

# *Wharfedale* *Pro* **Service Manual:** **TITAN-12 ACTIVE** **Professional Speaker**

**TITAN-12 ACTIVE**

## ★ **TABLE OF CONTENTS**

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|                             |    |
|-----------------------------|----|
| SPECIFICATION-----          | 2  |
| ASSEMBLY SKETCH-----        | 3  |
| ASSEMBLY PARTS LIST-----    | 4  |
| SCHEMATIC DIAGRAM-----      | 5  |
| ELECTRONICS PARTS LIST----- | 13 |

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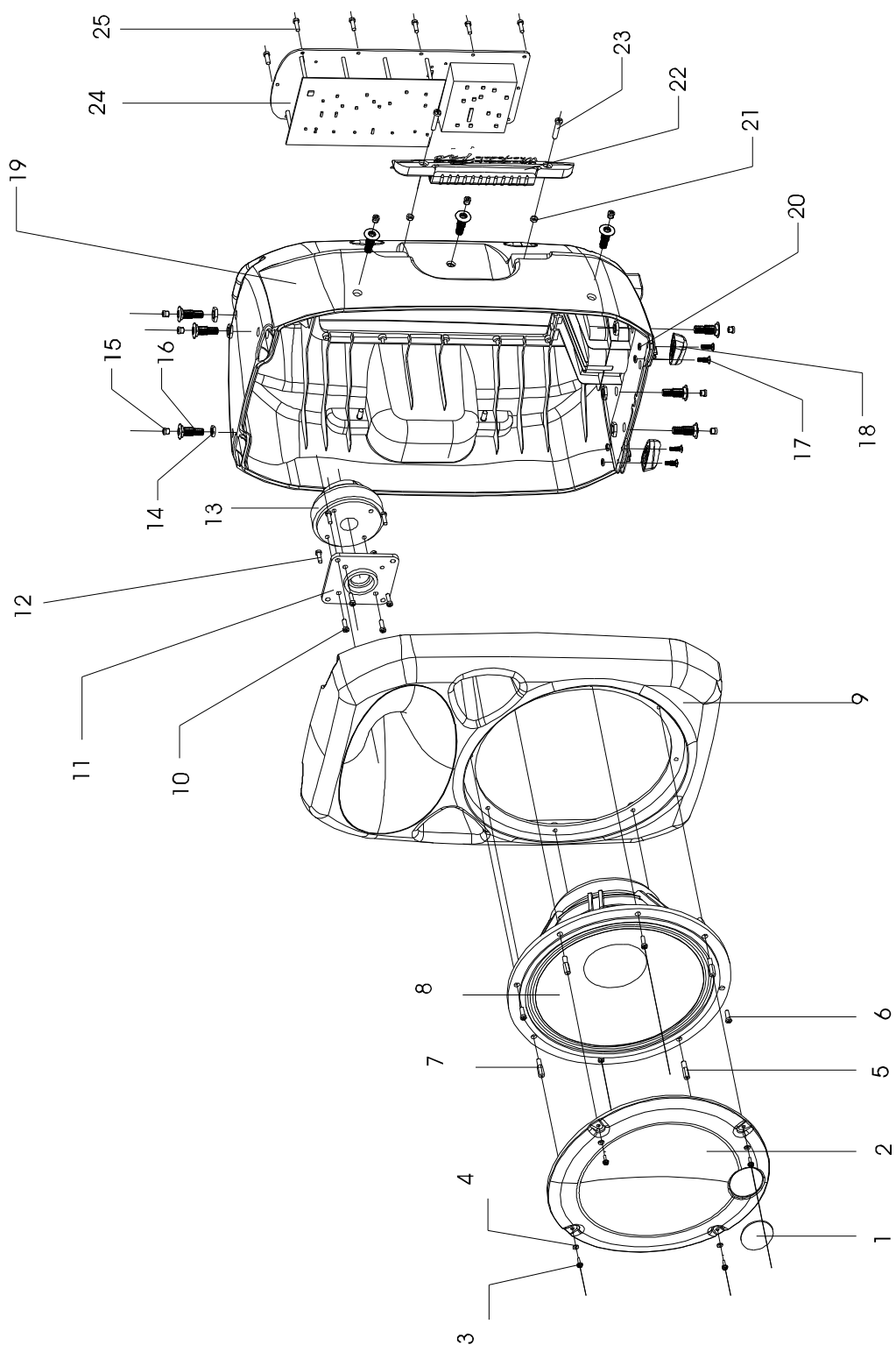
# 1.SPECIFICATIONS

## TITAN-12 ACTIVE

|                                           |                                                 |
|-------------------------------------------|-------------------------------------------------|
| Model Name                                | Titan 12 Active                                 |
| System Type                               | Active 12"2-way Bi-Amplified system             |
| Frequency Response(+/-3dB)                | 55-20kHz                                        |
| Low Frequency Transducer                  |                                                 |
| Size(mm/inches)                           | 305mm/12"                                       |
| Coil Size(mm/inches)                      | 64.26mm/2.5"                                    |
| Impedance                                 | 4 ohm                                           |
| High Frequency Transducer                 |                                                 |
| Type                                      | Compression Driver                              |
| Coil Size(mm/inches)                      | 51mm/2"                                         |
| Exit Size(mm/inches)                      | 25mm/1"                                         |
| Diaphragm Material                        | Titanium                                        |
| Impedance                                 | 8 ohm                                           |
| High Frequency Coverage(H*V)              | 90°*60°                                         |
| Amplifiers                                |                                                 |
| Low-Frequency Power amplifier(Class D)    | Rated 250W RMS, 500W Peak                       |
| High-Frequency Power Amplifier(Class A/B) | Rated 50W RMS, 100W Peak                        |
| Electronic Crossover:                     | 24dB per octave Linkwitz-Riley                  |
| Crossover Frequency                       | 2.3kHz                                          |
| Amplifier Protection                      |                                                 |
| Power On Protection                       | Power switch on/off mute                        |
| Thermal Protection                        | Amplifier shutdown, auto reset                  |
| Low Line Voltage Shut Down                | 60% Nominal line voltage                        |
| Driver Protection                         | Independent LF and HF limiters                  |
| DC Protection                             | Yes                                             |
| Short Protection                          | Yes                                             |
| Clip Limiter:                             | Turns on approx 250W output                     |
| Limiter Indicator                         | Red LED                                         |
| Line Output                               |                                                 |
| Line Output Connector                     | Switchable LOOP/MIX Balanced Male XLR Connector |
| Impedance                                 | Balanced:1k ohm-Unbalanced:500 ohm              |
| Sensitivity                               | +4dBu(1.78dBv or 1.228Vrms)                     |
| AC Power details                          |                                                 |
| Power Supply                              | High Efficiency Switching Mode Power Supply     |
| AC Power Options                          | AC100-120V/220-240V, 50/60HZ                    |
| Power On Indicator                        | LED                                             |
| Enclosure                                 |                                                 |
| Enclosure Material                        | Injection Moulded Polypropylene                 |
| Colour                                    | Grey or white                                   |
| Dimensions(mm/inches) :                   |                                                 |
| H                                         | 556mm/21.88"                                    |
| W                                         | 384mm/15.11"-180mm/7.1"                         |
| D                                         | 312mm/12.28"                                    |
| Weight                                    |                                                 |
| Net Weight(kg/lbs)                        | 12.8kg/28.16lbs                                 |
| Gross Weight(kg/lbs)                      | 14.8kg/32.56lbs                                 |

## 2.ASSEMBLY SKETCH

TITAN-12 ACTIVE

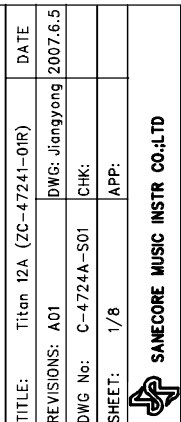


### 3.ASSEMBLY PARTS LIST

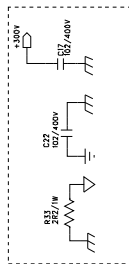
| R/N | P/N              | PART NAME          | DESCRIPTION       | QUA |
|-----|------------------|--------------------|-------------------|-----|
| 1   | 313-2104900001R  | LOGO PLATE         |                   | 1   |
| 2   | 310-2010470001R  | FRONT STEEL GRILLE |                   | 1   |
| 3   | 538-4001080801AR | SCREWS             | MV (+) 4*8 B Zn   | 4   |
| 4   | 513-4012130800AR | WASHER             |                   | 4   |
| 5   | 565-0413100001R  | SCREWS             | M5*13, M4*14*30   | 2   |
| 6   | 537-5001150801AR | SCREWS             | M5*30             | 4   |
| 7   | 565-0413100002R  | SCREWS             | M5*13, M4*12*27.5 | 2   |
| 8   | ZD-70301-01R     | WOOFER             |                   | 1   |
| 9   | 200-2010470003R  | FRONT FRAME        |                   | 1   |
| 10  | 537-6001100801AR | SCREWS             | MP (+) 6*10       | 4   |
| 11  | 249-2010490001R  | JOINING BRACKET    |                   | 1   |
| 12  | 559-5001300071AR | SCREWS             | M5*30             | 4   |
| 13  | ZD-70100-01R     | TWEETER            |                   | 1   |
| 14  | 500-1200951100R  | NUT                | M12               | 10  |
| 15  | 274-0400900786R  | KEYHOLE COVER      |                   | 10  |
| 16  | 321-4201202286R  | SCREWS             |                   | 10  |
| 17  | 537-5001250801AR | SCREWS             | MP (+) 5*25 BZn   | 4   |
| 18  | 231-2600275212R  | PLASTIC FOOT       |                   | 2   |
| 19  | 201-2010470003R  | MAIN FRAME         |                   | 1   |
| 20  | 500-5080400300AR | NUT                | M5                | 4   |
| 21  | 500-6000084080AR | NUT                | M6 BZn            | 4   |
| 22  | 243-2010470000R  | PLASTIC HANDLE     |                   | 2   |
| 23  | 539-6001350802AR | SCREWS             | MC (-) M6*35      | 4   |
| 24  | ZC-47241-01R     | CROSSOVER          |                   | 1   |
| 25  | 557-4001208061AR | SCREWS             | 4*20PA H          | 10  |

TITAN-12 ACTIVE

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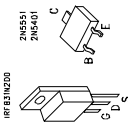
## TITAN-12 ACTIVE



|          |                          |                 |          |
|----------|--------------------------|-----------------|----------|
| TITLE:   | Talon 12A (2C-47241-018) |                 | DATE     |
| REVISES: | A01                      | DWG: Jjiangyang | 2007.8.5 |
| DWG No:  | C-4724A-S02              | CHK:            |          |
| SHEET:   | 2/8                      | APP:            |          |

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## TITAN-12 ACTIVE

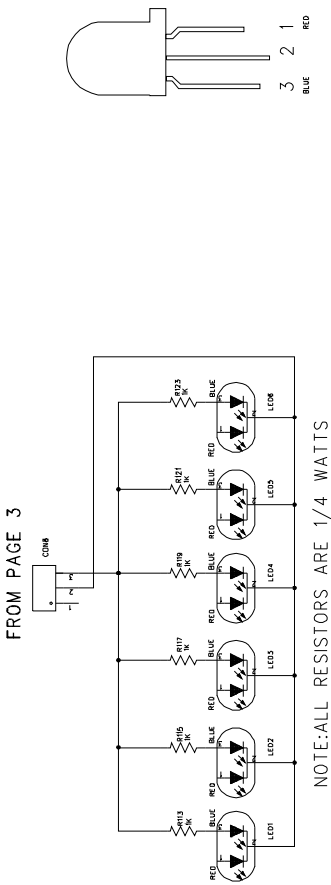


|            |                          |          |
|------------|--------------------------|----------|
| TITLE:     | Tilon 12A (ZC-47241-01R) | DATE     |
| REVISIONS: | A01                      | 2007.6.5 |
| DRG No:    | C-4724A-S04              |          |
|            | CHK:                     |          |
|            | APP:                     |          |
| SHEET.     | 4 / 6                    |          |

## TITAN-12 ACTIVE



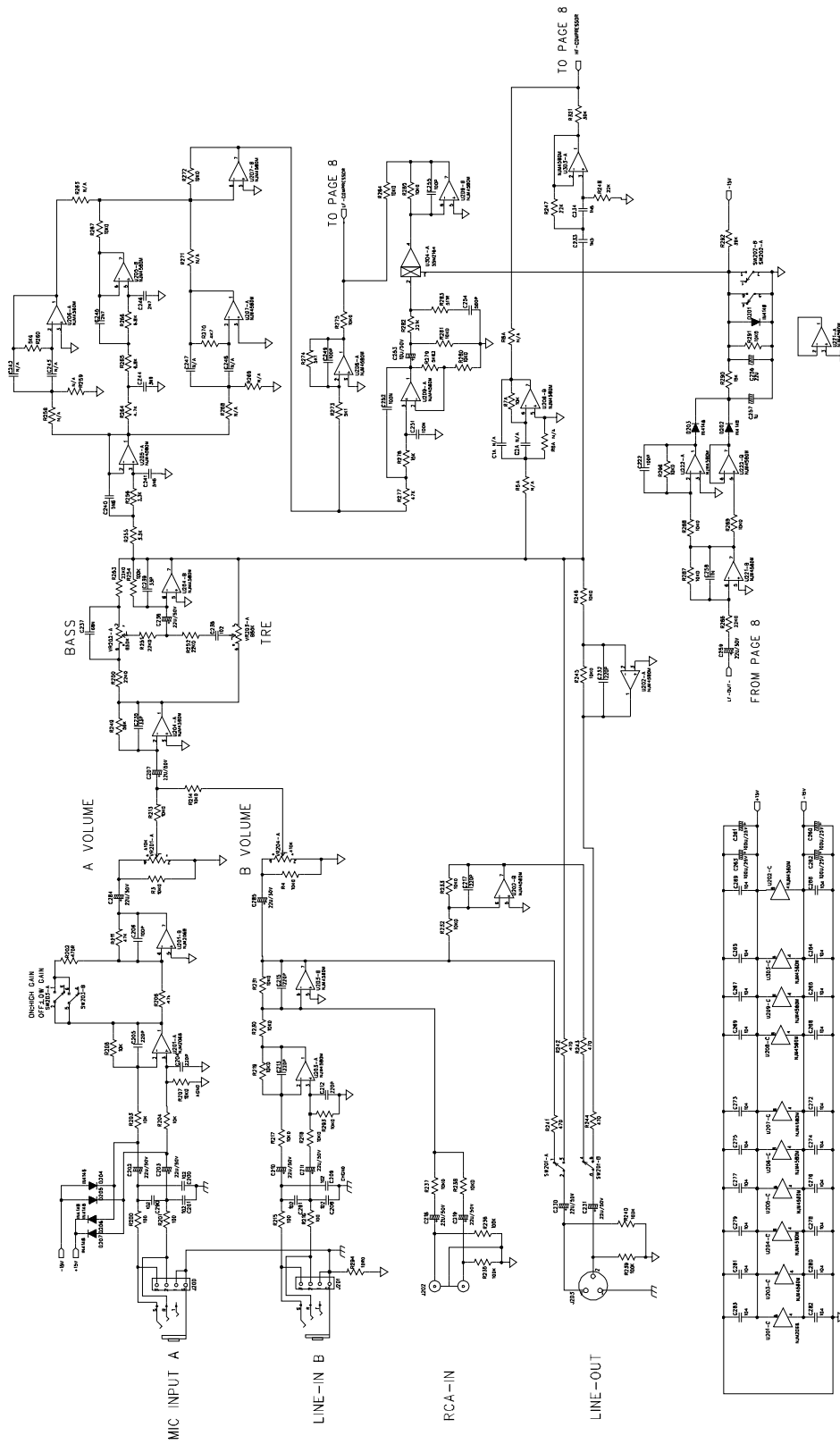
4.SCHEMATIC DIAGRAM



|                           |                         |                  |
|---------------------------|-------------------------|------------------|
| TITLE:                    | Titon DA (IC-47241-000) | DATE             |
| REVISIONS:                | A01                     | DATE: 09/09/2009 |
| DWG No:                   | C-47241-000             | Drawn by:        |
| SHEET:                    | 6/8                     | APP:             |
| SAMSUNG MICRO ELECTRONICS |                         |                  |

# 4.SCHEMATIC DIAGRAM

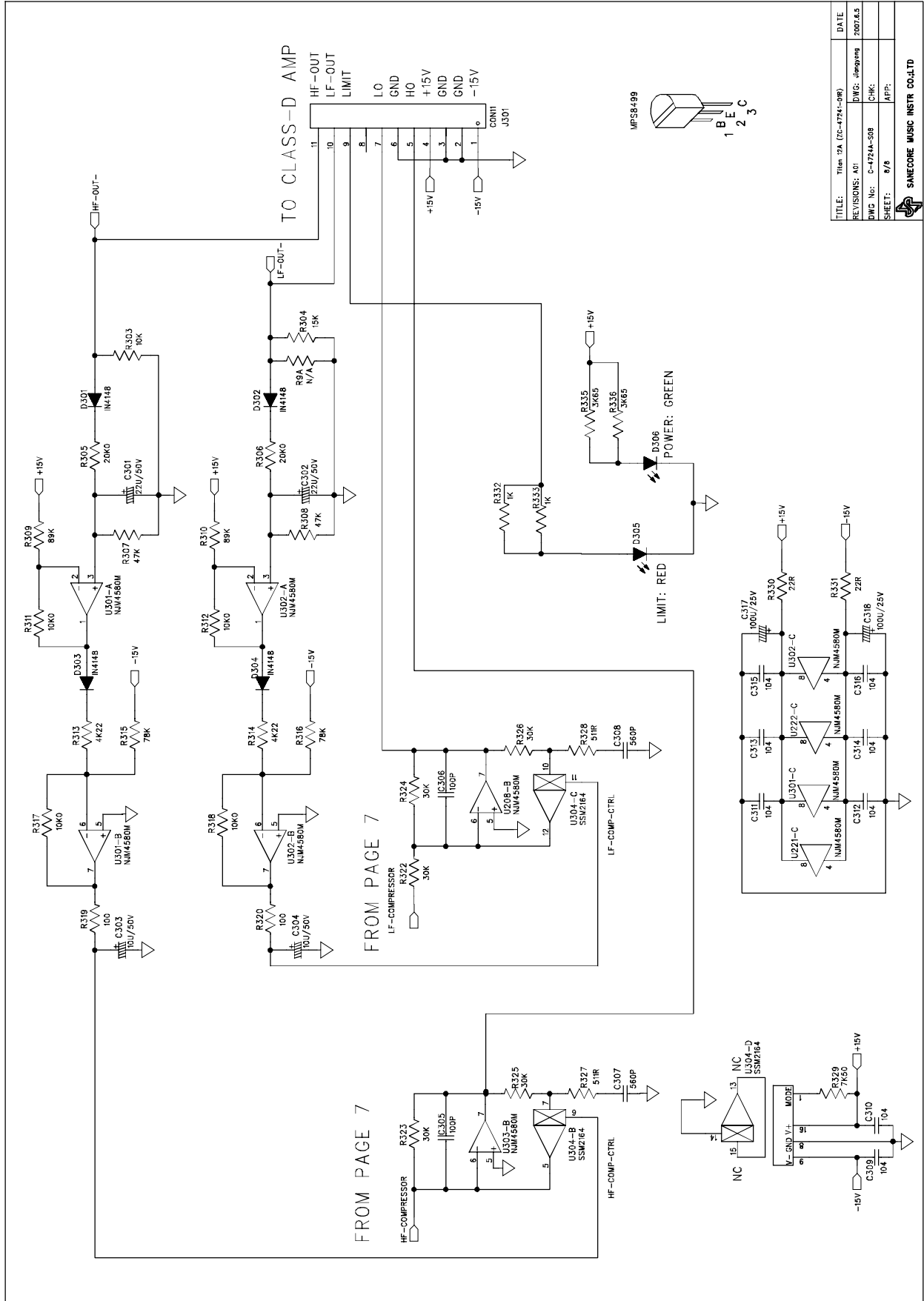
## TITAN-12 ACTIVE



|          |          |         |          |
|----------|----------|---------|----------|
| DATE     | 10-10-10 | REV     | 1.0      |
| DESIGNER | J. J. J. | CHECKED | J. J. J. |
| DATE     | 10-10-10 | REV     | 1.0      |
| DESIGNER | J. J. J. | CHECKED | J. J. J. |
| DATE     | 10-10-10 | REV     | 1.0      |
| DESIGNER | J. J. J. | CHECKED | J. J. J. |

# 4.SCHEMATIC DIAGRAM

## TITAN-12 ACTIVE



|                             |                         |               |
|-----------------------------|-------------------------|---------------|
| TITLE:                      | Titan 12A (ZC-4794-09R) | DATE          |
| REVISIONS:                  | NOI                     | DWG: jiangong |
| DWG No:                     | C-4724A-308             | CHK:          |
| SHEET:                      | 8/8                     | APP:          |
| SANCORE MUSIC INSTR CO.,LTD |                         |               |

## 5.ELECTRONIC PARTS LIST

TITAN-12 ACTIVE

| R / N | P/N             | PART NAME        | DESCRIPTION        | QUA | LOCATION                        |
|-------|-----------------|------------------|--------------------|-----|---------------------------------|
|       | 088-1472415000R | LAMP POP PCB     |                    | 1   |                                 |
| 1     | 053-1407001658R | LAMP PCB         | 6.4*6.4CM          | 1   |                                 |
| 2     | 001-1002105050R | RESISTOR         | 1K 1/4W            | 6   | R113, 116, 118, 120, 122, 124   |
| 3     | 019-0506123001R | LED              |                    | 6   | LED1-6                          |
| 4     | 060-3240500967R | WIRE             |                    | 1   |                                 |
|       | 088-1472415500R | AMP POP PCB      |                    | 1   |                                 |
| 1     | 053-1407001610R | AMP PCB          | 35*30mm 1.6T FR-4  | 1   |                                 |
| 2     | 002-1002032010R | RESISTOR         | 1K 1/8W 1% 0805    | 2   | R39, 41                         |
| 3     | 002-4709032010R | RESISTOR         | 4R7 1/8W 1% 0805   | 1   | R50                             |
| 4     | 002-1003032010R | RESISTOR         | 10K 1/8W 1% 0805   | 3   | R37, 42, 51                     |
| 5     | 002-3302032010R | RESISTOR         | 3K3 1/8W 1% 0805   | 1   | R36                             |
| 6     | 002-4702032010R | RESISTOR         | 4K7 1/8W 1% 0805   | 2   | R40, 49                         |
| 7     | 002-4703032010R | RESISTOR         | 47K 1/8W 1% 0805   | 2   | R45, 46                         |
| 8     | 002-4701032010R | RESISTOR         | 470R 1/8W 1% 0805  | 1   | R43                             |
| 9     | 002-2203032010R | RESISTOR         | 22K 1/8W 1% 0805   | 2   | R47, 130                        |
| 10    | 002-2703032010R | RESISTOR         | 27K 1/8W 1% 0805   | 1   | R48                             |
| 11    | 002-2205032010R | RESISTOR         | 2M2 1/8W 1% 0805   | 1   | R44                             |
| 12    | 007-1004052060R | CAPACITOR        | 100nF 50V 5% 0805  | 8   | C34, 38, 39, 41, 44, 46, 47, 48 |
| 13    | 007-1802052060R | CAPACITOR        | 1.8nF 50V 5% 0805  | 2   | C42, 43                         |
| 14    | 010-2251602010R | CAPACITOR        | 2.2uF 1206         | 1   | C40                             |
| 15    | 007-1014063090R | CAPACITOR        | 1u/100V 10% 1206   | 2   | C33, 49                         |
| 16    | 018-2905401227R | TRANSISTOR       | 2N5401S SOT-23     | 1   | Q7                              |
| 17    | 018-2905551227R | TRANSISTOR       | 2N5551S SOT-23     | 1   | Q8                              |
| 18    | 067-2204141110R | BRIDGE RECTIFIER | 1N4148 0805        | 3   | D24, 25, 903                    |
| 19    | 019-0012003103R | DIODE            | MURS120T3          | 1   | D26                             |
| 20    | 017-7110000000R | IC               | ISL55001 IBZ SO-8  | 1   | U6                              |
| 21    | 017-7070000000R | IC               | IR2011 SOP8        | 1   | U9                              |
| 22    | 017-5220000001R | IC               | LM7805 SOP8        | 1   | U10                             |
| 23    | 017-7130000000R | IC               | TC7W104 SSOP8      | 1   | U7                              |
| 24    | 017-7120000000R | IC               | TC7WH08 SSOP8      | 1   | U8                              |
| 25    | 007-1001052093R | CAPACITOR        | 10P 100V 5% 0805   | 1   | C45                             |
| 26    | 002-2003032010R | RESISTOR         | 20K OHM 1/8W       | 1   | R52                             |
| 27    | 007-1003062090R | CAPACITOR        | 103/100V           | 1   | C37                             |
|       | 088-1472414500R | POWER POP PCB    |                    | 1   |                                 |
| 1     | 053-1407001676R | POWER PCB        | 45*30mm 1.6T FR-4  | 1   |                                 |
| 2     | 007-0108062060R | CAPACITOR        | 0.1uF/50V 0805 10% | 3   | C2, 5, 6                        |
| 3     | 014-1020100002R | CAPACITOR        | 0.001uF 50V 5%     | 2   | C3, 7                           |
| 4     | 001-1003203010R | RESISTOR         | 10K 1/8W F         | 5   | R1, 2, 9, 12, 14                |
| 5     | 001-1803203010R | RESISTOR         | 18K 1/8W F         | 3   | R11, 13, 16                     |
| 6     | 001-3300103050R | RESISTOR         | 33R 1/8W J         | 2   | R17, 18                         |
| 7     | 001-9102203010R | RESISTOR         | 9.1K 1/8W F        | 1   | R19                             |
| 8     | 001-5602103050R | RESISTOR         | 5.6K 1/8W          | 1   | R20                             |
| 9     | 001-2203203010R | RESISTOR         | 22K 1/8W F         | 1   | R10                             |

## 5.ELECTRONIC PARTS LIST

TITAN-12 ACTIVE

|    |                  |              |                     |   |                                         |
|----|------------------|--------------|---------------------|---|-----------------------------------------|
| 10 | 001-1002203010R  | RESISTOR     | 1K 1/8W F           | 1 | R8                                      |
| 11 | 014-4710311028R  | CAPACITOR    | MKS2 470NF 100V 10% | 1 | C8                                      |
| 12 | 006-4700051251R  | CAPACITOR    | 47UF/35V 10%        | 1 | C1                                      |
| 13 | 006-1004061194R  | CAPACITOR    | 10UF 100V 10%       | 1 | C9                                      |
| 14 | 006-2291051163R  | CAPACITOR    | 2.2UF/50V 20%       | 1 | C35                                     |
| 15 | 067-1104148000R  | DIODE        | 1N4148              | 6 | D1. 3. 4. 6. 7. 8                       |
| 16 | 067-2200107000R  | DIODE        | HER107              | 1 | D5                                      |
| 17 | 067-3305246000R  | ZENER        | 16V 1/2W 1N5246     | 2 | ZD1. 2                                  |
| 18 | 018-3408050115R  | TRANSISTOR   | SS8050 TO-92        | 3 | Q1. 3. 4                                |
| 19 | 018-3408550115R  | TRANSISTOR   | SS8550C TO-92       | 1 | Q2                                      |
| 20 | 017-4660000000R  | IC           | DT5268S DTP8        | 1 | U1                                      |
|    | 088-1472410000R  | MAIN POP PCB |                     | 1 |                                         |
| 1  | 053-1407001600R  | MAIN PCB     | 190*125*1.6mm       | 1 |                                         |
| 2  | 002-4703032050R  | RESISTOR     | 47K 1/8W 5% 0805    | 6 | R53. 73. 74. 97. 98. 100                |
| 3  | 002-1003032010R  | RESISTOR     | 10K 1/8W 1% 0805    | 9 | R54. 55. 58. 60. 66. 68. . 82. 106. 107 |
| 4  | 002-5602032010R  | RESISTOR     | 5K6 1/8W 1% 0805    | 1 | R89                                     |
| 5  | 002-5102032010R  | RESISTOR     | 5K1 1/8W 1% 0805    | 1 | R77                                     |
| 6  | 002-1803032010R  | RESISTOR     | 18K 1/8W 1% 0805    | 1 | R88                                     |
| 7  | 002-8202032010R  | RESISTOR     | 8K2 1/8W 1% 0805    | 2 | R81, R94                                |
| 8  | 002-1004032010R  | RESISTOR     | 100K 1/8W 1% 0805   | 3 | R38. 101. 528                           |
| 9  | 002-2202032010R  | RESISTOR     | 2K2 1/8W 1% 0805    | 2 | R80, R85                                |
| 10 | 002-5601032010R  | RESISTOR     | 560 1/8W 1% 0805    | 5 | R64. 61. 71. 72. 110                    |
| 11 | 002-1000032010R  | RESISTOR     | 10R 1/8W 5% 0805    | 3 | R65. 67. 75                             |
| 12 | 002-2203032010R  | RESISTOR     | 22K 1/8W 1% 0805    | 4 | R92. 93. 105. 130                       |
| 13 | 002-4702032010R  | RESISTOR     | 4K7 1/8W 1% 0805    | 2 | R57. 59                                 |
| 14 | 002-2003032010R  | RESISTOR     | 20K 1/8W 1% 0805    | 2 | R108. 111                               |
| 15 | 002-1002032010R  | RESISTOR     | 1K 1/8W 1% 0805     | 4 | R90. 96. 103. 104                       |
| 16 | 002-3903032010QR | RESISTOR     | 39K 1/8W 1% 0805    | 1 | R91                                     |
| 17 | 002-2703032010R  | RESISTOR     | 27K 1/8W 1% 0805    | 1 | R95                                     |
| 18 | 002-3003032010R  | RESISTOR     | 30K 1/8W 1% 0805    | 1 | R109                                    |
| 19 | 002-3302032010R  | RESISTOR     | 3K3 1/8W 1% 0805    | 1 | R83                                     |
| 20 | 007-1003062090R  | CAPACITOR    | 103/100V 10% 0805   | 1 | C50                                     |
| 21 | 007-1004052060R  | CAPACITOR    | 100NF 50V 5% 0805   | 4 | C65. 66. 69. 70                         |
| 22 | 007-1001032060R  | CAPACITOR    | 100P 50V 5% 0805    | 3 | C55. 60. 68                             |
| 23 | 007-2201062060R  | CAPACITOR    | 220P 50V 10% 0805   | 1 | C73                                     |
| 24 | 007-4701062060R  | CAPACITOR    | 470P 50V 10% 0805   | 1 | C54                                     |
| 25 | 007-1004053090R  | CAPACITOR    | 100N 100V 5% 1206   | 2 | C99. 100                                |
| 26 | 007-0108062060R  | CAPACITOR    | 0.1UF/50V 0805 10%  | 3 | C21. 31. 32                             |
| 27 | 017-5270000001R  | IC           | NJM4580M NJM-DMP8   | 1 | U11                                     |
| 28 | 067-2204148110R  | DIODE        | 1N4148 SMD 1206     | 5 | D2. 22. 23. 27. 38                      |
| 29 | 067-6600040110R  | DIODE        | 10BQ040 MLL41 1206  | 2 | D33. 34                                 |
| 30 | 018-2905401227R  | TRANSISTOR   | 2N5401S SOT-23 KEC  | 6 | Q11. 13. 16. 19. 27. 28                 |
| 31 | 018-2905551227R  | TRANSISTOR   | 2N5551S SOT-23 KEC  | 6 | Q9. 10. 14. 15. 20. 26                  |
| 32 | 002-5603032050R  | RESISTOR     | 56K                 | 1 | R500                                    |

## 5.ELECTRONIC PARTS LIST

TITAN-12 ACTIVE

|    |                  |           |                      |   |                         |
|----|------------------|-----------|----------------------|---|-------------------------|
| 33 | 067-3327180000R  | ZENER     | 180V 0.8W            | 1 | ZD6                     |
| 34 | 067-3300015114R  | ZENER     | 15V                  | 2 | ZD4                     |
| 35 | 067-3300068114R  | ZENER     | 6.8V 0805 1/8W       | 1 | ZD5                     |
| 36 | 001-3904203010R  | RESISTOR  | 390K 1/8W F          | 1 | R4                      |
| 37 | 001-6802203010R  | RESISTOR  | 6K8 1/8W F           | 1 | R5                      |
| 38 | 001-1004208050R  | RESISTOR  | 100K 2W 5%           | 1 | R7                      |
| 39 | 001-1008708050R  | RESISTOR  | 0R1 2W               | 4 | R62. 63. 69. 70         |
| 40 | 001-1000207051R  | RESISTOR  | 10R 1W               | 1 | R131                    |
| 41 | 001-1000308050R  | RESISTOR  | 10R 2W               | 1 | R79                     |
| 42 | 001-1002203010R  | RESISTOR  | 1K 1/8W              | 1 | R29                     |
| 43 | 001-0470308050R  | RESISTOR  | 4R7 2W               | 1 | R112                    |
| 44 | 001-4703107050R  | RESISTOR  | 470K 1W 5%           | 1 | R21                     |
| 45 | 001-0220107050R  | RESISTOR  | 2R2 1W               | 1 | R33                     |
| 46 | 001-1001105050R  | RESISTOR  | 100R 1/4W            | 1 | R34                     |
| 47 | 001-4702203010R  | RESISTOR  | 4K7 1/8W F           | 1 | R35                     |
| 48 | 001-0398810050R  | RESISTOR  | 0.39R 5W 5%          | 2 | R22. 23                 |
| 49 | 001-0393108050R  | RESISTOR  | 39K 2W               | 3 | R24. 25. 30             |
| 50 | 001-2203208010R  | RESISTOR  | 22K 2W 1%            | 1 | R32                     |
| 51 | 004-3307000000R  | RESISTOR  | 10D-20               | 2 | R26. 27                 |
| 52 | 006-1021174293R  | CAPACITOR | 1000UF/100V          | 2 | C23. 24                 |
| 53 | 006-1014060533R  | CAPACITOR | 100UF/16V            | 1 | C51                     |
| 54 | 006-1014061153AR | CAPACITOR | 100UF/25V 10%        | 2 | C29. 30                 |
| 55 | 006-1014081153AR | CAPACITOR | 100UF/35V 10%        | 1 | C15                     |
| 56 | 006-4714102053AR | CAPACITOR | 470UF/35 10*20       | 2 | C27. 28                 |
| 57 | 006-2204051143AR | CAPACITOR | 22UF/25V 20%         | 1 | C53                     |
| 58 | 006-2291051163R  | CAPACITOR | 2.2UF/50V 20%        | 2 | C36. 72                 |
| 59 | 006-1006051243R  | CAPACITOR | 10UF/25V 10%         | 3 | C52. 74. 75             |
| 60 | 006-0104051143AR | CAPACITOR | 1UF/50V 20%          | 1 | C76                     |
| 61 | 006-4714132063R  | CAPACITOR | 470UF/50V 20%        | 2 | C25. 26                 |
| 62 | 006-2201061173R  | CAPACITOR | 22UF/63V 6*11        | 3 | C67. 71. 80             |
| 63 | 006-4700051251R  | CAPACITOR | 47UF/35V 10%         | 1 | C20                     |
| 64 | 006-1004061194R  | CAPACITOR | 10UF/100V 10%        | 1 | C19                     |
| 65 | 006-1024304109R  | CAPACITOR | 1000UF/200V 30*41    | 2 | C12. 14                 |
| 66 | 013-2240320503R  | CAPACITOR | 220NF/100V 5%        | 1 | C64                     |
| 67 | 014-1040211028R  | CAPACITOR | MKS2 100NF 63V 10%   | 2 | C78. 79                 |
| 68 | 014-1040311028R  | CAPACITOR | 104/100V             | 1 | C81                     |
| 69 | 016-4741112201R  | CAPACITOR | 0.47UF/100V P15      | 6 | C56. 57. 58. 59. 62. 63 |
| 70 | 008-1021040005R  | CAPACITOR | 102/400V             | 4 | C10. 11. 17. 22         |
| 71 | 014-1050411006R  | CAPACITOR | 1U/250V              | 1 | C13                     |
| 72 | 013-3304025005R  | CAPACITOR | 0.33UF/275V          | 2 | C16, C18                |
| 73 | 067-2200107000R  | DIODE     | HER107               | 2 | D9. 10                  |
| 74 | 067-2200207000R  | DIODE     | HER204               | 4 | D12. 13. 14. 15         |
| 75 | 067-2205100000R  | DIODE     | SR5100               | 4 | D18. 19. 20. 21         |
| 76 | 067-2201620001R  | DIODE     | 1N16C20A1PC SM-7820C | 1 | D17                     |

## 5.ELECTRONIC PARTS LIST

TITAN-12 ACTIVE

|    |                  |                         |                      |    |                                                                                                                                                                                               |
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| 77 | 067-2201620000R  | DIODE                   | 1H16C20C1PC SM-7820C | 1  | D16                                                                                                                                                                                           |
| 78 | 067-3300041001R  | ZENER                   | 16V 1W D0-41         | 1  | ZD3                                                                                                                                                                                           |
| 79 | 034-1119992508R  | BRIDGE RECTIFIER        | RBV2510              | 1  | D11                                                                                                                                                                                           |
| 80 | 017-7004229125R  | FIELD EFFECT TRANSISTOR | IRFP4229             | 2  | Q17, 18                                                                                                                                                                                       |
| 81 | 018-7000460125R  | FIELD EFFECT TRANSISTOR | IRFP460A             | 2  | Q5, 6                                                                                                                                                                                         |
| 82 | 018-2800112115R  | FIELD EFFECT TRANSISTOR | J112G                | 1  | Q, 23                                                                                                                                                                                         |
| 83 | 018-0304883113R  | IC                      | C4883A T0-220        | 1  | Q25                                                                                                                                                                                           |
| 84 | 017-0190000000R  | IC                      | L7815CV T0220        | 1  | U4                                                                                                                                                                                            |
| 85 | 017-1830000000R  | IC                      | KIA7915 T0220 KEC    | 1  | U5                                                                                                                                                                                            |
| 86 | 017-2700000000R  | IC                      | TDA7294              | 1  | U12                                                                                                                                                                                           |
| 87 | 080-0210012016R  | INDUCTOR                | 13.6MH 0.8MM 230VAC  | 2  | T1, 2                                                                                                                                                                                         |
| 88 | 026-3334000170R  | INDUCTOR                | 33UH                 | 1  | L501                                                                                                                                                                                          |
| 89 | 022-1040041316R  | TRANSFORMER             |                      | 1  | T3                                                                                                                                                                                            |
| 90 | 066-0095010000R  | SWITCH                  | KSD01F95B3           | 1  | TSW1                                                                                                                                                                                          |
| 91 | 056-0102224400R  | JACK                    | CON02-3.96MM         | 2  | CON5, 7                                                                                                                                                                                       |
| 92 | 056-4103220000R  | JACK                    | CON03-2.5MM          | 1  | CON9                                                                                                                                                                                          |
| 93 | 056-4111221100R  | JACK                    | CON11-2.5MMB         | 1  | CON6                                                                                                                                                                                          |
| 94 | 057-2545011241R  | JACK                    |                      | 2  | CON4, CCON2                                                                                                                                                                                   |
| 95 | 056-0103003300R  | JACK                    |                      | 1  | AC-IN                                                                                                                                                                                         |
| 96 | 324-0280220111R  | MICA LAMINATION         | T0-3P                | 1  | U12                                                                                                                                                                                           |
| 97 | 324-0180130100R  | MICA LAMINATION         | T0-220 18*13MM       | 3  | D16, D17, TSW1                                                                                                                                                                                |
| 98 | 324-0280220100R  | MICA LAMINATION         | T0-3P 18*22MM        | 2  | Q17, Q18                                                                                                                                                                                      |
|    | 088-1472411300R  | SIGNAL POP PCB          |                      | 1  |                                                                                                                                                                                               |
| 1  | 053-1407001613R  | SIGNAL PCB              |                      | 1  |                                                                                                                                                                                               |
| 2  | 002-1003032010R  | RESISTOR                | 10K 1/8W 1% 0805     | 39 | R3, 4, 7A, 203, 204, 206, 207, 213, 214, 217, 218, 219, 230, 231, 232, 233, 237, 238, 245, 246, 267, 272, 275, 280, 281, 284, 285, 287, 288, 289, 291, 293, 296, 311, 312, 317, 318, 249, 321 |
| 3  | 002-1001032050QR | RESISTOR                | 100R 1/8W 5% 0805    | 6  | R200, 201, 215, 216, 319, 320                                                                                                                                                                 |
| 4  | 002-1503032010R  | RESISTOR                | 15K 1/8W 1% 0805     | 2  | R278, 290                                                                                                                                                                                     |
| 5  | 002-1103032010QR | RESISTOR                | SMD 11K 1/8W         | 1  | R303                                                                                                                                                                                          |
| 6  | 002-1004032010R  | RESISTOR                | 100K 1/8W            | 5  | R235, 236, 239, 240, 254,                                                                                                                                                                     |
| 7  | 002-4701032010R  | RESISTOR                | 470R 1/8W 1% 0805    | 5  | R202, 241, 242, 243, 244                                                                                                                                                                      |
| 8  | 002-4702032010QR | RESISTOR                | 4K7 1/8W 1% 0805     | 1  | R270                                                                                                                                                                                          |
| 9  | 002-2203032010R  | RESISTOR                | 22K 1/8W 1% 0805     | 7  | R247, 248, 250, 251, 252, 253, 286                                                                                                                                                            |
| 10 | 002-5603032050R  | RESISTOR                | 56K 1/8W 5% 0805     | 5  | R323, 324, 325, 326, 249                                                                                                                                                                      |
| 11 | 002-6802032050R  | RESISTOR                | 6.8K 1/8W 5% 0805    | 3  | R264, 265, 266                                                                                                                                                                                |
| 12 | 002-5102032010R  | RESISTOR                | 5.1K 1/8W 1% 0805    | 2  | R273, 274                                                                                                                                                                                     |
| 13 | 002-5622032010R  | RESISTOR                | 5K62 1/8W 1% 0805    | 1  | R279                                                                                                                                                                                          |
| 14 | 002-1002032010R  | RESISTOR                | 1K 1/8W 1% 0805      | 2  | R332, 333                                                                                                                                                                                     |
| 15 | 002-3651012010R  | RESISTOR                | 3K65 1/8W 1% 0805    | 2  | R335, 336                                                                                                                                                                                     |
| 16 | 002-4222032010R  | RESISTOR                | 4K22 1/8W 1% 0805    | 2  | R313, 314                                                                                                                                                                                     |
| 17 | 002-4703032010R  | RESISTOR                | 47K 1/8W 1% 0805     | 5  | R208, 211, 277, 307, 308                                                                                                                                                                      |
| 18 | 002-2214032010R  | RESISTOR                | 221K 1/8W 1% 0805    | 1  | R282                                                                                                                                                                                          |
| 19 | 002-5111032010R  | RESISTOR                | 511R 1/8W 1% 0805    | 3  | R283, 327, 328                                                                                                                                                                                |
| 20 | 002-3903032010QR | RESISTOR                | 39K 1/8W 1% 0805     | 1  | R292                                                                                                                                                                                          |
| 21 | 002-2003032010R  | RESISTOR                | 20K 1/8W 1% 0805     | 2  | R305, 306                                                                                                                                                                                     |

## 5.ELECTRONIC PARTS LIST

TITAN-12 ACTIVE

|    |                  |               |                       |    |                                                                                                                                             |
|----|------------------|---------------|-----------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------|
| 22 | 002-9103032010R  | RESISTOR      | 91K 1/8W 1% 0805      | 2  | R309. 310                                                                                                                                   |
| 23 | 002-7503022010   | RESISTOR      | 75K 1/10W J 0805      | 2  | R315. 316                                                                                                                                   |
| 24 | 002-7502032010R  | RESISTOR      | 7K5 1/8W 1% 0805      | 2  | R304. 329                                                                                                                                   |
| 25 | 002-2200032050R  | RESISTOR      | 22R 1/8W 1% 0805      | 2  | R330. 331                                                                                                                                   |
| 26 | 002-5602032010R  | RESISTOR      | 5K6 1/8W 1% 0805      | 2  | R260. 322                                                                                                                                   |
| 27 | 002-3302032010R  | RESISTOR      | 3K3 1/8W 1% 0805      | 2  | R255. 256                                                                                                                                   |
| 28 | 002-1000032010R  | RESISTOR      | 10R 1/8W 1% 0805      | 1  | R294                                                                                                                                        |
| 29 | 007-1000062160R  | CAPACITOR     | 1NF 5% 50V NPO 0805   | 8  | C200. 201. 208. 209. 238. 258. 290. 291                                                                                                     |
| 30 | 007-2201062060R  | CAPACITOR     | 220P 10% CP50V 0805   | 7  | C204. 205. 212. 213. 215. 217. 232                                                                                                          |
| 31 | 007-1001062060R  | CAPACITOR     | 100P 10% CP50V 0805   | 6  | C206. 222. 249. 255. 305. 306                                                                                                               |
| 32 | 007-3300052060R  | CAPACITOR     | 33P 5% 50V NPO 0805   | 2  | C235. 239                                                                                                                                   |
| 33 | 007-5601062060R  | CAPACITOR     | 560PF 10% 50V 0805    | 3  | C254. 307. 308                                                                                                                              |
| 34 | 007-1502052060QR | CAPACITOR     | 1.5NF 5% 50V 0805     | 2  | C233. 234                                                                                                                                   |
| 35 | 007-6803052060R  | CAPACITOR     | 68N 10% 50V NPO 0805  | 1  | C237                                                                                                                                        |
| 36 | 007-5602052060R  | CAPACITOR     | 5.6NF 5% 50V 0805     | 2  | C240. 241                                                                                                                                   |
| 37 | 007-3902052060QR | CAPACITOR     | 3.9NF 5% 50V 0805     | 1  | C244                                                                                                                                        |
| 38 | 007-2702052060R  | CAPACITOR     | 2.7NF 5% 50V 0805     | 2  | C245. 246                                                                                                                                   |
| 39 | 007-1004052060R  | CAPACITOR     | 100NF 5% 50V 0805     | 2  | C251. 252                                                                                                                                   |
| 40 | 007-1004062060R  | CAPACITOR     | 100NF 10% 50V 0805    | 28 | C264. 265. 266. 267. 268. 269. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 288. 289. 309. 310. 311. 312. 313. 314. 315. 316 |
| 41 | 017-8260000000R  | IC            | SSM2164 R-16A         | 1  | U304                                                                                                                                        |
| 42 | 017-1370000000R  | IC            | NJM2068M SO-8B JRC!   | 1  | U201                                                                                                                                        |
| 43 | 017-5270000001R  | IC            | NJM4580M NJM-DMP8     | 13 | U202. 203. 204. 205. 206. 207. 208. 209. 221. 222. 301. 302. 303                                                                            |
| 44 | 067-2204148110R  | DIODE         | 1N4148 SMT1206        | 11 | D201. 202. 203. 204. 205. 206. 207. 301. 302. 303. 304                                                                                      |
| 45 | 006-2201051163R  | CAPACITOR     | 22U/50V 20%           | 16 | C202. 203. 207. 210. 211. 218. 219. 230. 231. 236. 256. 259. 284. 285. 301. 302                                                             |
| 46 | 006-1001051163R  | CAPACITOR     | 10U/50V 10%           | 3  | C253. 303. 304                                                                                                                              |
| 47 | 006-1011061143R  | CAPACITOR     | 100U/25V 10%          | 6  | C260. 261. 262. 263. 317. 318                                                                                                               |
| 48 | 006-0104051164R  | CAPACITOR     | RX 1U/50V UL 20%      | 1  | C257                                                                                                                                        |
| 49 | 019-0311122001R  | LED           | LED 204HD/E-A RED     | 1  | D305                                                                                                                                        |
| 50 | 019-0322122001R  | LED           | LED 204GD/E-A GREEN   | 1  | D306                                                                                                                                        |
| 51 | 048-3000000000R  | JACK          | NYS143 3PIN           | 1  | J203                                                                                                                                        |
| 52 | 049-2507222016R  | JACK          | LA1113 7PIN           | 2  | J200. 201                                                                                                                                   |
| 53 | 056-4111221100R  | JACK          | 11PIN* 2.54MM         | 1  | J301                                                                                                                                        |
| 54 | 051-0500000000R  | RCA JACK      | JK0200560N            | 1  | J202                                                                                                                                        |
| 55 | 040-1400000000R  | SWITCH        | JPS2281EA             | 2  | SW201. 202                                                                                                                                  |
| 56 | 089-0500000012R  | SWITCH        | SS-22F20-G12          | 1  | SW203                                                                                                                                       |
| 57 | 020-5052119425R  | POTENTIOMETER | 50KB                  | 2  | VR202. 203                                                                                                                                  |
| 58 | 020-1032120325R  | POTENTIOMETER | RK16K12D0094-10K15Ax2 | 2  | VR201. 204                                                                                                                                  |
| 1  | 042-1003005001R  | POWER SWITCH  | RF-1003TV-5AC250V     | 1  |                                                                                                                                             |
| 2  | 044-0300000000R  | POWER SOCKET  | R-3014 AC INLET       | 1  |                                                                                                                                             |
| 3  | 031-2200512121R  | FUSE          | T4A 250V              | 1  |                                                                                                                                             |