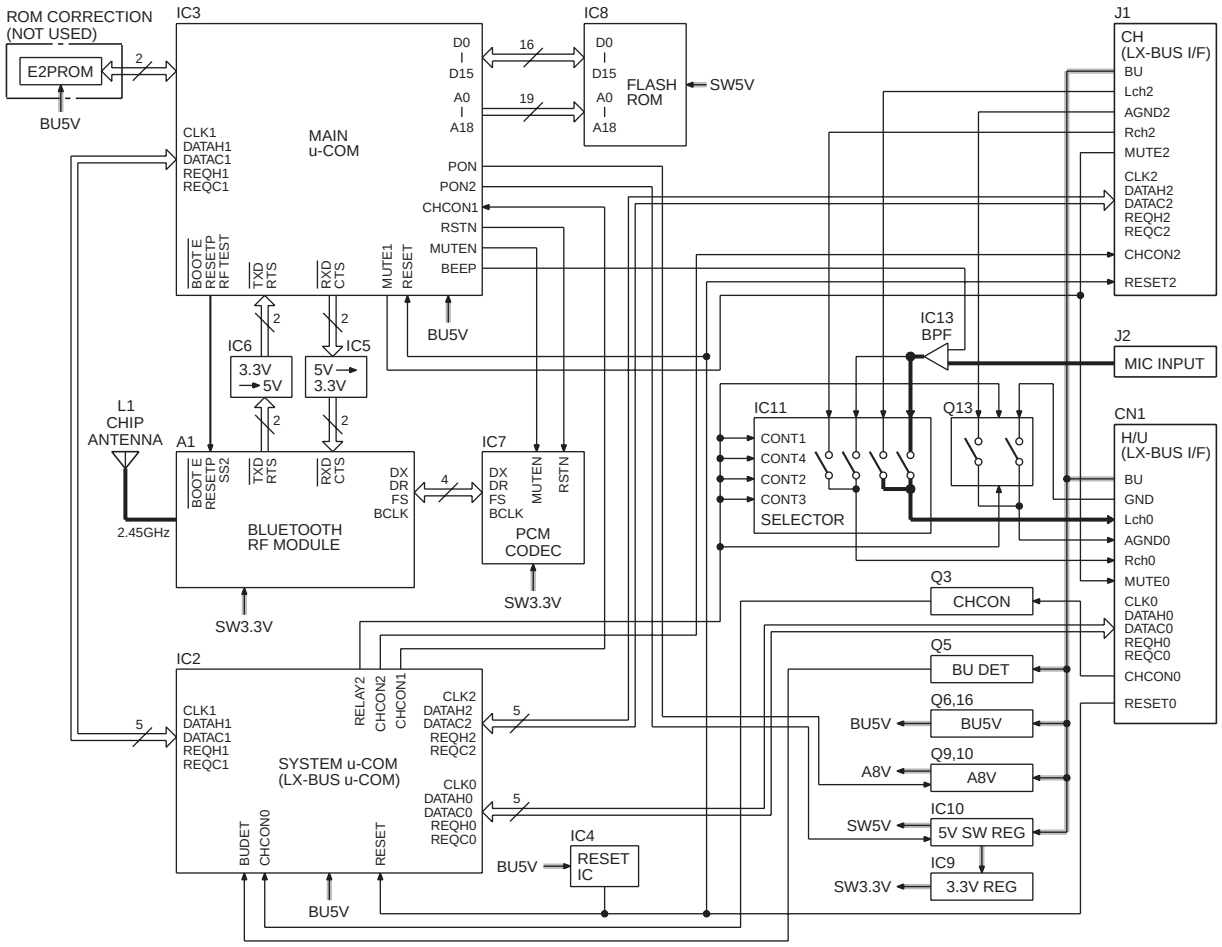
Screw set
(N99-1789-05)



Microphone (3m)
(W01-1676-05)

This product uses Lead Free solder.

# BLOCK DIAGRAM




# COMPONENTS DESCRIPTION

## ● PROCESSOR UNIT (X32-5852-70)

| Ref. No. | Application / Function | Operation / Condition / Compatibility |
|---|---|---|
| IC2 | System μ-COM (LX-BUS μ-COM) | |
| IC3 | Main μ-COM | |
| IC4 | Reset IC | Detection voltage is 3.5V |
| IC5 | 5V → 3.3V Conversion | Level conversion from 5V to 3.3V |
| IC6 | 3.5V → 5V Conversion | Level conversion from 3.3V to 5V |
| IC7 | PCM Codec | |
| IC8 | Flash Memory | |
| IC9 | 3.3V REG | |
| IC10 | 5V REG | |
| IC11 | Analog SW | Switches 5L-signal output and hands-free signal output. |
| IC12 | MIC Input AMP | Amplifies MIC input. |
| IC13 | BPF | Amplifies audio reference circuit signal and hands-free signal. |
| Q1 | SW5V SW | Vb=L: SW5V ON, Vb=H: SW5V OFF |
| Q2 | Reset CONT | Vb=H: It resets IC2 and IC3 |

# COMPONENTS DESCRIPTION

| Ref. No. | Application / Function | Operation / Condition / Compatibility |
|---|---|---|
| Q3 | Changer CONT | Vc=L: Head unit is used, Vc=H: Head unit is not used |
| Q5 | BU DET | BU ON: Vc=L, BU OFF: Vc=H |
| Q6 | BU5V AVR | Q16's Vb=H: 5V ON |
| Q7,8 | Analog SW CONT | Controls switching of IC11 and Q13<br>IC2's pin22=H: Changer audio signal, IC2's pin22=L: Hands-free audio signal |
| Q9,10 | A8V AVR | Q9's Vb=H: 8V ON |
| Q11 | Analog SW CONT | Controls switching of IC11 and Q13<br>IC2's pin22=H: Changer audio signal, IC2's pin22=L: Hands-free audio signal |
| Q12 | SW14V | IC3's pin21=H: 14V ON |
| Q13 | Audio GND SW | Changer or Hands-free GND select SW<br>IC2's pin22=H: Changer GND, IC2's pin22=L: Hands-free GND |
| Q15 | LX-BUS Mute Buffer | IC3's pin25=L: Vc=H, IC3's pin25=H: Vc=L |
| Q16 | BU5V AVR | Q16's Vb=H: 5V ON |

# MICROCOMPUTER'S TERMINAL DESCRIPTION

### ● SYSTEM μ-COM: IC2 on X32- (PROCESSOR UNIT)

| Pin No. | Pin Name | I/O | Application | Processing / Operation / Description |
|---|---|---|---|---|
| 1~3 | NC | - | Not used | |
| 4 | AVSS | - | A/D reference GND | |
| 5 | P130 | - | GND | |
| 6 | REQH1 | O | Communication request to CH1 | L: Communication request is found |
| 7 | AVREF1 | - | D/A reference voltage input | |
| 8 | DATAC1 | I | Data input from CH1 | |
| 9 | DATAH1 | O | Data output to CH1 | |
| 10 | HCLK1 | I/O | Clock output to CH1 | |
| 11 | DATAH0 | I | Data input from head unit | |
| 12 | DATAC0 | O | Data output to head unit | |
| 13 | HCLK0 | I/O | Clock input from head unit | |
| 14 | REQC0 | O | Communication request to head unit | L: Communication request is found |
| 15 | REQH2 | O | Communication request to CH2 | L: Communication request is found |
| 16 | DATAC2 | I | Data input from CH2 | |
| 17 | DATAH2 | O | Data output to CH2 | |
| 18 | HCLK2 | I/O | CH2 clock output | |
| 19 | CHCONO1 | O | CH1 control output | H: CH1 control request |
| 20 | CHCONO2 | O | CH2 control output | H: CH2 control request |
| 21 | NC | - | Not used | |
| 22 | RELAY2 | O | Relay control | H: CH2, L: CH1 |
| 23~32 | NC | - | Not used | |
| 33 | VSS1 | - | GND | |
| 34~59 | NC | - | Not used | |

# MICROCOMPUTER'S TERMINAL DESCRIPTION

| Pin No. | Pin Name | I/O | Application | Processing / Operation / Description |
|---|---|---|---|---|
| 60 | $\overline{\text{RESET}}$ | I | Reset input | L: Reset |
| 61 | REQH0 | I | Communication request input from head unit | L: Communication request is found |
| 62 | BUDET | I | Detection input of momentary power down | H: Detection of momentary power down |
| 63 | PO2 | - | GND | |
| 64 | REQC2 | I | Communication request input from CH2 | L: Communication request is found |
| 65 | REQC1 | I | Communication request input from CH1 | L: Communication request is found |
| 66 | CHCON1 | I | Changer control input from head unit | L: Changer control request |
| 67 | VSS0 | - | GND | |
| 68 | VDD1 | - | Power supply voltage | |
| 69 | X2 | - | Resonator connection | |
| 70 | X1 | I | Resonator connection | |
| 71 | IC | - | Internal connection | |
| 72 | NC | - | Not used | |
| 73 | CHCON2 | I | CH2 control input from head unit | L: CH2 control request |
| 74 | AVDD0 | - | A/D anolog power supply voltage | |
| 75 | AVREF0 | - | A/D reference voltage input | |
| 76~80 | NC | - | Not used | |

● **MAIN μ-COM: IC3 on X32- (PROCESSOR UNIT)**

| Pin No. | Pin Name | I/O | Application | Processing / Operation / Description |
|---|---|---|---|---|
| 1,2 | NC | - | Not used | L fixed |
| 3 | LX DATA S | O | Data to master unit | Pull-up (B.U.) |
| 4 | LX DATA M | I | Data from master unit | |
| 5 | LX CLK | I | LX-BUS clock | Pull-up (B.U.) |
| 6 | BYTE | - | External data bus switching input | Connects to GND |
| 7 | CNVSS | - | Processor mode switching input | Pull-down (GND) |
| 8,9 | NC | - | Not used | L fixed |
| 10 | $\overline{\text{RESET}}$ | I | Forced reset from master unit | L: Reset |
| 11 | XOUT | O | Main clock output | |
| 12 | VSS | - | Power supply input | Connects to GND |
| 13 | XIN | I | Main clock input | |
| 14 | VCC1 | - | Power supply input | Connects to B.U.5V |
| 15 | NMI | I | NMI interruption input | Pull-up (B.U.) |
| 16 | PON2 | O | Circumference power supply control (5V) | L: ON |
| 17 | LX CON | I | Start-up request from master unit | H: Slave unit ON, L: Slave unit OFF |
| 18 | LX REQ M | I | Communication request from master unit | |
| 19 | MUTEN | I/O | Codec mute | L: Mute |
| 20 | RSTN | O | Codec reset | L: Reset |
| 21 | PON | O | Circumference power supply control (A8V) | H: ON |
| 22 | BEEP | O | Beep output | 2kHz |
| 23 | BOOT E | I | Test mode input | L: Test mode |
| 24 | RESET P | I/O | Module reset output | L: Reset |

# MICROCOMPUTER'S TERMINAL DESCRIPTION

| Pin No. | Pin Name | I/O | Application | Processing / Operation / Description |
|---|---|---|---|---|
| 25 | LX MUTE | O | Mute request to master unit | L: Mute ON, H: Mute OFF |
| 26 | LX REQ S | O | Communication request to master unit | Pull-down (GND) |
| 27 | ROM SCL | I/O | E2PROM clock for ROM correction | Pull-up (B.U.) |
| 28 | ROM SDA | O | E2PROM data for ROM correction | Pull-up (B.U.) |
| 29 | MCU RXD | O | Not used (Terminal for flash ROM writing) | L fixed |
| 30 | MCU TXD | O | Not used (Terminal for flash ROM writing) | L fixed |
| 31 | MCU CLK | O | Not used (Terminal for flash ROM writing) | L fixed |
| 32 | SCIF0 RTS | I | Bluetooth module transmission control input | |
| 33 | SCIF0 RXD | O | Bluetooth module data output | |
| 34 | SCIF0 TXD | I | Bluetooth module data input | |
| 35 | NC | - | Not used | L fixed |
| 36 | SCIF0 CTS | O | Bluetooth module transmission control output | |
| 37 | NC | I | Not used | Pull-up (B.U.) |
| 38 | NC | - | Not used | |
| 39 | NC | I | Not used | Pull-up (B.U.) |
| 40 | NC | - | Not used | |
| 41 | NC | I | Not used | Pull-up (B.U.) |
| 42 | RD | O | External memory reading permission | L: Reading |
| 43 | NC | - | Not used | |
| 44 | WR | O | External memory writing permission | L: Writing |
| 45 | NC | O | Not used | Pull-up (B.U.) |
| 46 | DISP SEL | I | Switch for 2006's models with 14-SEG display | L: 2006's models with 14-SEG display<br>H: Others condition (Default) |
| 47 | A18 | O | External bus address | Address output |
| 48 | CS | O | Flash ROM chip enable | L: Selected |
| 49 | A17 | O | External bus address | Address output |
| 50 | NC | - | Not used | Open |
| 51~59 | A16~A8 | O | External bus address | Address output |
| 60 | VCC2 | - | Power supply input | Connects to B.U.5V |
| 61 | A7 | O | External bus address | Address output |
| 62 | VSS | - | Power supply input | Connects to GND |
| 63~69 | A6~A0 | O | External bus address | Address output |
| 70 | NC | - | Not used | Open |
| 71~86 | D15~D0 | I/O | External bus data | Data input/output |
| 87 | FLASH RST | O | Flash ROM reset | L: Reset |
| 88 | FLASH RY | I | Flash ROM ready input | L: Busy (During writing) |
| 89~93 | NC | - | Not used | L fixed |
| 94 | AVSS | - | Analog power supply input | Connects to GND |
| 95 | NC | - | Not used | L fixed |
| 96 | VREF | - | Reference voltage input | Connects to GND |
| 97 | AVCC | - | Analog power supply input | Connects to B.U.5V |
| 98,99 | NC | - | Not used | L fixed |
| 100 | ROM WR | I | ROM correction writing mode input | L: ROM correction writing mode |

# TEST MODE

## ■ How to enter the test mode

Set the connected head unit to the test mode to enter the test mode.

## ■ Test mode conditions

- In the test mode, telephone number and name are not normally displayed. (In order to use for the display in the test mode)
- Key operations have to be the same as the operations in the normal mode.
- The unit comes into conditions when the telephone is connected even if it is not physically connected.

## ■ ROM correction version display and Main μ-com (IC3) software version display

- In the name used to enter the telephone directory search mode, ROM correction version and Main μ-com (IC3) version are displayed.

  " S x . x x R x . x x "

  (Main μ-com) (ROM correction)

## ■ Switch status display (DISPLAY SELECT: S2)

- Depending on the status of the switch, the level at pin 30 of the main μ-com (IC3) varies.

  When the switch (S2) is set to the side 1: Hi level

  When the switch (S2) is set to the side 2 (GND side): Lo level

## ■ Flash ROM check function

To check connection of the external flash ROM.

- How to enter the test mode

  Set Lo level at pin 23 of the main μ-com (IC3) and then reset it to enter the test mode.
- Operations

  During operations, the Hi/Lo level at pin 31 of the main μ-com (IC3) changes.

  Output level will become constant after the completion of operations.

  Hi level: OK

  Lo level: NG

## ■ Clear of the test mode

The unit returns to the initial condition by reset, ACC OFF, POWER OFF and momentary power down.

# ROM CORRECTION WRITING MODE

Mode to make ROM correction E2PROM externally writable.

## ■ How to enter the write mode

Reset while keeping the Lo level at the write mode terminal (pin 100 of the Main μ-com (IC3))

The write mode condition is retained while the write mode terminal is at Lo level.

In this condition, externally write the data.

## ■ How to check the data

① Enter the test mode. (Refer to "How to enter the test mode" for how to enter the test mode)

② Enter the telephone directory search mode and check ROM correction version.

# REPLACING PARTS

## ■ Check of calls when parts or Processor Unit (X32-) is replaced

- After parts or Processor Unit (X32-) is replaced, connect Bluetooth compatible cell phone to KCA-BT100, and check Hands-free calls.
- Telephone number that was used to check calls is recorded in a telephone directory.
- After the completion of the check, please remove the relevant telephone number from the telephone directory.

## ■ When replacing parts

1. Processor Unit (X32-) has been subjected to various RF performance tests before factory shipment.
   Therefore, Bluetooth RF Module (A1) and Main μ-COM (IC3) cannot be replaced.
   When Bluetooth RF Module (A1) or Main μ-COM (IC3) has to be replaced, replace Processor Unit (X32-) of Processor Unit Assy (Y33-2680-00) that is available for the service replacement. (Refer to Ref. No. 10 of the Exploded View)
   Note that the Chassis (702) of Y33-2680-00 does not have Serial Number Sticker.
   Thus, do not use the Chassis of Y33-2680-00 when replacement.
2. Telephone directory data is stored in the Flash Memory (IC8).
   Replacing the Flash Memory (IC8) clears the telephone directory data.

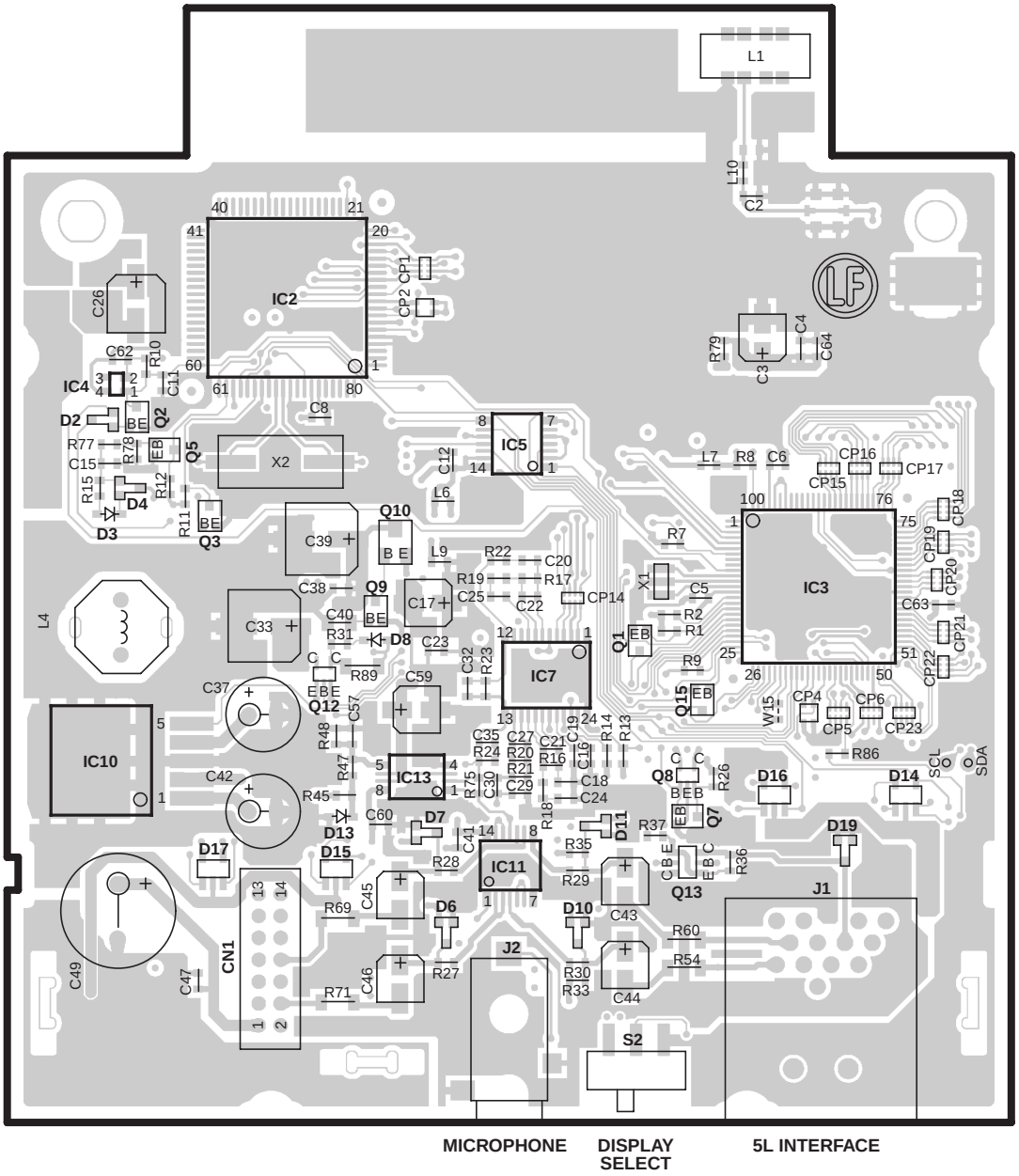
## ■ Troubleshooting

| Error symptoms | Check points |
|---|---|
| Bluetooth device cannot be searched from cell phone.<br>Changer source selection is also impossible. | IC2 (System μ-COM), IC3 (Main μ-COM) and their perimeter.<br>Q6 (BU5V AVR) and its perimeter. |
| Bluetooth device cannot be searched from cell phone.<br>Changer source selection is possible. | A1 (Bluetooth RF Module), IC6 (3.3V → 5V Conversion) and their perimeter.<br>IC9 (3.3V REG.), IC10 (5V REG.) and their perimeter. |
| Bluetooth device can be searched from cell phone but connection (authentication) is impossible.<br>Changer source selection is possible. | IC5 (5V → 3.3V Conversion) and its perimeter. |
| The telephone directory data becomes NO DATA after the telephone directory data is transferred from the cell phone. | IC8 (Flash Memory) and its perimeter. |
| Bluetooth device can be searched only when the device is brought near to cell phone. | L1 (Chip ANT.) and its perimeter. |
| Input/Output of the hands-free audio are NG.<br>(Cannot send or receive call) | IC7 (PCM CODEC), Q10 (A8V AVR) and their perimeter. |
| Audio level of hands-free call is low. | IC13 (BPF) and its perimeter. |
| Cannot send call. | IC12 (MIC Input AMP) and its perimeter. |
| Receiving audio does not come out of the Head Unit speaker. | IC11 (Analog SW) and its perimeter. |

# KCA-BT100

## PC BOARD (COMPONENT SIDE VIEW)

**PROCESSOR UNIT**
**X32-5852-70 (J76-0207-12)**



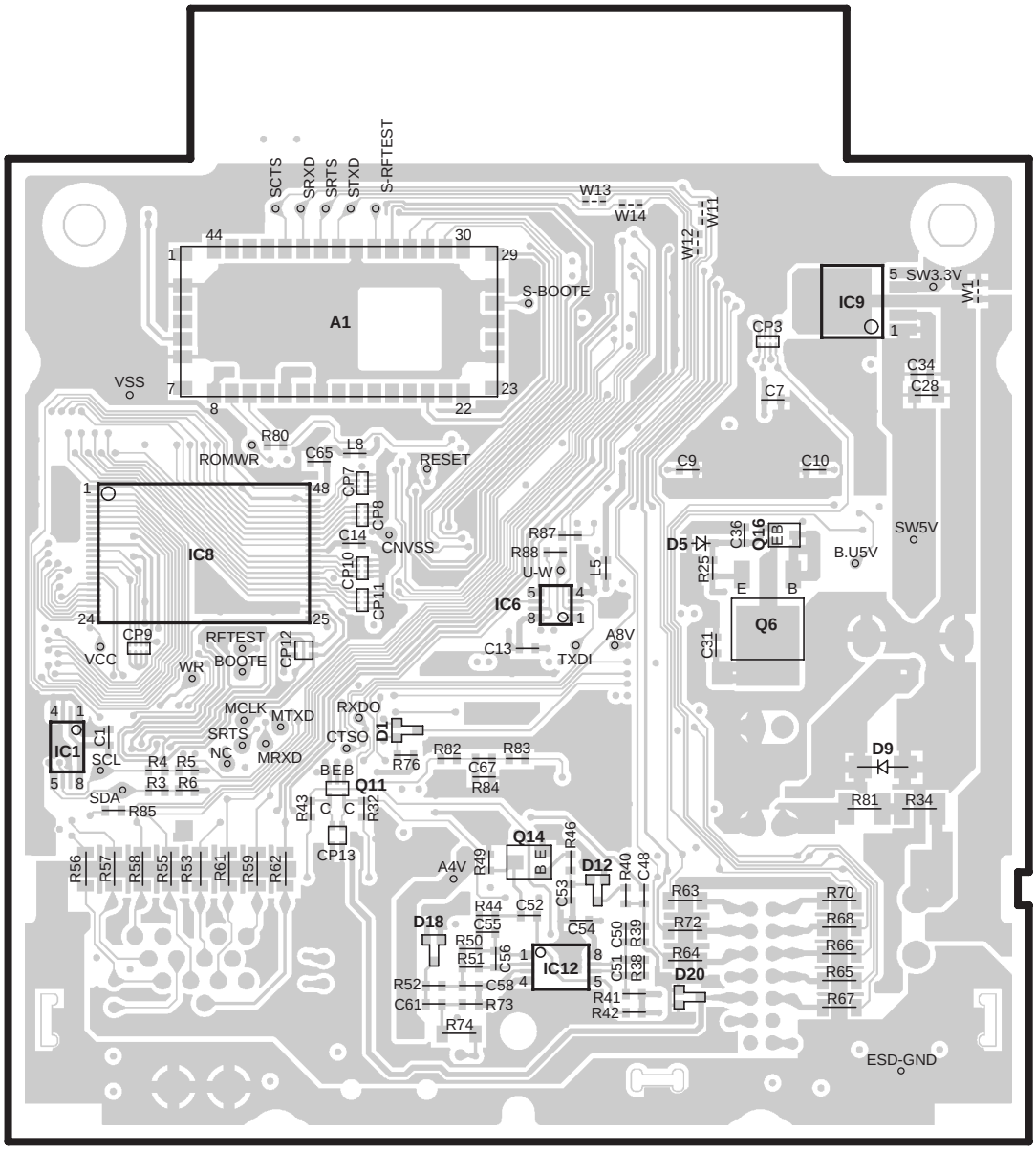

**X32-5852-70**

| Ref. No. | Address | Ref. No. | Address |
|---|---|---|---|
| IC2 | 3B | Q3 | 3B |
| IC3 | 4D | Q5 | 3B |
| IC4 | 3B | Q7 | 4D |
| IC5 | 3C | Q8 | 4D |
| IC7 | 4C | Q9 | 4C |
| IC10 | 4B | Q10 | 3C |
| IC11 | 5C | Q12 | 4C |
| IC13 | 4C | Q13 | 5D |
| Q1 | 4D | Q15 | 4D |
| Q2 | 3B | | |

Refer to the schematic diagram for the values of resistors and capacitors.

# PC BOARD (FOIL SIDE VIEW)

**PROCESSOR UNIT**
**X32-5852-70 (J76-0207-12)**

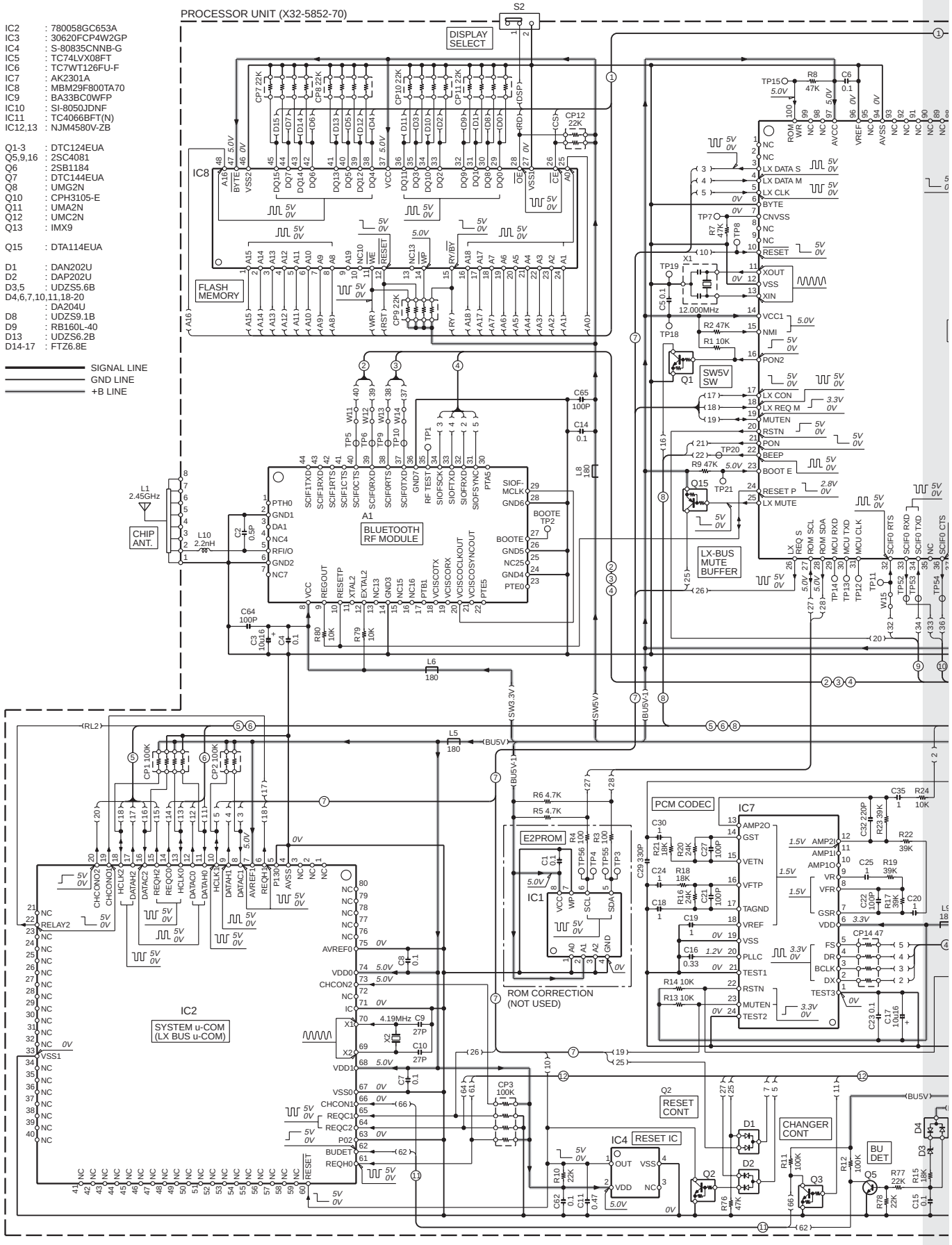



**X32-5852-70**

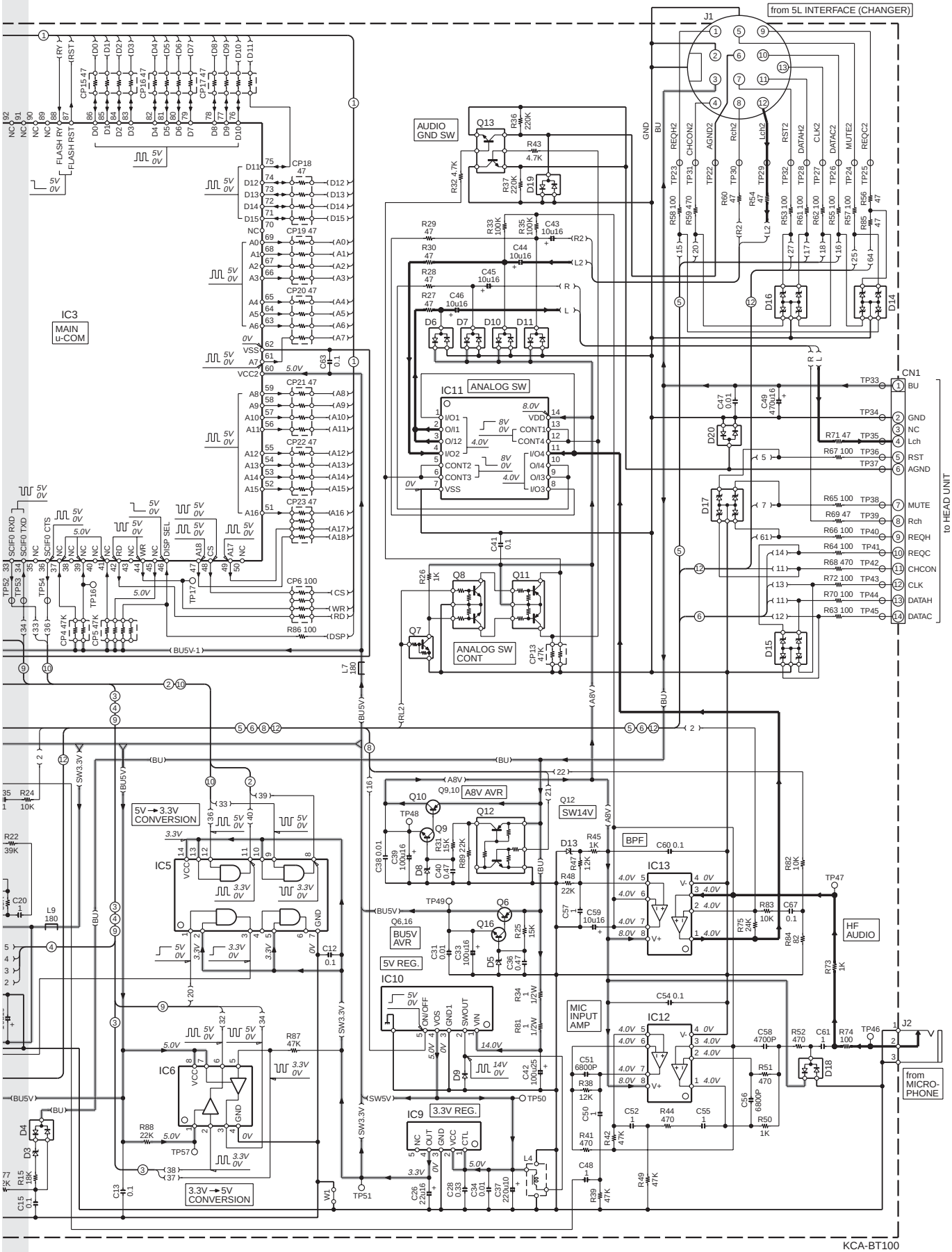
| Ref. No. | Address |
|---|---|
| IC6 | 4H |
| IC8 | 3G |
| IC9 | 3I |
| IC12 | 5H |
| Q6 | 4I |
| Q11 | 4G |
| Q16 | 3I |

Refer to the schematic diagram for the values of resistors and capacitors.

# KCA-BT100



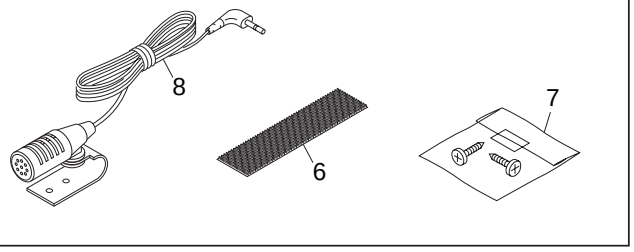

**CAUTION :** For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). ⚠ Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.



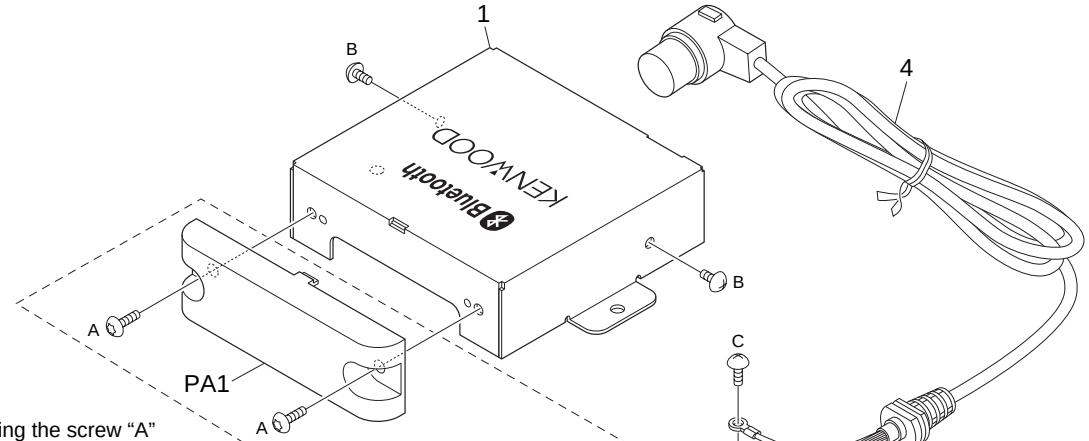

KCA-BT100

- DC voltages are as measured with a high impedance voltmeter. Values may vary slightly due to variations between individual instruments or/and units.

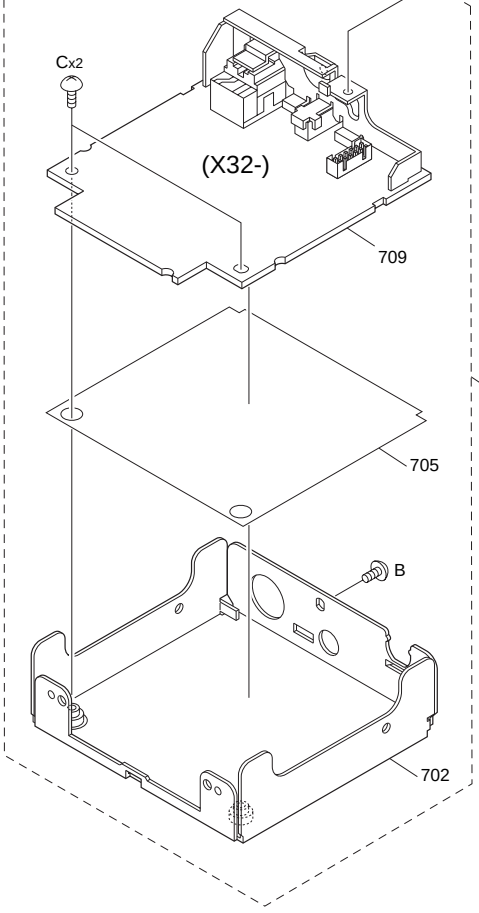
# EXPLODED VIEW




A M2.6x8 : N09-6431-05
B : N89-2605-43
C : N89-2605-48




About removing the screw “A”
which is a hexagonal head screw :
“TORX T8 Screwdriver” is necessary.




About replacing “10” :
This is a part which is only for service.
“702” which is contained in “10”
does not include Serial Number Sticker.
Therefore “702” which is contained in “10”
can not be used as a replacement part.
When replacing “10”, original “702”
including Serial Number Sticker is necessary.

**Parts with the exploded numbers larger than 700 are not supplied.**

# PARTS LIST

✻ New parts
Parts without **Parts No.** are not supplied.
Les articles non mentionnes dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

| Ref. No. | Add | New | Parts No. | Description | Destination |
|---|---|---|---|---|---|
| **KCA-BT100** | | | | | |
| 1 | 1A | ✻ | A01-4422-02 | METALLIC CABINET | |
| PA1 | 2A | ✻ | A64-4074-02 | PANEL | |
| - | | ✻ | B64-3478-00 | INST. MANUAL (ENG.FRE.SPA) | K1 |
| - | | ✻ | B64-3479-00 | INST. MANUAL (ENG.ARABIC) | M1 |
| - | | ✻ | B64-3480-00 | INST. MANUAL (ENGLISH) | E1 |
| - | | ✻ | B64-3480-00 | INST. MANUAL (FRE.GER.DUT) | E1 |
| - | | ✻ | B64-3480-00 | INST. MANUAL (ITA.SPA.POR) | E1 |
| 4 | 1B | ✻ | E30-6645-05 | CORD WITH DIN CONNECTOR | |
| 6 | 1A | ✻ | H30-0600-04 | MAGIC TAPE | |
| - | | ✻ | H12-2825-04 | PACKING FIXTURE | |
| - | | ✻ | H54-3867-03 | ITEM CARTON CASE | |
| 7 | 1A | | N99-1789-05 | SCREW SET | |
| A | 2A | ✻ | N09-6431-05 | DRESSED SCREW (M2.6X8) | |
| B | 1A | ✻ | N89-2605-43 | BINDING HEAD TAPTITE SCREW | |
| C | 2A | ✻ | N89-2605-48 | BINDING HEAD TAPTITE SCREW | |
| 8 | 1A | ✻ | W01-1676-05 | MICROPHONE (3m) | |
| 10 | 3B | ✻ | Y33-2680-00 | PROCESSOR UNIT ASSY | |
| **PROCESSOR UNIT (X32-5852-70)** | | | | | |
| C2 | | | CC73GCH1H0R5C | CHIP C 0.5PF C | |
| C3 | | | CE32BJ1C100M | CHIP EL 10UF 16WV | |
| C4-8 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C9,10 | | | CC73GCH1H270J | CHIP C 27PF J | |
| C11 | | | CK73GB1A474K | CHIP C 0.47UF K | |
| C12-15 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C16 | | | CK73GB1A334K | CHIP C 0.33UF K | |
| C17 | | | CE32BJ1C100M | CHIP EL 10UF 16WV | |
| C18-20 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C21,22 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C23 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C24,25 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C26 | | | CE32BJ1C220M | CHIP EL 22UF 16WV | |
| C27 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C28 | | | CK73FB1H334K | CHIP C 0.33UF K | |
| C29 | | | CC73GCH1H331J | CHIP C 330PF J | |
| C30 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C31 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C32 | | | CC73GCH1H221J | CHIP C 220PF J | |
| C33 | | | CE32BJ1C101M | CHIP EL 100UF 16WV | |
| C34 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C35 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C36 | | | CK73GB1A474K | CHIP C 0.47UF K | |
| C37 | | | CD04BK1A221M | ELECTRO 220UF 10WV | |
| C38 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C39 | | | CE32BJ1C101M | CHIP EL 100UF 16WV | |
| C40 | | | CK73FB1E474K | CHIP C 0.47UF K | |
| C41 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C42 | | | CD04BK1E101M | ELECTRO 100UF 25WV | |
| C43-46 | | | CE32BJ1C100M | CHIP EL 10UF 16WV | |
| C47 | | | CK73GB1H103K | CHIP C 0.010UF K | |
| C48 | | | CK73GB1A105K | CHIP C 1.0UF K | |

| Ref. No. | Add | New | Parts No. | Description | Destination |
|---|---|---|---|---|---|
| C49 | | | CD04BJ1C471M | ELECTRO 470UF 16WV | |
| C50 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C51 | | | CK73GB1H682K | CHIP C 6800PF K | |
| C52 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C54 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C55 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C56 | | | CK73GB1H682K | CHIP C 6800PF K | |
| C57 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C58 | | | CK73GB1H472K | CHIP C 4700PF K | |
| C59 | | | CE32BJ1C100M | CHIP EL 10UF 16WV | |
| C60 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C61 | | | CK73GB1A105K | CHIP C 1.0UF K | |
| C62,63 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| C64,65 | | | CC73GCH1H101J | CHIP C 100PF J | |
| C67 | | | CK73GB1H104K | CHIP C 0.10UF K | |
| CN1 | | ✻ | E41-2616-05 | PIN ASSY | |
| J1 | | | E56-0865-05 | CYLINDRICAL RECEPTACLE | |
| J2 | | | E11-0638-05 | PHONE JACK | |
| L1 | | ✻ | T90-0579-05 | CHIP ANTENNA | |
| L4 | | | L33-2262-05 | CHOKE COIL | |
| L5-9 | | | L92-0373-05 | CHIP FERRITE | |
| L10 | | ✻ | L40-2263-38 | SMALL FIXED INDUCTOR (2.2NH) | |
| X1 | | | L78-0872-05 | RESONATOR (12MHZ) | |
| X2 | | ✻ | L77-2942-05 | CRYSTAL RESONATOR (4.194304MHZ) | |
| CP1 | | | RK74HB1J104J | CHIP-COM 100K J 1/16W | |
| CP2 | | | RK74GA1J104J | CHIP-COM 100K J 1/16W | |
| CP3 | | | RK74HB1J104J | CHIP-COM 100K J 1/16W | |
| CP4 | | | RK74GA1J473J | CHIP-COM 47K J 1/16W | |
| CP5 | | | RK74HB1J473J | CHIP-COM 47K J 1/16W | |
| CP6 | | | RK74HB1J101J | CHIP-COM 100 J 1/16W | |
| CP7-11 | | | RK74HB1J223J | CHIP-COM 22K J 1/16W | |
| CP12 | | | RK74GA1J223J | CHIP-COM 22K J 1/16W | |
| CP13 | | | RK74GA1J473J | CHIP-COM 47K J 1/16W | |
| CP14-23 | | | RK74HB1J470J | CHIP-COM 47 J 1/16W | |
| R1 | | | RK73GB2A103J | CHIP R 10K J 1/10W | |
| R2 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R5,6 | | | RK73GB2A472J | CHIP R 4.7K J 1/10W | |
| R7-9 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R10 | | | RK73GB2A223J | CHIP R 22K J 1/10W | |
| R11,12 | | | RK73GB2A104J | CHIP R 100K J 1/10W | |
| R13,14 | | | RK73GB2A103J | CHIP R 10K J 1/10W | |
| R15 | | | RK73GB2A183J | CHIP R 18K J 1/10W | |
| R16 | | | RK73GB2A243J | CHIP R 24K J 1/10W | |
| R17 | | | RK73GB2A393J | CHIP R 39K J 1/10W | |
| R18 | | | RK73GB2A183J | CHIP R 18K J 1/10W | |
| R19 | | | RK73GB2A393J | CHIP R 39K J 1/10W | |
| R20 | | | RK73GB2A243J | CHIP R 24K J 1/10W | |
| R21 | | | RK73GB2A183J | CHIP R 18K J 1/10W | |
| R22,23 | | | RK73GB2A393J | CHIP R 39K J 1/10W | |
| R24 | | | RK73GB2A103J | CHIP R 10K J 1/10W | |
| R25 | | | RK73GB2A153J | CHIP R 15K J 1/10W | |
| R26 | | | RK73GB2A102J | CHIP R 1.0K J 1/10W | |
| R27-30 | | | RK73GB2A470J | CHIP R 47 J 1/10W | |
| R31 | | | RK73GB2A153J | CHIP R 15K J 1/10W | |

**E** : Europe **K** : North America **M** : Other Areas **W** : Without Europe

⚠ Indicates safety critical components.

# PARTS LIST

## PROCESSOR UNIT (X32-5852-70)

| Ref. No. | Add | New | Parts No. | Description | Destination |
|---|---|---|---|---|---|
| R32 | | | RK73GB2A472J | CHIP R 4.7K J 1/10W | |
| R33 | | | RK73GB2A104J | CHIP R 100K J 1/10W | |
| R34 | | | RK73PB2H1R0J | CHIP R 1.0 J 1/2W | |
| R35 | | | RK73GB2A104J | CHIP R 100K J 1/10W | |
| R36,37 | | | RK73GB2A224J | CHIP R 220K J 1/10W | |
| R38 | | | RK73GB2A123J | CHIP R 12K J 1/10W | |
| R39 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R41 | | | RK73GB2A471J | CHIP R 470 J 1/10W | |
| R42 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R43 | | | RK73GB2A472J | CHIP R 4.7K J 1/10W | |
| R44 | | | RK73GB2A471J | CHIP R 470 J 1/10W | |
| R45 | | | RK73GB2A102J | CHIP R 1.0K J 1/10W | |
| R47 | | | RK73GB2A123J | CHIP R 12K J 1/10W | |
| R48 | | | RK73GB2A223J | CHIP R 22K J 1/10W | |
| R49 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R50 | | | RK73GB2A102J | CHIP R 1.0K J 1/10W | |
| R51,52 | | | RK73GB2A471J | CHIP R 470 J 1/10W | |
| R53 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R54 | | | RK73EB2E470J | CHIP R 47 J 1/4W | |
| R55 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R56 | | | RK73EB2E470J | CHIP R 47 J 1/4W | |
| R57,58 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R59 | | | RK73EB2E471J | CHIP R 470 J 1/4W | |
| R60 | | | RK73EB2E470J | CHIP R 47 J 1/4W | |
| R61-67 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R68 | | | RK73EB2E471J | CHIP R 470 J 1/4W | |
| R69 | | | RK73EB2E470J | CHIP R 47 J 1/4W | |
| R70 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R71 | | | RK73EB2E470J | CHIP R 47 J 1/4W | |
| R72 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R73 | | | RK73GB2A102J | CHIP R 1.0K J 1/10W | |
| R74 | | | RK73EB2E101J | CHIP R 100 J 1/4W | |
| R75 | | | RK73GB2A243J | CHIP R 24K J 1/10W | |
| R76 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R77,78 | | | RK73GB2A223J | CHIP R 22K J 1/10W | |
| R79,80 | | | RK73GB2A103J | CHIP R 10K J 1/10W | |
| R81 | | | RK73PB2H1R0J | CHIP R 1.0 J 1/2W | |
| R82,83 | | | RK73GB2A103J | CHIP R 10K J 1/10W | |
| R84 | | | RK73GB2A820J | CHIP R 82 J 1/10W | |
| R85 | | | RK73GB2A470J | CHIP R 47 J 1/10W | |
| R86 | | | RK73GB2A101J | CHIP R 100 J 1/10W | |
| R87 | | | RK73GB2A473J | CHIP R 47K J 1/10W | |
| R88 | | | RK73GB2A223J | CHIP R 22K J 1/10W | |
| R89 | | | RK73EB2E223J | CHIP R 22K J 1/4W | |
| W1 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| W11-15 | | | R92-1252-05 | CHIP R 0 OHM J 1/16W | |
| S2 | | | S62-0857-05 | SLIDE SWITCH | |
| D1 | | | DAN202U | DIODE | |
| D2 | | | DAP202U | DIODE | |
| D3 | | | UDZS5.6B | ZENER DIODE | |
| D4 | | | DA204U | DIODE | |
| D5 | | | UDZS5.6B | ZENER DIODE | |
| D6,7 | | | DA204U | DIODE | |

| Ref. No. | Add | New | Parts No. | Description | Destination |
|---|---|---|---|---|---|
| D8 | | | UDZS9.1B | ZENER DIODE | |
| D9 | | | RB160L-40 | DIODE | |
| D10,11 | | | DA204U | DIODE | |
| D13 | | | UDZS6.2B | ZENER DIODE | |
| D14-17 | | | FTZ6.8E | ZENER DIODE | |
| D18-20 | | | DA204U | DIODE | |
| IC2 | | | 780058GC653A | MICROCONTROLLER IC | |
| IC3 | | ✻ | 30620FCP4W2GP | MICROCONTROLLER IC | |
| IC4 | | | S-80835CNNB-G | MOS-IC | |
| IC5 | | | TC74LVX08FT | MOS-IC | |
| IC6 | | | TC7WT126FU-F | MOS-IC | |
| IC7 | | ✻ | AK2301A | MOS-IC | |
| IC8 | | ✻ | MBM29F800TA70 | ROM IC | |
| IC9 | | | BA33BC0WFP | ANALOGUE IC | |
| IC10 | | | SI-8050JDNF | ANALOGUE IC | |
| IC11 | | | TC4066BFT(N) | MOS-IC | |
| IC12,13 | | | NJM4580V-ZB | ANALOGUE IC | |
| Q1-3 | | | DTC124EUA | DIGITAL TRANSISTOR | |
| Q5 | | | 2SC4081 | TRANSISTOR | |
| Q6 | | | 2SB1184 | TRANSISTOR | |
| Q7 | | | DTC144EUA | DIGITAL TRANSISTOR | |
| Q8 | | | UMG2N | TRANSISTOR | |
| Q9 | | | 2SC4081 | TRANSISTOR | |
| Q10 | | | CPH3105-E | TRANSISTOR | |
| Q11 | | | UMA2N | TRANSISTOR | |
| Q12 | | | UMC2N | TRANSISTOR | |
| Q13 | | | IMX9 | TRANSISTOR | |
| Q15 | | | DTA114EUA | DIGITAL TRANSISTOR | |
| Q16 | | | 2SC4081 | TRANSISTOR | |
| A1 | | ✻ | W02-5173-05 | ELECTRIC CIRCUIT MODULE | |

**E** : Europe **K** : North America **M** : Other Areas **W** : Without Europe

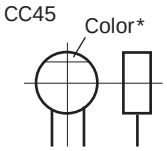
⚠ Indicates safety critical components.

# PARTS LIST

## CAPACITORS

| C C | 4 5 | T H | 1 H | 2 2 0 | J |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

1 = Type ... ceramic, electrolytic, etc.
2 = Shape ... round, square, etc.
3 = Temp. coefficient
4 = Voltage rating
5 = Value
6 = Tolerance




**• Capacitor value**

010 = 1pF
100 = 10pF
101 = 100pF
102 = 1000pF = 0.001µF
103 = 0.01µF

2 2 0 = 22pF
Multiplier
2nd number
1st number

**• Temperature coefficient**

| 1st Word | C | L | P | R | S | T | U |
|---|---|---|---|---|---|---|---|
| Color* | Black | Red | Orange | Yellow | Green | Blue | Violet |
| ppm/°C | 0 | –80 | –150 | –220 | –330 | –470 | –750 |

| 2nd Word | G | H | J | K | L |
|---|---|---|---|---|---|
| ppm/°C | ±30 | ±60 | ±120 | ±250 | ±500 |

Example : CC45TH = –470±60ppm/°C

**• Tolerance (More than 10pF)**

| Code | C | D | G | J | K | M | X | Z | P | No code |
|---|---|---|---|---|---|---|---|---|---|---|
| (%) | ±0.25 | ±0.5 | ±2 | ±5 | ±10 | ±20 | +40 | +80 | +100 | More than 10µF : –10~+50 |
| | | | | | | | –20 | –20 | –0 | Less than 4.7µF : –10~+75 |

**(Less than 10pF)**

| Code | B | C | D | F | G |
|---|---|---|---|---|---|
| (pF) | ±0.1 | ±0.25 | ±0.5 | ±1 | ±2 |

**• Voltage rating**

| 2nd word / 1st word | A | B | C | D | E | F | G | H | J | K | V |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1.0 | 1.25 | 1.6 | 2.0 | 2.5 | 3.15 | 4.0 | 5.0 | 6.3 | 8.0 | – |
| 1 | 10 | 12.5 | 16 | 20 | 25 | 31.5 | 40 | 50 | 63 | 80 | 35 |
| 2 | 100 | 125 | 160 | 200 | 250 | 315 | 400 | 500 | 630 | 800 | – |
| 3 | 1000 | 1250 | 1600 | 2000 | 2500 | 2150 | 4000 | 5000 | 6300 | 8000 | – |

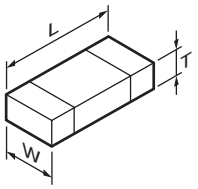
**• Chip capacitors**

(EX) C C 7 3 F S L 1 H 0 0 0 J
1 2 3 4 5 6 7
(Chip) (CH, RH, UJ, SL)

(EX) C K 7 3 F F 1 H 0 0 0 Z
1 2 3 4 5 6 7
(Chip) (B, F)

Refer to the table above.
1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Voltage rating
6 = Value
7 = Tolerance

**• Dimension**




**Chip capacitor**

| Code | L | W | T |
|---|---|---|---|
| Empty | 5.6±0.5 | 5.0±0.5 | Less than 2.0 |
| A | 4.5±0.5 | 3.2±0.4 | Less than 2.0 |
| B | 4.5±0.5 | 2.0±0.3 | Less than 2.0 |
| C | 4.5±0.5 | 1.25±0.2 | Less than 1.25 |
| D | 3.2±0.4 | 2.5±0.3 | Less than 1.5 |
| E | 3.2±0.2 | 1.6±0.2 | Less than 1.25 |
| F | 2.0±0.3 | 1.25±0.2 | Less than 1.25 |
| G | 1.6±0.2 | 0.8±0.2 | Less than 1.0 |
| H | 1.0±0.05 | 0.5±0.05 | 0.5±0.05 |

## RESISTORS

**• Chip resistor (Carbon)**

(EX) R D 7 3 E B 2 B 0 0 0 J
1 2 3 4 5 6 7
(Chip) (B, F)

**• Carbon resistor (Normal type)**

(EX) R D 1 4 B B 2 C 0 0 0 J
1 2 3 4 5 6 7

1 = Type
2 = Shape
3 = Dimension
4 = Temp. coefficient
5 = Rating wattage
6 = Value
7 = Tolerance

**Chip resistor**

| Code | L | W | T |
|---|---|---|---|
| E | 3.2±0.2 | 1.6±0.2 | 1.0 |
| F | 2.0±0.3 | 1.25±0.2 | 1.0 |
| G | 1.6±0.2 | 0.8±0.2 | 0.5±0.1 |
| H | 1.0±0.05 | 0.5±0.05 | 0.35±0.05 |

**• Rating wattage**

| Code | Wattage | Code | Wattage | Code | Wattage |
|---|---|---|---|---|---|
| 1J | 1/16W | 2C | 1/6W | 3A | 1W |
| 2A | 1/10W | 2E | 1/4W | 3D | 2W |
| 2B | 1/8W | 2H | 1/2W | | |

# KCA-BT100

## SPECIFICATIONS

### Bluetooth Section

Technology ..... Bluetooth 1.2 Certified
Frequency ..... 2.402~2.480GHz
Output Power ..... +4dBm (MAX), 0dBm (AVE) Power Class 2

### General

Operating voltage (11~16V allowable) ..... 14.4V
Current consumption ..... 0.2A
Dimension (W x H x D) ..... 95 x 30 x 105 mm
Weight ..... 0.35kg

KENWOOD follows a policy of continuous advancements in development.
For this reason specifications may be changed without notice.