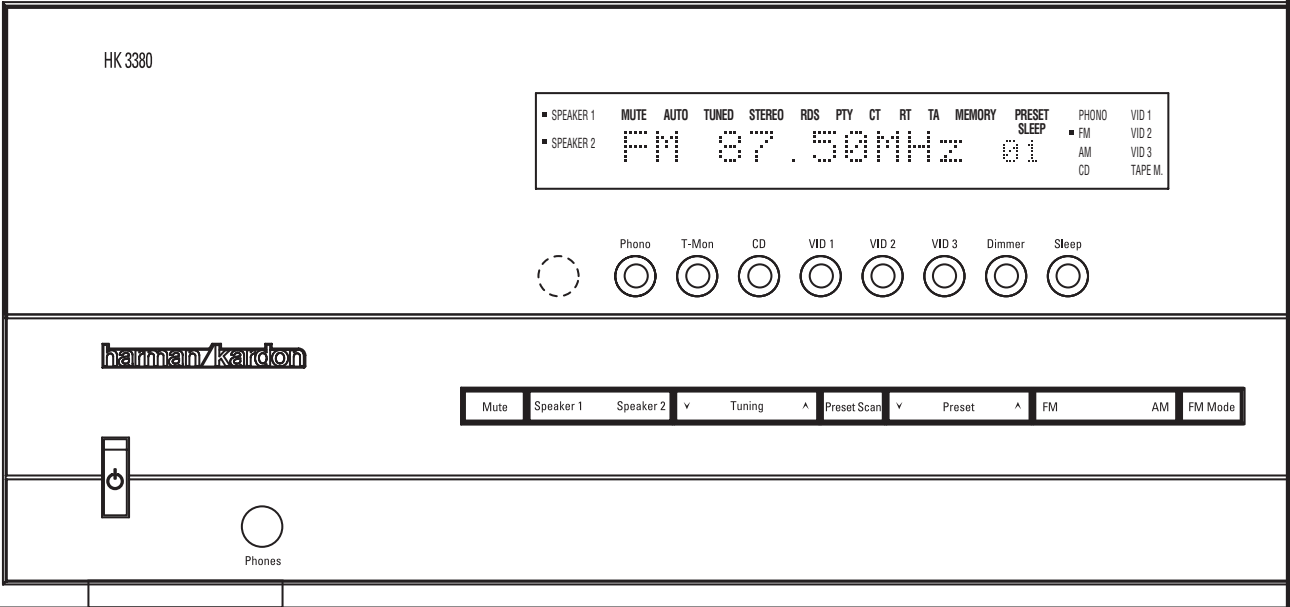


# HK 3380 HK3480 Stereo Receiver

## SERVICE MANUAL



harman/kardon®

Power for the Digital Revolution®

# Technical Specifications HK3380/230

## Audio Section

|                                                 |               |
|-------------------------------------------------|---------------|
| Stereo Mode                                     |               |
| Continuous Average Power (FTC)                  |               |
| 80 Watts per channel, 20Hz–20kHz                |               |
| @ < 0.07% THD, both channels driven into 8 ohms |               |
| 100 Watts per channel, 20Hz–20kHz               |               |
| @ < 0.2% THD, both channels driven into 4 ohms  |               |
| Input Sensitivity/Impedance                     |               |
| Linear (High Level)                             | 200mV/47kohms |
| Signal-to-Noise Ratio (IHF-A)                   | 95dB          |
| Frequency Response                              |               |
| @ 1W (+0dB, –3dB)                               | 10Hz–110kHz   |
| High Instantaneous                              |               |
| Current Capability (HCC)                        | ±42 Amps      |
| Transient Intermodulation                       |               |
| Distortion (TIM)                                | Unmeasurable  |
| Rise Time                                       | 16 µsec       |
| Slew Rate                                       | 40V/µsec      |

## FM Tuner Section

|                       |                             |
|-----------------------|-----------------------------|
| Frequency Range       | 87.5–108MHz                 |
| Usable Sensitivity    | IHF: 1.12 µV/13.5dBf        |
| Signal-to-Noise Ratio | Mono/Stereo: 73/72dBA (DIN) |
| Distortion            | Mono/Stereo: 0.3/0.4%       |
| Stereo Separation     | 40dB @ 1kHz                 |
| Selectivity           | ±400kHz, 65dB               |
| Image Rejection       | >80dB                       |
| IF Rejection          | >100dB                      |

## AM Tuner Section

|                       |                     |
|-----------------------|---------------------|
| Frequency Range       | 520–1710kHz         |
| Signal-to-Noise Ratio | >40dB               |
| Usable Sensitivity    | Loop: 500 µV/M      |
| Distortion            | 1kHz, 50% Mod: 0.8% |
| Selectivity           | ±10kHz: >25dB       |

## Video Section

|                   |                     |
|-------------------|---------------------|
| Television System | NTSC/PAL/SECAM      |
| Signal Format     | Composite           |
| Input Level       | 1Vp-p               |
| Input Impedance   | 75 ohms, unbalanced |
| Sync Polarity     | Negative            |
| Output Level      | 1Vp-p               |
| Output Impedance  | 75 ohms, unbalanced |
| Video Frequency   |                     |
| Response          | 10Hz – 10MHz        |

## General

|                   |                                                    |
|-------------------|----------------------------------------------------|
| Power Requirement | AC 230V/50Hz                                       |
| Power Consumption | 3W standby, 200W maximum<br>(both channels driven) |

## Dimension (Max)

|        |       |
|--------|-------|
| Width  | 442mm |
| Height | 168mm |
| Depth  | 382mm |
| Weight | 9.5kg |

Depth measurement includes knobs, buttons and terminal connections. Height measurement includes feet and chassis.

All features and specifications are subject to change without notice.

Harman Kardon and Power for the Digital Revolution are registered trademarks of Harman International Industries, Incorporated.

# Technical Specifications HK3480

## Audio Section

|                                                 |               |
|-------------------------------------------------|---------------|
| Stereo Mode                                     |               |
| Continuous Average Power (FTC)                  |               |
| 100 Watts per channel, 20Hz–20kHz               |               |
| @ < 0.07% THD, both channels driven into 8 ohms |               |
| 135 Watts per channel, 20Hz–20kHz               |               |
| @ < 0.2% THD, both channels driven into 4 ohms  |               |
| Input Sensitivity/Impedance                     |               |
| Linear (High Level)                             | 200mV/47kohms |
| Signal-to-Noise Ratio (IHF-A)                   | 95dB          |
| Frequency Response                              |               |
| @ 1W (+0dB, –3dB)                               | 10Hz – 110kHz |
| High Instantaneous                              |               |
| Current Capability (HCC)                        | ±40 Amps      |
| Transient Intermodulation                       |               |
| Distortion (TIM)                                | Unmeasurable  |
| Rise Time                                       | 16 µsec       |
| Slew Rate                                       | 40V/µsec      |

## FM Tuner Section

|                       |                             |
|-----------------------|-----------------------------|
| Frequency Range       | 87.5–108MHz                 |
| Usable Sensitivity    | IHF: 1.12 µV/13.5dBf        |
| Signal-to-Noise Ratio | Mono/Stereo: 71/67dBA (DIN) |
| Distortion            | Mono/Stereo: 0.3/0.4%       |
| Stereo Separation     | 40dB @ 1kHz                 |
| Selectivity           | ±300kHz, 60dB               |
| Image Rejection       | >80dB                       |
| IF Rejection          | >100dB                      |

## AM Tuner Section

|                       |                     |
|-----------------------|---------------------|
| Frequency Range       | 520–1710kHz         |
| Signal-to-Noise Ratio | >40dB               |
| Usable Sensitivity    | Loop: 500µV/M       |
| Distortion            | 1kHz, 50% Mod: 0.8% |
| Selectivity           | ±9kHz: >25dB        |

## General

|                   |                                                  |
|-------------------|--------------------------------------------------|
| Power Requirement | AC 230V/50Hz                                     |
| Power Consumption | 72W idle, 470W maximum<br>(both channels driven) |
| Dimension (Max)   |                                                  |
| Width             | 442mm                                            |
| Height            | 156mm                                            |
| Depth             | 415mm                                            |
| Weight            | 12.1kg                                           |

Depth measurement includes knobs, buttons and terminal connections. Height measurement includes feet and chassis.

All features and specifications are subject to change without notice.

Harman Kardon is a registered trademark, and Power for the digital revolution is a trademark, of Harman Kardon, Inc.

VMAx is a registered trademark of Harman International Industries, Inc., and is an implementation of Cooper Bauck Transaural Stereo under patent license.

## **DISASSEMBLY PROCEDURES**

### **<1> TOP-CABINET(21) REMOVAL**

1. Remove 13 screws(S1) and then remove the Top-cabinet.

### **<2> FRONT PANEL ASS'Y REMOVAL**

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Disconnect the lead wire(BN71-12P,BN72-5P) on the Tone PCB(38) from connector(CN71,CN72) on the Main PCB(44).
3. Disconnect the lead wire(BN82-7P) on the Front PCB(37) from connector(CN82) on the Main PCB(44).
4. Disconnect the connector(CN81-20P wire assy) on the Front PCB(37) from connector(CN81) on the Main PCB(44).
5. Disconnect the lead wire(BN73-3P) on the Phone PCB(40) from connector(CN73) on the Main PCB(44).
6. Disconnect the lead wire(BN89-7P) on the Front PCB(37) from connector(CN73) on the Download PCB(44).
7. Remove 1 screw(S10) and then lead wire(JW73-2P) on the Phone PCB(40).
8. Remove 1 screw(S10) and then lead wire(JW72-1P) on the Tone PCB(38).
9. Remove 9 screws(S1) and then remove the Front Panel ASS'Y.

### **<3> TONE PCB(38) REMOVAL**

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Remove the Front Panel ASS'Y, referring to the previous step<2>.
3. Pull out the Volume Knob ASS'Y & 3 Rotary Knobs(5).
4. Remove 9 screws(S1,S11) and then remove the Tone PCB(38).
5. Disconnect the lead wire(BN83-4P) from connector(CN83) on the Tone PCB(38).

### **<4>PHONE PCB(40) REMOVAL**

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Remove the Front Panel ASS'Y, referring to the previous step<2>.
3. Remove 2 screws(S2,S3) and then remove the Phone PCB(16).

### **<5>POWER LED PCB(39) REMOVAL**

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Remove the Front Panel ASS'Y, referring to the previous step<2>.
3. Remove 2 screws(S2) and then remove the Power led PCB(39).
4. Disconnect the lead wire(BN84-4P) from connector(CN84) on the Power led PCB(39).

### **<6>FRONT PCB(37) REMOVAL**

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Remove the Front Panel ASS'Y, referring to the previous step<2>.
3. Remove the Tone PCB(38), referring to the previous step<3>.
4. Remove the Phone PCB(40), referring to the previous step<4>.
5. Remove the Power led PCB(39), referring to the previous step<5>.
6. Remove 13 screws(S2) and then remove the Front PCB(37).

### **<7>TUNER MODULE(34) REMOVAL**

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Disconnect the connector(CON1-Card cable) from connector(CN26) on the Main PCB ASS'Y(44).
3. Remove 2 screws(S8) and then remove the Tuner Module(34).

#### <8>VIDEO PCB(43) REMOVAL

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Disconnect the connector (CN91) on the Main PCB ASS'Y(44) from lead wire(BN91-9P) on the Video PCB(43).
3. Remove 4 screws(S8,S13) and then remove the Video PCB(43).

#### <9>DOWNLOAD PCB(42) REMOVAL

1. Remove the Top-cabinet, referring to the previous step<1>.
2. Disconnect the connector (CN89) from lead wire(BN89-7P) on the Front PCB(37).
3. Remove 2 screws(S4) and then remove the Download PCB(42).

#### <10>POWER TRANS(30) REMOVAL

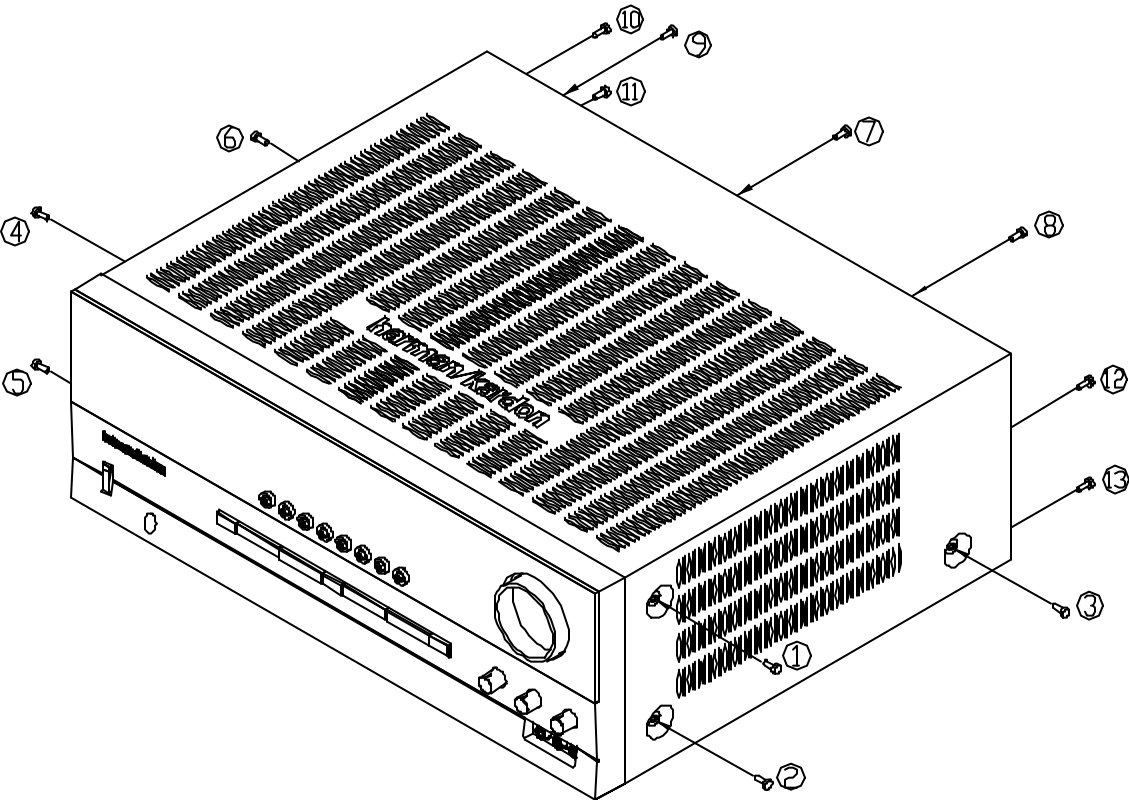
1. Remove the Top-cabinet, referring to the previous step<1>.
2. Disconnect the connector (CN62,CN63,CN64) on the Trans PCB from lead wire(BN62-2P,BN63-3P,BN64-6P) on the Main PCB(44).
3. Remove 4 Trans screws(S9) and then remove the Power Trans(30).

#### <11>MAIN PCB ASS'Y(44) REMOVAL

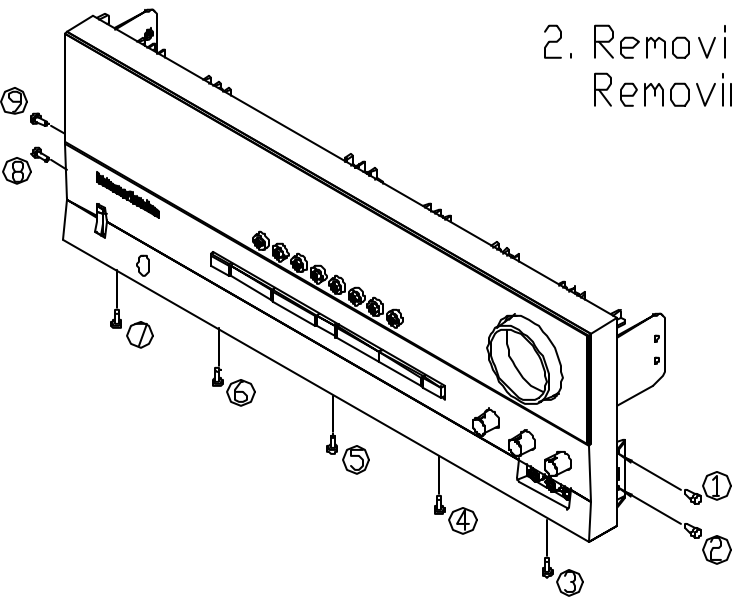
1. Remove the Top-cabinet, referring to the previous step<1>.
2. Remove the Power Trans(30), referring to the previous step<10>.
3. Disconnect the connector(CN81-20P wire ass'y) from connector(CN81-7P) on the Front PCB(37).
4. Disconnect the connector(CN82) from lead wire(BN82-7P) on the Front PCB(37).
5. Disconnect the connector(CN71) from lead wire(BN71-12P) on the Tone PCB(38).
6. Disconnect the connector(CN72) from lead wire(BN72-5P) on the Tone PCB(38).
7. Disconnect the connector(CN73) from lead wire(BN73-3P) on the Phone PCB(40).
8. Disconnect the connector(CN91) from lead wire(BN91-9P) on the Video PCB(43).
9. Disconnect the connector(CN26-Card cable) from lead wire(CON1) on the Tuner Module(34).
10. Disconnect the connector(CN61) from Power cord(35).
11. Remove 21 screws(S8-11EA, S13-1EA, S4-2EA, S6-2EA, S15-1EA, S12-3EA, S5-1EA) and then remove the Main PCB ASS'Y(44).

DISASSEMBLY

1. Removing the Top Cabinet  
Removing the Screws①~⑬

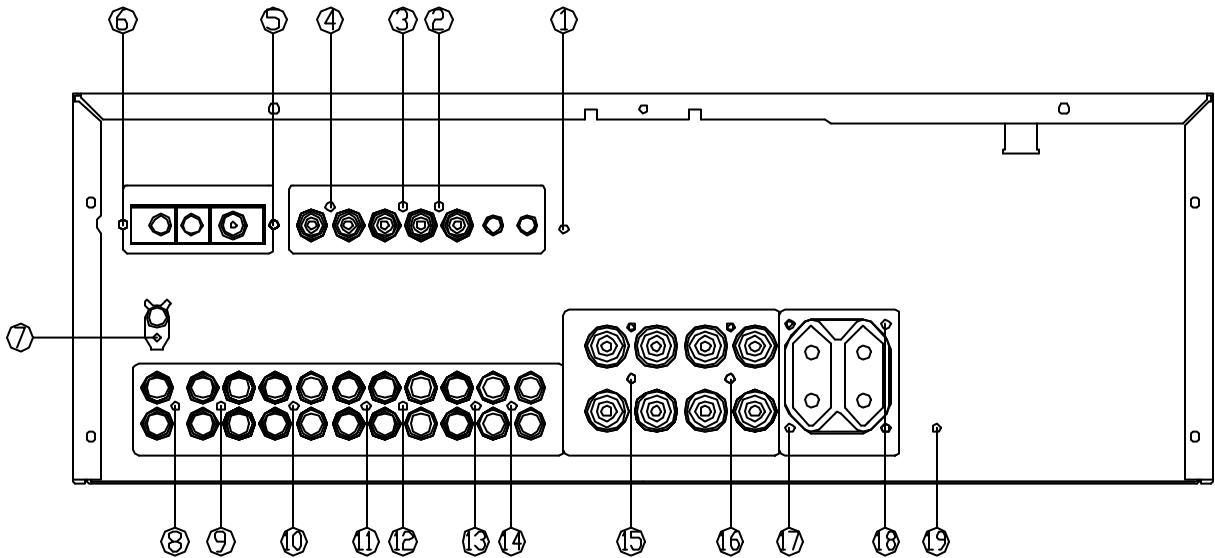


2. Removing the Front Panel  
Removing the Screws①~⑨

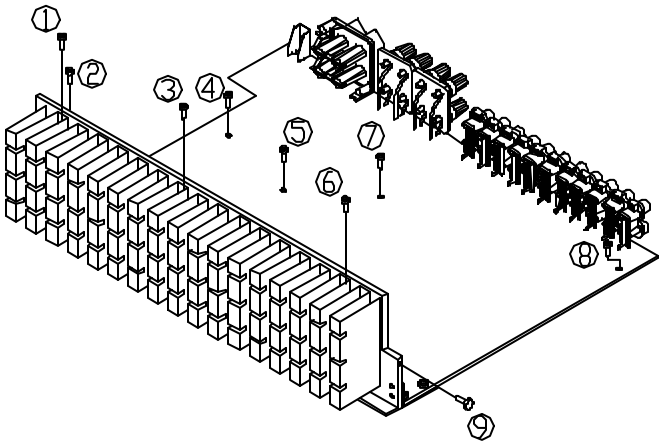


HK3380/230  
HK3480/230

3. Removing the Rear Panel  
Removing the Screws①~⑱



3. Removing the Main PCB  
Removing the Screws①~⑥



# HK3380/230 EXPLODED VIEW

Exploded view diagram of the HK3380/230 device, showing various components and their assembly relationships. The diagram includes callouts for specific parts and their quantities.

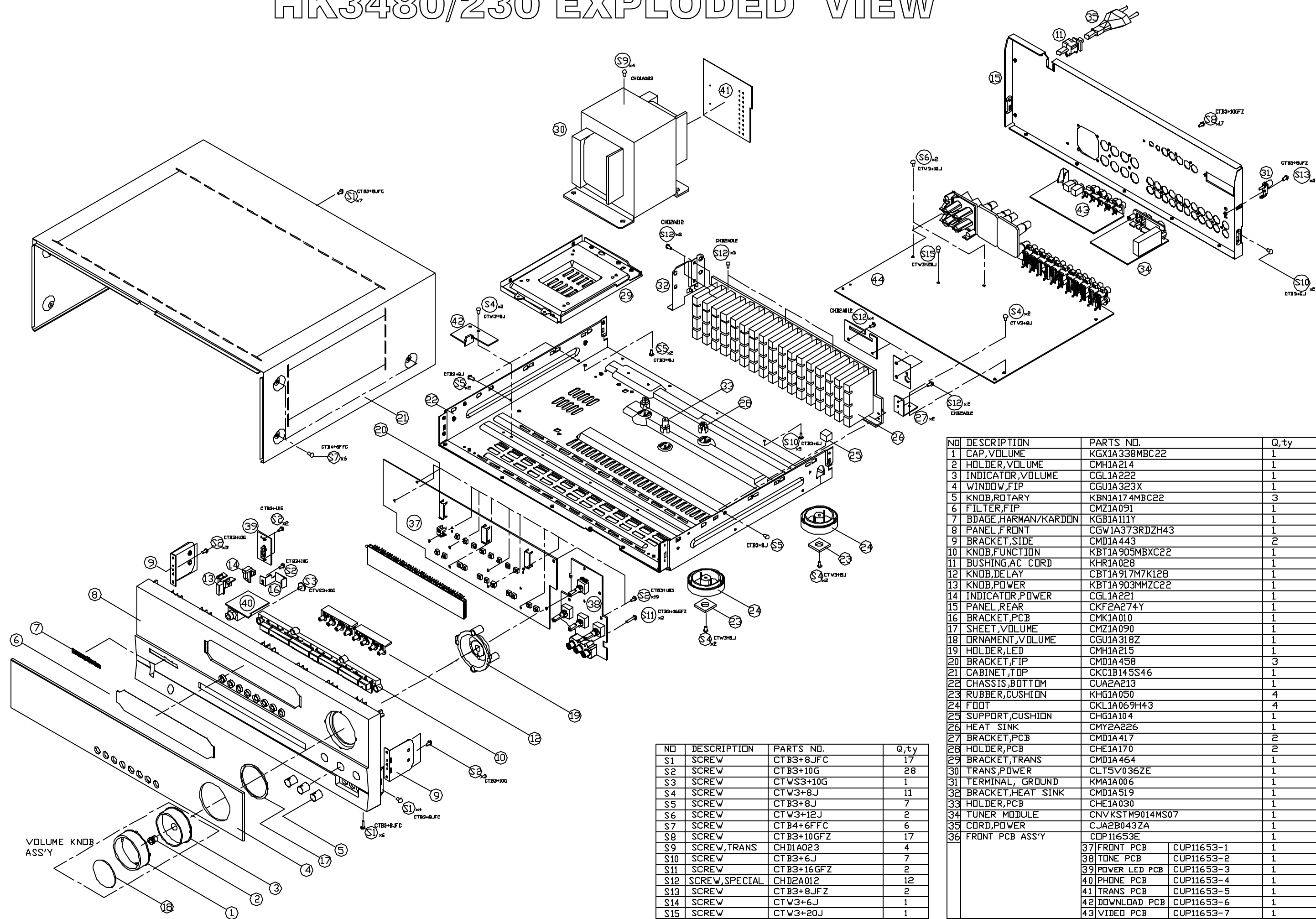
Key components and callouts include:

- 1: CAP, VOLUME
- 2: HOLDER, VOLUME
- 3: INDICATOR, VOLUME
- 4: WINDOW, FIP
- 5: KNOB, ROTARY
- 6: FILTER, FIP
- 7: BDAGE, HARMAN/KARDON
- 8: PANEL, FRONT
- 9: BRACKET, SIDE
- 10: KNOB, FUNCTION
- 11: BUSHING, AC CORD
- 12: KNOB, DELAY
- 13: KNOB, POWER
- 14: INDICATOR, POWER
- 15: PANEL, REAR
- 16: BRACKET, PCB
- 17: SHEET, VOLUME
- 18: ORNAMENT, VOLUME
- 19: HOLDER, LED
- 20: BRACKET, FIP
- 21: CABINET, TOP
- 22: CHASSIS, BOTTOM
- 23: RUBBER, CUSHION
- 24: FOOT
- 25: SUPPORT, CUSHION
- 26: HEAT SINK
- 27: BRACKET, PCB
- 28: HOLDER, PCB
- 29: BRACKET, TRANS
- 30: TRANS, POWER
- 31: TERMINAL, GROUND
- 32: BRACKET, HEAT SINK
- 33: HOLDER, PCB
- 34: TUNER MODULE
- 35: CORD, POWER
- 36: FRONT PCB ASS'Y
- 37: FRONT PCB
- 38: TONE PCB
- 39: POWER LED PCB
- 40: PHONE PCB
- 41: TRANS PCB
- 42: DOWNLOAD PCB
- 43: VIDEO PCB
- 44: MAIN PCB ASS'Y

| NO | DESCRIPTION          | PARTS NO.       | Q,ty |
|----|----------------------|-----------------|------|
| 1  | CAP, VOLUME          | KGX1A338MBC22   | 1    |
| 2  | HOLDER, VOLUME       | CMH1A214        | 1    |
| 3  | INDICATOR, VOLUME    | CGL1A222        | 1    |
| 4  | WINDOW, FIP          | CGU1A323Z       | 1    |
| 5  | KNOB, ROTARY         | KBN1A174MBC22   | 3    |
| 6  | FILTER, FIP          | CMZ1A091        | 1    |
| 7  | BDAGE, HARMAN/KARDON | KG81A111Y       | 1    |
| 8  | PANEL, FRONT         | CGW1A373RDZH43  | 1    |
| 9  | BRACKET, SIDE        | CMD1A443        | 2    |
| 10 | KNOB, FUNCTION       | KBT1A905MBXC22  | 1    |
| 11 | BUSHING, AC CORD     | KHR1A028        | 1    |
| 12 | KNOB, DELAY          | CBT1A917M7G2    | 1    |
| 13 | KNOB, POWER          | KBT1A903MMZC22  | 1    |
| 14 | INDICATOR, POWER     | CGL1A221        | 1    |
| 15 | PANEL, REAR          | CKF2A274Z       | 1    |
| 16 | BRACKET, PCB         | CMK1A010        | 1    |
| 17 | SHEET, VOLUME        | CMZ1A090        | 1    |
| 18 | ORNAMENT, VOLUME     | CGU1A318Z       | 1    |
| 19 | HOLDER, LED          | CMH1A215        | 1    |
| 20 | BRACKET, FIP         | CMD1A458        | 3    |
| 21 | CABINET, TOP         | CKC1B145S46     | 1    |
| 22 | CHASSIS, BOTTOM      | CUA2A213        | 1    |
| 23 | RUBBER, CUSHION      | KHG1A050        | 4    |
| 24 | FOOT                 | CKL1A069H43     | 4    |
| 25 | SUPPORT, CUSHION     | CHG1A104        | 1    |
| 26 | HEAT SINK            | CMY3A226        | 1    |
| 27 | BRACKET, PCB         | CMD1A417        | 2    |
| 28 | HOLDER, PCB          | CHE1A170        | 2    |
| 29 | BRACKET, TRANS       | CMD1A464        | 1    |
| 30 | TRANS, POWER         | CLT5U021ZE      | 1    |
| 31 | TERMINAL, GROUND     | KMA1A006        | 1    |
| 32 | BRACKET, HEAT SINK   | CMD1A519        | 1    |
| 33 | HOLDER, PCB          | CHE1A030        | 1    |
| 34 | TUNER MODULE         | CNVKSTM9014MS07 | 1    |
| 35 | CORD, POWER          | CJA2B043ZA      | 1    |
| 36 | FRONT PCB ASS'Y      | COP11653C       | 1    |
| 37 | FRONT PCB            | CUP11653-1      | 1    |
| 38 | TONE PCB             | CUP11653-2      | 1    |
| 39 | POWER LED PCB        | CUP11653-3      | 1    |
| 40 | PHONE PCB            | CUP11653-4      | 1    |
| 41 | TRANS PCB            | CUP11653-5      | 1    |
| 42 | DOWNLOAD PCB         | CUP11653-6      | 1    |
| 43 | VIDEO PCB            | CUP11653-7      | 1    |
| 44 | MAIN PCB ASS'Y       | COP11654C       | 1    |

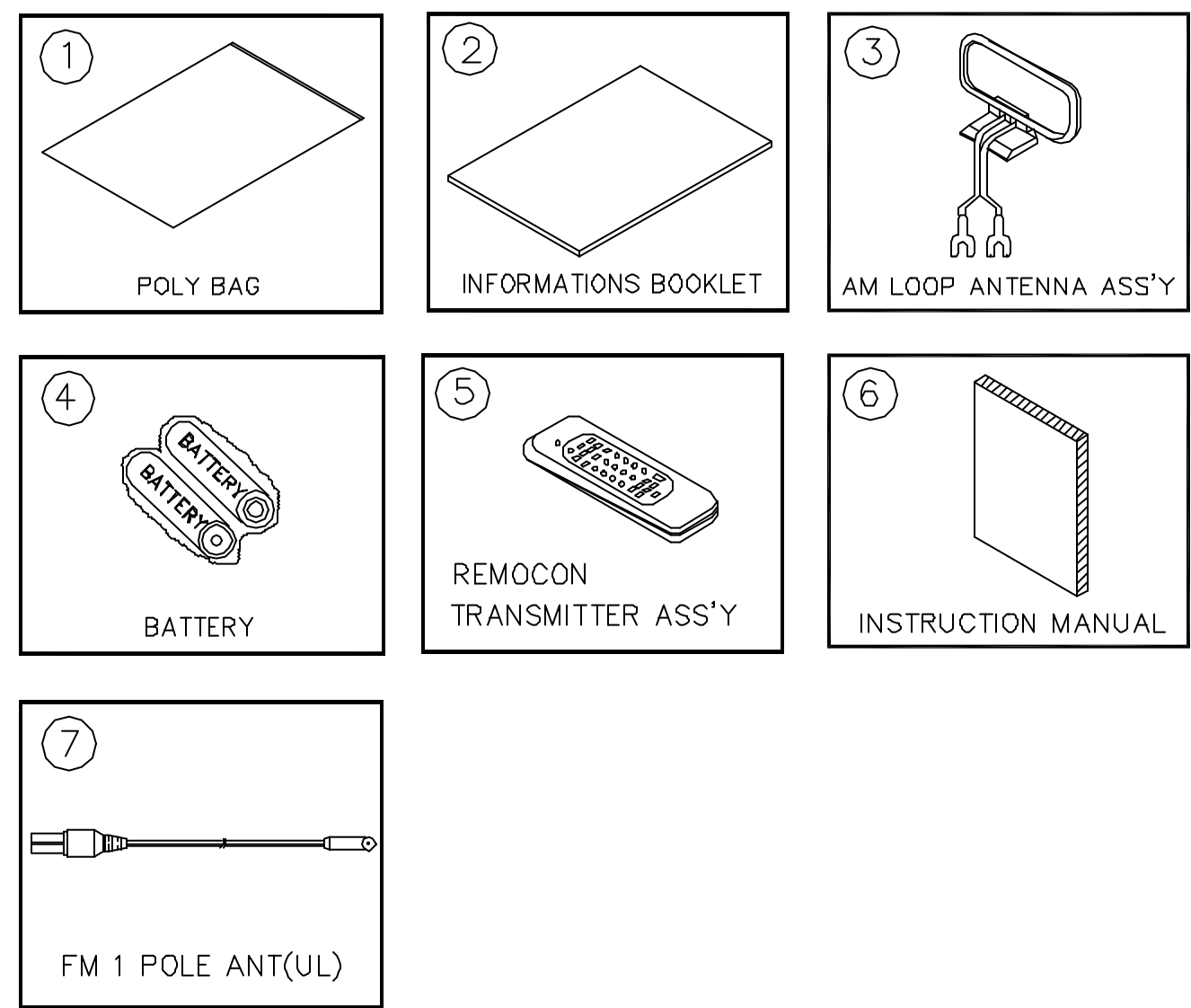
| NO | DESCRIPTION         | PARTS NO.        | Q,ty       |   |
|----|---------------------|------------------|------------|---|
| 1  | CAP,VOLUME          | KGX1A338MBC22    | 1          |   |
| 2  | HOLDER,VOLUME       | CMH1A214         | 1          |   |
| 3  | INDICATOR,VOLUME    | CGL1A222         | 1          |   |
| 4  | WINDOW,FIP          | CGUIA323Z        | 1          |   |
| 5  | KNOB,ROTARY         | KBNI1A174MBC22   | 3          |   |
| 6  | FILTER,FIP          | CMZ1A091         | 1          |   |
| 7  | BDAGE,HARMAN/KARDON | KGB1A111Y        | 1          |   |
| 8  | PANEL,FRONT         | CGW1A373RDZH43   | 1          |   |
| 9  | BRACKET,SIDE        | CMJ1A443         | 2          |   |
| 10 | KNOB,FUNCTION       | KBT1A905MBXC22   | 1          |   |
| 11 | BUSHING,AC CORD     | KHRI1A028        | 1          |   |
| 12 | KNOB,DELAY          | CBT1A917M7G2     | 1          |   |
| 13 | KNOB,POWER          | KBT1A903MMZC22   | 1          |   |
| 14 | INDICATOR,POWER     | CGL1A221         | 1          |   |
| 15 | PANEL,REAR          | CKF2A274Z        | 1          |   |
| 16 | BRACKET,PCB         | CMK1A010         | 1          |   |
| 17 | SHEET,VOLUME        | CMZ1A090         | 1          |   |
| 18 | ORNAMENT,VOLUME     | CGUIA318Z        | 1          |   |
| 19 | HOLDER,LED          | CMH1A215         | 1          |   |
| 20 | BRACKET,FIP         | CMJ1A458         | 3          |   |
| 21 | CABINET, TOP        | CKC1B145S46      | 1          |   |
| 22 | CHASSIS,BOTTOM      | CUA2A213         | 1          |   |
| 23 | RUBBER,CUSHION      | KHG1A050         | 4          |   |
| 24 | FOOT                | CKL1A069H43      | 4          |   |
| 25 | SUPPORT,CUSHION     | CHG1A104         | 1          |   |
| 26 | HEAT SINK           | CMY3A226         | 1          |   |
| 27 | BRACKET,PCB         | CMJ1A417         | 2          |   |
| 28 | HOLDER,PCB          | CHE1A170         | 2          |   |
| 29 | BRACKET,TRANS       | CMJ1A464         | 1          |   |
| 30 | TRANS,POWER         | CLT5U021ZE       | 1          |   |
| 31 | TERMINAL, GROUND    | KMA1A006         | 1          |   |
| 32 | BRACKET,HEAT SINK   | CMJ1A519         | 1          |   |
| 33 | HOLDER,PCB          | CHE1A030         | 1          |   |
| 34 | TUNER MODULE        | CNVKSTM9014MS07  | 1          |   |
| 35 | CORD,POWER          | CJA2B043ZA       | 1          |   |
| 36 | FRONT PCB ASS'Y     | COP11653C        | 1          |   |
|    |                     | 37 FRONT PCB     | CUP11653-1 | 1 |
|    |                     | 38 TONE PCB      | CUP11653-2 | 1 |
|    |                     | 39 POWER LED PCB | CUP11653-3 | 1 |
|    |                     | 40 PHONE PCB     | CUP11653-4 | 1 |
|    |                     | 41 TRANS PCB     | CUP11653-5 | 1 |
|    |                     | 42 DOWNLOAD PCB  | CUP11653-6 | 1 |
|    |                     | 43 VIDEO PCB     | CUP11653-7 | 1 |
| 44 | MAIN PCB ASS'Y      | COP11654C        | 1          |   |

# HK3480/230 EXPLODED VIEW



| NO | DESCRIPTION         | PARTS NO.        | Q,ty       |   |
|----|---------------------|------------------|------------|---|
| 1  | CAP,VOLUME          | KGX1A338MBC22    | 1          |   |
| 2  | HOLDER,VOLUME       | CMH1A214         | 1          |   |
| 3  | INDICATOR,VOLUME    | CGL1A222         | 1          |   |
| 4  | WINDOW,FIP          | CGU1A323X        | 1          |   |
| 5  | KNOB,ROTARY         | KBN1A174MBC22    | 3          |   |
| 6  | FILTER,FIP          | CMZ1A091         | 1          |   |
| 7  | BDAGE,HARMAN/KARDON | KGB1A111Y        | 1          |   |
| 8  | PANEL,FRONT         | CGW1A373RDZH43   | 1          |   |
| 9  | BRACKET,SIDE        | CMD1A443         | 2          |   |
| 10 | KNOB,FUNCTION       | KBT1A905MBC22    | 1          |   |
| 11 | BUSHING,AC CORD     | KHR1A028         | 1          |   |
| 12 | KNOB,DELAY          | CBT1A917M7K128   | 1          |   |
| 13 | KNOB,POWER          | KBT1A903MMZC22   | 1          |   |
| 14 | INDICATOR,POWER     | CGL1A221         | 1          |   |
| 15 | PANEL,REAR          | CKF2A274Y        | 1          |   |
| 16 | BRACKET,PCB         | CMK1A010         | 1          |   |
| 17 | SHEET,VOLUME        | CMZ1A090         | 1          |   |
| 18 | ORNAMENT,VOLUME     | CGU1A318Z        | 1          |   |
| 19 | HOLDER,LED          | CMH1A215         | 1          |   |
| 20 | BRACKET,FIP         | CMD1A458         | 3          |   |
| 21 | CABINET,TOP         | CKC1B145S46      | 1          |   |
| 22 | CHASSIS,BOTTOM      | CUA2A213         | 1          |   |
| 23 | RUBBER,CUSHION      | KHG1A050         | 4          |   |
| 24 | FOOT                | CKL1A069H43      | 4          |   |
| 25 | SUPPORT,CUSHION     | CHG1A104         | 1          |   |
| 26 | HEAT SINK           | CMY2A226         | 1          |   |
| 27 | BRACKET,PCB         | CMD1A417         | 2          |   |
| 28 | HOLDER,PCB          | CHE1A170         | 2          |   |
| 29 | BRACKET,TRANS       | CMD1A464         | 1          |   |
| 30 | TRANS,POWER         | CLT5V036ZE       | 1          |   |
| 31 | TERMINAL, GROUND    | KMA1A006         | 1          |   |
| 32 | BRACKET,HEAT SINK   | CMD1A519         | 1          |   |
| 33 | HOLDER,PCB          | CHE1A030         | 1          |   |
| 34 | TUNER MODULE        | CNVKSTM9014MS07  | 1          |   |
| 35 | CORD,POWER          | CJA2B043ZA       | 1          |   |
| 36 | FRONT PCB ASS'Y     | COP11653E        | 1          |   |
|    |                     | 37 FRONT PCB     | CUP11653-1 | 1 |
|    |                     | 38 TONE PCB      | CUP11653-2 | 1 |
|    |                     | 39 POWER LED PCB | CUP11653-3 | 1 |
|    |                     | 40 PHONE PCB     | CUP11653-4 | 1 |
|    |                     | 41 TRANS PCB     | CUP11653-5 | 1 |
|    |                     | 42 DOWNLOAD PCB  | CUP11653-6 | 1 |
|    |                     | 43 VIDEO PCB     | CUP11653-7 | 1 |
| 44 | MAIN PCB ASS'Y      | COP11654E        | 1          |   |

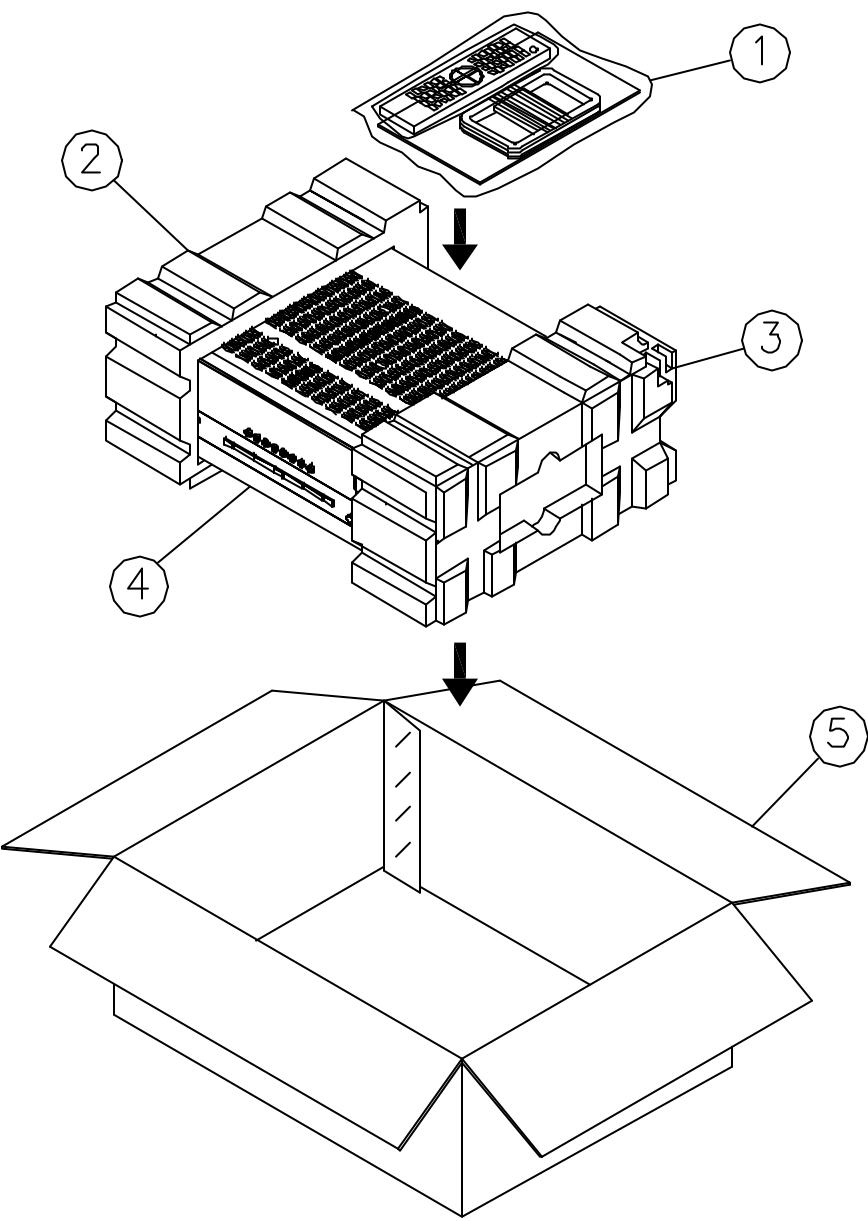
1. Instruction manual ass’y – Accessories



| NO | DESCRIPTION               | PARTS NO.   | Q.ty |
|----|---------------------------|-------------|------|
| 1  | POLY BAG                  | CPB1061Y    | 1    |
| 2  | INFORMATIONS BOOKLET      | CQE1A180Z   | 1    |
| 3  | AM LOOP ANTENNA ASS'Y     | CSA3A012Z   | 1    |
| 4  | BATTERY                   | HABAAAM1.5V | 2    |
| 5  | REMOCON TRANSMITTER ASS'Y | HARTHK3380  | 1    |
| 6  | INSTRUCTION MANUAL        | CQX1A888Z   | 1    |
| 7  | FM 1 POLE ANT             | CSA1A018Z   | 1    |

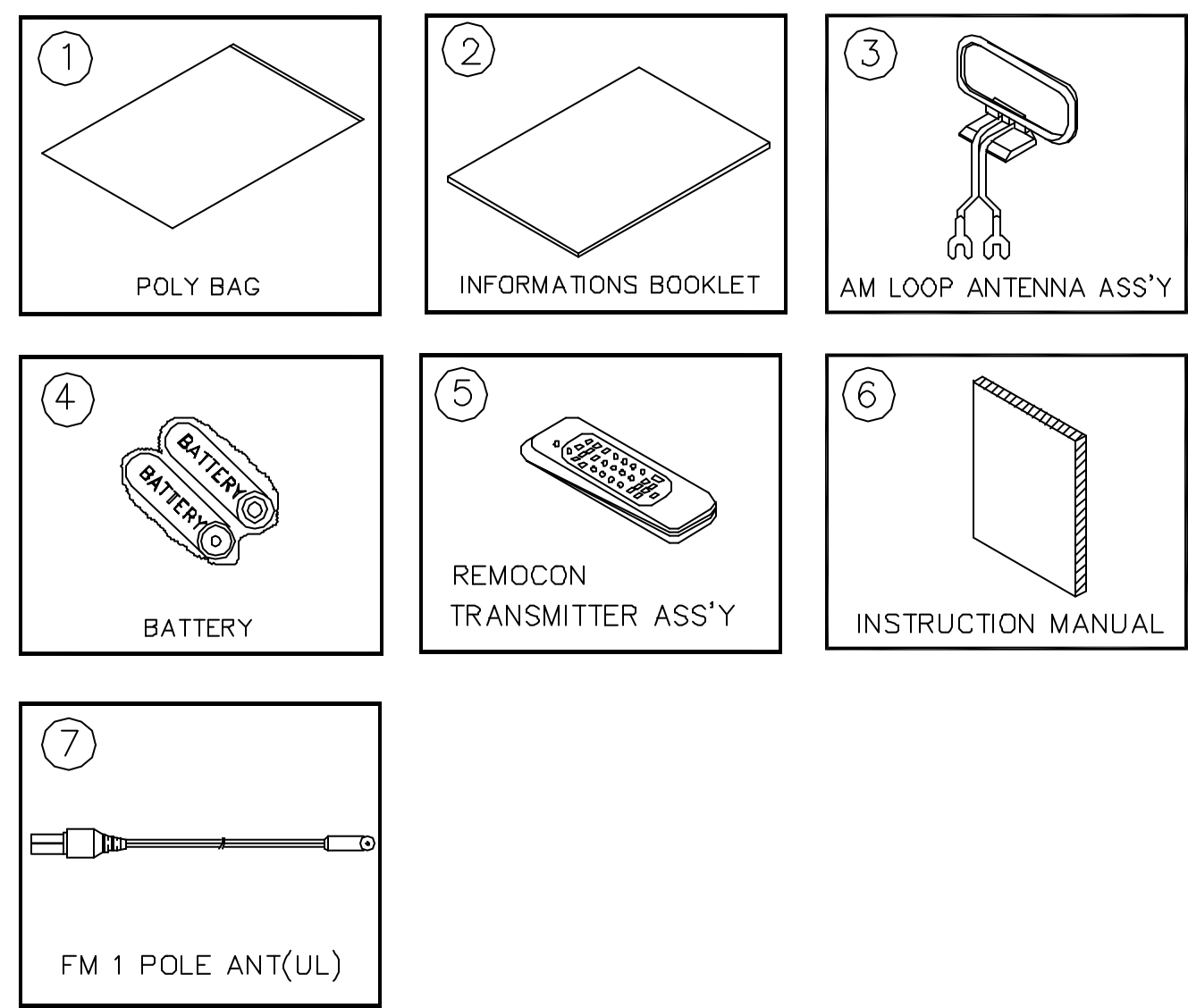
2. Package Drawing

HK3380/230



| NO | DESCRIPTION              | PARTS NO.     | Q.ty |
|----|--------------------------|---------------|------|
| 1  | INSTRUCTION MANUAL ASS'Y | CQXHK3380/230 | 1    |
| 2  | SNOW PAD(L)              | CPS4A564      | 1    |
| 3  | SNOW PAD(R)              | CPS4A565      | 1    |
| 4  | SET                      | HK3380/230SET | 1    |
| 5  | BOX                      | CPG1A743Y     | 1    |

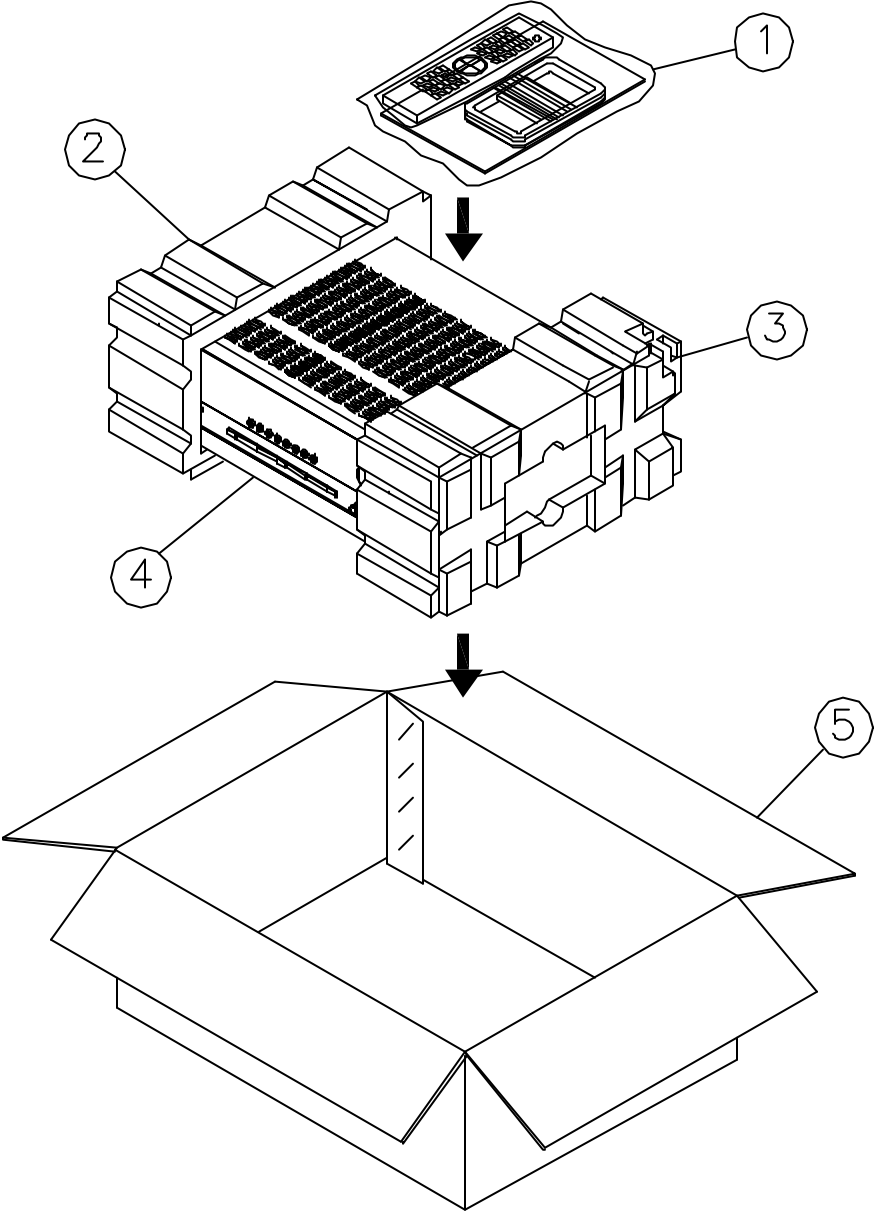
1. Instruction manual ass’y – Accessories



| NO | DESCRIPTION               | PARTS NO.   | Q,ty |
|----|---------------------------|-------------|------|
| 1  | POLY BAG                  | CPB1061Y    | 1    |
| 2  | INFORMATIONS BOOKLET      | CQE1A180Z   | 1    |
| 3  | AM LOOP ANTENNA ASS'Y     | CSA3A012Z   | 1    |
| 4  | BATTERY                   | HABAAAM1.5V | 2    |
| 5  | REMOCON TRANSMITTER ASS'Y | HARTHK3480  | 1    |
| 6  | INSTRUCTION MANUAL        | CQX1A890Z   | 1    |
| 7  | FM 1 POLE ANT             | CSA1A018Z   | 1    |

2. Package Drawing

HK3480/230



| NO | DESCRIPTION              | PARTS NO.     | Q,ty |
|----|--------------------------|---------------|------|
| 1  | INSTRUCTION MANUAL ASS'Y | CQXHK3480/230 | 1    |
| 2  | SNOW PAD(L)              | CPS4A564      | 1    |
| 3  | SNOW PAD(R)              | CPS4A565      | 1    |
| 4  | SET                      | HK3480/230SET | 1    |
| 5  | BOX                      | CPG1A743W     | 1    |

| FRONT PCB CUP11653Y (VIDEO PCB CUP11653-7) |                |                         | HK3380/230      |
|--------------------------------------------|----------------|-------------------------|-----------------|
| REF NO.                                    | PART NO.       | 1st DESCRIPTION         | 2nd DESCRIPTION |
| <b>►CAPACITOR</b>                          |                |                         |                 |
| C603,604,605,606                           | HCQI1H473JZT   | CAP , MYLAR             | 0.047UF 50V J   |
| C701,702,711~714                           | CCEA1HKS100T   | CAP , ELECT             | UF10 50V KS     |
| C802,817                                   | HCBS1H101KBT   | CAP , CERAMIC           | 100PF 50V K     |
| C703,704,726                               | CCEA1CKS470T   | CAP , ELECT             | 47UF/16V        |
| C707, 708                                  | HCBS1H470JT    | CAP , CERAMIC           | 47PF 50V J      |
| C709,710,813,814                           | KCFE1J183JBT   | CAP , FILM              | 0.018UF 63V J   |
| C715,716,719,720                           | KCFE1J823JBT   | CAP , FILM              | 0.082UF 63V J   |
| C717,718                                   | KCFE1J332JBT   | CAP , FILM              | 0.0033UF 63V J  |
| C721,722                                   | HCBS1H221KBT   | CAP , CERAMIC           | 220PF 50V K     |
| C723,724                                   | HCBS1H104ZFT   | CAP , CERAMIC           | 0.1UF 50V Z     |
| C727,744,808,809                           |                |                         |                 |
| C819,838,839,914                           |                |                         |                 |
| C728,729,730,804                           |                |                         |                 |
| C811,815,816,818                           | HCBS1H223ZFT   | CAP , CERAMIC           | 0.022UF 50V Z   |
| C830,834,837,911                           |                |                         |                 |
| C912,828                                   |                |                         |                 |
| C741,742                                   | HCQI1H122JZT   | CAP , MYLAR             | 1200PF 50V J    |
| C745                                       | HCBS1H103ZFT   | CAP , CERAMIC           | 0.01UF 50V Z    |
| C801                                       | CCKT1H104ZF    | CAP , CERAMIC           | 50V 0.1UF       |
| C803,812                                   | CCEA1AH471T    | CAP , ELECT             | 470UF 10V       |
| C805,806                                   | HCBS1H150JCT   | CAP , CERAMIC           | 15PF 50V        |
| C807,823,824,840                           | HCBS1H821KBT   | CAP , CERAMIC           | 820PF 50V K     |
| C810, 829                                  | CCEA1AKS101T   | CAP. ELECT              | 100UF 10V       |
| C820                                       | CCEA1CH331T    | CAP , ELECT             | 330UF 16V       |
| C821                                       | CCEA1CKS4R7T   | CAP. ELECT              | 4.7UF 16V       |
| C822                                       | HCBS1H151KBT   | CAP , CERAMIC           | 150PF 50V K     |
| C831                                       | CCEA1CKS2R2T   | CAP , ELECT HK3480 only | 2.2UF 16V       |
| C832,833                                   | HCBS1H102KBT   | CAP , CERAMIC           | 1000PF 50V K    |
| C835                                       | CCEA0JH102T    | CAP , ELECT             | 1000UF 6.3V     |
| C904~908                                   | CCKT1H101KB    | CAP , CERAMIC           | 100PF 50V KB    |
| C909,910,921,922                           | CCEA1CH101T    | CAP , ELECT             | 100UF 16V       |
| C913                                       | CCEA1EH220T    | CAP , ELECT             | 22UF/25V        |
| C825, 826                                  | HCBS1H390JT    | CAP , CERAMIC           | 39PF 50V J      |
| C827                                       | HCBS1H561KBT   | CAP , CERAMIC           | 560PF 50V K     |
| <b>►DIODE</b>                              |                |                         |                 |
| D701~705                                   | CVD52CSBBCEAB2 | BLUE L.E.D              |                 |
| D706                                       | CVD50BOGDWGA   | L.E.D , 2 COLOR         |                 |
| D707,708,802~808                           | HVD1SS133MT    | DIODE                   | 1SS133T-77      |
| D901~903                                   |                |                         |                 |
| <b>►COIL</b>                               |                |                         |                 |
| L801                                       | HLQ02C100KT    | COIL , AXAIL            |                 |
| <b>►TRANSISTOR</b>                         |                |                         |                 |
| Q801,803,805,807                           | HVTKRC107MT    | T.R                     | KRC107M         |
| Q808,813                                   | HVTKRA107MT    | T.R                     | KRA107M         |
| Q802,806,814,901                           | HVTKTA1271YT   | T.R                     | KTA1271Y        |
| Q804                                       | KVTKSA1175YT   | T.R                     | KSA1175Y        |
| Q809                                       | KVTKSC2785YT   | T.R                     | KSC2785Y        |
| Q810                                       | HVTKSC945CYT   | T.R                     | KSC945CY        |
| Q811,812                                   |                |                         |                 |

| FRONT PCB CUP11653Y (VIDEO PCB CUP11653-7) |               |                        | HK3380/230      |
|--------------------------------------------|---------------|------------------------|-----------------|
| REF NO.                                    | PART NO.      | 1st DESCRIPTION        | 2nd DESCRIPTION |
| <b>►RESISTOR</b>                           |               |                        |                 |
| R705,706,829,830                           | CRD20TJ101T   | RES , CARBON           | 100 OHM 1/5W J  |
| R870,918,871                               |               |                        |                 |
| R701,702,707,708                           | CRD20TJ104T   | RES , CARBON           | 100K OHM 1/5W J |
| R709,710,723,724                           |               |                        |                 |
| R711,712                                   | CRD20TJ105T   | RES , CARBON           | 1M OHM 1/5W J   |
| R713,714                                   | CRD20TJ223T   | RES , CARBON           | 22K OHM 1/5W J  |
| R715,716,919                               | CRD20TJ392T   | RES , CARBON           | 3.9K OHM 1/5W J |
| R717,718,824,872                           | CRD20TJ222T   | RES , CARBON           | 2.2K OHM 1/5W J |
| R719,720                                   | CRD20TJ681T   | RES , CARBON           | 680 OHM 1/5W J  |
| R721,722,745                               | CRD20TJ471T   | RES , CARBON           | 470 OHM 1/5W J  |
| R725,901~905                               | CRD20TJ750T   | RES , CARBON           | 75 OHM 1/5W J   |
| R726                                       | CRD20TJ560T   | RES , CARBON           | 56 OHM 1/5W J   |
| R727,728,820,856                           | CRD20TJ272T   | RES , CARBON           | 2.7K OHM 1/5W J |
| R866                                       |               |                        |                 |
| R729,809,825~827                           |               |                        |                 |
| R835,853,860,863                           | CRD20TJ102T   | RES , CARBON           | 1K OHM 1/5W J   |
| R908,911,912,913                           |               |                        |                 |
| R873,874                                   |               |                        |                 |
| R733,734                                   | CRD20TJ331T   | RES , CARBON           | 330 OHM 1/5W J  |
| R742,828,833,834                           | CRD20TJ100T   | RES , CARBON           | 10 OHM 1/5W J   |
| R836,909,910,877                           |               |                        |                 |
| R744                                       | CRD20TJ181T   | RES , CARBON           | 180 OHM 1/5W J  |
| R801                                       | CRD20TJ122T   | RES , CARBON           | 1.2K OHM 1/5W J |
| R806,807,808,822                           |               |                        |                 |
| R823,837~839,841                           | CRD20TJ103T   | RES , CARBON           | 10K OHM 1/5W J  |
| R842,845,847~852                           |               |                        |                 |
| R876,818                                   |               |                        |                 |
| R831,832,844,846                           | CRD20TJ472T   | RES , CARBON           | 4.7K OHM 1/5W J |
| R843,857,867,906                           | CRD20TJ332T   | RES , CARBON           | 3.3K OHM 1/5W J |
| R907,917                                   |               |                        |                 |
| R854,861,864                               | CRD20TJ152T   | RES , CARBON           | 1.5K OHM 1/5W J |
| R855,862,865                               | CRD20TJ182T   | RES , CARBON           | 1.8K OHM 1/5W J |
| R858,868                                   | CRD20TJ562T   | RES , CARBON           | 5.6K OHM 1/5W J |
| R859,869                                   | CRD20TJ752T   | RES , CARBON           | 7.5K OHM 1/5W J |
| R875                                       | CRD20TJ820T   | RES , CARBON           | 82 OHM 1/5W J   |
| R878                                       | CRD20TJ273T   | RES , CARBON           | 27K OHM 1/5W J  |
| R915                                       | CRD20TJ271T   | RES , CARBON           | 270 OHM 1/5W J  |
| R916                                       | CRD20TJ470T   | RES , CARBON           | 47 OHM 1/5W J   |
| R920                                       | CRD20TJ473T   | RES , CARBON           | 47K OHM 1/5W J  |
| R921,922                                   | CRG2ANJ470H   | RES , METAL OXIDE FILM | 47 OHM 2W J     |
| <b>►TACT SWITCH</b>                        |               |                        |                 |
| S701,801~819                               | HST1A020ZT    | SW , TACT              |                 |
| <b>►WIRE ASS'Y</b>                         |               |                        |                 |
| BN71                                       | CWZHK3380BN71 | WIRE ASS'Y             |                 |
| BN72                                       | CWZHK3380BN72 | WIRE ASS'Y             |                 |
| BN73                                       | CWB2B903350EN | WIRE ASS'Y             |                 |
| BN82                                       | CWB2B907350EN | WIRE ASS'Y             |                 |
| BN83,84                                    | CWB2B904070EN | WIRE ASS'Y             |                 |
| BN89                                       | CWB2B907160EN | WIRE ASS'Y             |                 |
| BN91                                       | CWB2B909200EN | WIRE ASS'Y             |                 |
| BN81                                       | CWZHK3380BN81 | WIRE ASS'Y             |                 |

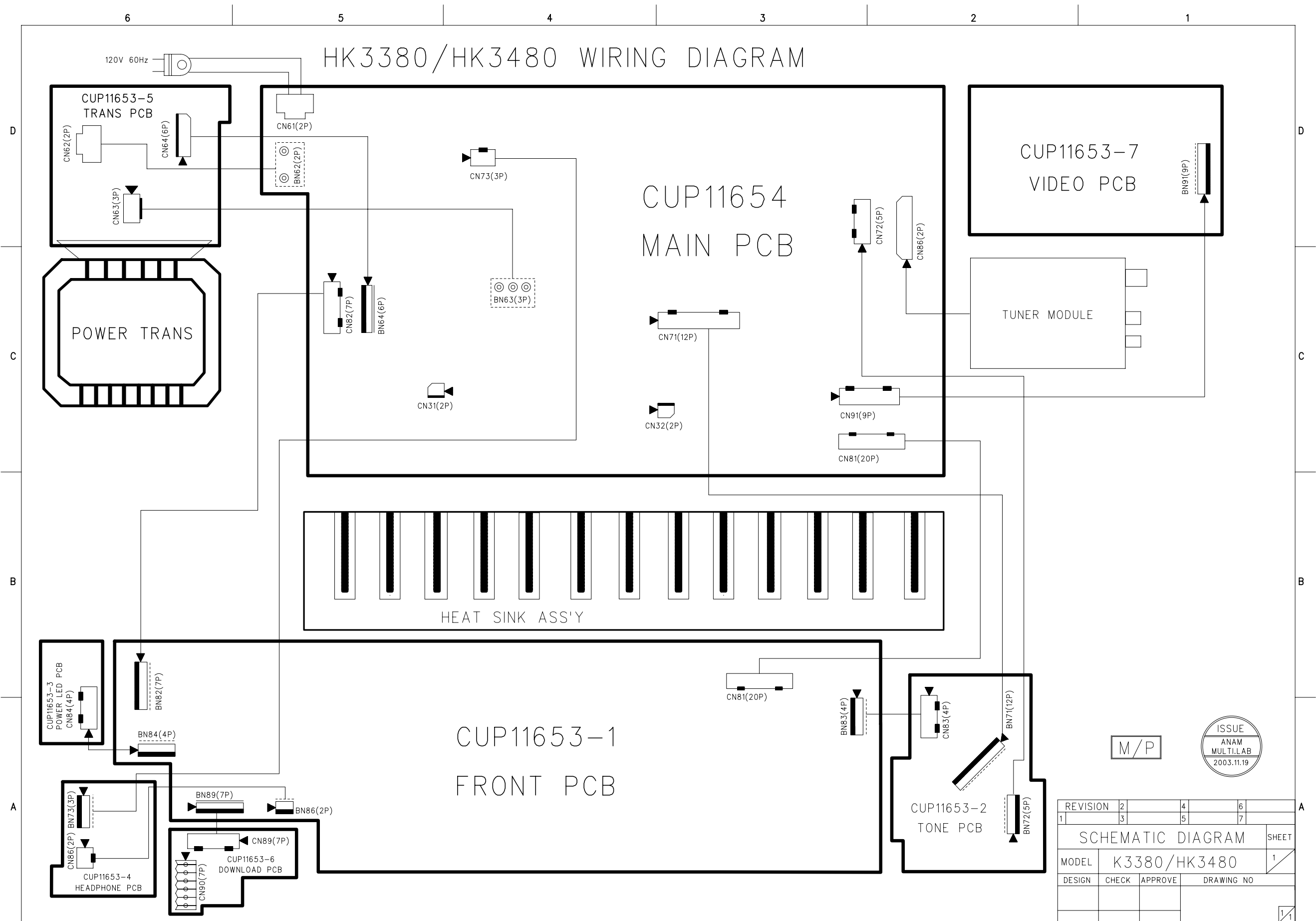
| FRONT PCB CUP11653Y (VIDEO PCB CUP11653-7) |                 |                         | HK3380/230      |
|--------------------------------------------|-----------------|-------------------------|-----------------|
| REF NO.                                    | PART NO.        | 1st DESCRIPTION         | 2nd DESCRIPTION |
| <b>►CONNECTOR</b>                          |                 |                         |                 |
| CN62                                       | KJP02GA89ZM     | WAFER                   | MOLEX35328-02   |
| CN63                                       | KJP03GA90ZM     | WAFER                   | MOLEX35313-0310 |
| CN64                                       | KJP06GA01ZM     | WAFER                   | MOLEX 5267-06A  |
| CN81                                       | CJP20GB163ZW    | WAFER                   |                 |
| CN83,84                                    | KJP04GA19ZM     | WAFER                   |                 |
| CN89                                       | KJP07GA19ZM     | WAFER                   | MOLEX53014-0710 |
| CN90                                       | KJP07HA37ZM     | WAFER                   |                 |
| <b>►F.I.P</b>                              |                 |                         |                 |
| FIP1                                       | HFLHCA16ML08-1  | F.I.P                   |                 |
| <b>►I.C</b>                                |                 |                         |                 |
| IC71                                       | HVINJM2068MDTE1 | I.C , OP AMP            | NJM2068MD-TE1   |
| IC81                                       | HVIST72F321R    | I.C , FLASH U-COM       |                 |
| IC82                                       | BVISAA6579TV1   | I.C , RDS FILTER        | SAA6579T/V1     |
| IC83                                       | HVIAT24C08N10SC | I.C                     | AT24C08N10SC2.7 |
| IC84                                       | HVIS-80145ALMC  | I.C RESET               | S-80145ALMC     |
| IC85                                       | HVIRE5VL28CATZ  | I.C , RESET             |                 |
| IC87                                       | HVIL7805CP      | I.C, REGULATOR          |                 |
| IC88                                       | HVIL7905CP      | I.C, REGULATOR          |                 |
| IC91                                       | HVINJM2296M     | I.C , VIDEO SW          | NJM2296M        |
| IC92                                       | BVIKP1010B      | I.C, PHOTO COUPLER      |                 |
| <b>►JACK</b>                               |                 |                         |                 |
| JK71                                       | CJJ2E026Z       | JACK , HEADPHONE        |                 |
| JK72                                       | CJJ4S023Y       | JACK , BOARD            |                 |
| JK91                                       | CJJ4N043Z       | JACK , BOARD            |                 |
| JK92                                       | CJJ4S010Z       | JACK , BOARD            |                 |
| JK93,94                                    | CJJ2D008Z       | JACK , STEREO           |                 |
| JW72                                       | CWE8202110RV    | WIRE, ASS'Y             |                 |
| JW73                                       | CWZAVR2550JW82  | WIRE , ASS'Y            |                 |
| <b>►REMOCON SENSER</b>                     |                 |                         |                 |
| RC81                                       | HRVKSM603TH2    | REMOCON SENSER CN       | KSM-603TH2      |
| <b>►VARIABLE RESISTOR</b>                  |                 |                         |                 |
| VR71,72                                    | CVV2X07C104Z    | RES , VARIABLE(TONE)    | RK14128030214C  |
| VR73                                       | CVV2X05M104Z    | RES , VARIABLE(BALANCE) | RK14128030214Y  |
| <b>►ENCODER</b>                            |                 |                         |                 |
| VR81                                       | HSR2A026Z       | VR , ENCODER            |                 |
| <b>►CRYSTAL</b>                            |                 |                         |                 |
| X801                                       | HOX04000E150C   | CRYSTAL , 4MHZ          |                 |
| X802                                       | HOX04332E200C   | CRYSTAL , 4.332MHZ      |                 |

| PCB, MAIN CUP11654Y |                 | HK3380/230               |                 |
|---------------------|-----------------|--------------------------|-----------------|
| REF NO.             | PART NO.        | 1st DESCRIPTION          | 2nd DESCRIPTION |
| <b>►CAPACITOR</b>   |                 |                          |                 |
| C101,102,105,106    | CCKT1H101KB     | CAP , CERAMIC            | 100PF 50V KB    |
| C103,104,117,118    | CCEA1VH100T     | CAP , ELECT              | 10UF 35V        |
| C191~194,301,302    |                 |                          |                 |
| C107,108,111,112    |                 |                          |                 |
| C121,122,123,124    |                 |                          |                 |
| C175,176,181,182    | CCEA1CH101T     | CAP , ELECT              | 100UF 16V       |
| C195,196,219,220    |                 |                          |                 |
| C305,306            |                 |                          |                 |
| C307~310            | HCEA1JH471E     | CAP , ELECT HK 3480 only | 470UF 63V       |
| C109,110,213,214    | HCQI1H102JZT    | CAP , MYLAR              | 1000PF 50V J    |
| C222                |                 |                          |                 |
| C113,114,331~336    | HCQI1H562JZT    | CAP , MYLAR              | 5600PF 50V J    |
| C115,116            | HCQI1H152JZT    | CAP , MYLAR              | 1500PF 50V J    |
| C119,120            | HCQI1H183JZT    | CAP , MYLAR              | 0.018UF 50V J   |
| C125~130            | HCBS1H471KBT    | CAP , CERAMIC            | 470PF 50V K     |
| C131~144            | HCBS1H221KBT    | CAP , CERAMIC            | 220PF 50V K     |
| C145,146            | HCBS1H104ZFT    | CAP , CERAMIC            | 0.1UF 50V Z     |
| C183~185,303,304    | CCKT1H471KB     | CAP , CERAMIC            | 470PF 50V KB    |
| C197,198,342,615    | CCKT1H223ZF     | CAP , CERAMIC            | 0.022UF 50V ZF  |
| C616,623,624,627    |                 |                          |                 |
| C201~204            | HCBS1H101KBT    | CAP , CERAMIC            | 100PF 50V K     |
| C211,212,215        |                 |                          |                 |
| C216,341,620        | CCEA1HH4R7T     | CAP , ELECT              | 4.7UF 50V       |
| C240                | CCEA1HH1R0T     | CAP , ELECT              | 1UF 50V         |
| C311,312            | HCBS1H120JCT    | CAP , CERAMIC            | 12PF 50V J      |
| C313,314            | HCBS1H330JT     | CAP , CERAMIC            | 33PF 50V        |
| C315,316,317        | CCEA1HH100TS    | CAP , ELECT              | 10UF/50V 105°C  |
| C318                | CCEA1HH100T     | CAP. ELECT               | 10UF/50V        |
| C319,320,607~609    | HCQI1H473JZT    | CAP , MYLAR              | 0.047UF 50V J   |
| C343                | CCEA1AH471T     | CAP , ELECT              | 470UF 10V       |
| C351,352            | HCBS1H681KBT    | CAP , CERAMIC            | 680PF 50V K     |
| C401,402,405,406    | CCEA1EH470T     | CAP , ELECT HK 3480 only | 47UF 25V        |
| C409                | KCFE1J334JBT    | CAP , FILM HK 3480 only  | 0.33UF 63V J    |
| C613,614,622        | CCEA1EH101T     | CAP , ELECT              | 100UF 25V       |
| C619,629            | CCEA1HH470T     | CAP , ELECT              | 47UF/50V        |
| C626                | CCEA1AH101T     |                          | 100UF 10V       |
| C628,630            | HCBS1H103ZFT    | CAP , CERAMIC            | 0.01UF 50V Z    |
| C307~310            | CCEA1JH221E     | CAP , ELECT              | 220UF 63V       |
| C601,602            | CCET63VKL5103NK | CAP , ELECT HK 3380 only | 10000/63V       |
| C601,602            | CCET63VKL5153NK | CAP , ELECT HK 3480 only | 15000UF 63V     |
| C611                | HCEA1EH332E     | CAP , ELECT              | 3300UF 25V      |
| C612                | CCEA1EH222E     | CAP. ELECT.              | 2200UF 25V      |
| C621                | KCKDKS472ME     | CAP , CERAMIC(X1/Y2/SC)  | 0.0047UF/2.5KV  |
| C625                | CCEA1EH102E     | CAP , ELECT              | 1000UF 25V      |
| C631                | BCQE2E104KDE    | CAP , LINE ACROSS        | 0.1UF 250V KD   |
| C632                | CCEA1JH101E     | CAP , ELECT              | 100UF 63V       |
| <b>►DIODE</b>       |                 |                          |                 |
| D101~110,112~115    |                 |                          |                 |
| D301~309,606,612    | HVD1SS133MT     | DIODE                    | 1SS133T-77      |
| D613,614            |                 |                          |                 |
| D602~605,607,615    | KVD1N4003ST     | DIODE                    | 1N4003          |
| D616~618            |                 |                          |                 |
| D608,609            | HVDMTZJ15BT     | DIODE , ZENER            | 15V 1/2W        |
| D611                | HVDMTZJ6.2BT    | DIODE , ZENER            | 6.2V 1/2W       |
| D601                | HVDGBJ806MF     | DIODE , BRIDGE           |                 |

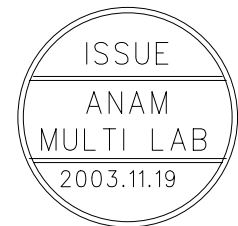
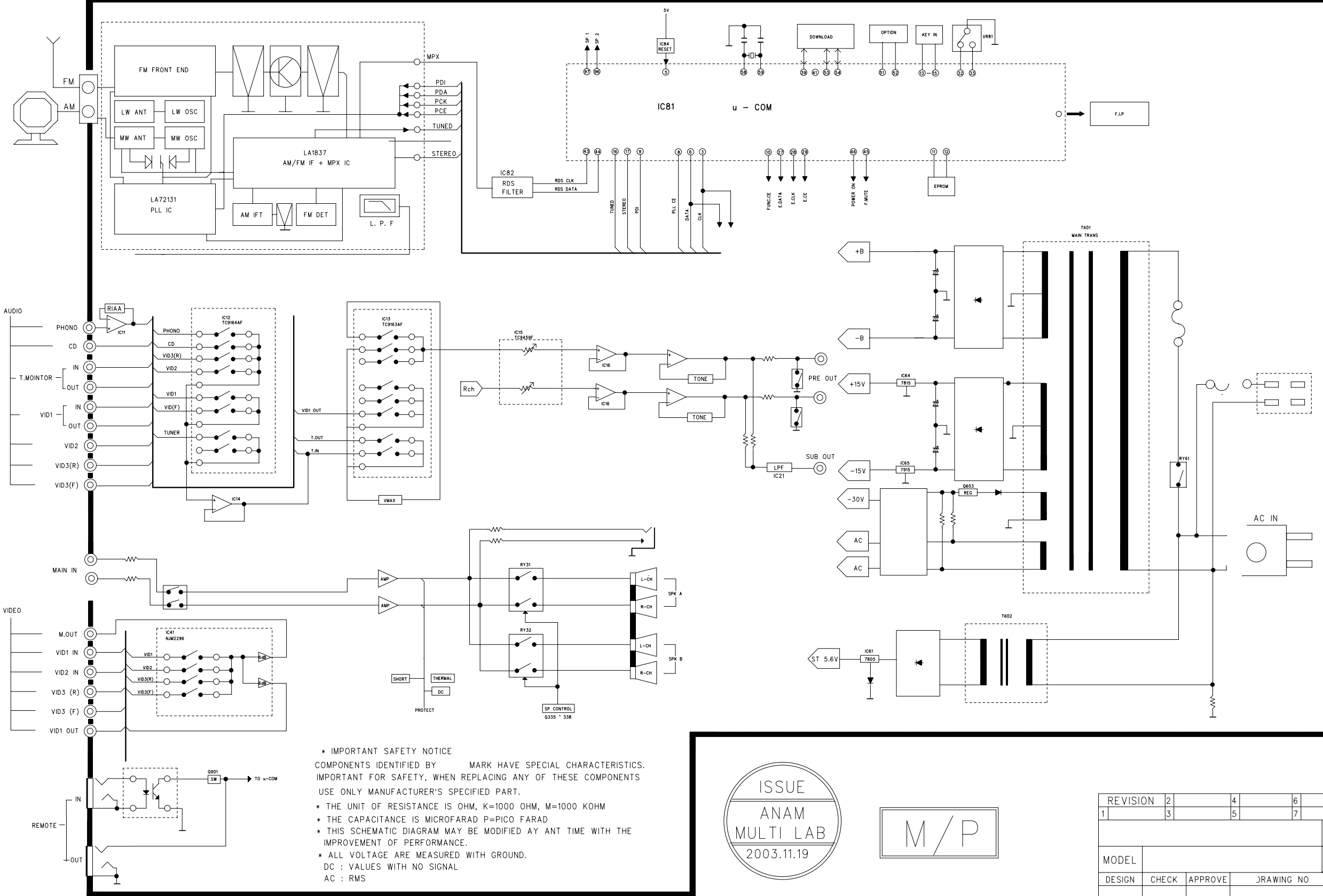
| PCB, MAIN CUP11654Y |               | HK3380/230             |                 |
|---------------------|---------------|------------------------|-----------------|
| REF NO.             | PART NO.      | 1st DESCRIPTION        | 2nd DESCRIPTION |
| <b>►COIL</b>        |               |                        |                 |
| L101,102            | HLQ02C470KT   | COIL , AXAIL           |                 |
| <b>►TRANSISTOR</b>  |               |                        |                 |
| Q204~208            | HVTKTC2874BT  | T.R , MUTE             | KTC2874B        |
| Q209,332,337,338    | HVTKRA107MT   | T.R                    | KRA107M         |
| Q602                |               |                        |                 |
| Q210,335,336        | HVTKRC107MT   | T.R                    | KRC107M         |
| Q301~306,311,312    | HVTKTC3200GRT | T.R                    | KTC3200GR       |
| Q307~310            | HVTKTA1268GRT | T.R                    | KTA1268GR       |
| Q323,324,333,334    |               |                        |                 |
| Q601                | KVTKSC2785YT  | T.R                    | KSC2785Y        |
| Q331                | KVTKSA1175YT  | T.R                    | KSA1175Y        |
| Q603                | HVTKTA1271YT  | T.R                    | KTA1271Y        |
| Q313,314            | HVTKTA1360Y   | T.R , PRE DRIVE        | KTA1360Y        |
| Q315,316            | HVTKTC3423Y   | T.R , PRE DRIVE        | KTC3423Y        |
| Q317                | HVTKTC3114A   | T.R , BIAS             | KTC3114A        |
| Q318                | HVTKTC3114A   | T.R , BIAS             | KTC3114A        |
| Q319                | BVT2SD2401P   | T.R , POWER(DARINGTON) |                 |
| Q320                | BVT2SD2401P   | T.R , POWER(DARINGTON) |                 |
| Q321                | BVT2SB1570P   | T.R , POWER(DARINGTON) |                 |
| Q322                | BVT2SB1570P   | T.R , POWER(DARINGTON) |                 |
| <b>►RESISTOR</b>    |               |                        |                 |
| R101,102,359,360    | CRD20TJ102T   | RES , CARBON           | 1K OHM 1/5W J   |
| R363,364,386        |               |                        |                 |
| R103~106,117,118    |               |                        |                 |
| R213,214,221,222    | CRD20TJ104T   | RES , CARBON           | 100K OHM 1/5W J |
| R618                |               |                        |                 |
| R107,108,121,123    |               |                        |                 |
| R124,171,172,181    | CRD20TJ101T   | RES , CARBON           | 100 OHM 1/5W J  |
| R182,195,196,201    |               |                        |                 |
| R202~204,219,220    |               |                        |                 |
| R109,110            | CRD20TJ564T   | RES , CARBON           | 560K OHM 1/5W J |
| R111,112,173,174    |               |                        |                 |
| R367,368,385        | CRD20TJ473T   | RES , CARBON           | 47K OHM 1/5W J  |
| R113,114            | CRD20TJ751T   | RES , CARBON           | 750 OHM 1/5W J  |
| R115,116,125~144    |               |                        |                 |
| R183~185,211,305    | CRD20TJ471T   | RES , CARBON           | 470 OHM 1/5W J  |
| R306                |               |                        |                 |
| R122                | CRD25TJ101T   | RES , CARBON           | 100 OHM 1/4W J  |
| R151~164            | CRD20TJ474T   | RES , CARBON           | 470K OHM 1/5W J |
| R191~194,205~208    | CRD20TJ184T   | RES , CARBON           | 180K OHM 1/5W J |
| R212                | CRD25TJ471T   | RES , CARBON           | 470 OHM 1/4W J  |
| R215,216            | CRD20TJ202T   | RES , CARBON           | 2K OHM 1/5W J   |
| R217,218,617        | CRD20TJ222T   | RES , CARBON           | 2.2K OHM 1/5W J |
| R223,224,315~318    |               |                        |                 |
| R384                | CRD20TJ152T   | RES , CARBON           | 1.5K OHM 1/5W J |
| R234                |               |                        |                 |
| R235~239            | CRD20TJ562T   | RES , CARBON           | 5.6K OHM 1/5W J |
|                     | CRD20TJ332T   | RES , CARBON           | 3.3K OHM 1/5W J |
| R240,365,366        | CRD20TJ103T   | RES , CARBON           | 10K OHM 1/5W J  |
| R241                | CRD20TJ822T   | RES , CARBON           | 8.2K OHM 1/5W J |
| R255                | CRD20TJ105T   | RES , CARBON           | 1M OHM 1/5W J   |
| R303,304,319,320    |               |                        |                 |
| R383                | CRD20TJ333T   | RES , CARBON           | 33K OHM 1/5W J  |

| PCB, MAIN                    |                 | CUP11654Y                 | HK3380/230      |
|------------------------------|-----------------|---------------------------|-----------------|
| REF NO.                      | PART NO.        | 1st DESCRIPTION           | 2nd DESCRIPTION |
| R307,308                     | CRD20TJ100T     | RES , CARBON              | 10 OHM 1/5W J   |
| R309,310                     | CRD20TJ271T     | RES , CARBON              | 270 OHM 1/5W J  |
| R311~314                     | CRD20TJ221T     | RES , CARBON              | 220 OHM 1/5W J  |
| R321,322,343,344<br>R611     | CRD20TJ122T     | RES , CARBON              | 1.2K OHM 1/5W J |
| R323~334                     | CRD20TJ561T     | RES , CARBON              | 560 OHM 1/5W J  |
| R335~338                     | CRD20TJ750T     | RES , CARBON              | 75 OHM 1/5W J   |
| R339~342                     | CRD20TJ223T     | RES , CARBON              | 22K OHM 1/5W J  |
| R345,346                     | CRD20TJ331T     | RES , CARBON              | 330 OHM 1/5W J  |
| R347~350,621                 | KRD25FJ3R3T     | RES , CARBON              | 3.3 OHM 1/4W J  |
| R351~354                     | KRD25FJ180T     | RES , CARBON              | 18 OHM 1/4W J   |
| R357,358                     | CRD20TJ511T     | RES , CARBON              | 510 OHM 1/5W J  |
| R361,362,609,610<br>R619,620 | CRD20TJ182T     | RES , CARBON              | 1.8K OHM 1/5W J |
| R371~374                     | CRD25TJ470T     | RES , CARBON              | 47 OHM 1/4W J   |
| R381,382                     | CRD20TJ273T     | RES , CARBON              | 27K OHM 1/5W J  |
| R383                         | CRD20TJ433T     | RES , CARBON HK 3480 only | 43K OHM 1/5W J  |
| R391~393                     | CRD20TJ470T     | RES , CARBON              | 47 OHM 1/5W J   |
| R601~604                     | CRD25TJ393T     | RES , CARBON              | 39K OHM 1/4W J  |
| R607,608                     | CRD20TJ123T     | RES , CARBON              | 12K OHM 1/5W J  |
| R612,613                     | CRD20TJ560T     | RES , CARBON              | 56 OHM 1/5W J   |
| R614                         | CRD20TJ820T     | RES , CARBON              | 82 OHM 1/5W J   |
| R355,356                     | CRF5EKR22HX2    | RES , CEMENT              | 0.22OHM(*2), 5W |
| R375,376                     | CRG1ANJ100H     | RES , METAL OXIDE FILM    | 10 OHM 1W J     |
| R377,378                     | CRG1ANJ221H     | RES , METAL OXIDE FILM    | 220 OHM 1W J    |
| R605,606                     | KRQ1AJR47H      | RES , FUSE                | 0.47 OHM 1W J   |
| R615                         | KRQ1AJ100H      | RES , FUSE                | 10 OHM 1W J     |
| R427                         | CRD20TJ151T     | RES , CARBON HK 3480 only | 150 OHM 1/5W J  |
| R413,414                     | CRD20TJ220T     | RES , CARBON HK 3480 only | 22 OHM 1/5W J   |
| R434                         | CRD20TJ4R7T     | RES , CARBON HK 3480 only | 4.7 OHM 1/5W J  |
| R426,429,430,435             | CRD20TJ512T     | RES , CARBON HK 3480 only | 5.1K OHM J      |
| R421,423                     | CRD20TJ622T     | RES , CARBON HK 3480 only | 6.2K OHM 1/5W J |
| <b>►SEMI RESISTOR</b>        |                 |                           |                 |
| VR31,32                      | HVN1RA221B01T   | RES , SEMI FIXED(220 OHM) | RH0615C100221   |
| <b>►WIRE ASS'Y</b>           |                 |                           |                 |
| BN62                         | CWB4FA32120PU   | WIRE ASS'Y                |                 |
| BN63                         | CWB3FE03280UP   | WIRE ASS'Y                |                 |
| BN64                         | CWB1C906200BM   | WIRE ASS'Y                |                 |
| JW31                         | CWE7202050AA    | WIRE ASS'Y                |                 |
| JW32                         | CWE7202070AA    | WIRE ASS'Y                |                 |
| JW33                         | CWE7202060AA    | WIRE ASS'Y                |                 |
| JW34,35                      | CWE7202090AA    | WIRE ASS'Y                |                 |
| <b>►CONNECTOR</b>            |                 |                           |                 |
| CN26                         | CJP13GA115ZY    | WAFER , CARD CABLE        |                 |
| CN31,32                      | KJP02GA01ZM     | WAFER                     | MOLEX 5267-02A  |
| CN61                         | KJP02KA060ZY    | WAFER                     | 7.92MM(YUNHO)   |
| CN71                         | KJP12GA19ZM     | WAFER                     |                 |
| CN73,74                      | KJP03GA19ZM     | WAFER                     |                 |
| CN75                         | KJP02GA19ZM     | WAFER                     |                 |
| CN81                         | CJP20GA147ZW    | 20 DUAL WAFER             | JWT             |
| CN82                         | KJP07GA19ZM     | WAFER                     | MOLEX53014-0710 |
| CN91                         | KJP09GA19ZM     | WAFER                     | MOLEX53014-0910 |
| <b>►I.C</b>                  |                 |                           |                 |
| IC11,14,16,21<br>IC41~43     | HVINJM2068MDTE1 | I.C , OP AMP              | NJM2068MD-TE1   |
| IC12                         | HVITC9164AF     | I.C , FUNCTION            | TC9164AF        |
| IC13                         | HVITC9163AF     | I.C , FUNCTION            | TC9163AF        |
| IC15                         | HVITC9459F      | I.C , VOLUME              |                 |
| IC61                         | HVIL7805CP      | I.C, REGULATOR            |                 |
| IC64                         | CVIL7815CPVA    | I.C ASS'Y                 |                 |
| IC65                         | CVIL7915CPVA    | I.C ASS'Y                 |                 |

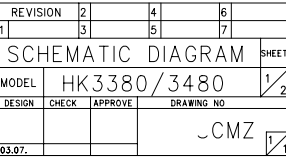
| PCB, MAIN          |                | CUP11654Y                 | HK3380/230      |
|--------------------|----------------|---------------------------|-----------------|
| REF NO.            | PART NO.       | 1st DESCRIPTION           | 2nd DESCRIPTION |
| <b>►JACK</b>       |                |                           |                 |
| JK10               | CJJ4N060Z      | JACK , BOARD 2P (GOLD)    |                 |
| JK11,12            | CJJ4P014W      | JACK , IN/OUT             |                 |
| JK13               | CJJ4R019W      | TERMINAL , IN/OUT         |                 |
| JK14               | CJJ4R021W      | JACK , IN/OUT             |                 |
| JK15               | CJJ5Q006Z      | TERMINAL , SPEAKER        |                 |
| <b>►COIL</b>       |                |                           |                 |
| L301,302           | CLEY0R5KAK     | COIL , SPEAKER            | 0.5UH K         |
| <b>►OUTLET</b>     |                |                           |                 |
| OL61               | KJJ7A025Z      | OUTLET , EUR (2P)         | A3-04-D007-2P   |
| <b>►RELAY</b>      |                |                           |                 |
| RY31,32            | HSL4A004ZU     | RELAY                     | OSA-SS-212DM3   |
| RY61               | HSL1A008ZE     | RELAY                     | SDT-S-112DMR    |
| <b>►POSISTOR</b>   |                |                           |                 |
| TH31               | KRTP42T7D330B  | THERMAL SENSOR , POSISTOR | P42T7D330BW20   |
| <b>►SUB TRANS</b>  |                |                           |                 |
| T602               | CLT5J033ZE     | TRANS , SUB               |                 |
| <b>►CARD CABLE</b> |                |                           |                 |
| BN26               | CWC1C4A13B170B | CARD , CABLE              |                 |
| <b>►FUSE</b>       |                |                           |                 |
| F601               | KBA2C4000TLEY  | FUSE HK3380/230           | T 4A L 250V     |
| F601               | KBA2C6300TLEY  | FUSE HK3480/230           | T 6.3A L 250V   |
| F602               | KBA2D2500TLET  | FUSE                      | T 2.5A L 250V   |
| F603,604           | KBA2C6300TLEY  | FUSE HK3380/230           | T 6.3A L 250V   |
| F603,604           | KBA2C8000TLEY  | FUSE HK 3480/230          | T 8A L 250V     |
| <b>►OTHERS</b>     |                |                           |                 |
| T601               | CLT5U021ZE     | TRANS , POWER HK3380/230  |                 |
|                    | CLT5V036ZE     | TRANS , POWER HK3480/230  |                 |



# HK3380/HK3480 BLOCK DIAGRAM



| REVISION |       | 2       | 4          | 6 |
|----------|-------|---------|------------|---|
| 1        | 3     | 5       | 7          |   |
| MODEL    |       |         |            |   |
| DESIGN   | CHECK | APPROVE | DRAWING NO |   |
|          |       |         | 1653P      |   |





# AMPLIFIER SECTION BIAS ADJUSTMENT

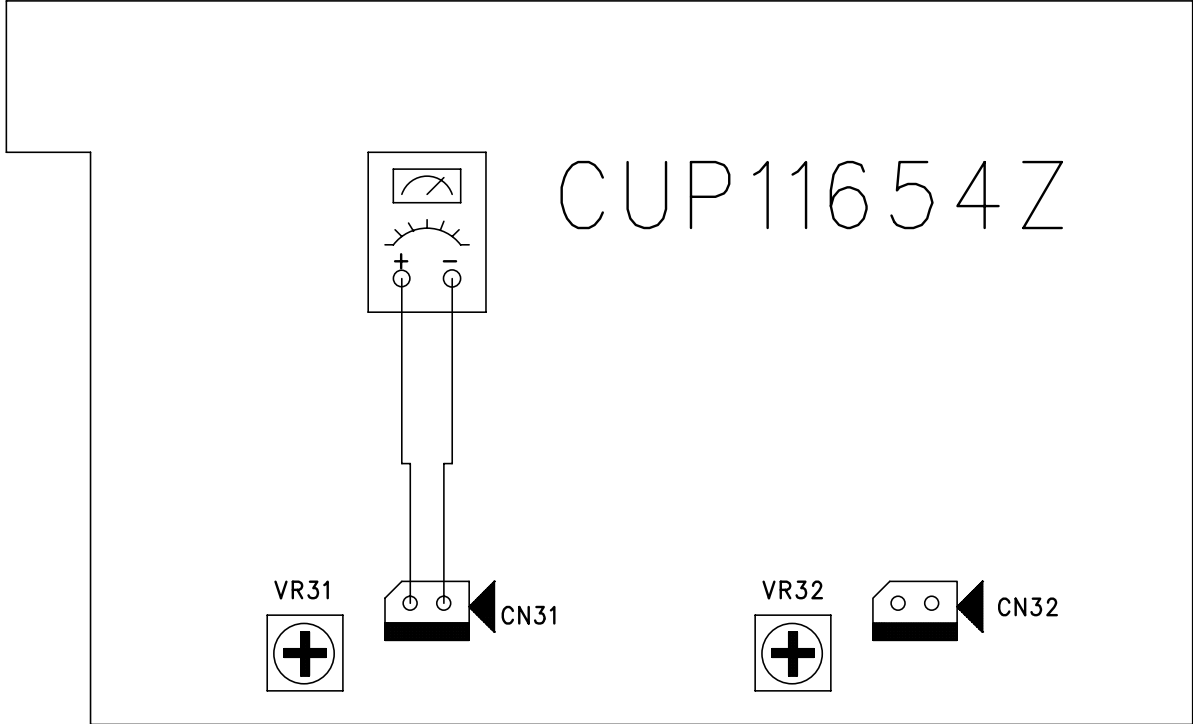
**Measurement condition**

; No input signal or volume position is minimum.

**Standard value**

; Ideal current = 48mA ( ±5%)

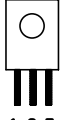
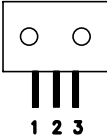
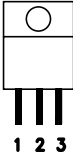
; Ideal DC Voltage = 21.12mV ( ±5%)



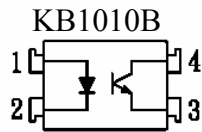
DC VOLTMETER .....Connect to CN31 , CN32

| NO. | CHENNEL | ADJUST FOR     | ADJUSTMENT |
|-----|---------|----------------|------------|
| 1   | L CH    | 21.12mV ( ±5%) | VR31       |
| 2   | R CH    | 21.12mV ( ±5%) | VR32       |

TRANSISTOR , REGULATOR IC BLOCK DIAGRAM

|                                                                                                                                                                                                                                 |                                                                                                                                                                                                                     |                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>T0-92M</p>  <p>1. Emitter<br/>2. Collector<br/>3. Base</p> <p>1 2 3</p> <p>KRA107M      KRC107M<br/>KSA1175Y      KSC2785Y<br/>KTC2874B</p> | <p>T0-92</p>  <p>1. Emitter<br/>2. Collector<br/>3. Base</p> <p>1 2 3</p> <p>KTA1271Y      KSC945CY<br/>KTA1268GR    KTC3200GR</p> | <p>T0-126</p>  <p>1. Emitter<br/>2. Collector<br/>3. Base</p> <p>1 2 3</p> <p>KTA1360Y      KTC3423Y<br/>KTC3114A</p> |
| <p>T0-3P</p>  <p>1. Base<br/>2. Collector<br/>3. Emitter</p> <p>1 2 3</p> <p>2SB1570      2SD2401</p>                                          | <p>T0-220</p>  <p>1. INPUT<br/>2. GND<br/>3. OUTPUT</p> <p>1 2 3</p> <p>L7805CP      L7815CP</p>                                   | <p>T0-220</p>  <p>1. GND<br/>2. INPUT<br/>3. OUTPUT</p> <p>1 2 3</p> <p>L7905CP      L7915CP</p>                      |

SCHEMATIC : TOP VIEW



- 1. Anode
- 2. Cathode
- 3. Emitter
- 4. Collector

DISPLAY

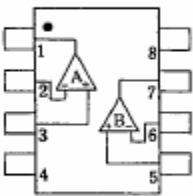
PIN CONNECTION

\* TS : Test pin. Be left open if not used.

| PIN NO.    | 85 | 84 | 83 | 82 | 81~67 | 66~20 | 19  | 18  | 17 | 16   | 15   | 14 | 13  | 12  | 11   | 10  | 9    | 8    | 7    | 6   | 5   | 4  | 3  | 2  | 1  |
|------------|----|----|----|----|-------|-------|-----|-----|----|------|------|----|-----|-----|------|-----|------|------|------|-----|-----|----|----|----|----|
| CONNECTION | F2 | F2 | F2 | NP | TS    | NP    | 16G | 15G | NC | GRI5 | GRI6 | NC | VDD | DIN | CLKB | CSB | RSTB | OSCO | OSCI | VEE | GND | NP | F1 | F1 | F1 |

PIN CONFIGURATION

- PIN FUNCTION
- 1. A OUTPUT
  - 2. A-INPUT
  - 3. A+INPUT
  - 4. V-
  - 5. B+INPUT
  - 6. B-INPUT
  - 7. B OUTPUT
  - 8. V+



NJM2068D  
NJM2068M  
NJM2068V

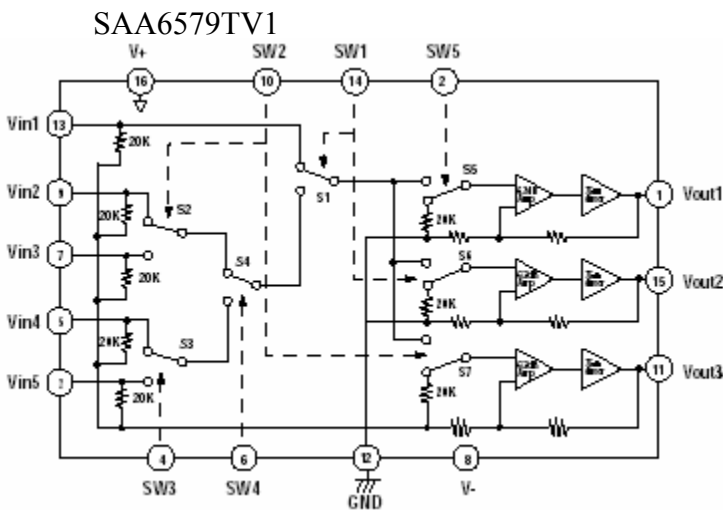
NJM2068

\*Notes

Fn : Filament Pin

NP : No Pin

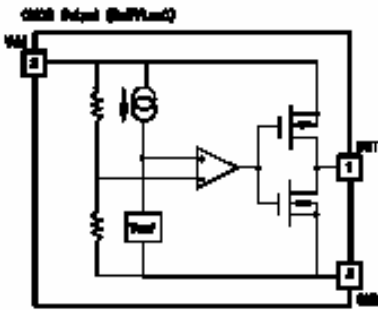
NC : No connection



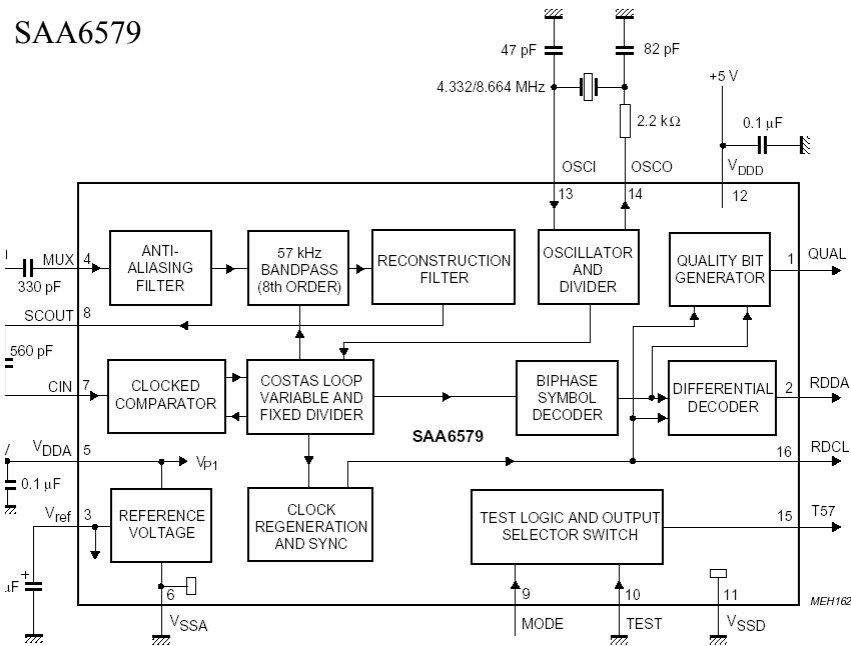
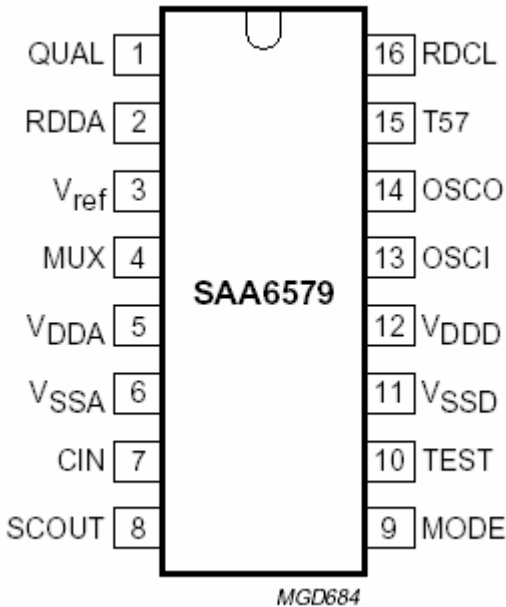
RE5VL28

RE5VL28CATZ (VOLTAGE DETECTOR : IC85)

BLOCK DIAGRAM

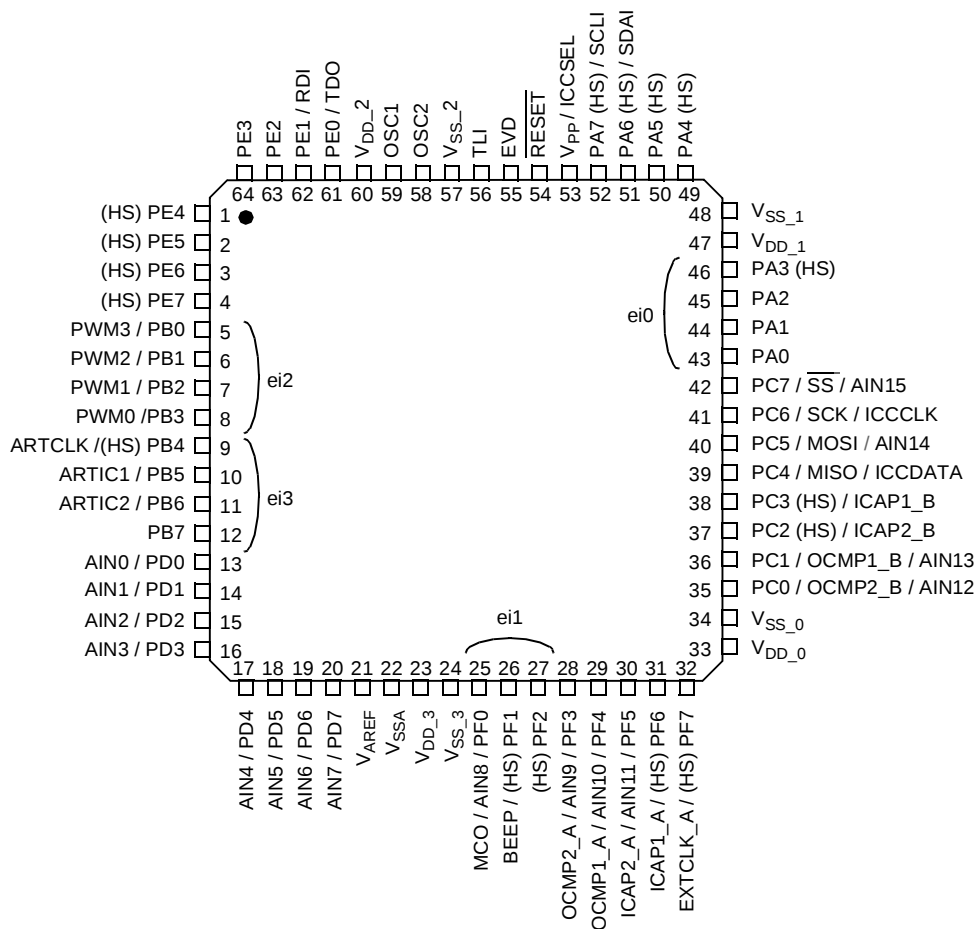


SAA6579



## 2 PIN DESCRIPTION

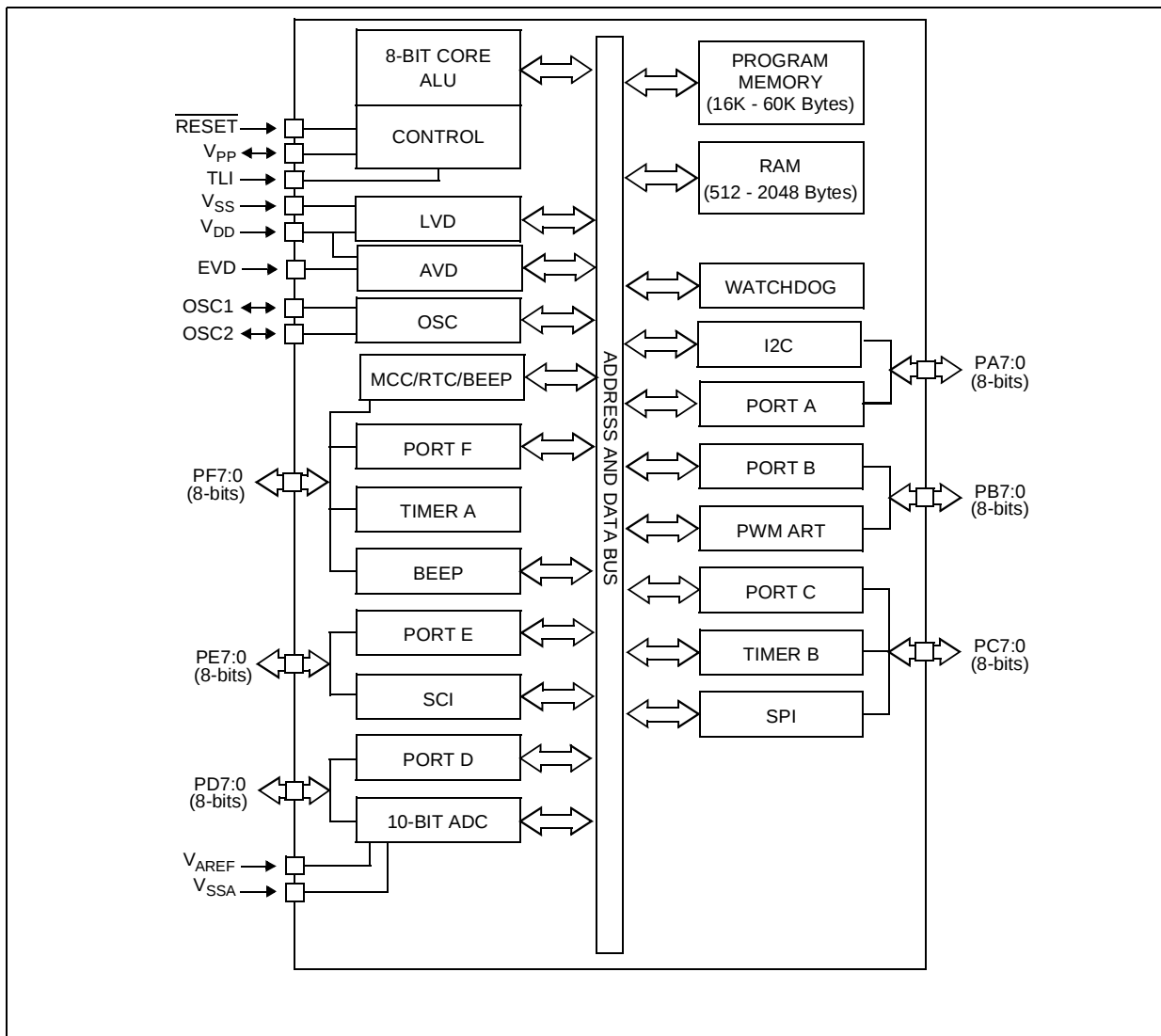
Figure 2. 64-Pin TQFP 14x14 and 10x10 Package Pinout



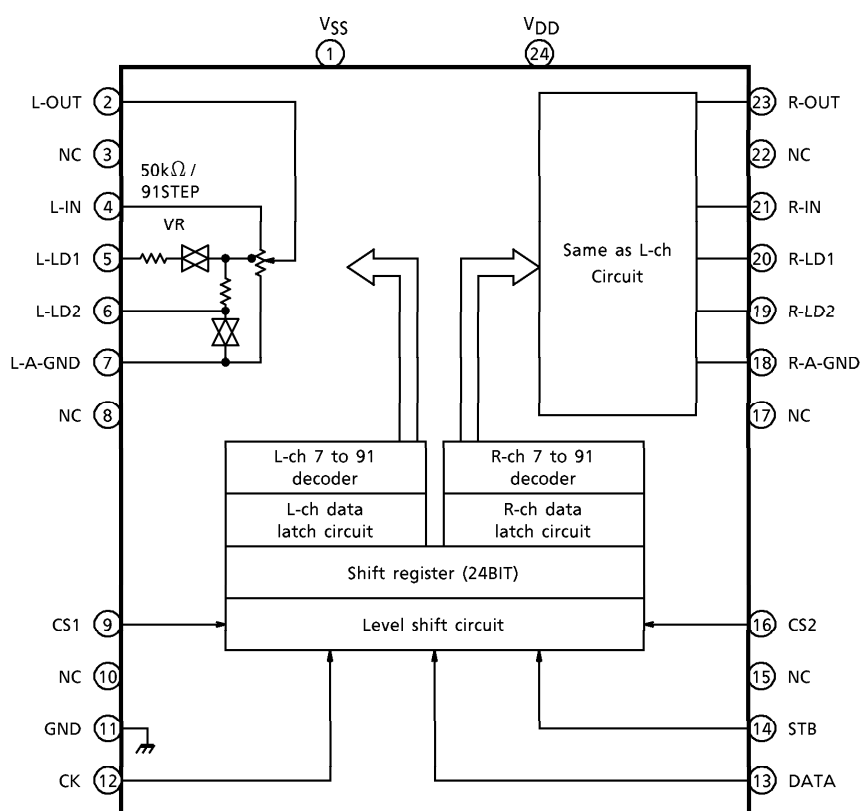
(HS) 20mA high sink capability  
eix associated external interrupt vector

# HVIST72F321R (U-COM) : IC81

**Figure 1. Device Block Diagram**

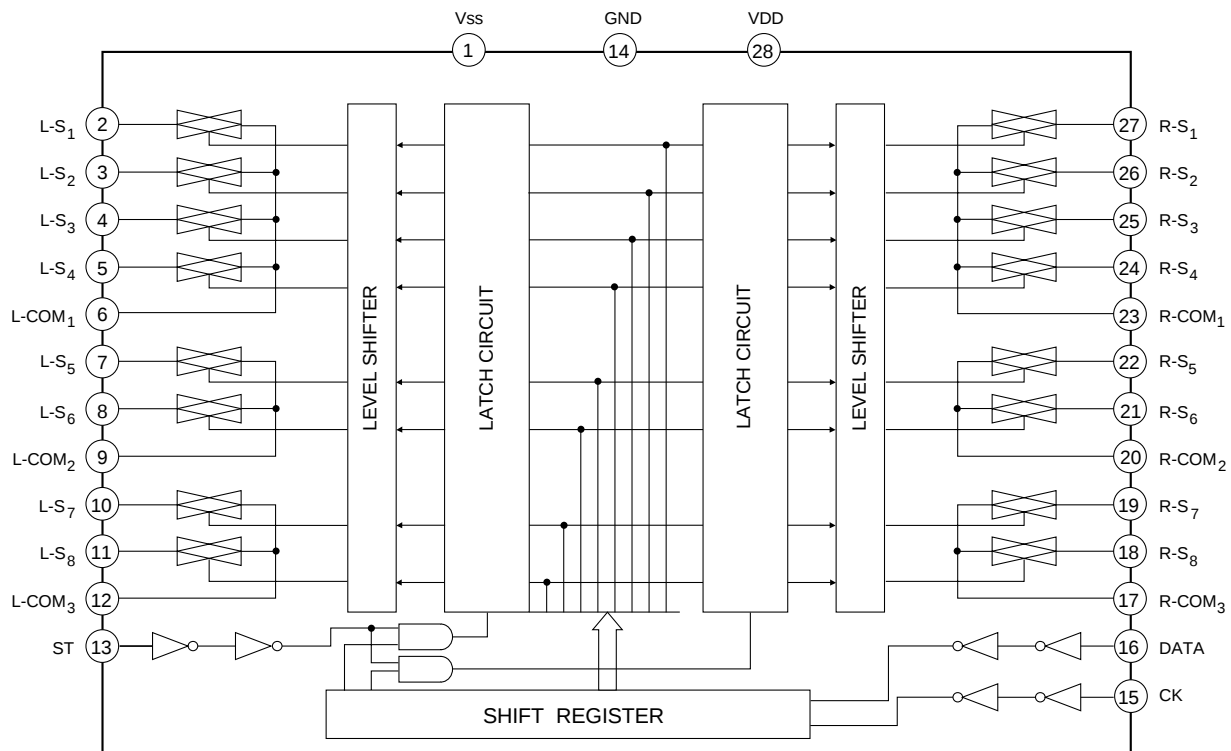


### BLOCK DIAGRAM (TC9459F)



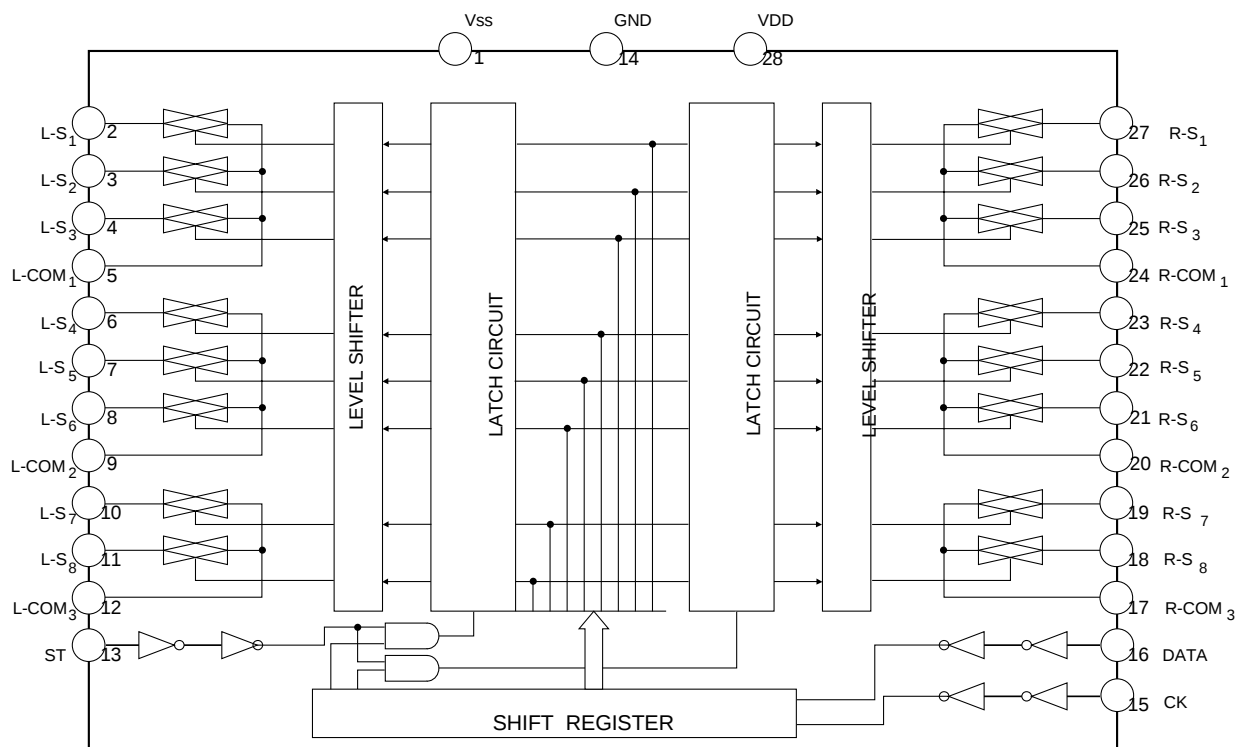
## TC9164AF (FUNCTION/INPUT) : IC12

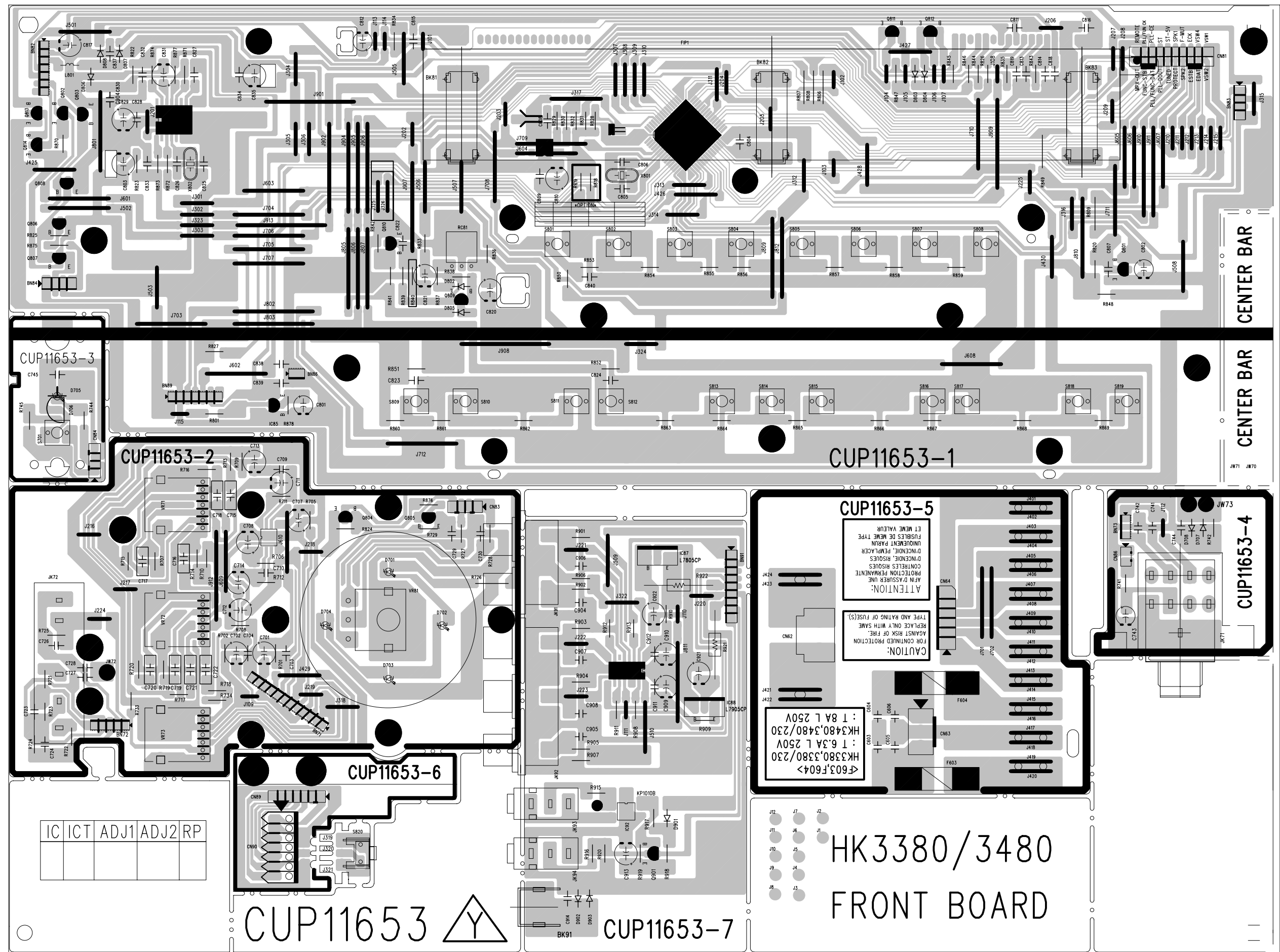
### ■ BLOCK DIAGRAM



## TC9163AF (FUNCTION/INPUT) : IC13

### ■ BLOCK DIAGRAM





CUP11653-3

C745  
D705  
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