



SCHEMATIC DIAGRAM

MODEL : 21CS2R

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON THE MANUAL FOR THIS MODEL.

CAUTION: The international hazard symbols " \triangle " in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on the MANUAL for this model. Do not degrade the safety of the receiver through improper servicing.

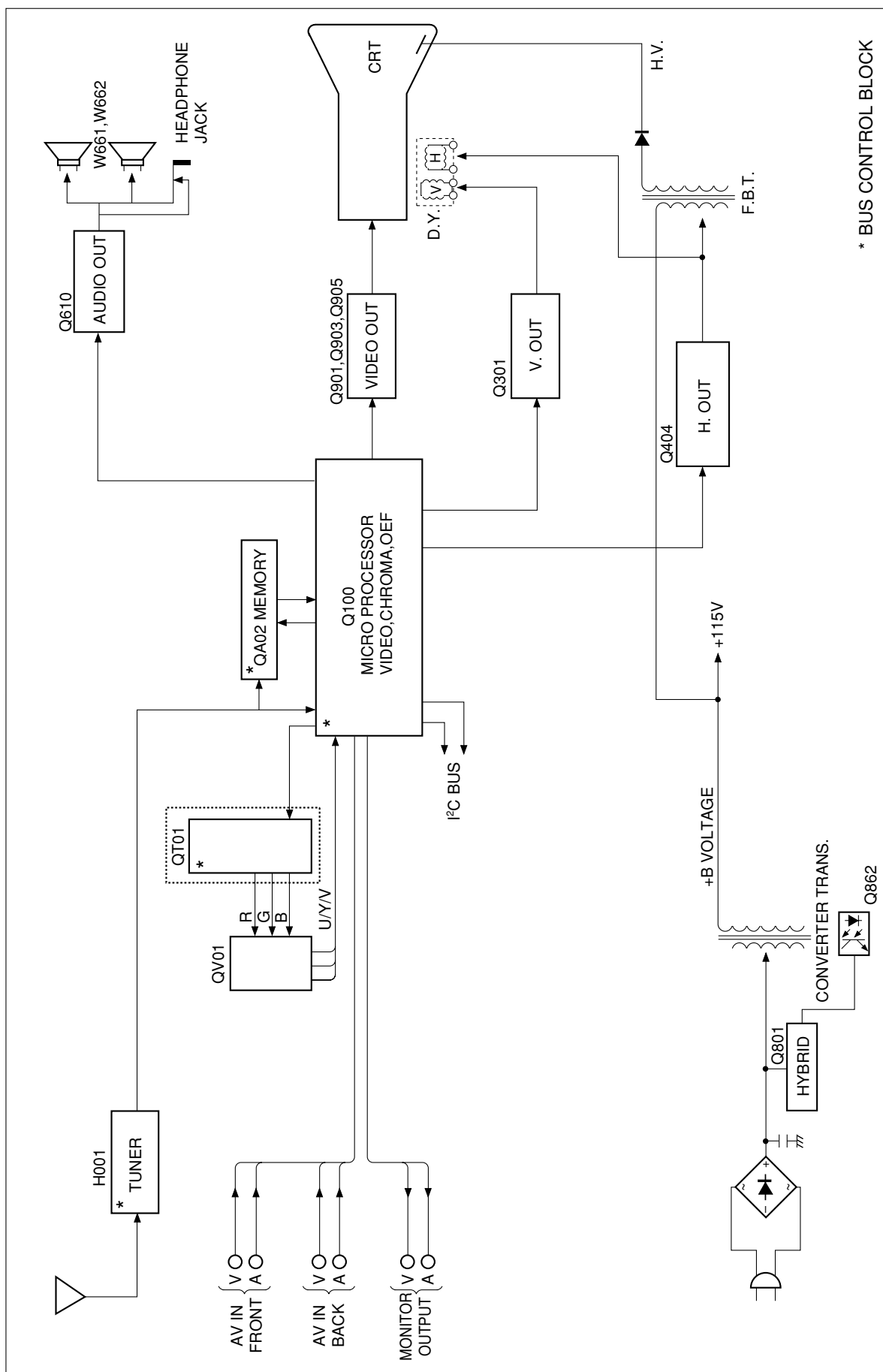
NOTE:

- 1. RESISTOR** Resistance is shown in ohm [$K = 1.000$, $M = 1.000.000$]. All resistors are 1/6W and 5% tolerance carbon resistor, unless otherwise noted as the following marks.
 $1/2R$ = Metal or Metal oxide of 1/2 watt $1/2S$ = Carbon composition of 1/2 watt
 $1RF$ = Fuse resistor of 1 watt $10W$ = Cement of 10 watt
 $K = \pm 10\%$ $G = \pm 2\%$ $F = \pm 1\%$
- 2. CAPACITOR** Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in μF , and the values more than 1 in pF.
All capacitors are ceramic 50V, unless otherwise noted as the following marks.
 Electrolytic capacitor  Mylar capacitor
- 3.** The parts indicated with " \triangle " have special characteristics, and should be replaced with identical parts only.
- 4.** Voltages read with DIGITAL MULTI-METER from point indicated to chassing ground, using a color bar signal with all controls at normal, line voltage 220 volts.
- 5.** Waveforms are taken receiving color bar signal with enough sensitivity.
- 6.** Voltage reading shown are nominal values and may vary $\pm 20\%$ except H.V.

■ SCHEMATIC DIAGRAM STRUCTURE:

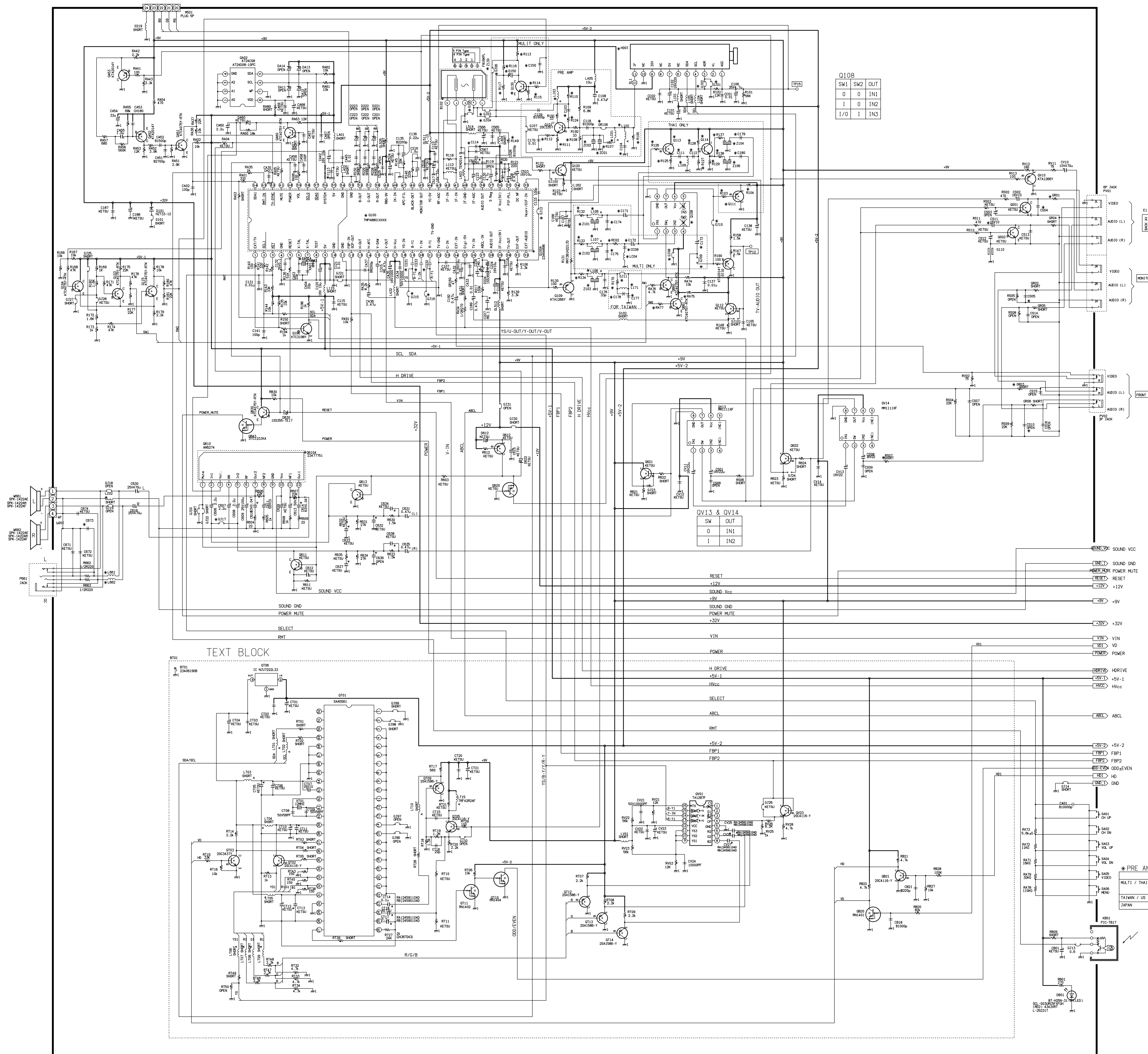
| | |
|----------------------------------|-----|
| ┌ MAIN / CRT DRIVE Circuit | 1/2 |
| └ POWER / DEF | 2/2 |

CIRCUIT BLOCK DIAGRAM



* BUS CONTROL BLOCK

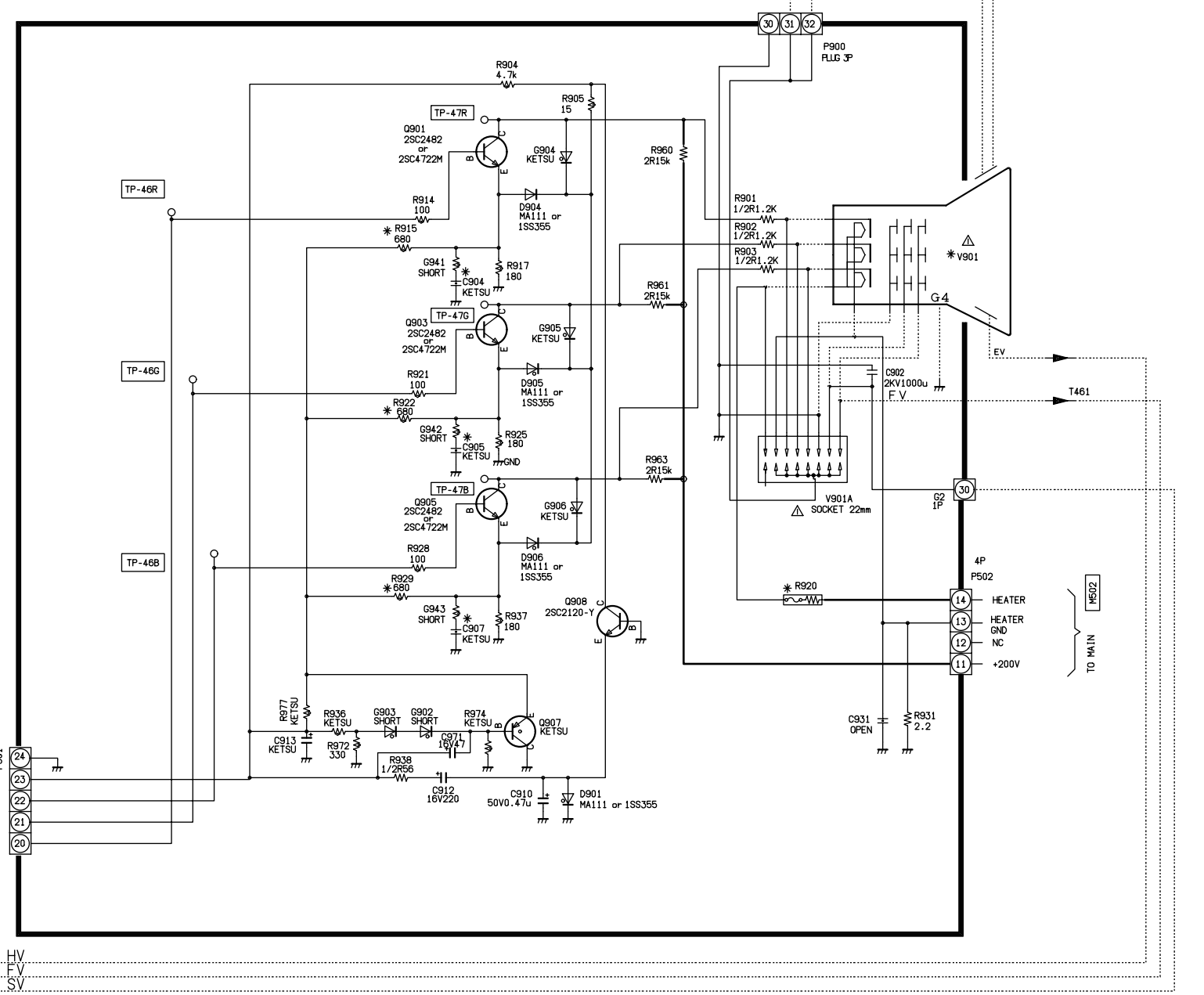
U902 MAIN BOARD PD1417 (14S3E), PD1418 (21S3E), PD1544 (14S2R), PD1561 (21S2R)



| G108 | SW1 | SW2 | OUT |
|------|-----|-----|-----|
| 0 | 0 | IN1 | |
| 1 | 0 | IN2 | |
| 1/0 | 1 | IN3 | |

| OV13 & OV14 | SW | OUT |
|-------------|-----|-----|
| 0 | IN1 | |
| 1 | IN2 | |

U901 CRT DRIVE BOARD



| LOCATION | 14" | 20" | 21" |
|----------|--------------------|--------------------|--------------------|
| V901 | A34LR090X(VM) (R1) | A48LRH94X(W) (RA) | 543XG03Y20C21 (R1) |
| | A34K0V42X (R2) | A51KST93X(VN) (R2) | A51KST93X(VN) (R2) |
| | A34JL91X(K) (R3) | A48JL91X(K) (RB) | A51J90X(PAK) (R3) |
| | A34JF090X(VX) (R4) | | A51KST93X(VN) (R4) |
| V901M | MAG-1070 (R1) | MAG-1070 (RA) | KETSU (R1) |
| | MAG-1052 (R2) | MAG-1054 (RB) | MAG-1070 (R2) |
| | MAG-1070 (R3) | | MAG-1070 (R3) |
| | MAG-1070 (R4) | | MAG-1070 (R4) |
| R920 | 1W 4.7 | 1W4.3 | 1W5.1 |
| E501 | 23198605A | 23198617 | 23198607 |

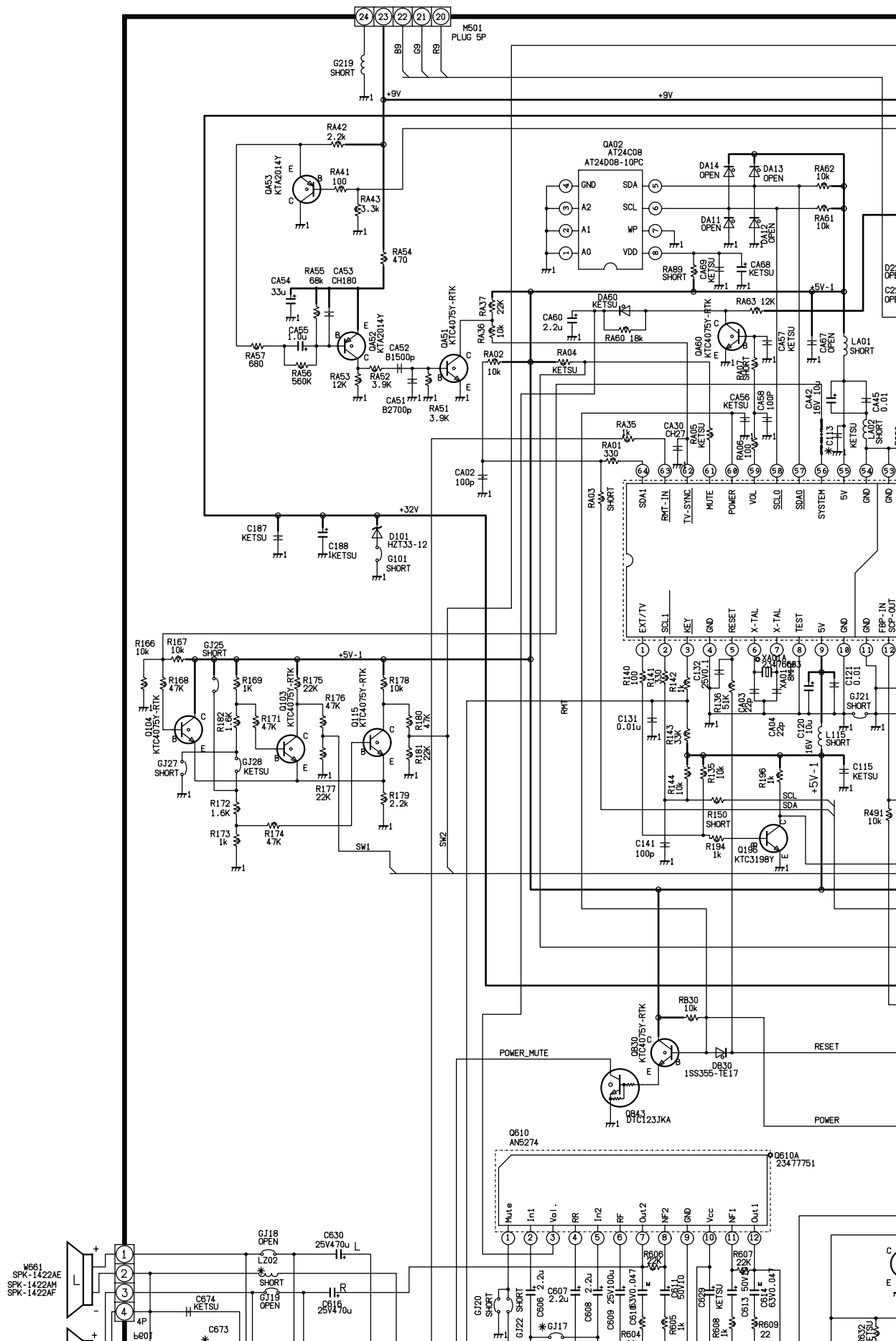
| *Z130 | G103 | G104 | G105 | G106 | G107 | PRE AMP |
|-------------|----------------|------|------|------|------|---------|
| MULTI | F818KPL (SPIN) | 0 | X | X | 0 | 0 |
| TAIWAN / US | | | | | | |
| THAI | | | | | | |
| JAPAN | | | | | | |

| *H001 | G101 | G102 | REMARKS |
|----------------|--------------------------|------|----------------|
| ASIA MODELS | ECA33X6 (R1) (23321473) | OPEN | OPEN SANYO |
| | ECA33X6 (R2) (23321452) | OPEN | OPEN SAMSUNG |
| | ECA33X6 (R3) (23321417) | 4.7K | 4.7K LG |
| | ECA33X6 (R4) (23321428) | OPEN | OPEN SANYO |
| VIETNAM MODELS | ECA33X1 (RA) (23321357) | OPEN | OPEN PANASONIC |
| | ECA33X8 (RB) (23321428) | OPEN | OPEN SANYO |
| TAIWAN MODELS | ECA51LX7 (RA) (23321456) | OPEN | OPEN PANASONIC |
| | ECA51L (RB) (23321368) | OPEN | OPEN TDL |
| RUSSIAN MODELS | ENW50A703 (23321450) | OPEN | OPEN PANASONIC |

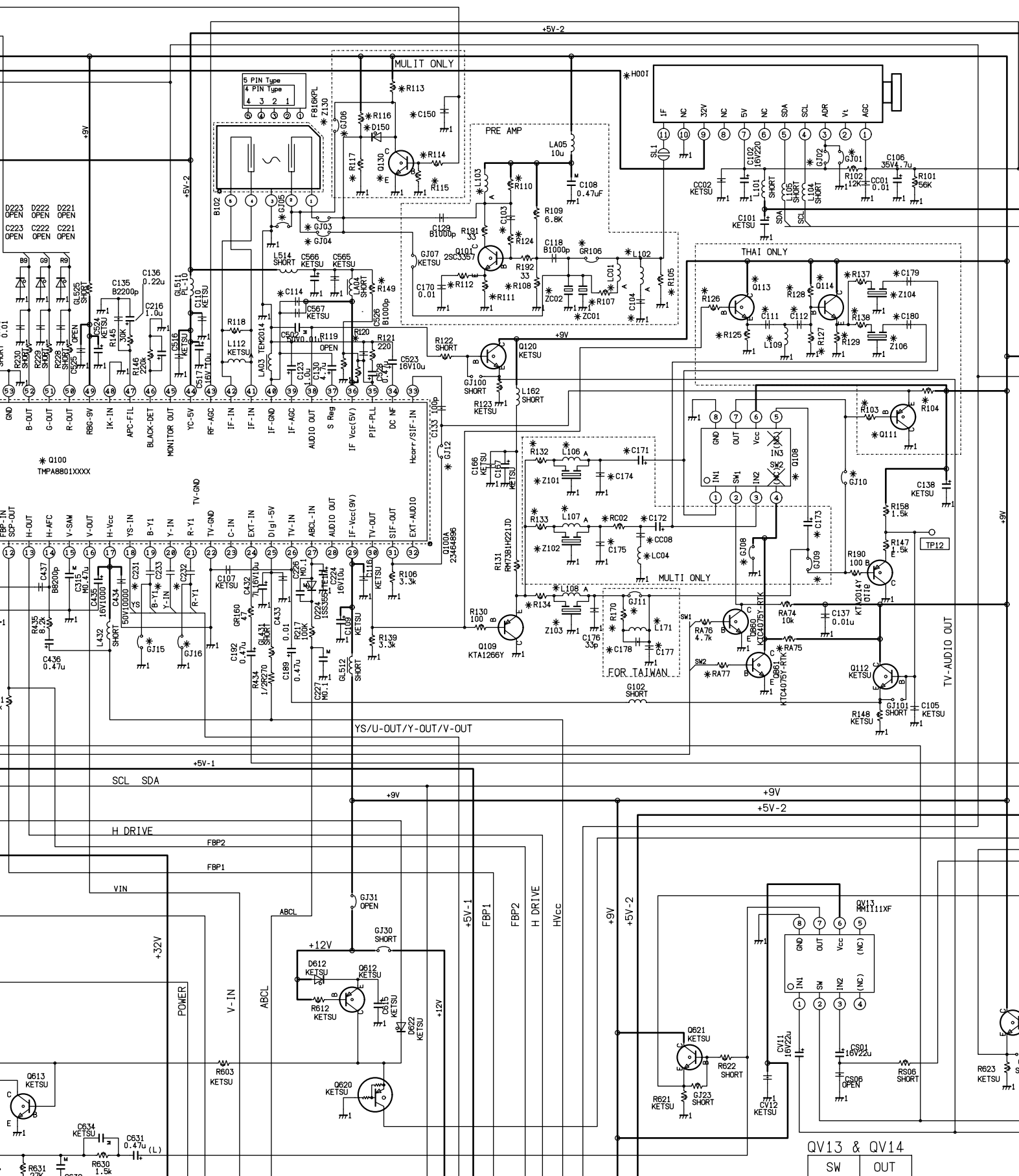
| *SIF FILTER | G108 | Z103 | G108 | G109 | G110 | G111 | G112 | CIRCUIT AREA |
|-------------|----------|----------------|------|------|------|------|------|-------------------|
| MULTI | MM1113XF | TPF1113AM (RA) | X | X | 0 | 0 | 0 | MULTI THAI TAIWAN |
| | | TPS4.5M1 (RB) | | | | | | |
| TAIWAN / US | | TCF1010 (RC) | | | | | | |
| THAI | | | | | | | | |

| *PRE AMP | R105 | L102 | C104 | GR106 | LC01 | R031 | Z002 | R108 | C103 | R124 | R110 | L103 | R191 | R111 | R112 | C170 | R118 | L112 | R107 |
|--------------|----------------|------|------|-------|-------|-------|----------|-------|----------|------|-------|------|------|------|------|------|-------|-------|-------|
| MULTI / THAI | ENC+ MODEL 330 | 1u | 47pF | KETSU | 0.22u | 39.9M | TPF11071 | 30.9M | TPF11071 | 2.7K | 0.01u | 1K | 1K | 1.2u | 33 | 36 | SHORT | 0.01u | KETSU |
| TAIWAN / US | --- | | | | | | | | | | | | | | | | | | |
| JAPAN | --- | | | | | | | | | | | | | | | | | | |

F

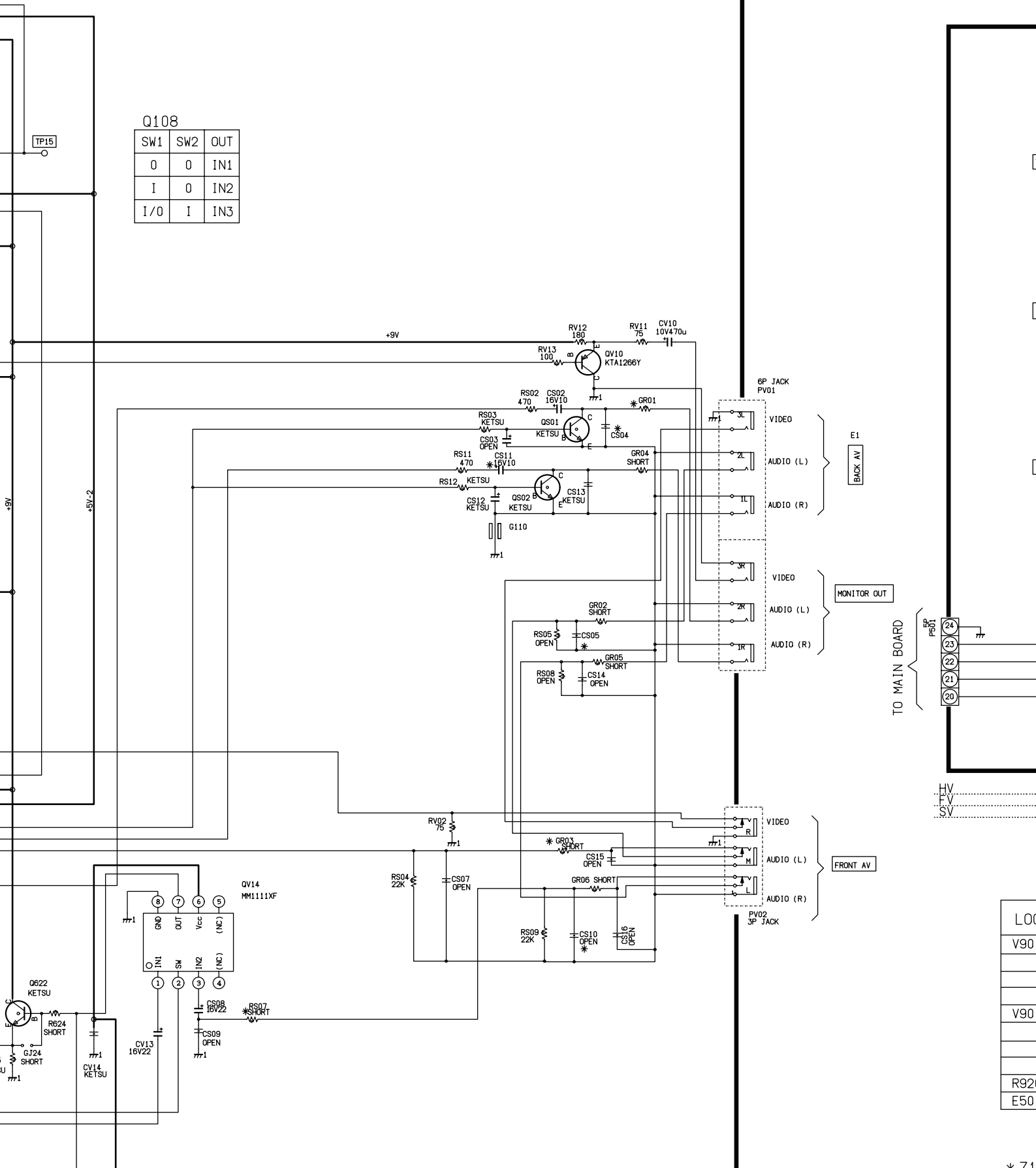


PD1418 (21S3E), PD1544 (14S2R), PD1561 (21S2R)



U901 0

| SW1 | SW2 | OUT |
|-------|-----|-----|
| 0 | 0 | IN1 |
| I | 0 | IN2 |
| I / 0 | I | IN3 |



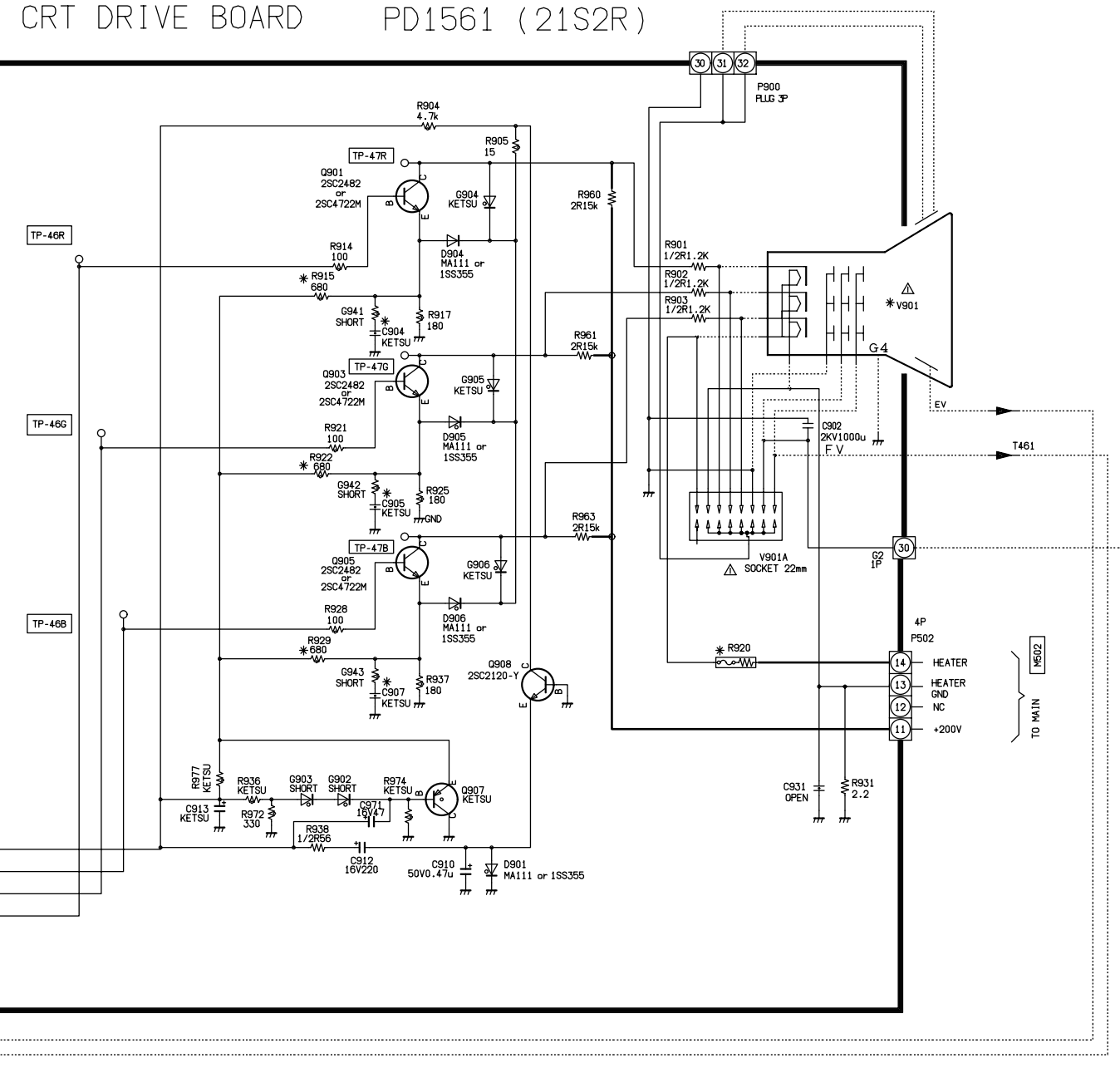
CRT DRIVE BOARD

PD1417 (14S3E)

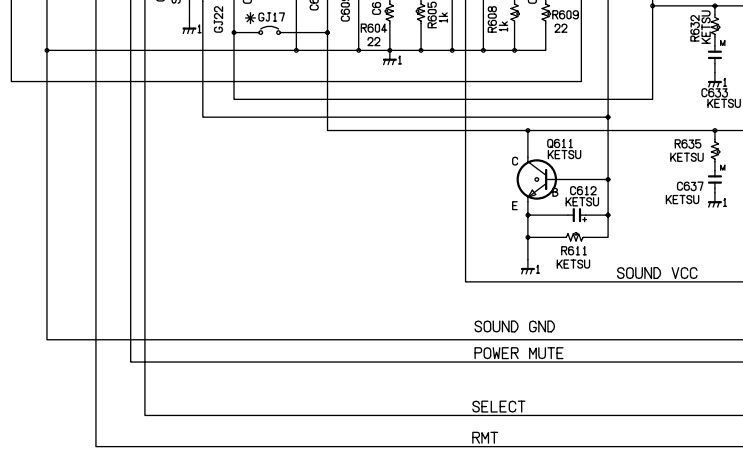
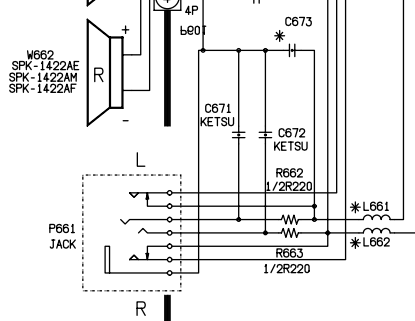
PD1418 (21S3E)

PD1544 (14S2R)

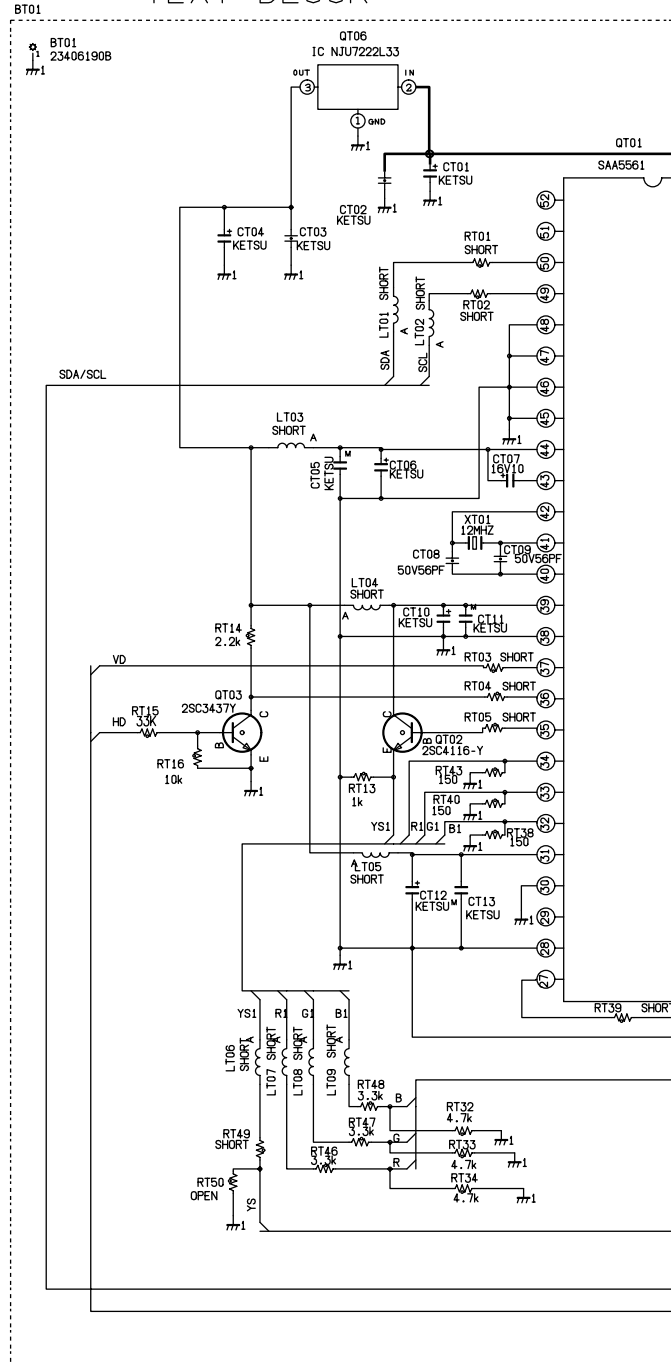
PD1561 (21S2R)

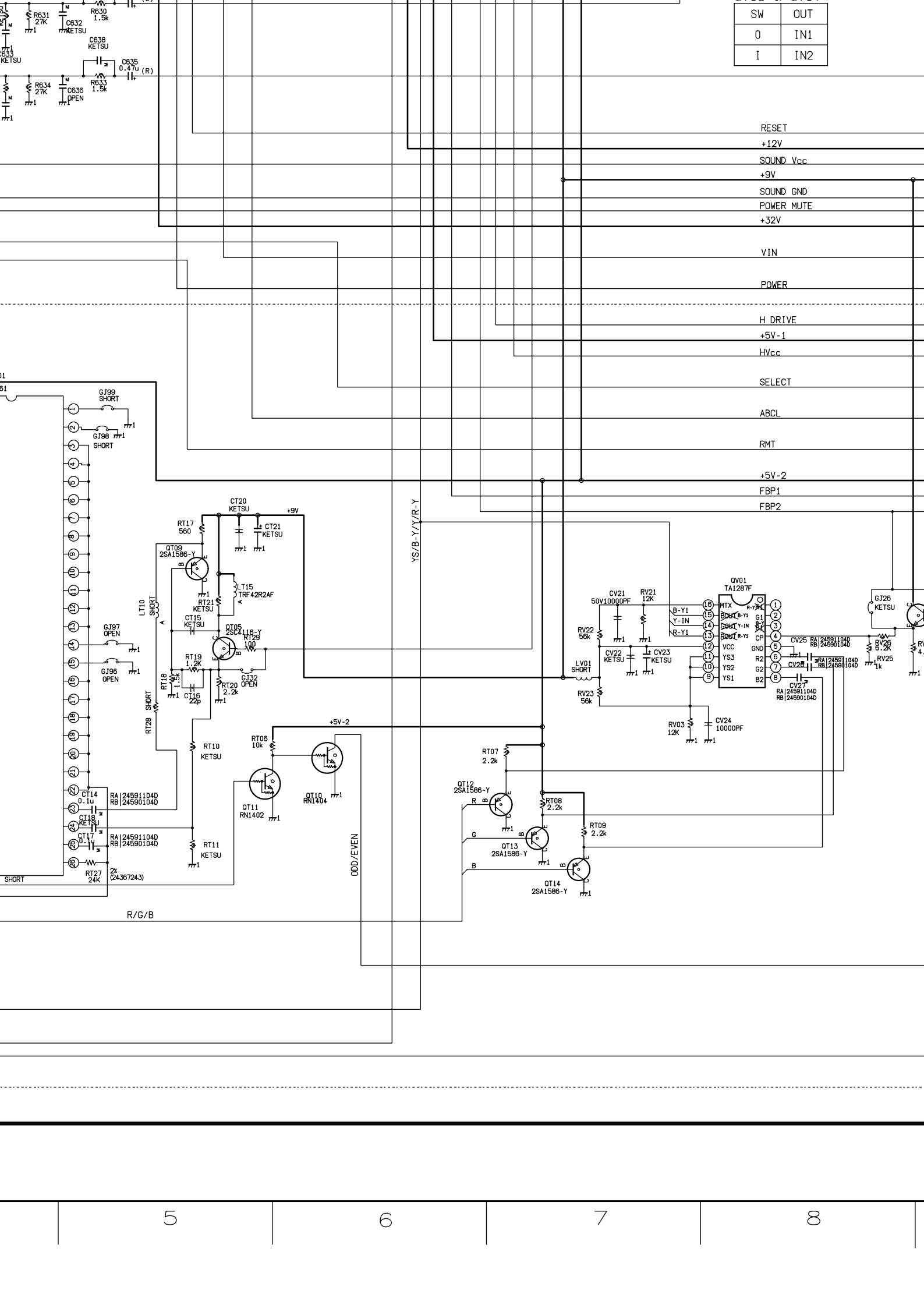


| LOCATION | 14" | 20" | 21" |
|----------|--------------------|-------------------|---------------------|
| V901 | A34LRQ90X(VW) (R1) | A48LRH94X(W) (RA) | 54SX503Y22DC21 (R1) |
| | A34KQV42X (R2) | A48JLL91X(K) (RB) | A51KST93X(VM) (R2) |
| | A34JLL91X(K) (R3) | | A51JSW90X(PAK)(R3) |
| | A34JFQ90X(VX) (R4) | | A51KST93X(VM) (R4) |
| V901M | MAG-1070 (R1) | MAG-1070 (RA) | KETSU (R1) |
| | MAG-1052 (R2) | MAG-1054 (RB) | MAG-1070 (R2) |
| | MAG-1070 (R3) | | MAG-1070 (R3) |
| | MAG-1070 (R4) | | MAG-1070 (R4) |
| R920 | 1W 4.7 | 1W4.3 | 1W5.1 |
| E501 | 23198605A | 23198617 | 23198607 |



TEXT BLOCK





| SW | OUT |
|----|-----|
| 0 | IN1 |
| 1 | IN2 |

RESET

+12V

SOUND Vcc

+9V

SOUND GND

POWER MUTE

+32V

VIN

POWER

H DRIVE

+5V-1

HVcc

SELECT

ABCL

RMT

+5V-2

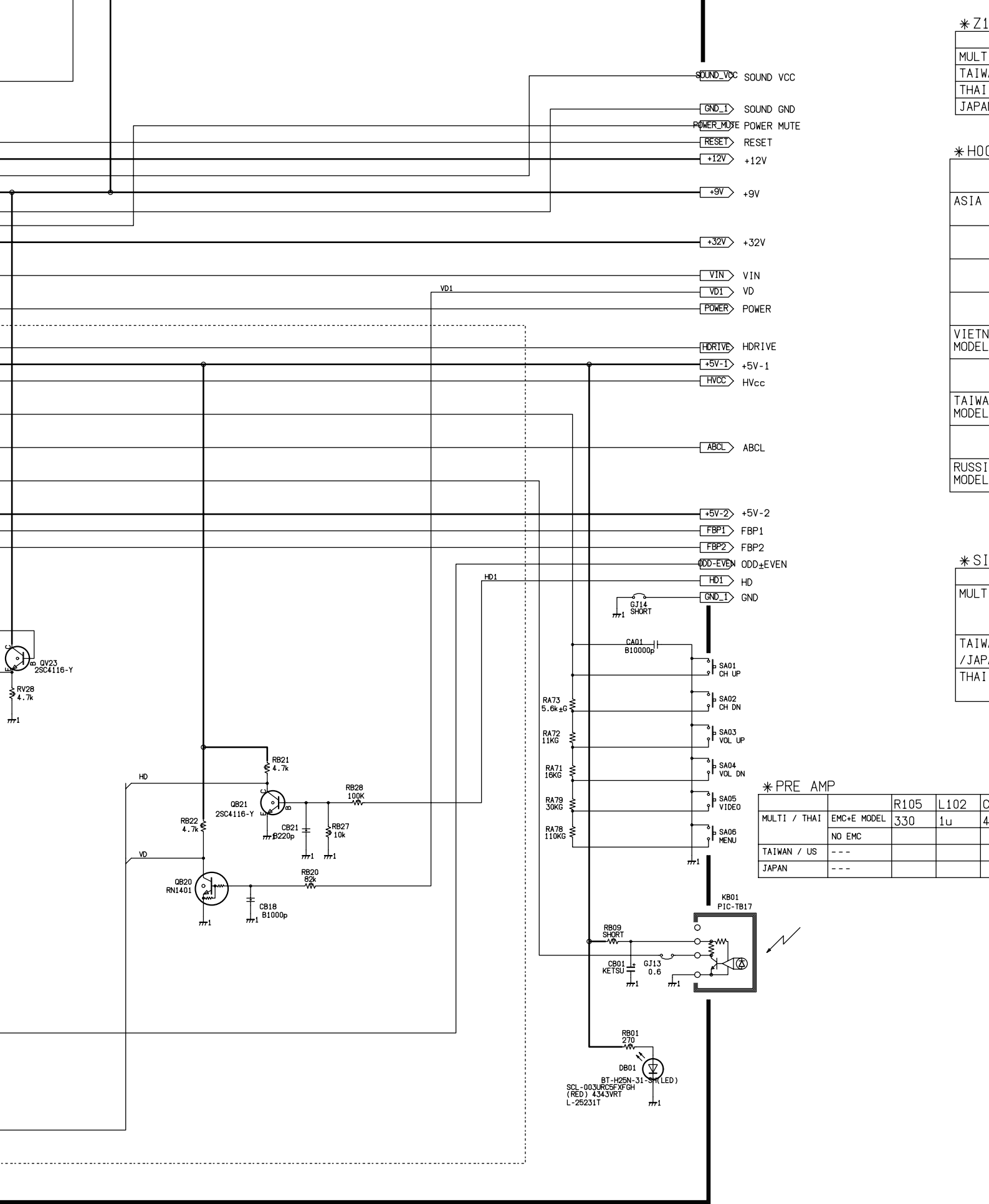
FBP1

FBP2

YS/B-Y/Y/R-Y

ODD/EVEN

R/G/B



* Z1
MULT
TAIW
THAI
JAPAI

* HOO
ASIA

VIETN
MODEL

TAIWA
MODEL

RUSSI
MODEL

* SI
MULT
TAIW
/JAP
THAI

| | | | | | | | |
|------------|----------------|------|------|------|------|------|---------|
| Z130 | | | | | | | |
| ULTI | F816KPL (5PIN) | GJ03 | GJ04 | GJ05 | GJ06 | GJ07 | PRE AMP |
| AIWAN / US | | 0 | X | X | 0 | X | 0 |
| HAI | | | | | | | |
| APAN | | | | | | | |

G

| | | | | |
|-----------------|-----------------------------|------|------|-----------|
| H001 | | | | |
| | | GJ01 | GJ02 | REMARKS |
| IA MODELS | ECA33LXC (R1) (23321473) | OPEN | OPEN | SANYO |
| | ECA33LXB (R2) (23321452) | OPEN | OPEN | SAMSUNG |
| | ECA33LX6 (R3) (23321417) | 4.7K | 4.7K | LG |
| | ECA33LX8 (R4) (23321428) | OPEN | OPEN | SANYO |
| ETNAM ODELS | ECA33LX1 (RA) (23321357) | OPEN | OPEN | PANASONIC |
| | ECA33LX8 (RB) (23321428) | OPEN | OPEN | SANYO |
| AIWAN ODELS | ECA51LX7 (RA) (23321456) | OPEN | OPEN | PANASONIC |
| | ECA51L (RB) (23321368) | OPEN | OPEN | TDL |
| USSIAN ODELS | ENV59DA7G3 (23321450) | OPEN | OPEN | PANASONIC |

H

| | | | | | | | | | | | | |
|------------|----------|--|------|------|------|------|------|-------|------|--------------|--|--|
| SIF FILTER | | | | | | | | | | CIRCUIT AREA | | |
| | Q108 | Z103 | GJ08 | GJ09 | GJ10 | GJ11 | GJ12 | MULTI | THAI | TAIWAN | | |
| ULTI | MM1113XF | TCF1138AM (RA) TPS4.5MCI (RB) TCF1010 (RC) | X | X | 0 | 0 | 0 | 0 | X | X | | |
| AIWAN / US | | | | | | | | | | | | |
| JAPAN | | | | | | | | | | | | |
| HAI | | | | | | | | | | | | |

I

| | | | | | | | | | | | | | | | | | |
|--|------|-------|-------|----------------|----------------|------|-------|------|------|------|------|------|-------|-------|-------|-------|------|
| | C104 | GR106 | LC01 | ZC01 | ZC02 | R108 | C103 | R124 | R110 | L103 | R191 | R111 | R112 | C170 | R118 | L112 | R107 |
| | 47pF | KETSU | 0.22u | 39.5M(TCF1107) | 30.0M(TCF1120) | 2.7K | 0.01u | 1K | 1K | 1.2u | 33 | 36 | SHORT | 0.01u | KETSU | KETSU | 33 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

J

| | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 14S2/14S3/20S2/20S3 21S2/21S3 SERIES MAIN | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

K

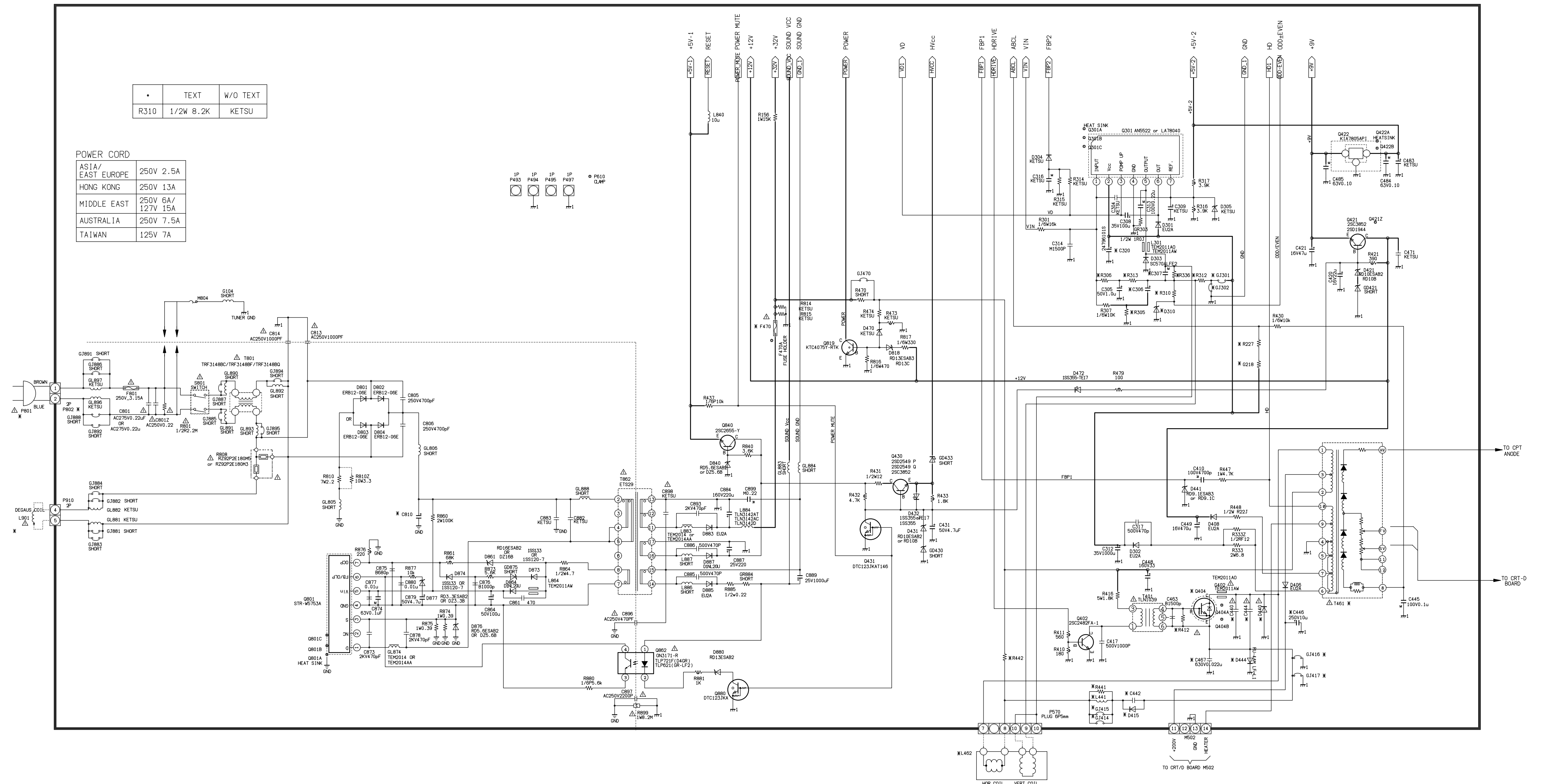
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|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|
| 13 | | | | 14 | | | | 15 | | | | 16 | | | |
|----|--|--|--|----|--|--|--|----|--|--|--|----|--|--|--|

L

| LOCATION | 14" | 20" | 21" |
|------------|------------------|-------------------|-------------------|
| T461 | TFB4122HY (RA) | TFB4125HY (RA) | TFB4125HY (RA) |
| | TFB4122ES (RB) | TFB4125JH (RB) | TFB4125JH (RB) |
| L462 | TFB4125JH (RB) | TFB4125CS (RC) | TFB4125CS (RC) |
| | TDY-314PV (RA) | TDY-320MY (R1) | KETSU (R1) |
| | TDY-314PY (RB) | TDY-320MS (R2) | TDY-621UA (R2) |
| | --- | TDY-320MV (R3) | TDY-621WS (R3) |
| M570 | --- | --- | TDY-621WS (R4) |
| | --- | KETSU (R1) | CON 6P-10 (R1) |
| | --- | WIRE 500mA(R2) | KETSU (R2) |
| | --- | --- | KETSU (R3) |
| | --- | --- | KETSU (R4) |
| P570 | PLUG 5P(233686)9 | PLUG 6P(233686)20 | PLUG 6P(233686)20 |
| C440 | 1250V7200PF | 1250V9800PF | 1500V6000PF |
| C442 | 250V 0.39uF (RA) | 250V 0.39uF (RA) | 250V 0.33uF (R1) |
| | 250V 0.39uF (RB) | 250V 0.39uF (RB) | 250V 0.33uF (R2) |
| | --- | --- | 250V 0.43uF (R3) |
| | --- | --- | 250V 0.43uF (R4) |
| C444 | KETSU | KETSU | 1500V 1500PF |
| C467 | KETSU | KETSU | 630V 22000PF (RA) |
| | --- | --- | 630V 22000PF (RB) |
| D440 | KETSU | KETSU | ERC06-15L |
| D444 | KETSU | KETSU | RJ-4A LF-L-1 |
| F470 | F0.5S150TBS(RA) | F0.5S150TBS(RA) | F0.63S150TBS(RA) |
| | F0.5B1213 (RB) | F0.5B1213 (RB) | F0.63B1213 (RB) |
| | F0.5S150TBS (RC) | F0.5S150TBS (RC) | F0.63S150TBS (RC) |
| G218 | 1/6W3_9K | 1/6W2_2K | 1/6W3_3K |
| GJ414 | SHORT | KETSU | KETSU |
| GJ415 | SHORT | KETSU | KETSU |
| GJ416 | SHORT | SHORT | KETSU |
| GJ417 | SHORT | SHORT | KETSU |
| L441 | KETSU | TLN2111AC (RA) | TLN2112AC (RA) |
| | KETSU | TLN2111G (RB) | TLN2112G (RB) |
| M502 | 23509469 | 23509471 | 23509471 |
| O404 | 28D2599I (FA) | 28D2499I (FA)(R1) | 28D2499I (FA)(R1) |
| | --- | 0N4409 (R2) | 0N4409 (R2) |
| R227 | 1/6W 30K | 1/6W 24K | 1/6W 22K |
| R305 | 2W1_5 | 2W 1.0 | 2W 1.0 |
| R306 | 1/6W 56K | 1/6W 56K | 1/6W 62K |
| R312 | 1/2W 2_7K | 1/2W 1_8K | 1/2W 1_2K |
| R313 | 1/6W 51K | 1/6W 51K | 1/6W 47K |
| R412 | KETSU | KETSU (R1) | KETSU (R1) |
| | --- | 1/6W 56 (R2) | 1/6W 56 (R2) |
| R441 | KETSU | 1W 1K | 1W 1K |
| R442 | 2W 330 | KETSU | KETSU |
| | | | |
| | | | |
| [901 (RA) | TSB-2360AH | TSB-2359AH | TSB-2301AH |
| [901 (RB) | TSB-2360AK | TSB-2359AL | TSB-2301AR |
| [901 (RC) | TSB-2301AR | TSB-2359AG | TSB-2301AL |
| [901 (RD) | TSB-2360AL | --- | TSB-2301AG |

| • | TEXT | W/O TEXT |
|------|-----------|----------|
| R310 | 1/2W 8.2K | KETSU |

| | |
|----------------------|----------------------|
| ASIA/ EAST EUROPE | 250V 2.5A |
| HONG KONG | 250V 13A |
| MIDDLE EAST | 250V 6A/ 127V 15A |
| AUSTRALIA | 250V 7.5A |
| TAIWAN | 125V 7A |



14S2/14S3/20S2/20S3
21S2/21S3 SERIES
POWER/DEF

1

2

3

A

B

C

D

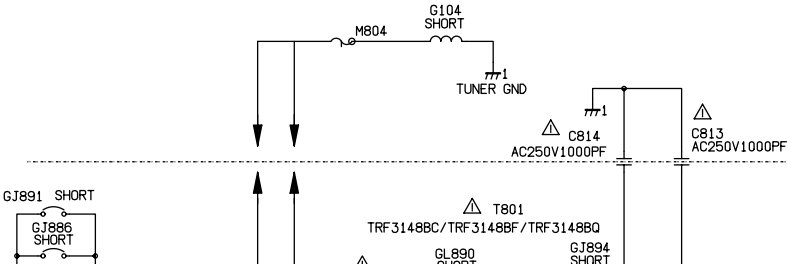
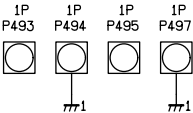
| LOCATION | 14" | 20" | 21" |
|----------|-------------------|-------------------|-------------------|
| T461 | TFB4122HY (RA) | TFB4125HY (RA) | TFB4125HY (RA) |
| | TFB4122ES (RB) | TFB4125JH (RB) | TFB4125JH (RB) |
| | TFB4125JH (RB) | TFB4125CS (RC) | TFB4125CS (RC) |
| L462 | TDY-314PV (RA) | TDY-320MY (R1) | KETSU (R1) |
| | TDY-314PY (RB) | TDY-320MS (R2) | TDY-621UA (R2) |
| | --- | TDY-320MV (R3) | TDY-621WS (R3) |
| | --- | --- | TDY-621WS (R4) |
| M570 | --- | KETSU (R1) | CON 6P-10 (R1) |
| | --- | WIRE 500mA(R2) | KETSU (R2) |
| | --- | --- | KETSU (R3) |
| | --- | --- | KETSU (R4) |
| P570 | PLUG 5P(23368619) | PLUG 6P(23368620) | PLUG 6P(23368620) |
| C440 | 1250V7200PF | 1250V9800PF | 1500V6000PF |
| C442 | 250V 0.39uF(RA) | 250V 0.39uF(RA) | 250V 0.33uF(R1) |
| | 250V 0.39uF(RB) | 250V 0.39uF(RB) | 250V 0.33uF(R2) |
| | --- | --- | 250V 0.43uF(R3) |
| | --- | --- | 250V 0.43uF(R4) |
| C444 | KETSU | KETSU | 1500V 1500PF |
| C467 | KETSU | KETSU | 630V 22000PF(RA) |
| | --- | --- | 630V 22000PF(RB) |
| D440 | KETSU | KETSU | ERC06-15L |
| D444 | KETSU | KETSU | RU-4AM LF-L1 |
| F470 | F0.5S150TBS(RA) | F0.5S150TBS(RA) | F0.63S150TBS(RA) |
| | F0.5B1213 (RB) | F0.5B1213 (RB) | F0.63B1213 (RB) |
| | F0.5S150TBS(RC) | F0.5S150TBS(RC) | F0.63S150TBS(RC) |
| G218 | 1/6W3.9K | 1/6W2.2K | 1/6W3.3K |
| GJ414 | SHORT | KETSU | KETSU |
| GJ415 | SHORT | KETSU | KETSU |
| GJ416 | SHORT | SHORT | KETSU |
| GJ417 | SHORT | SHORT | KETSU |
| L441 | KETSU | TLN2111AC (RA) | TLN2112AC (RA) |
| | KETSU | TLN2111G (RB) | TLN2112G (RB) |
| M502 | 23509469 | 23509471 | 23509471 |

U903 POWER BOARD PD1417 (14S3E), PD1411

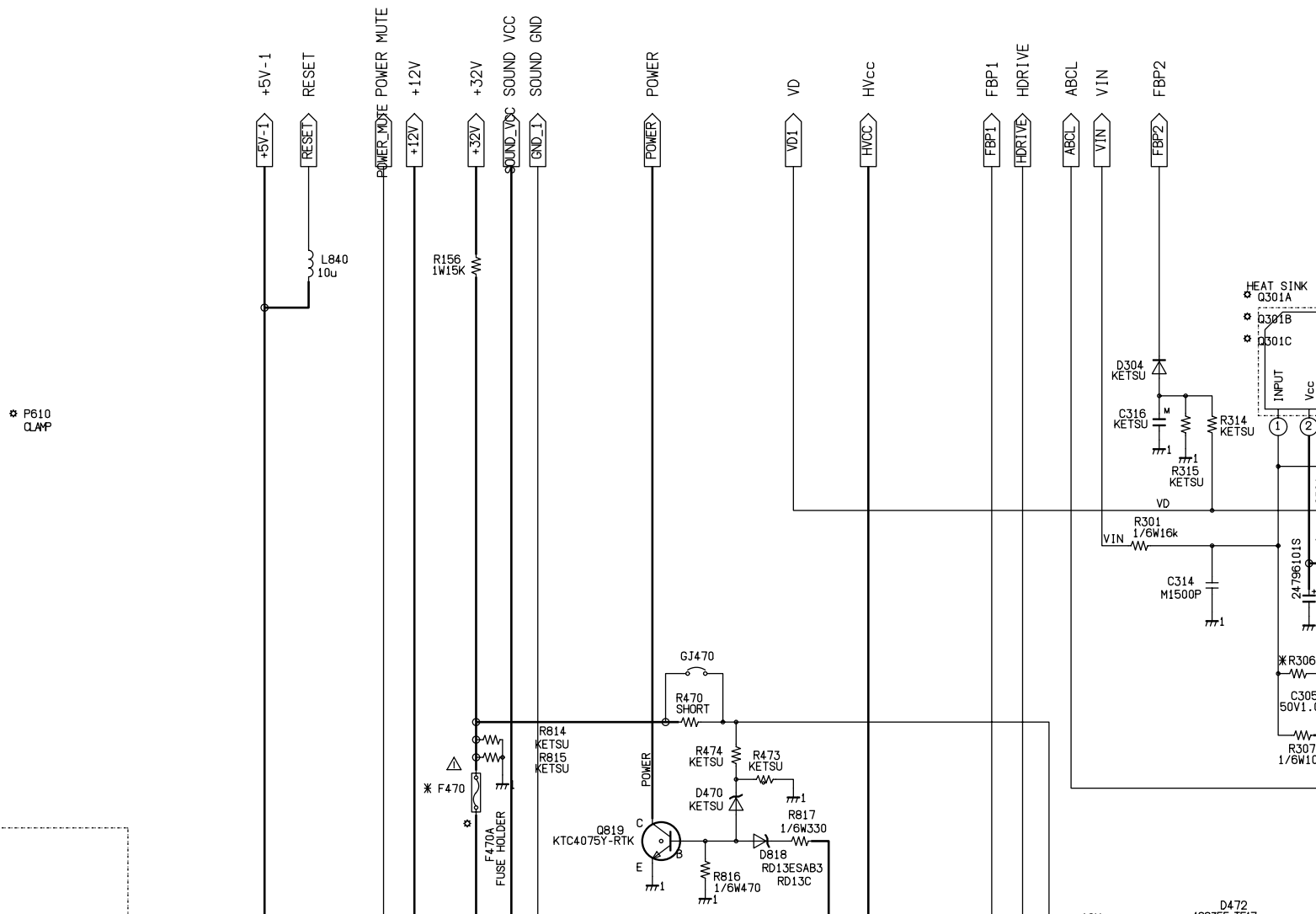
| * | TEXT | W/O TEXT |
|------|-----------|----------|
| R310 | 1/2W 8.2K | KETSU |

POWER CORD

| | |
|----------------------|----------------------|
| ASIA/ EAST EUROPE | 250V 2.5A |
| HONG KONG | 250V 13A |
| MIDDLE EAST | 250V 6A/ 127V 15A |
| AUSTRALIA | 250V 7.5A |
| TAIWAN | 125V 7A |



18 (21S3E), PD1544 (14S2R), PD1561 (21S2



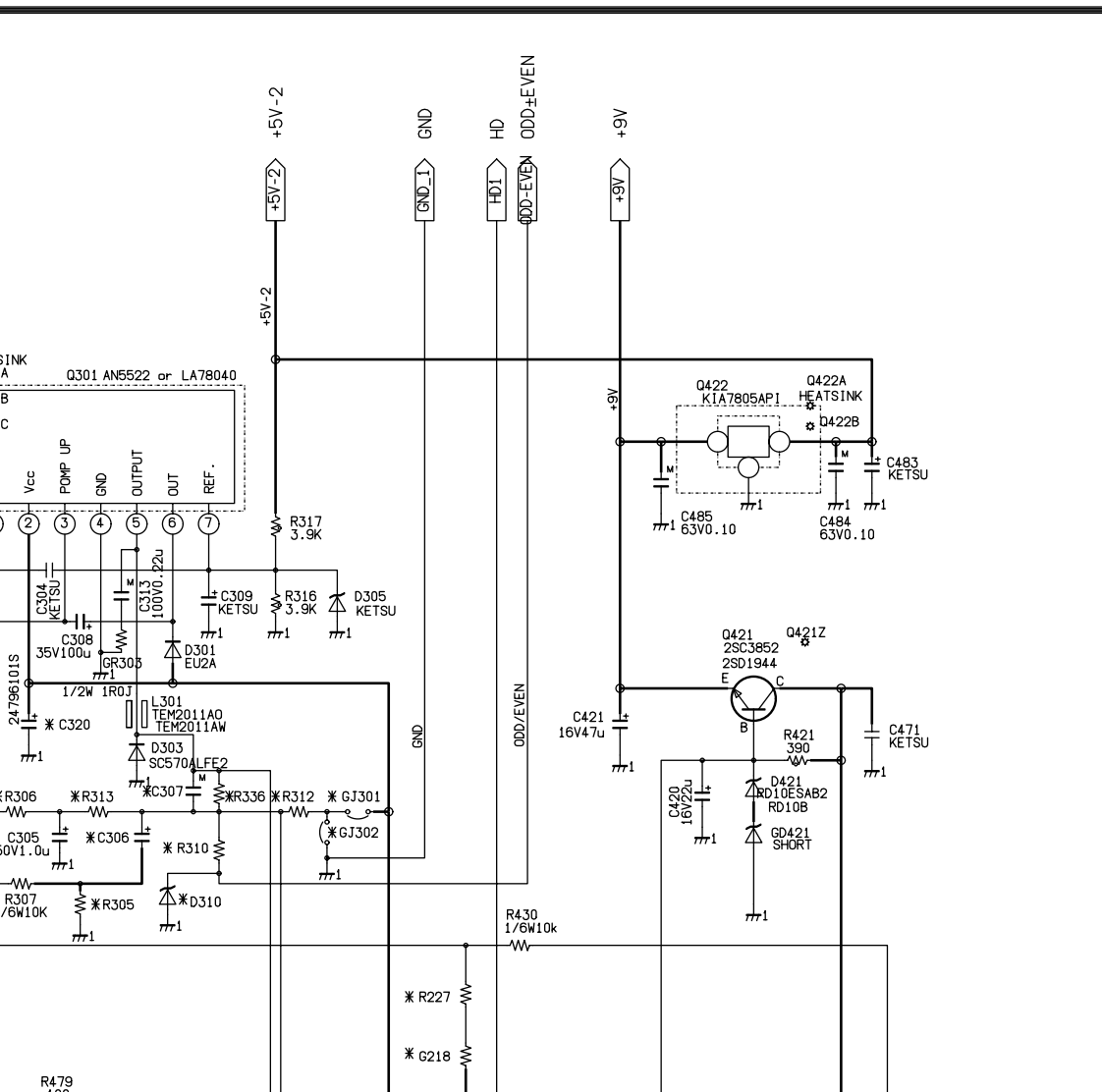
A

B

C

D

S2R)



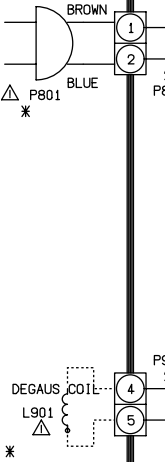
E

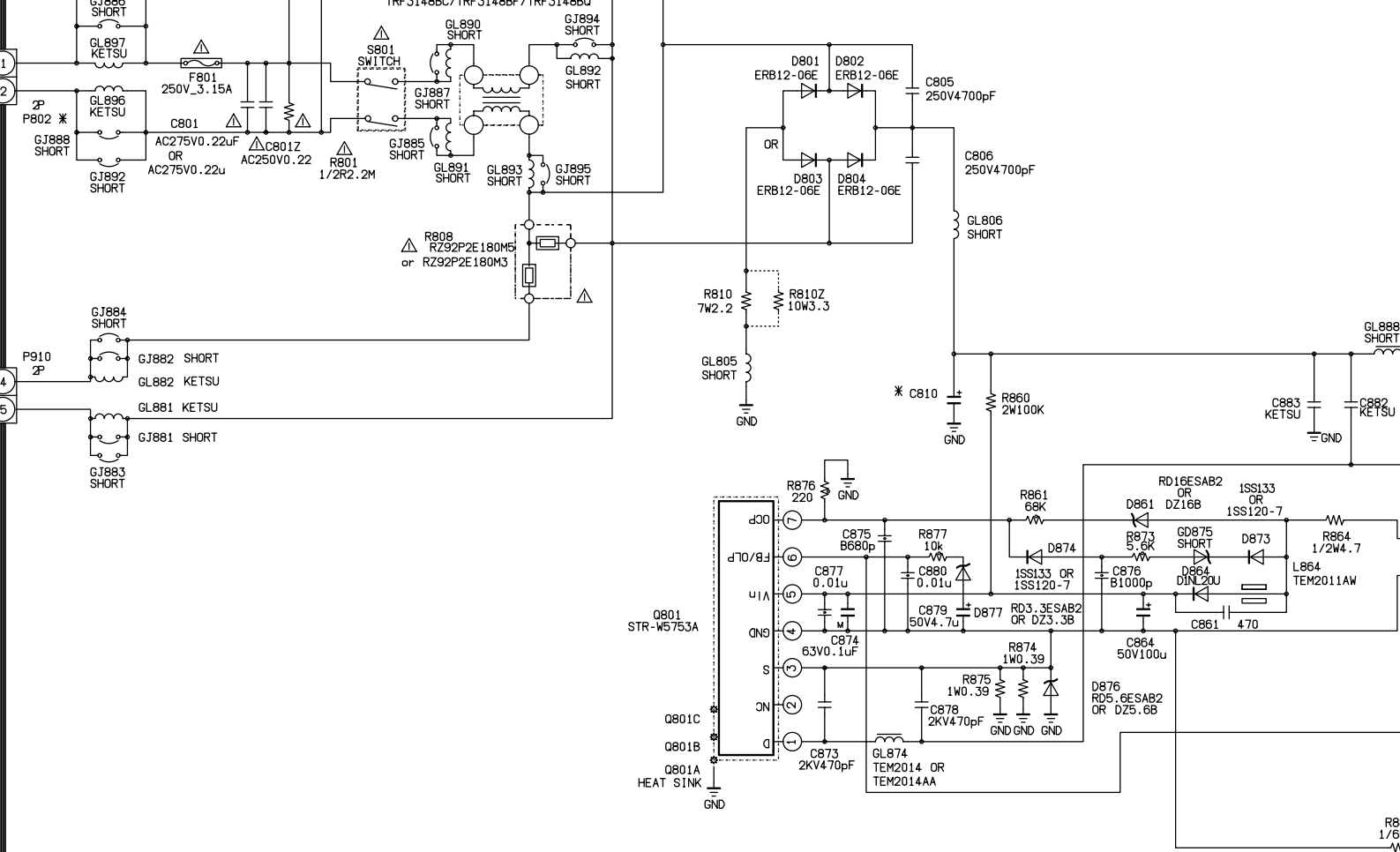
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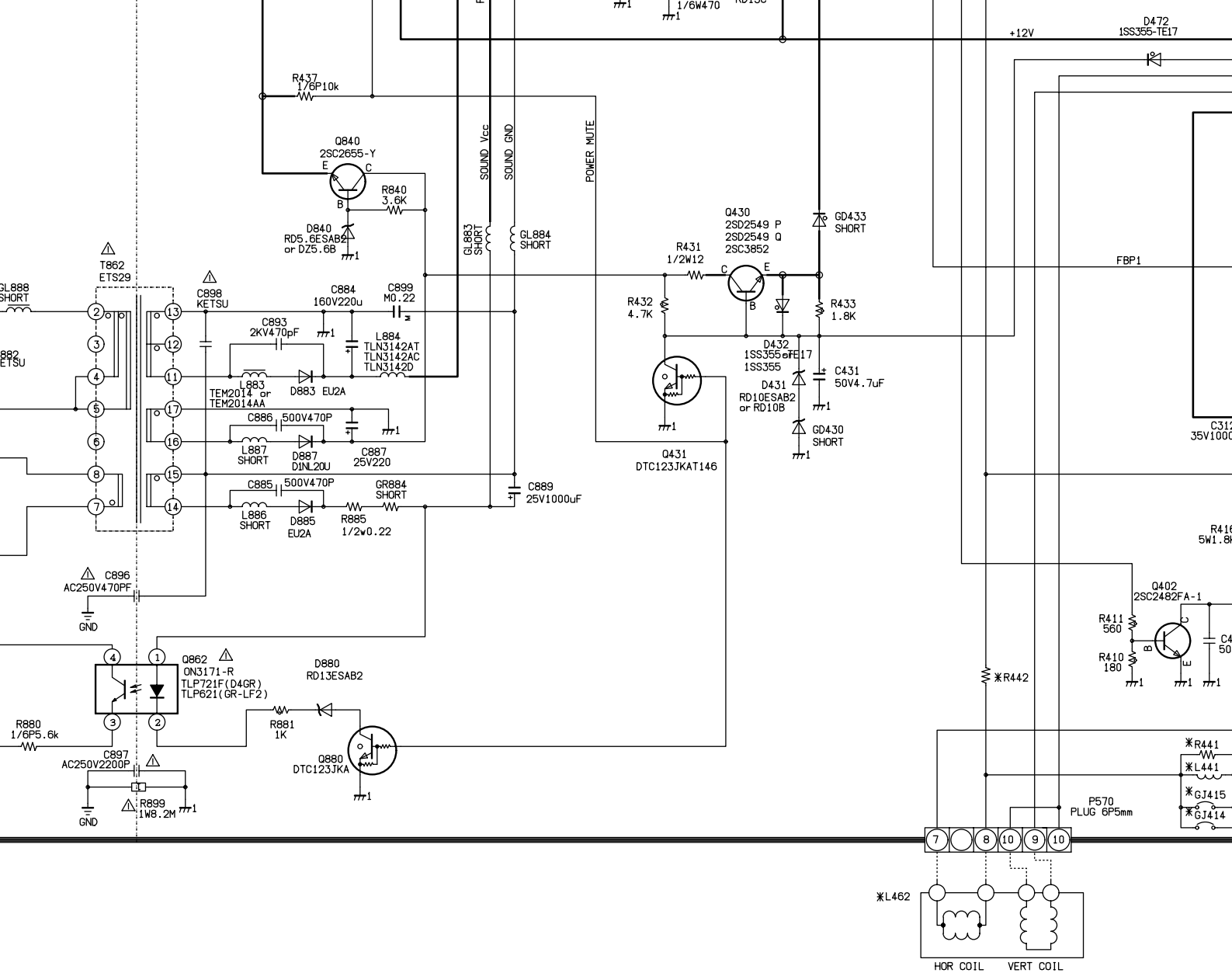
G

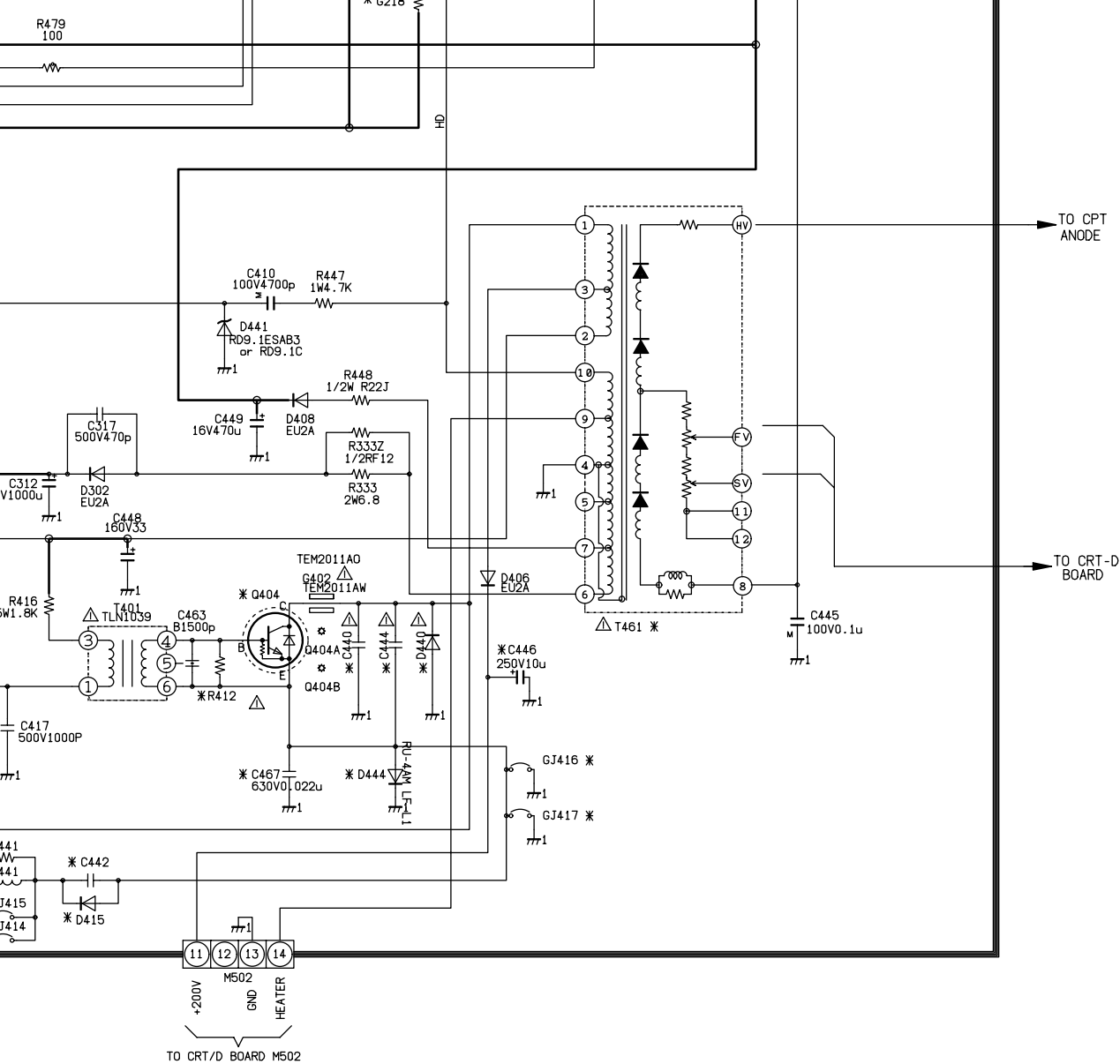
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|-----------|-------------|-----------------|-----------------|
| M502 | 23509469 | 23509471 | 23509471 |
| Q404 | 2SD2599(FA) | 2SD2499(FA)(R1) | 2SD2499(FA)(R1) |
| | --- | 0N4409 (R2) | 0N4409 (R2) |
| R227 | 1/6W 30K | 1/6W 24K | 1/6W 22K |
| R305 | 2W1.5 | 2W 1.0 | 2W 1.0 |
| R306 | 1/6W 56K | 1/6W 56K | 1/6W 62K |
| R312 | 1/2W 2.7K | 1/2W 1.8K | 1/2W 1.2K |
| R313 | 1/6W 51K | 1/6W 51K | 1/6W 47K |
| R412 | KETSU | KETSU (R1) | KETSU (R1) |
| | --- | 1/6W 56 (R2) | 1/6W 56 (R2) |
| R441 | KETSU | 1W 1K | 1W 1K |
| R442 | 2W 330 | KETSU | KETSU |
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| L901 (RA) | TSB-2360AH | TSB-2359AH | TSB-2301AH |
| L901 (RB) | TSB-2360AK | TSB-2359AL | TSB-2301AR |
| L901 (RC) | TSB-2301AR | TSB-2359AG | TSB-2301AL |
| L901 (RD) | TSB-2360AL | --- | TSB-2301AG |
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14S2/14S3/20S2/20S3
21S2/21S3 SERIES
POWER/DEF