K061

# SERVICE MANUAL

# CASSETTE DECK WITH ELECTRONIC TUNER

# CS 229A (TEN Model No. CE-8531TY1)

## SPECIFICATIONS

**MAIN UNIT**

| (RADIO SECTION) | AM | FM |
|---|---|---|
| TUNING RANGE | 522 to 1629 kHz (9k step) | 87.5 to 108.0 MHz (25k step) |
| INTERMEDIATE FREQUENCY | 450 kHz | 10.7 MHz |
| SENSITIVITY (MAX.) | 35 dBμ or better | |
| SENSITIVITY AT ELECTRONIC TUNING | Distant: 40 ± 8 dBμ<br>Local: 70 $^{+10}_{-5}$ dBμ | Distant: 25 ± 8 dBμ<br>Local: 50 ± 8 dBμ |
| LIMITING SENSITIVITY | | 5 $^{+10}_{-5}$ dBμ |
| SIGNAL TO NOISE RATIO | 21 dB or better (35 dBμ input) | 50 dB or better (54 dBμ input)<br>Stereo: 30 dB or better (54 dBμ input) |
| SEPARATION | | 20 dB or better |
| ELECTRICAL FIDELITY | 100 Hz: 0 ± 3 dB (74 dBμ input, Refer 400 Hz)<br>4 kHz: −20±6 dB (74 dBμ input, Refer 400 Hz) | 100 Hz: 0 ± 3 dB (74 dBμ input, Refer 400 Hz)<br>10 kHz: −19 ± 6 dB (74 dBμ input, Refer 400 Hz) |

**(CASSETTE DECK SECTION)**

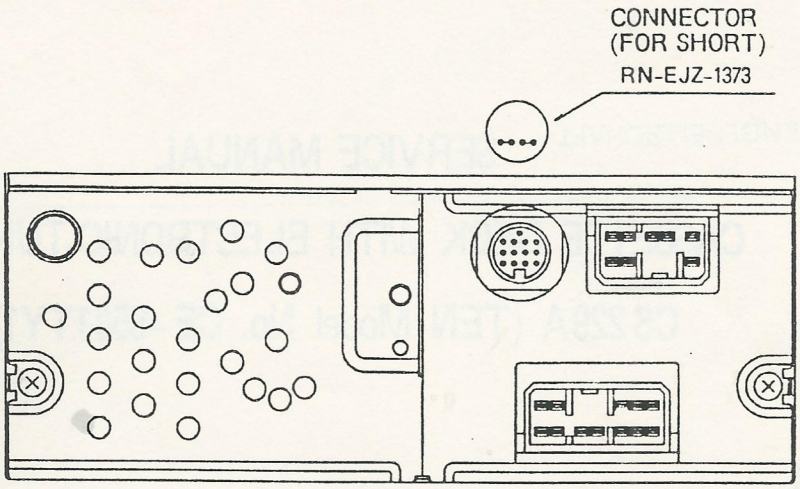
| | |
|---|---|
| NUMBER OF TRACKS | 4-track 2-channel |
| TAPE SPEED | 4.76cm/sec. (1-7/8", i.p.s.) |
| WOW & FLUTTER | 0.35% or better (RMS) |
| CROSSTALK | 45 dB or better |
| SEPARATION | 35 dB or better |
| EQUALIZATION | Normal: t1=3,180 μsec., t2=120 μsec.<br>Chrome and metal: t1=3,180 μsec., t2=70 μsec |
| SIGNAL TO NOISE RATIO | 50 dB or better (with MTT-150 test tape) |
| DOLBY NR CIRCUIT | |
| NOISE REDUCTION EFFECT | 8 dB or better(400 Hz, MTT-150, CCIR filter) |
| DOLBY NR LEVEL | 388 mV ±1 dB(with MTT-150 test tape) |
| TAKE-UP TORQUE | 50 to 73 g-cm |

**(COMMON SECTION)**

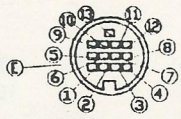
| | |
|---|---|
| POWER INPUT | 12-volt car battery, negative terminal to ground |
| Voltage | 13.2 VDC |
| Current | Approx. 2.0 amperes (0.5W×4), MAX 8.5 amperes |
| SEMICONDUCTORS | 13 ICs, 74 Transistors, 38 Diodes |
| DIMENSIONS | 180(W)×70(H)×160(D)mm (7-3/32", 2-3/4", 6-19/64") |
| WEIGHT | Unit-1.8 kg (4.0 lbs.) |

**NOTES:** Unless otherwise noted specification is measured with balance and fader control at center.

# CONNECTIONS

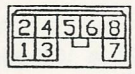



(PIN VIEW)



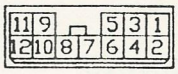
| | |
|---|---|
| 1 | OUTPUT LH+ |
| 2 | INPUT LH+ |
| 3 | OUTPUT RH+ |
| 4 | INPUT RH+ |
| 5 | SIGNAL GND |
| 6 | ILL.(TNS) |
| 7 | POWER ACC |
| 8 | BACK UP +13.2 |
| 9 | CONTROL ON |
| 10 | CONTROL OFF(DECK) |
| 11 | CONTROL OFF(AUX) |
| 12 | THROUGH(B/T CUT) |
| 13 | THROUGH(MUTE) |
| E | SHIELD EARTH |

(PIN VIEW)



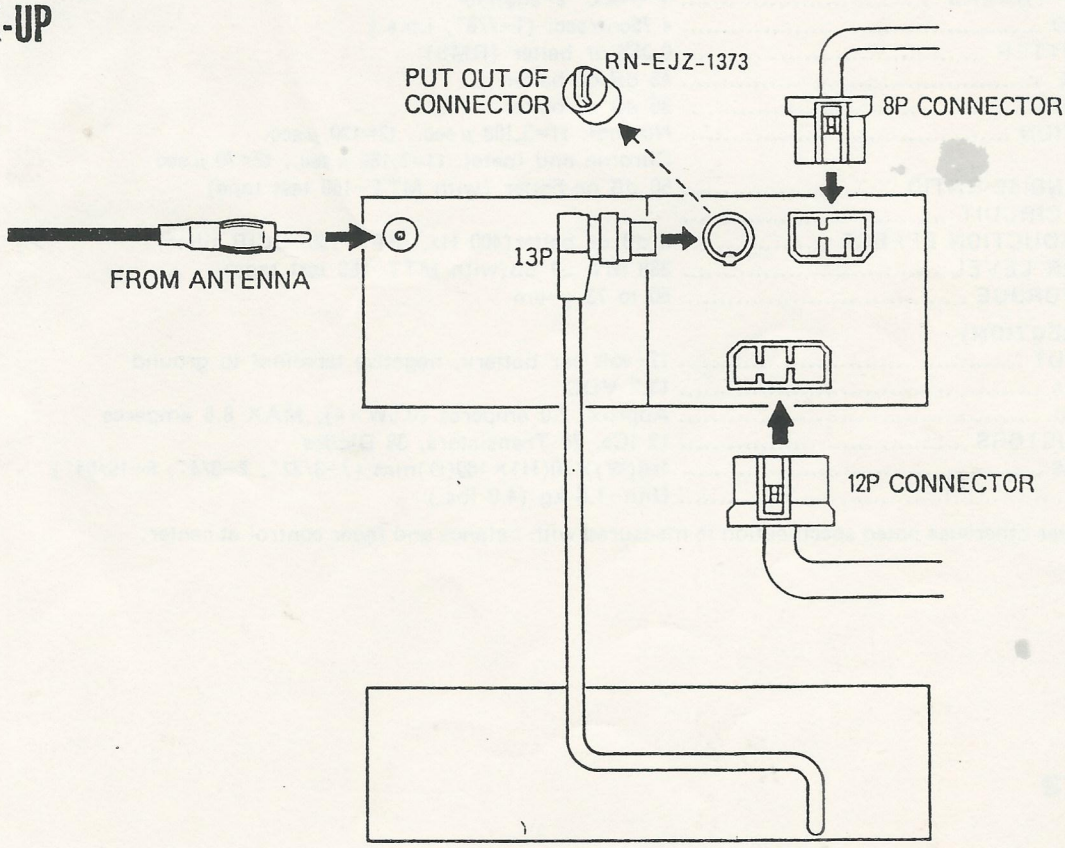
| | |
|---|---|
| 1 | REAR SP LH+ |
| 2 | REAR SP LH- |
| 3 | ——— |
| 4 | AMP CONTROL SIGNAL +13.2 |
| 5 | REAR SP RH+ |
| 6 | REAR SP RH- |
| 7 | SYSTEM MUTE |
| 8 | ——— |

(PIN VIEW)

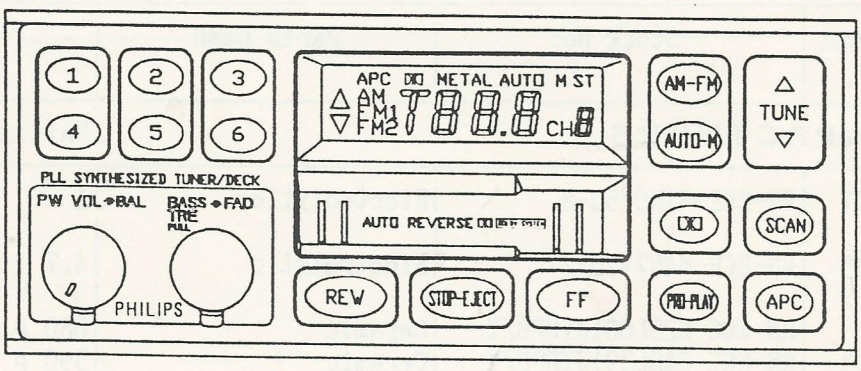


| | |
|---|---|
| 1 | RADIO +ACC |
| 2 | SYSTEM MUTE |
| 3 | BACK UP +B |
| 4 | ANT. SW |
| 5 | ILL.(TNS) |
| 6 | ——— |
| 7 | ——— |
| 8 | AMP CONTROL SIGNAL +13.2 |
| 9 | FR.SP LH+ |
| 10 | FR.SP LH- |
| 11 | FR.SP RH+ |
| 12 | FR.SP RH- |

# HOOK-UP



# AUTO. M (Auto Memory) : OPERATION




① Auto memory writing

Press AUTO.M button for at least 1.5 seconds: auto memory writing will start. (At this time, a beep is heard)

After completion of auto memory writing, CH1 of the AUTO.M is received.

**(CAUTION)**

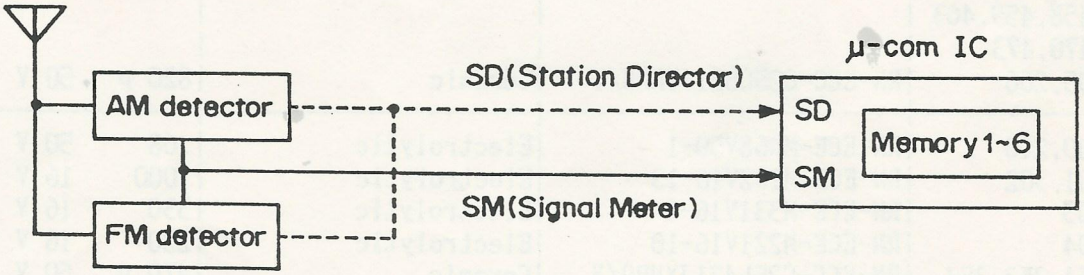
**The auto memory writing is carried out in the sequence of a stronger field, and in the sequence of a lower frequency when the field is the same.**

**For auto memory, 6AM and 6FM stations can be stored in memory besides the preset memory function.**

② Auto memory access

Press AUTO.M button for less than 1.5 seconds: auto memory will be able to be called cyclically like CH1 → CH2 ···· CH6 → CH1 by each push on the button.

**(Auto Memory Operation Outline)**




① The auto memory function writes a station frequency detected by SD signal and field strength in memory 1~6.

② This function compares the 7th station detected by SD signal with the field strength of the station written in memory 1~6, disposing of the station with the lowest field.

③ The function writes the six final remaining stations in the order of a stronger field, and in the order of a lower frequency when the field is the same: this completes auto memory operation.

# REPLACEMENT PARTS LIST

Note:Main replacement parts are marked O in the remarks column.

| Symbol. No. | Stock No. | Parts name | Description Chip:(C) | | | Remark |
|---|---|---|---|---|---|---|
| CAPACITORS | | | Unit:μF, P=pF, F=F | | | |
| C101,102,107 108 | RN-ECE-M1R0V50-8 | Electrolytic | 1 | 50 V | | |
| C103,104,105 106,132 | RN-ECE-M4R7V25-7 | Electrolytic | 4.7 | 25 V | | |
| C109,110 | RN-ECC-C2SL681JYHPB/Y | Ceramic | 680 p | 50 V | (C) | |
| C111,112,113 114 | RN-ECC-C2SL391JYHPB/Y | Ceramic | 390 p | 50 V | (C) | |
| C115,116,117 118 | RN-ECE-M3R3V50-4 | Electrolytic | 3.3 | 50 V | | |
| C119,120,121 122 | RN-ECE-M220V10-9 | Electrolytic | 22 | 10 V | | |
| C123,124,125 126,127,128 129,130 | RN-ECH-R124J50-11/TP | M.P. | .12 | 50 V | | |
| C131,133,359 | RN-ECE-M101V10-11 | Electrolytic | 100 | 10 V | | |
| C134 | RN-ECE-M470V16-16 | Electrolytic | 47 | 16 V | | |
| C135 | RN-ECE-M220V16-9/TT | Electrolytic | 22 | 16 V | | |
| C136,137 | RN-ECE-M221V10-9 | Electrolytic | 220 | 10 V | | |
| C138,139,466 | RN-ECE-M471V16-15 | Electrolytic | 470 | 16 V | | |
| C140,141,142 143 | RN-ECE-M222V16-8 | Electrolytic | 2200 | 16 V | | |
| C144,145,201 202,203,204 415,433,456 458,459,463 470,473 | RN-ECC-C2F104ZYEPB/Y | Ceramic | .1 | 25 V | (C) | |
| C205,206 | RN-ECC-C2SL821JYHPB/Y | Ceramic | 820 p | 50 V | (C) | |
| C209,210 | RN-ECE-MR68V50-1 | Electrolytic | .68 | 50 V | | |
| C301,302 | RN-ECE-M102V16-13 | Electrolytic | 1000 | 16 V | | |
| C303 | RN-ECE-M331V16-6 | Electrolytic | 330 | 16 V | | |
| C304 | RN-ECE-M221V16-10 | Electrolytic | 220 | 16 V | | |
| C351,353,354 360,361,362 363,364,365 366,367 | RN-ECC-C2SL471JYHPB/Y | Ceramic | 470 p | 50 V | (C) | |
| C352,355,401 424,425,457 476,477 | RN-ECK-C2B223KYHPB/Y | Ceramic | .022 | 50 V | (C) | |
| C356 | RN-ECH-R223J50-11 | M.P. | .022 | 50 V | | |
| C357,404,436 437 | RN-ECE-MR10V50-5/TT | Electrolytic | .1 | 50 V | | |
| C358 | RN-ECE-M470V10-11 | Electrolytic | 47 | 10 V | | |
| C402,406,414 428,450,451 465,467,468 | RN-ECK-C2B103KYHPB/Y | Ceramic | .01 | 50 V | (C) | |
| C403 | RN-ECE-M1R0V50-12 | Electrolytic | 1 | 50 V | | |
| C405 | RN-ECC-C2CH100FYHPB/Y | Ceramic | 10 p | 50 V | (C) | |
| C407 | RN-ECK-C2B102KYHPB/Y | Ceramic | 1000p | 50 V | (C) | |

| Symbol. No. | Stock No. | Parts name | Description Chip:(C) | Remark |
|---|---|---|---|---|
| C408 | RN-ECH-R103J50-11 | M.P. | .01 50 V | |
| C409,412 | RN-ECK-C2B332KYHPC/Y | Ceramic | 3300p 50 V (C) | |
| C410 | RN-ECE-M1R0V50-10 | Electrolytic | 1 50 V | |
| C411,443,444 446,447,452 | RN-ECE-M4R7V25-9 | Electrolytic | 4.7 25 V | |
| C413 | RN-ECH-R104J50-11 | M.P. | .1 50 V | |
| C416,421,422 472,474,475 | RN-ECE-M470V10-18 | Electrolytic | 47 10 V | |
| C417,418,419 420 | RN-ECF-R471V50-JC | Mylar | 470 p 50 V | |
| C423,426,427 431,432,440 448,453,454 469 | RN-ECE-M100V16-13 | Electrolytic | 10 16 V | |
| C429 | RN-ECE-MR47V50-11 | Electrolytic | .47 50 V | |
| C430,438,439 471 | RN-ECE-M101V10-14 | Electrolytic | 100 10 V | |
| C434,435 | RN-ECC-C2SL181JYHPB/Y | Ceramic | 180 p 50 V (C) | |
| C441,442 | RN-ECH-R684J50-11 | M.P. | .68 50 V | |
| C445,449 | RN-ECE-M220V10-8 | Electrolytic | 22 10 V | |
| C455 | RN-ECE-M330V16-9 | Electrolytic | 33 16 V | |
| C460 | RN-ECK-C2F473ZYHPB/Y | Ceramic | .047 50 V (C) | |
| C461,462 | RN-ECC-C2CH120JYHPB/Y | Ceramic | 12 p 50 V (C) | |
| C464 | RN-ECE-M221V10-13 | Electrolytic | 220 10 V | |
| C478 | RN-ECH-R224V50-2 | M.P. | .22 50 V | |
| C901 | RN-ECE-M221V16-9 | Electrolytic | 220 16 V | |
| RESISTORS | | | Unit:ohm , K=kohm | |
| R101,102,113 114,121,122 123,124,137 138,355,405 415,421,449 456 | RN-ERG-I2B473JR-1/Y | Metallic | 47 K 5% 1/10W (C) | |
| R103,462,463 465,466,489 490,491,492 493,500,501 516,530,531 532,533 | RN-ERG-I2B224JR-1/Y | Metallic | 220K 5% 1/10W (C) | |
| R104,534 | RN-ERG-I2B224JR-1/Y | Metallic | 220K 5% 1/10W (C) | |
| R105,106,404 423,429,459 460,502 | RN-ERG-I2B104JR-1/Y | Metallic | 100K 5% 1/10W (C) | |
| R107,108,146 147,303,351 403,517,537 | RN-ERG-I2B102JR-1/Y | Metallic | 1 K 5% 1/10W (C) | |
| R109,110,111 112,143,211 212,213,214 425,479,518 519 | RN-ERG-I2B472JR-1/Y | Metallic | 4.7K 5% 1/10W (C) | |

| Symbol. No. | Stock No. | Parts name | Description Chip:(C) | Remark |
|---|---|---|---|---|
| R115,116,117 118 | RN-ERG-I2B225JR-1/Y | Metallic | 2.2M 5% 1/10W (C) | |
| R119,120,142 305,496 | RN-ERG-I2B223JR-1/Y | Metallic | 22 K 5% 1/10W (C) | |
| R125,126,127 128,140,301 302,407,448 451,488,999 | RN-ERG-I2B101JR-1/Y | Metallic | 100 5% 1/10W (C) | |
| R129,130,131 132,133,134 135,136 | RN-ERG-I2B2R2JR-1/Y | Metallic | 2.2 5% 1/10W (C) | |
| R139,408,438 439 | RN-ERG-I2B151JR-1/Y | Metallic | 150 5% 1/10W (C) | |
| R141,424,430 464,467,474 480,499,509 511,513,520 525 | RN-ERG-I2B222JR-1/Y | Metallic | 2.2K 5% 1/10W (C) | |
| R145 | RN-ERG-I2B471JR-1/Y | Metallic | 470 5% 1/10W (C) | |
| R148,149,478 | RN-ERG-I2B182JR-1/Y | Metallic | 1.8K 5% 1/10W (C) | |
| R201,203,204 307,354,453 454,457,458 469,476,481 484,494,497 510 | RN-ERG-I2B103JR-1/Y | Metallic | 10 K 5% 1/10W (C) | |
| R202,523 | RN-ERG-I2B103JR-1/Y | Metallic | 10 K 5% 1/10W (C) | |
| R205,206,207 208,406 | RN-ERG-I2B332JR-1/Y | Metallic | 3.3K 5% 1/10W (C) | |
| R209,210 | RN-ERG-I2B153JR-1/Y | Metallic | 15 K 5% 1/10W (C) | |
| R306,498 | RN-ERG-I2B561JR-1/Y | Metallic | 560 5% 1/10W (C) | |
| R352,353 | RN-ERG-I2B150JR-1/Y | Metallic | 15 5% 1/10W (C) | |
| R401 | RN-ERG-I2B272JR-1/Y | Metallic | 2.7K 5% 1/10W (C) | |
| R402,427,444 445,477,486 508,524 | RN-ERG-I2B103JR-1/Y | Metallic | 10 K 5% 1/10W (C) | |
| R409,426,472 | RN-ERG-I2B681JR-1/Y | Metallic | 680 5% 1/10W (C) | |
| R410,411,446 | RN-ERG-I2B333JR-1/Y | Metallic | 33 K 5% 1/10W (C) | |
| R412,413 | RN-ERG-I2B123JR-1/Y | Metallic | 122K 5% 1/10W (C) | |
| R414 | RN-ERG-I2B823JR-1/Y | Metallic | 820K 5% 1/10W (C) | |
| R416,417,419 422 | RN-ERG-I2B683JR-1/Y | Metallic | 68 K 5% 1/10W (C) | |
| R418,420,434 435,436,437 | RN-ERG-I2B273JR-1/Y | Metallic | 27 K 5% 1/10W (C) | |
| R428,432 | RN-ERG-I2B221JR-1/Y | Metallic | 220 5% 1/10W (C) | |
| R431,442,443 | RN-ERG-I2B682JR-1/Y | Metallic | 6.8K 5% 1/10W (C) | |
| R433,504,506 507 | RN-ERG-IC471J-1/TY | Metallic | 470 5% 1/8W (C) | |
| R440,441 | RN-ERG-I2B184JR-1/Y | Metallic | 180K 5% 1/10W (C) | |
| R447,461 | RN-ERG-I2B821JR-1/Y | Metallic | 820 5% 1/10W (C) | |
| R450,455 | RN-ERG-I2B474JR-1/Y | Metallic | 470K 5% 1/10W (C) | |
| R452 | RN-ERG-I2B330JR-1/Y | Metallic | 33 5% 1/10W (C) | |

| Symbol. No. | Stock No. | Parts name | Description Chip:(C) | Remark |
|---|---|---|---|---|
| R468,470,522 528 | RN-ERG-IC222J-1/TY | Metallic | 2.2K 5% 1/8W (C) | |
| R471 | RN-ERD-AF681J-1 | Carbon | 680 5% 1/2W | |
| R473 | RN-ERG-IC220J-1/TY | Metallic | 22 5% 1/8W (C) | |
| R475 | RN-ERG-I2B152JR-1/Y | Metallic | 1.5K 5% 1/10W (C) | |
| R482 | RN-ERG-I2B183JR-1/Y | Metallic | 18 K 5% 1/10W (C) | |
| R483,485 | RN-ERG-I2B123JR-1/Y | Metallic | 12 K 5% 1/10W (C) | |
| R487 | RN-ERG-I2B105JR-1/Y | Metallic | 1 M 5% 1/10W (C) | |
| R495,526,527 | RN-ERG-I2B563JR-1/Y | Metallic | 56 K 5% 1/10W (C) | |
| R503 | RN-ERD-AF152J-1 | Carbon | 1.5K 5% 1/2W | |
| R505,529 | RN-ERG-IC332J-1/TY | Metallic | 3.3K 5% 1/8W (C) | |
| R512 | RN-ERD-AF561J-1 | Carbon | 560 5% 1/2W | |
| R515 | RN-ERG-I2B154JR-1/Y | Metallic | 150K 5% 1/10W (C) | |
| R521 | RN-ERG-IC102J-1/TY | Metallic | 1 K 5% 1/8W (C) | |
| R535,536 | RN-ERG-I2B560JR-1/Y | Metallic | 56 5% 1/10W (C) | |
| R901 | RN-ERC-CF2R2K | Solid | 2.2 10% 1/2W | |
| RV201,202 S101 | RN-ERV-2P3-1003 | Variable | POW,BAL,MAIN VOL. | ○ |
| RV204,205,207 208,209,S102 | RN-ERV-2P6-1002 | Variable | BASS,TRE,FAD,L.OFF | ○ |
| RV402,404 | RN-ERV-ON1-226 | Variable | | |
| RV403,405 | RN-ERV-ON1-228 | Variable | | |
| RV406,407 | RN-ERV-ON1-230 | Variable | | |
| SEMICONDUCTORS | | | | |
| D301,302 | RN-EDS-1N5401U21A/FO | Silicon diode | | ○ |
| D351 | RN-EDS-MA151WA/TY | Silicon diode | Mark:MN (C) | ○ |
| D352,416,417 418,419,421 422,434 | RN-EDS-MA151WK/TY | Silicon diode | Mark:MT (C) | ○ |
| D353 | RN-EDS-MA151K/TY | Silicon diode | Mark:MH (C) | ○ |
| D354,355 | RN-EDS-P300D | Silicon diode | | ○ |
| D356 | RN-EDT-RD9R1EB3/TY | Zener diode | 9.1V | ○ |
| D401,404,411 412,413,414 415,420,430 433 | RN-EDS-1SS254-52/TM | Silicon diode | | ○ |
| D402,403,424 431 | RN-EDT-RD5R1BSC/TM | Zener diode | 5.1V | ○ |
| D406 | RN-EDS-MA153/TY | Silicon diode | Mark:MC (C) | ○ |
| D407 | RN-EDT-RD100BSC | Zener diode | 10V | ○ |
| D408,409,410 | RN-EDS-1S1885 | Silicon diode | | ○ |
| D423,425,426 427 | RN-EDT-RD9R1BSC/TM | Zener diode | 9.1V | ○ |
| D428,429 | RN-EDS-1A3 | Silicon diode | | ○ |
| D432 | RN-EDS-1A3F | Silicon diode | | ○ |
| IC101 | RN-EIC-NJM4560D | Linear-monolithic IC | | ○ |
| IC102,103 | RN-EIC-TA8210H | Linear-monolithic IC | POWER AMP. | ○ |
| IC401 | RN-EIC-AN90B20 | Linear-monolithic IC | AUTO MEMORY | ○ |
| IC402 | RN-EID-TC4016BP | Digital-monolithic IC | ANALOG SW. | ○ |

| Symbol. No. | Stock No. | Parts name | Description Chip:(C) | Remark |
|---|---|---|---|---|
| IC403 | RN-EIC-M51524P | Linear-monolithic IC | OP.AMP. | ○ |
| IC404 | RN-EIC-CXA1102P | Linear-monolithic IC | DOLBY N.R. | ○ |
| IC405 | RN-EIC-LA6358 | Linear-monolithic IC | OP.AMP. | ○ |
| IC406 | RN-EID-LC7800 | Digital-monolithic IC | | ○ |
| IC407 | RN-EID-MB88307 | Digital-monolithic IC | | ○ |
| IC408 | RN-EIM-MB88563-206M | Digital-monolithic IC | CONTROLLER | ○ |
| IC409 | RN-EID-M51957AL | Digital-monolithic IC | OP.AMP. | ○ |
| IC410 | RN-EIC-LM2931Z-5.0 | Linear-monolithic IC | V.REG. | ○ |
| IC901 | RN-EIA-DM106B | Hybrid IC | | ○ |
| Q101,102,110 305,402,414 415,419,432 433,442,459 460 | RN-EVS-2SD601-QRS/TY | Silicon transistor | Mark:YQ,YR,YS (C) | ○ |
| Q103,104 | RN-EVF-2SJ125-DE/TY | FET | Mark:JD,JE (C) | ○ |
| Q105,106 | RN-EVF-2SK433-CDE/TY | FET | Mark:KC,KD,KE (C) | ○ |
| Q107,108 | RN-EVS-2SD1328-RST/TY | Silicon transistor | Mark:1DR,1DS,1DT (C) | ○ |
| Q109,422,425 429,454 | RN-EVS-DTA114EK/TY | Silicon transistor | Mark:14 (C) | ○ |
| Q301,302,304 409,424,437 443,444 | RN-EVS-DTC114EK/TY | Silicon transistor | Mark:24 (C) | ○ |
| Q303,438 | RN-EVS-2SB709-QRS/TY | Silicon transistor | Mark:AQ,AR,AS (C) | ○ |
| Q401,412,413 434,435,436 439,440,449 | RN-EVS-DTC144EK/TY | Silicon transistor | Mark:26 (C) | ○ |
| Q403 | RN-EVS-DTC124EK/TY | Silicon transistor | Mark:25 (C) | ○ |
| Q404,418 | RN-EVS-DTC114TK/TY | Silicon transistor | Mark:04 (C) | ○ |
| Q405 | RN-EVS-DTC124TK/TY | Silicon transistor | Mark:05 (C) | ○ |
| Q406 | RN-EVS-DTC144TK | Silicon transistor | | ○ |
| Q407,408 | RN-EVS-2SC3142-34/TY | Silicon transistor | Mark:J-3,J-4 (C) | ○ |
| Q410,446,452 | RN-EVS-DTA123YK/TY | Silicon transistor | Mark:52 (C) | ○ |
| Q411,445 | RN-EVS-DTA143EK/TY | Silicon transistor | Mark:13 (C) | ○ |
| Q416,417 | RN-EVS-2SC1472K-AB | Silicon transistor | | ○ |
| Q420,423 | RN-EVS-2SB1203-ST | Silicon transistor | | ○ |
| Q421 | RN-EVS-DTC143EK/TY | Silicon transistor | Mark:23 (C) | ○ |
| Q426,450,453 457 | RN-EVS-2SD1347-TU | Silicon transistor | | ○ |
| Q427,447,448 456,458 | RN-EVS-2SB815-67/TY | Silicon transistor | Mark:B6,B7 (C) | ○ |
| Q428,455 | RN-EVS-2SD602-RS/TY | Silicon transistor | Mark:WR,WS (C) | ○ |
| Q430,431 | RN-EVS-DTA144EK/TY | Silicon transistor | Mark:16 (C) | ○ |
| Q441 | RN-EVF-2SK802 | FET | | ○ |
| Q451 | RN-EVS-2SC1847-PQR | Silicon transistor | | ○ |
| MISCELLANEOUS ELECTRICAL | | | | |
| J101 | RN-EWI-1367A | Lead assembly | 9P-8P | |
| J102 | RN-EWI-1366A | Lead assembly | 8P-7P | |
| J103 | RN-EWI-1368A | Lead assembly | 6P-5P | |
| J200 | RN-EWI-1370 | Lead assembly | | |

| Symbol. No. | Stock No. | Parts name | Description Chip:(C) | Remark |
|---|---|---|---|---|
| J300 | RN-EWI-1369 | Lead assembly | | |
| J301 | RN-EWI-1360 | Lead assembly | | |
| J302 | RN-EWI-1365A | Lead assembly | 8P-7P-2P | |
| J401 | RN-EJA-1003 | Antenna receptacle | | |
| J402 | RN-EWI-1363A | Lead assembly | | |
| J403 | RN-EWI-1362A | Lead assembly | | |
| J404 | RN-EJU-S12W-989 | Connector | 12P | |
| J405,408 | RN-EJU-4018-FCW08 | Connector | 8P | |
| J406 | RN-EJZ-1337 | Connector | | |
| J409 | RN-EWI-1361A | Lead assembly | | |
| J411 | RN-EWI-1364 | Lead assembly | | |
| J901 | RN-EWI-1387 | Lead assembly | 14P-9P-5P | |
| J902 | RN-EWI-1388 | Lead assembly | 10P-10P | |
| L301,302 | RN-ELL-1063 | Choke | .4mH | |
| L303 | RN-ELL-1034 | Choke | 1mH | |
| L304 | RN-ELL-328 | Choke | 2.4mH | |
| L401,402 | RN-ELH-DE6R8-1/TY | Choke | 6.8uH | |
| P101,403 | RN-EJU-4009-MBW08 | Connector | 8P | |
| P102 | RN-EJU-4009-MBW07 | Connector | 7P | |
| P103 | RN-EJU-4009-MAW05 | Connector | 5P | |
| P301 | RN-EJU-4006-MAW03 | Connector | 3P | |
| P302 | RN-EJU-S08V-1277 | Connector | 8P | |
| P303 | RN-EJZ-1375 | Connector | 9P | |
| P401 | RN-EJU-4009-MBW05 | Connector | | |
| P402 | RN-EJU-4009-MBW06 | Connector | 6P | |
| P405,408 | RN-EJZ-1379 | Connector | | |
| P407 | RN-EJZ-1374 | Connector | | |
| P409 | RN-EJU-S02V-1283 | Connector | 2P | |
| P901-1 | RN-EJU-4006-MAW09 | Connector | 9P | |
| P902 | RN-EJU-S10V-1279 | Connector | 10P | |
| PL105 | RN-EPM-1434A | Lamp assembly | Foor door | ○ |
| PL401 | RN-EPM-1431A | Lamp assembly | For LCD | ○ |
| PL402,404 | RN-EPM-1430A | Lamp assembly | For Escutcheon | ○ |
| PL403 | RN-EPM-1432A | Lamp assembly | For Escutcheon | ○ |
| S1-17 | RN-ESD-1047 | Push switch | | ○ |
| TV401 | RN-ETV-1114B | Front end | FM | ○ |
| TV402 | RN-ETV-1111B | Front end | AM | ○ |
| VE401 | RN-EVE-1068 | Liquid crystal element | | ○ |
| X401 | RN-EXD-1008 | Crystal | | |

| Illus. No. | Stock No. | Parts name | Description | Q'ty | Remark |
|---|---|---|---|---|---|
| MECHANICAL | | | | | |
| 501 | RN-MDP-2329 | Escutcheon | ASS'Y | 1 | ○ |
| 501-1 | RN-MDP-2330 | Escutcheon | | 1 | ○ |
| 501-2 | RN-MLF-1356A | Filter | 導光板 | 1 | |
| 501-3 | RN-MLC-1277 | Douser | | 1 | |
| 501-4 | RN-MSE-2312 | Spacer | 遮光板 | 1 | |
| 501-5 | RN-MYB-2730 | Button | 1·4 | 1 | ○ |
| 501-6 | RN-MYB-2731 | Button | 2·5 | 1 | ○ |
| 501-7 | RN-MYB-2732 | Button | 3·6 | 1 | ○ |
| 501-8 | RN-MYB-2743 | Button | REW | 1 | ○ |
| 501-9 | RN-MYB-2744 | Button | STOP/EJECT | 1 | ○ |
| 501-10 | RN-MYB-2745 | Button | FF | 1 | ○ |
| 501-11 | RN-MYB-2746 | Button | AM·FM/AUTO·M | 1 | ○ |
| 501-12 | RN-MYB-2747 | Button | TUNE | 1 | ○ |
| 501-13 | RN-MYB-2748 | Button | DOLBY | 1 | ○ |
| 501-14 | RN-MYB-2749 | Button | SCAN | 1 | ○ |
| 501-15 | RN-MYB-2750 | Button | PRO·PLAY | 1 | ○ |
| 501-16 | RN-MYB-2751 | Button | APC | 1 | ○ |
| 502 | RN-MTD-1393A | Chassis | | 1 | |
| 503 | RN-MHE-2158 | Holder | | 1 | |
| 504 | RN-MRE-1240A | Heat-sink | | 1 | |
| 505 | RN-MTD-1414 | Chassis | | 1 | |
| 506 | RN-MYD-1120 | Knob | BAL/FAD | 2 | ○ |
| 507 | RN-MYN-1219 | Knob | SW·VOL | 1 | ○ |
| 508 | RN-MYC-1114 | Knob | BASS·TRE | 1 | ○ |
| ※509 | RN-MPC-2532E | PC board | AUDIO P.C.B. | 1 | |
| ☆510 | RN-EPP- | PC board and parts | Main | 1 | |
| 511 | RN-MHE-2154 | Holder | | 1 | |
| 512 | RN-MSB-1265A | Shield plate | | 1 | |
| 513 | RN-MCV-1888 | Door | | 1 | |
| 514 | RN-MSC-1511 | Spring | | 1 | |
| 515 | RN-MHE-2225A | Holder | | 1 | |
| 516 | RN-MSE-2349A | Spacer | | 1 | |
| 517 | RN-MHE-2159B | Holder | | 1 | |
| 518 | RN-MHE-2163 | Holder | | 1 | |
| 519 | RN-MSE-2150 | Spacer | | 1 | |
| 520 | RN-MIP-1747 | Insulater | | 1 | |
| 521 | RN-MSB-1267 | Shield plate | | 1 | |
| 522 | RN-MCE-1175 | Clamp | | 3 | |
| 523 | RN-MHE-2160A | Holder | FOR IC | 1 | |
| 524 | RN-MSE-2332 | Spacer | | 1 | |
| 601 | RN-MET-242 | Special screw | | 1 | |
| 602 | RN-MSN-1003 | Nut | | 2 | |
| 603 | F6-SSA-3X6S | Screw | 3X6mm | 4 | |
| 604 | F6-SBD-3X6S | Screw | 3X6mm | 22 | |
| 605 | RN-MET-1458 | Special screw | 2X8mm | 2 | |

| Illus. No. | Stock No. | Parts name | Description | Q'ty | Remark |
|---|---|---|---|---|---|
| 51 | RN-MUL-1375G | Lever | Slide lever for 50 | 1 | |
| 52 | RN-MUL-1324F | Lever | | 1 | |
| 53 | RN-MSC-1366C | Spring | Spring for 53 | 1 | |
| 54 | RN-MSP-1074D | Spring | For program changing | 1 | |
| 55(S904) | RN-ESL-1044 | Leaf switch | | 1 | ○ |
| 56(E901) | RN-EEM-1045C | Solenoid | For APS | 1 | |
| 57(E903) | RN-EEM-1046D | Solenoid | For program changing | 1 | |
| 58 | RN-MUG-1209 | Gear | Take-up reel (R) | 1 | |
| 59 | RN-MUG-1210 | Gear | Take-up reel (L) | 1 | |
| 60 | RN-MSC-1264A | Spring | For backtention | 2 | |
| 61 | RN-MKS-1032 | Slip mechanism | | 1 | ○ |
| 62 | RN-MSC-1422D | Spring | For bias lever | 1 | |
| 70 | RN-MUG-1223 | Gear | | 1 | |
| 71 | RN-MUG-1224 | Gear | | 1 | |
| 72 | RN-MUG-1225A | Gear | | 1 | |
| 73 | RN-MUG-1226A | Gear | | 1 | |
| 199 | RN-MUB-1057 | Belt | | 1 | ○ |
| 301 | RN-MWP-80A | Washer | | 6 | |
| 302 | RN-MWP-1112 | Washer | For flywheel | 2 | |
| 304 | F6-ER-2 | E-type ring | 2mm | 3 | |
| 305 | F6-SBD-2X3S | Screw | 2x3mm | 1 | |
| 306 | F6-SW4NA-2X3S | Screw | 2x3mm | 2 | |
| 307 | RN-MET-1429 | Special screw | 2X2.5mm | 2 | |
| 308 | F6-SW4NA-2X6.5S | Screw | 2x6.5mm | 1 | |
| 309 | RN-MET-1435 | Special screw | 2x5.5mm | 1 | |
| 311 | RN-MET-1200A | Special screw | 1.4x5mm | 2 | |
| 312 | RN-MET-1339 | Special screw | | 3 | |
| 313 | RN-MET-1434 | Special screw | 2x3mm | 4 | |
| 314 | RN-MET-1266 | Special screw | 2x3mm(With frange) | 1 | |
| 315 | F6-ER-1.5 | E-type ring | 1.5mm | 2 | |
| 316 | F6-SBD-2X4S | Screw | 2x4mm | 7 | |
| 317 | F6-SW4NA-2X5S | Screw | 2x5mm | 1 | |
| 318 | RN-MET-1372 | Special screw | 2.6x4mm | 1 | |
| 319 | RN-MIIJ-3 | Ring | 3mm | 1 | |
| 320 | F6-SNA-2X3.5S-M-ZN2A | Screw | 2x3.5mm(For motor) | 2 | |

NOTE : 1.Specifications subject to change without prior notice.

| Illus. No. | Stock No. | Parts name | Description | Q'ty | Remark |
|---|---|---|---|---|---|
| MECHANICAL | | | | | |
| 201 | RN-MAS-1138B | Chassis | | 1 | |
| 202(M901) | RN-EDM-1110 | DC motor | | 1 | ○ |
| 203(A901) | RN-EHM-C44-1061 | Playback head | 361 174514 C57035 | 1 | ○ |
| ※204 | RN-MPM-3232A | PC board | ﾍｯﾄﾞ用ﾌﾚｷｼﾌﾞﾙｷﾊﾞﾝ | 1 | |
| 207 | RN-MUF-1022 | Flywheel | (L) | 1 | |
| 208 | RN-MUF-1023E | Flywheel | (R) | 1 | |
| 210 | RN-MYT-1242L | Sub-chassis | ｶｾｯﾄ挿入機構用 | 1 | |
| ※211 | RN-MPM-3464 | PC board | 210上大ｷﾊﾞﾝ | 1 | |
| ※212 | RN-MPM-3449 | PC board | ｼｬｰｼ下小ｷﾊﾞﾝ | 1 | |
| 213(S906) | RN-ESL-1046 | Leaf switch | ﾊﾟｯｸ取出検知SW | 1 | ○ |
| 214(S905) | RN-ESL-1055 | Leaf switch | ﾃｰﾌﾟｾﾚｸﾀSW | 1 | ○ |
| 216 | RN-MUL-1378E | Lever | ﾊﾟｯｸ検知ﾚﾊﾞｰ | 1 | |
| 217 | RN-MSC-1358A | Spring | ﾊﾟｯｸ検知ﾚﾊﾞｰ用 | 1 | |
| 218 | RN-MUL-1313H | Lever | ｶｾｯﾄ挿入,排出用 | 1 | |
| 219 | RN-MUL-1314J | Lever | 218用ｽﾗｲﾄﾞﾚﾊﾞｰ | 1 | |
| 228 | RN-MKI-1033 | Slide plate assembly | | 1 | |
| 298 | RN-MET-1339 | Special screw | 213用ﾈｼﾞ | 1 | |
| 299 | RN-MET-1319 | Special screw | 2X4mm | 1 | |

NOTE : 1.Specifications subject to change without prior notice.
2.※ marked PC board does not include component parts to be mounted.

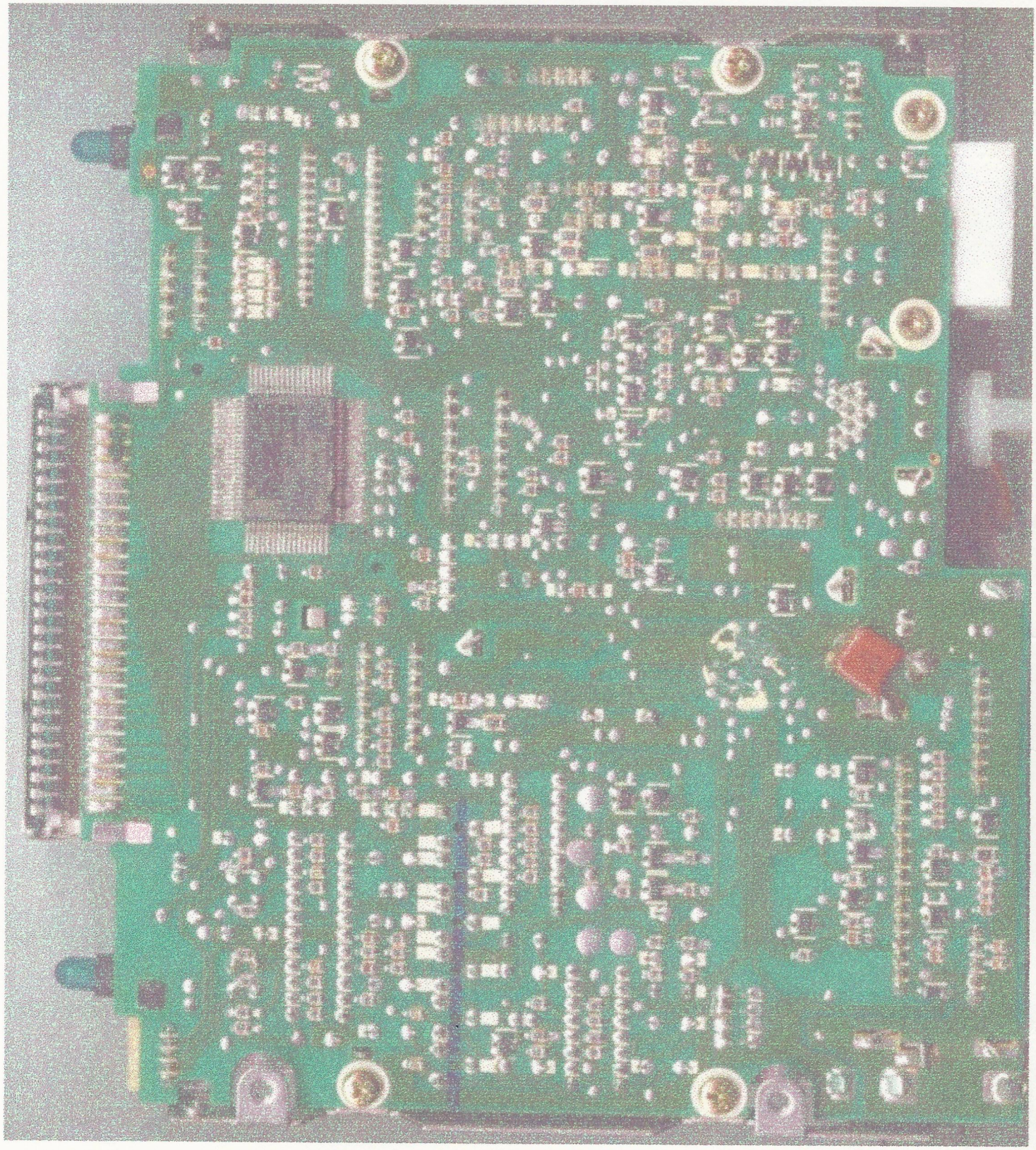
NO LCD ILLUMINATION OR VERY LOW ILLUMINATION - PRESS PCB & IT COMES ON - CHECK R506 [SUPPLIES B+(8) to BASE of Q453]

(8 Volt lamp)

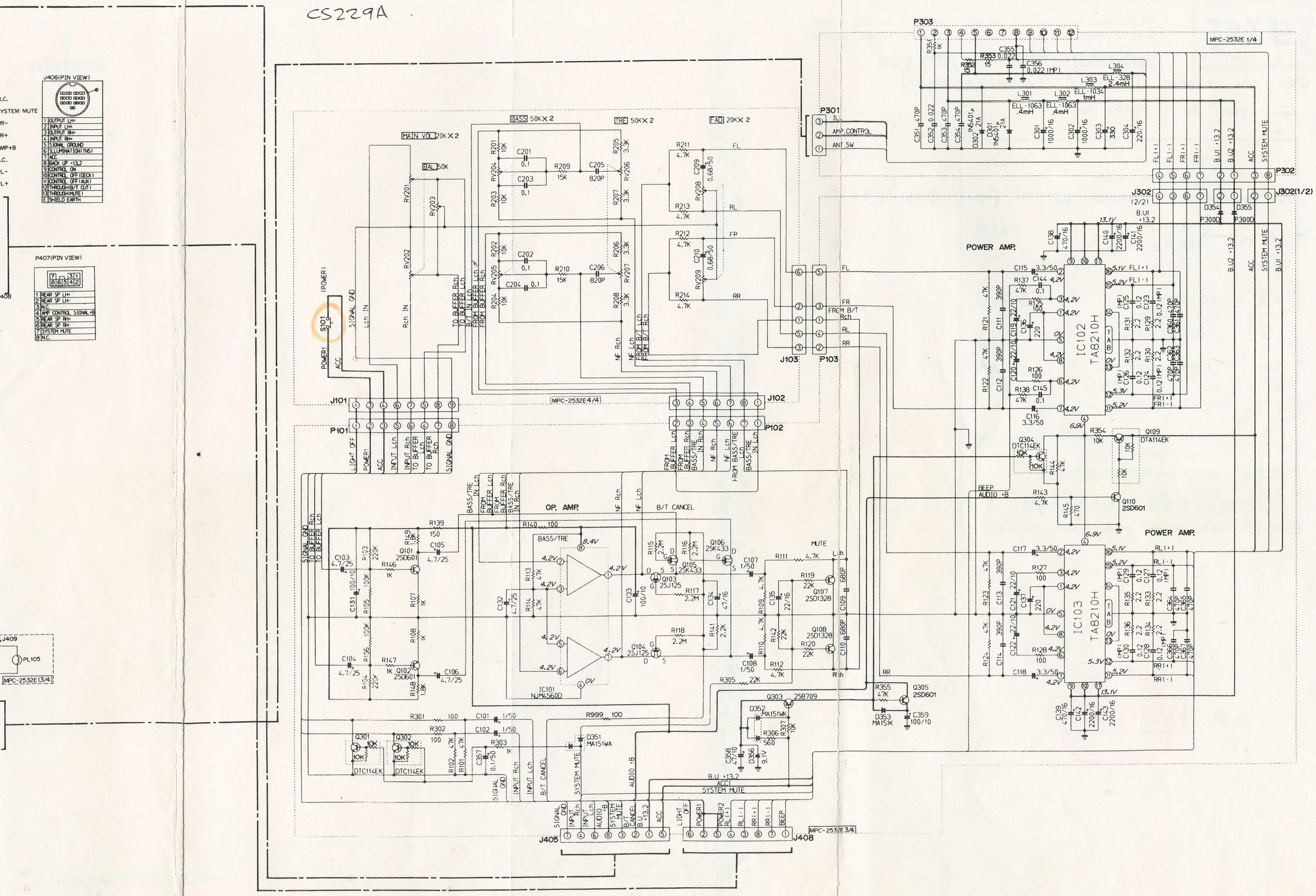
| Illus. No. | Stock No. | Parts name | Description | Q'ty | Remark |
|---|---|---|---|---|---|
| 606 | RN-MET-253 | Special screw | 3X8mm | 4 | |

NOTE : 1.Specifications subject to change without prior notice.
2.It takes long time to supply some parts marked ☆ since we do not always have them in store.
In the worst case, we can't supply them for you.
3.※ marked PC board does not include component parts to be mounted.

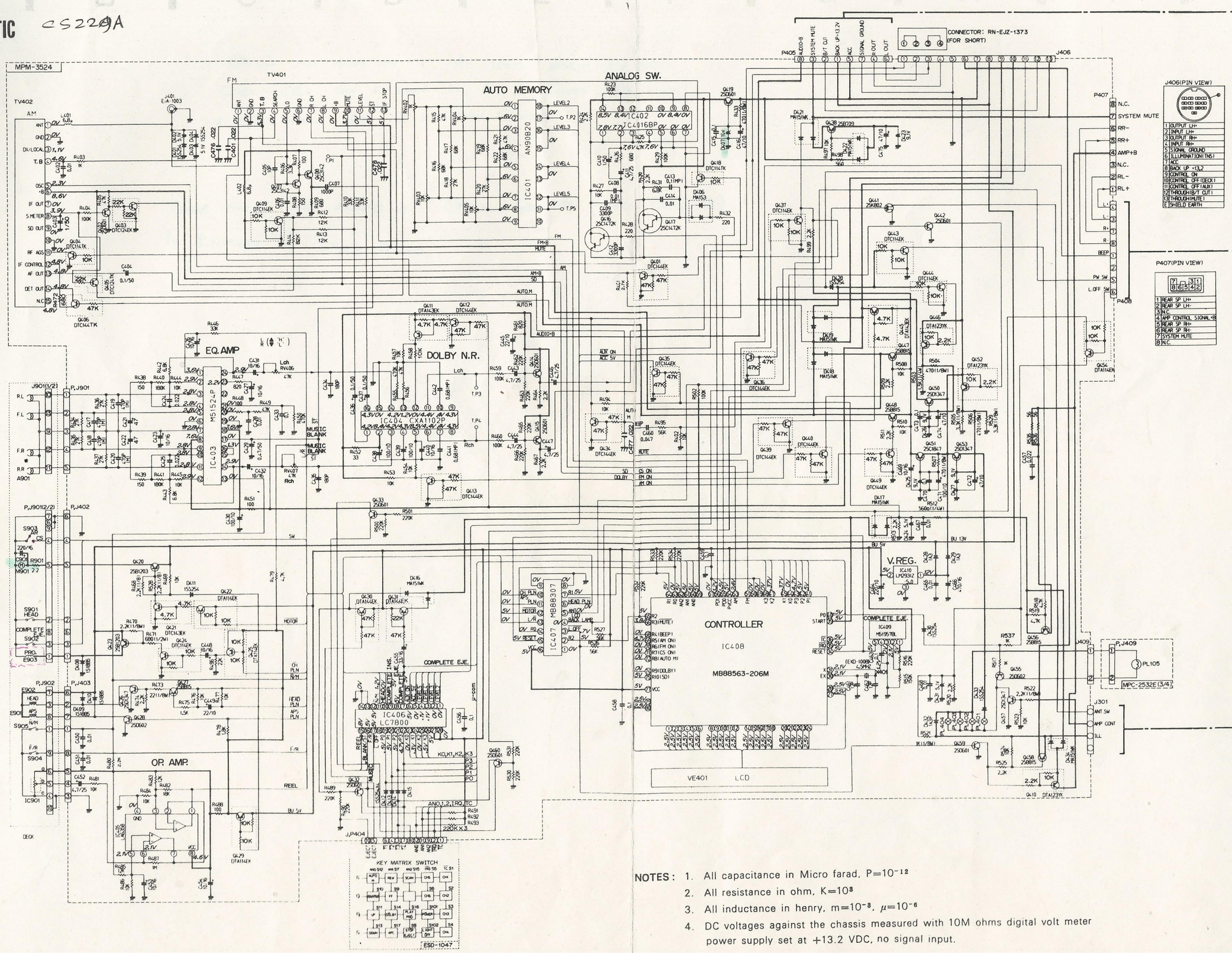
| Illus. No. | Stock No. | Parts name | Description | Q'ty | Remark |
|---|---|---|---|---|---|
| MECHANICAL | | | | | |
| 2 | RN-MHE-1604K | Holder | Elevator for 1 | 1 | |
| 3 | RN-MUL-1316I | Lever | Cassette engaging lever | 1 | |
| 4 | RN-MUL-1318B | Lever | Lock lever for 5 | 1 | |
| 5 | RN-MUG-1154F | Gear | Gear for loading | 1 | |
| 6 | RN-MSC-1355A | Spring | Spring for 219 | 1 | |
| 7 | RN-MSC-1356D | Spring | Inverting lever | 1 | |
| 8 | RN-MSC-1463 | Spring | Spring for 2 | 1 | |
| 9(S903) | RN-ESM-1021 | Micro switch | Power switch | 1 | ○ |
| 10(S902) | RN-ESL-1042 | Leaf switch | For complete eject | 1 | ○ |
| 11 | RN-MUL-1372E | Lever | Bias lever for 1 | 1 | |
| 13 | RN-MSI-1118 | Pin | Shaft for 3 | 1 | |
| 14 | RN-MUG-1141A | Gear | Idler gear of play | 1 | |
| 15 | RN-MUG-1142A | Gear | Changing gear of PLAY/FF | 1 | |
| 16 | RN-MUG-1143A | Gear | | 1 | |
| 17 | RN-MUG-1146A | Gear | Idler gear of reel | 1 | |
| 18 | RN-MKR-1227 | Pinchroller mechanism | (L) | 1 | |
| 19 | RN-MKR-1228 | Pinchroller mechanism | (R) | 1 | |
| 20 | RN-MHE-1605H | Holder | Bottom plate | 1 | |
| 21 | RN-MSC-1360D | Spring | For 15 press-fitting | 1 | |
| 22 | RN-MSC-1361B | Spring | For 209 press-fitting | 1 | |
| 23 | RN-MSC-1362B | Spring | For 18 press-fitting | 1 | |
| 24 | RN-MSC-1363A | Spring | For 19 press-fitting | 1 | |
| 25 | RN-MST-1112 | Spacer | | 3 | |
| 26 | RN-MUL-1315C | Lever | Lever for 219 | 1 | |
| 27 | RN-MYT-1362 | Sub-chassis | Head plate | 1 | |
| 28 | RN-MSC-1367C | Spring | | 1 | |
| 29 | RN-MHZ-1032B | Holder | Holder for head | 1 | |
| 30 | RN-MUC-1039 | Cam | Cam for azimuth | 1 | |
| 31 | RN-MSP-1065 | Spring | | 1 | |
| 32 | RN-MSI-1075B | Pin | | 1 | |
| 33 | RN-MSP-1068A | Spring | Retaining spring for 29 | 1 | |
| 34 | RN-MSC-1369 | Spring | Retaining spring for 29 | 1 | |
| 35 | RN-MSC-1349A | Spring | Spring for 32 | 1 | |
| 36 | RN-MSC-1272B | Spring | For azimuth adjust | 2 | |
| 37 | RN-MSC-1603 | Spring | For head plate (R) | 1 | |
| 38 | RN-MUL-1321I | Lever | | 1 | |
| 39 | RN-MUL-1322F | Lever | | 1 | |
| 40 | RN-MUG-1148A | Gear | | 1 | |
| 41 | RN-MUG-1149E | Gear | | 1 | |
| 42 | RN-MSC-1601 | Spring | Spring for 39 | 1 | |
| 43 | RN-MSC-1365F | Spring | Spring for 38 | 1 | |
| 44 | RN-MSC-1602 | Spring | For head plate (L) | 1 | |
| 45(S901) | RN-ESS-1077 | Slide switch | | 1 | ○ |
| 46(E902) | RN-EEM-1039H | Solenoid | | 1 | |
| 50 | RN-MUG-1153E | Gear | For program changing | 1 | |



CS229A


J406(PIN VIEW)
1 OUTPUT LH+
2 INPUT LH+
3 OUTPUT RH+
4 INPUT RH+
5 SIGNAL GROUND
6 ILLUMINATION(TNS)
7 ACC
8 BACK UP +13.2
9 CONTROL ON
10 CONTROL OFF(DECK)
11 CONTROL OFF(AUX)
12 THROUGH(B/T OUT)
13 THROUGH(MUTE)
E SHIELD EARTH
P407(PIN VIEW)
1 REAR SP LH+
2 REAR SP LH-
3 N.C.
4 AMP CONTROL SIGNAL+B
5 REAR SP RH+
6 REAR SP RH-
7 SYSTEM MUTE
8 N.C.
P303(PIN VIEW)
1 RADIO +ACC
2 SYSTEM MUTE
3 BACK UP +B
4 ANT. SW
5 ILLMINATION(TNS)
6 N.C.
7 N.C.
8 AMP CONTROL SIGNAL +13.2
9 FR.SP LH+
10 FR.SP LH-
11 FR.SP RH+
12 FR.SP RH-
MAIN VOL 20K×2
BAL 50K
BASS 50K×2
TRE 50K×2
FAD 20K×2
P301
AMP CONTROL
ANT.SW
P303
MPC-2532E 1/4
P302
J302
J302(1/2)
J103
P103
J101
P101
J102
P102
MPC-2532E4/4
OP. AMP.
B/T CANCEL
IC101
NJM4560D
POWER AMP.
IC102
TA8210H
IC103
TA8210H
J405
J408
MPC-2532E 3/4
J409
PL105
MPC-2532E(3/4)

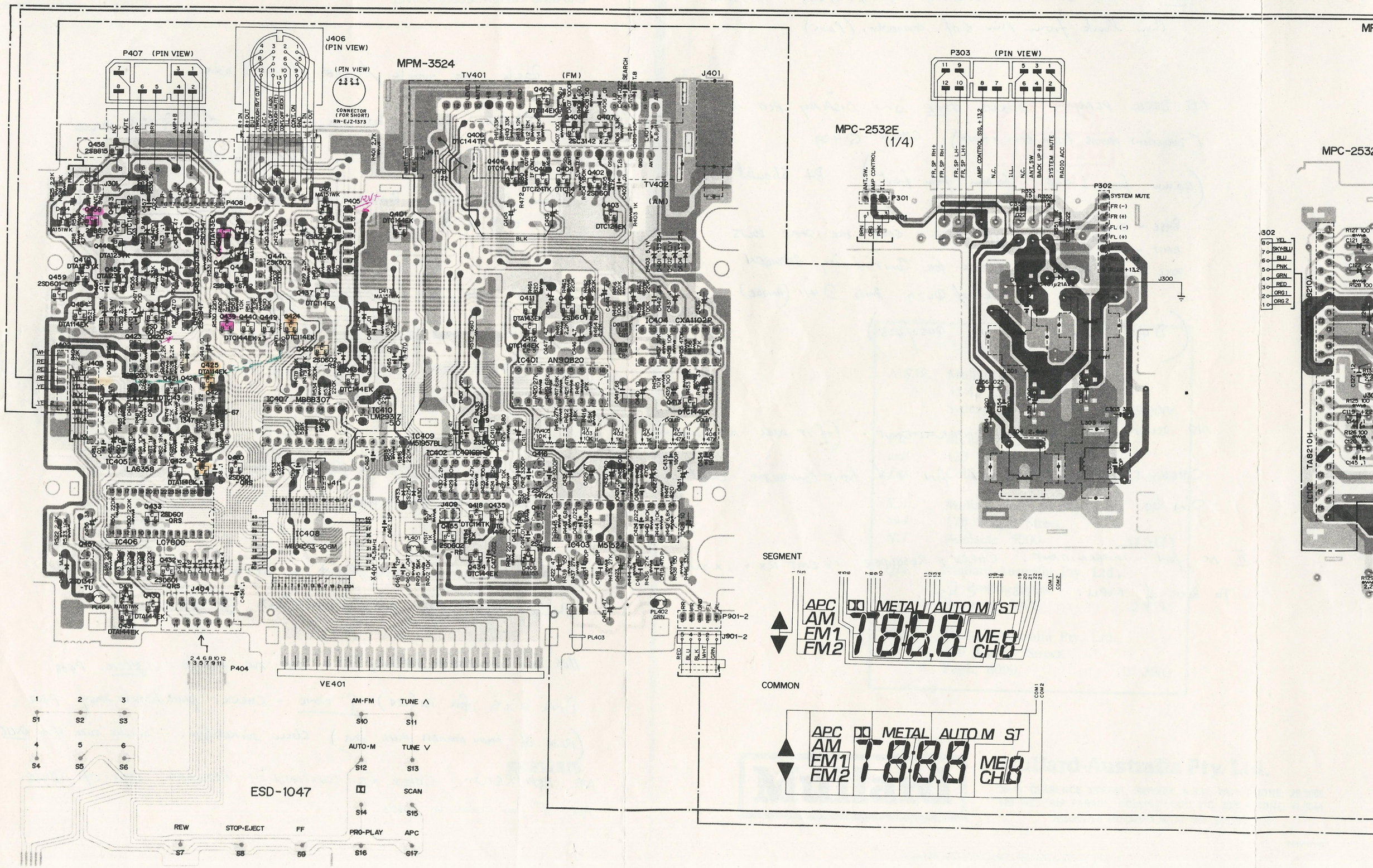
# SCHEMATIC CS2209A



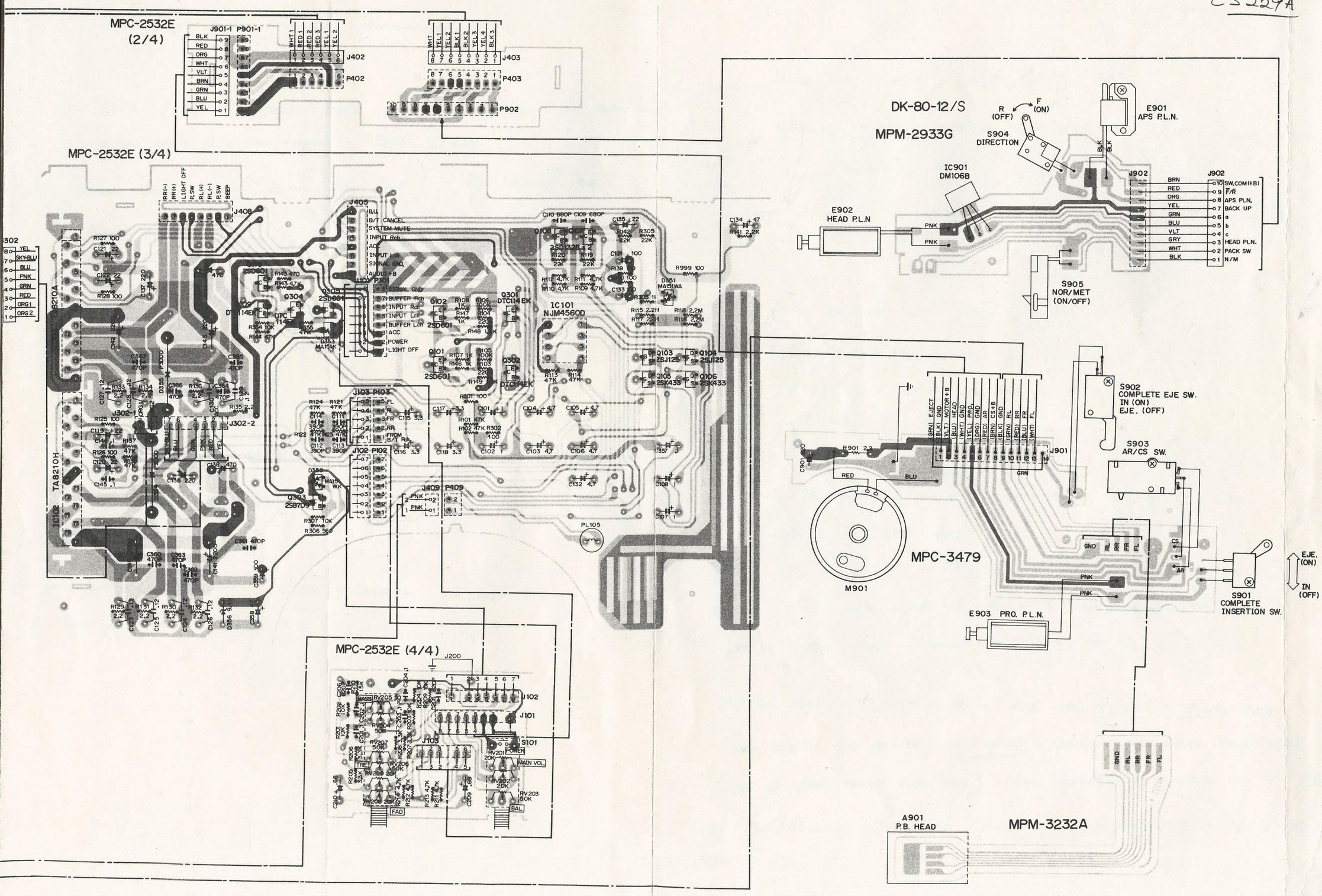

**NOTES:**

1. All capacitance in Micro farad, $P=10^{-12}$
2. All resistance in ohm, $K=10^{3}$
3. All inductance in henry, $m=10^{-3}$, $\mu=10^{-6}$
4. DC voltages against the chassis measured with 10M ohms digital volt meter power supply set at +13.2 VDC, no signal input.

# WIRING ON PC BOARD CS229A



CS229A

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NO AUDIO / DISPLAY ILL — no step on stations.

CHECK — for B+ on COLLECTOR of Q450, 451, 453 — if none then link from pin 5 of connector. (P405)

NO DECK PLAY — SHOWS TAPE ON DISPLAY BUT NOT PLAYING (DIRECTION ARROWS FLICK BACK & FORTH) CHECK Q429 (40 mm from L SIDE 60 mm from front) B+ should be

BASE — 0.5 APROX.
EMIT — 4.5 APROX
COLL — 4.5 APROX.

if BASE & EMIT ARE SAME VOLTS CHECK for CONTINUITY BETWEEN BASE of Q429 AND D411 (ANODE)

(D411 10 mm to R.H.S of Q420/423)

NO TURN ON — VERY INTERMITTANT — (if it does no functions)

CHECK CONTINUITY BETWEEN PIN 1 of FRONT CONNECTOR and Pin 60 of PLL IC

II NO T/ON — INTERMITTANT CHECK & RESOLDER 1 X SMT RX & 1 X SMT CAP TO REAR of MPU. R533 & C459.

Deck no work / eject / prog etc.

Check track between Base of Q423 and Resister R471. (usually o/c)

Blown Dirc LAMP — Replace with 12V type (5mm) and link C&E of Q453.

NO AM/FM — VERY WEAK

Check D407 (Zenner 10V) for leakage.

Should have 8V on pin 14 of IC 402

II : NO DECK WORK — CHECK for B+ from Pin 1 of P405 to Emitter's of Q420 & Q423

III Deck no work — Proc / Eject — B+ to BASE of Q423 ok.

Check Q423 Also Solenoid on Deck. for S/C

HAS ALL FUNCTIONS, DISPLAY ETC — BUT NO AUDIO — CHECK. P408

PINS 2 + 5 for B+ (12V) if NONE — CHECK PLUG/SOCKET ASSY P302 (REAR of MAIN HARNESS PLUG PCB) Clean socket/pins & make sure of a SNUG fit

NO FFW/REW — CHECK for CONTINUITY BETWEEN COLL of Q428 AND 2nd pin down on J403.