NiCOM CONDITIONS OF SALE and WARRANTY

1. Any goods (at your request) not collected/dispatched, shall be stored at your expense and risk. Such goods may be sold or disposed of 30 days after the invoice date to cover the price and cost incurred thereby.
2. Delivery / completion shall be effected by agreement or any reasonable extension thereof, and no claim(s) shall lie against NicomUSA, Inc. for any reason save for negligence by NicomUSA, Inc.
3. Each and every installment delivery shall be considered as a separate contract and shall be subject to full payment prior to any further delivery(ies).
4. Delivery shall be F.O.B. San Diego, California. Shipment to consignee's chosen address and all carriage insurance shall be at consignee's expense.
5. Any price increases affecting the quoted price prior to delivery shall be increased accordingly.
6. All quoted prices at NicomUSA's Inc sole discretion are subject to change/variation by virtue of any condition beyond their control. The price shall not include packing costs for shipping purposes or any taxes, duties, or transportation costs.
7. **Any damage to the goods must be reported to the carrier in writing on the shipping receipt. Any discrepancy/damage discovered subsequent to delivery shall be reported to NicomUSA, Inc. within 5 days of its receipt.**
8. NicomUSA, Inc. extends to the original end user purchaser all original manufacturers' warranties which are non- transferable and all claims are to be made through your dealer or distributor as per indicated procedures.
9. All manufacturers' warranties will be supported by NicomUSA, Inc. to ensure precise and speedy service when possible.
10. NicomUSA, Inc. shall not be liable for damages of whatsoever nature arising out of connection with the product or its use thereof.
11. **NICOMUSA's WARRANTY DOES NOT INCLUDE THE FOLLOWING:**
    a) Cost of shipment of the unit to NicomUSA, Inc. for repair purposes.
    b) Any unauthorized repairs/modifications.
    c) Repair of unit whose seal has been broken without Nicom's authorization.
    d) Incidental/consequential damages as a result of any defect.
    e) Nominal non–incidental defects.
    f) Free replacement of parts like vacuum tubes, amplifier tubes and cooling fans.
    g) Free replacement of semiconductors (transistors, mosfets and IC's) which are not covered under any warranty, as well as labor charges to replace these parts
    h) Shipment costs including insurance of the unit or replacement unit/parts from customer to NicomUsa and vice-versa.
12. Warranty shall commence as of the invoice/shipment date and for the period of 3 years. Any and all warranty work will take place at Nicom's facility.
13. To claim your rights under this warranty:

A. Contact the dealer or distributor from whom this product was purchased. Describe the problem and ask if they have an easy solution. Dealers and distributors are supplied with information on problems which may occur and usually can repair the unit more quickly than by going directly to the factory. It is also often true that errors in installation or use will be discovered by your dealer.

B. If your dealer cannot help, then contact Nicom directly to obtain a return authorization number. When calling for an RA# we will need unit serial number, detailed description of problem and a credit card number (for billing purposes). RA# will need to be placed on outside of box being shipped to us.

C. When you receive the return authorization, you can return the unit. Pack the unit(s) carefully for shipment. Use original packing materials if possible and assume carton will be dropped several times during transportation. We recommend the use of UPS or Fedex and would discourage use of the postal system (difficult to track package). If equipment is received inadequately packed, there will be a charge for re-packing for re-shipment. The risk of loss is assumed by you (NicomUSA, Inc is not responsible for damage or loss) until the package is received at NicomUSA, Inc. We advise you insure unit/s for full replacement value. Ship the unit/s or freight **PREPAID** to the address specified by NicomUSA, Inc. service department. DO NOT RETURN ANY UNIT/S WITHOUT A RETURN AUTHORIZATION NUMBER, AS IT WILL NOT BE ACCEPTED.

D. Please note in warranty returns where no fault is found with the unit, there will be a $150 minimum labor charge plus return freight. Work on repairs cannot be started until payment arrangements have been made. Any unit/s submitted for repair and not paid for 30 days after submission will become the property of NicomUsa, Inc.

14. Terms shown on the front of invoice are from date of invoice and not contingent upon delivery. In the event buyer fails to fulfill the terms of payment hereunder, buyer promises to pay all costs and expenses of collection and reasonable attorney's fees incurred by NicomUSA, Inc. on account of collection, whether or not suit is filed thereon. NicomUSA, Inc. reserves the right to charge interest on all bills not paid at maturity.
15. As a condition of purchaser conducting business with NicomUSA, Inc., the parties agree that should any dispute arise under such transaction for any reason, that venue and jurisdiction, therefore, shall be San Diego Superior Court, Central Court District or Municipal Court of the County of San Diego, San Diego Judicial District.
16. Interest shall accrue at the rate of 2% per month on all balances incurred for whatever reason remaining unpaid thirty (30) days from the date of invoice.
17. If buyer has consigned goods to NicomUSA, Inc. for repair within or outside of warranty period, buyer may lease/rent replacement goods AS IS from NicomUSA, Inc., if available. Buyer agrees that any and all of its goods in possession of NicomUSA, Inc. for whatever purpose, shall constitute retained security for the timely return of said rental goods as well as timely payment for repair services performed by NicomUSA, Inc. who at its option, may require a deposit paid for any rental goods leased to buyer. Said deposit may be used by NicomUSA, Inc. as satisfaction of any amounts owed to it by buyer in the event of buyer's failure to make any payment required in a timely fashion.

First Aid

The personnel employed in the installation, use and maintenance of the device, shall be familiar with theory and practice of first aid.

1. Treatment of electrical shocks

1.2 If victim is not responsive

follow the A-B-C's of basic life support

- Place victim flat on his backon a hard surface.
- Open airway: lift up neck, push forehead back
- clear out mouth if necessary and observe for breathing
- if not breathing, begin artificial breathing (Figure 2): tilt head, pinch nostrils, make airtight seal, four quick full breaths. Remember mouth to mouth resuscitation must be commenced as soon as possible

Figure 1

Figure 2

- Check carotid pulse (**Figure 3**); if pulse is absent, begin artificial circulation (**Figure 4**) depressing sternum 1 1/2" TO 2" (**Figure 5**).

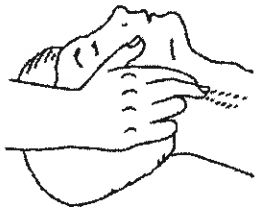

Figure 3

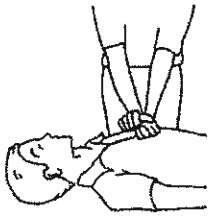

Figure 4

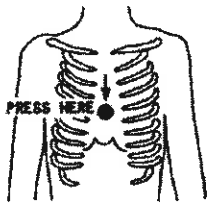

Figure 5

- APPROX. 80 SEC. : ONE RESCUER, 15 COMPRESSIONS
- APPROX. 60 SEC.: TWO RESCUERS, 5 COMPRESSIONS, 1 BREATH
- DO NOT INTERRUPT RHYTHM OF COMPRESSIONS WHEN SECOND PERSON IS GIVING BREATH
- Call for medical assistance as soon as possible.

2.1 If victim is responsive

- Keep them warm
- Keep them as quiet as possible
- Loosen their clothing (a reclining position is recommended)
- Call for medical help as soon as possible

2.2 Treatment of electrical Burns

2.2.1 Extensive burned and broken skin

- Cover area with clean sheet or cloth (Cleansed available cloth article).
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible.
- If arms or legs are affected keep them elevated

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (half a glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs

Do not give alcohol

2.2.2 Less severe burns (1st and 2nd degree)

- Apply cool (not ice cold) compresses using the cleansed available cloth article.
- Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
- Apply clean dry dressing if necessary.
- Treat victim for shock as required.
- Arrange transportation to a hospital as quickly as possible
- If arms or legs are affected keep them elevated.

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NICOM

CHAPTER 1

GENERAL DESCRIPTION

NT 500 Transmitter Exciter

INTRODUCTION

The NT 500 LCD Exciter is the latest in state of the art products available from Nicom. This Transmitter is designed with high reliability components and is intended to give many years of trouble free continuous service. This unit incorporates many features including a switching power supply and a PLL frequency synthesizer.
The latest SMD technology has allowed to make a more compact unit (only 3 rack spaces) and at the same time a very light unit (only 45 lbs).
The same technology has developped a new Mosfet (SD2942) capable of more than 350W output;
the use of two of them delivers a 700 W output that is more than enough to allow a continuous 500W output.

INSTALLATION

After unpacking the unit, check for any mechanical damage or loose parts inside.If there is any transportation damage, inform the supplier immediately and do not put the module into operation.

The applicable voltage is 110-120 or 220-240 V, depending on how it was ordered by the factory.
Ensure that the station's ground system connections have a ground resistance of less than 5 ohms. The equipment's rack or cabinet must be effectively grounded.

Check that the transmitter's main switch is off.

Connect the power cord to the AC plug.

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STARTING PROCEDURE

Connect the antenna cable to the 'N' connector on the back of the unit. The antenna system must be set up to operate at the transmitter's working frequency.

ATTENTION

Antenna matching is **extremely crucial** for FM transmitters. Operate this unit only after verifying good matching. Mismatching will decrease the communication distance and unduly stress the semiconductors.
Turn on the transmitter. You should see the "WAIT" message appear on the LCD Display.
After few seconds the green LED "PLL LOCK" should turn on. This indicates that the frequency is locked on the programmed value. In the display will appear a sequence of squares.
After few more seconds the "RF ENABLE" green LED will come on. This indicates that RF power is being delivered to the output connector on the back.
You can now increase the output power through the small trimpot located in the front panel and identified with " RF ADJ."
Increase slowly till you reach the power you need; keep always an eye at the Reflected power reading to verify that the antenna is well operating. The indication of the reflected power is on the right side of the display "RFL".
Once you have reached the desired power level, you should wait till the unit warms up (30 minutes)

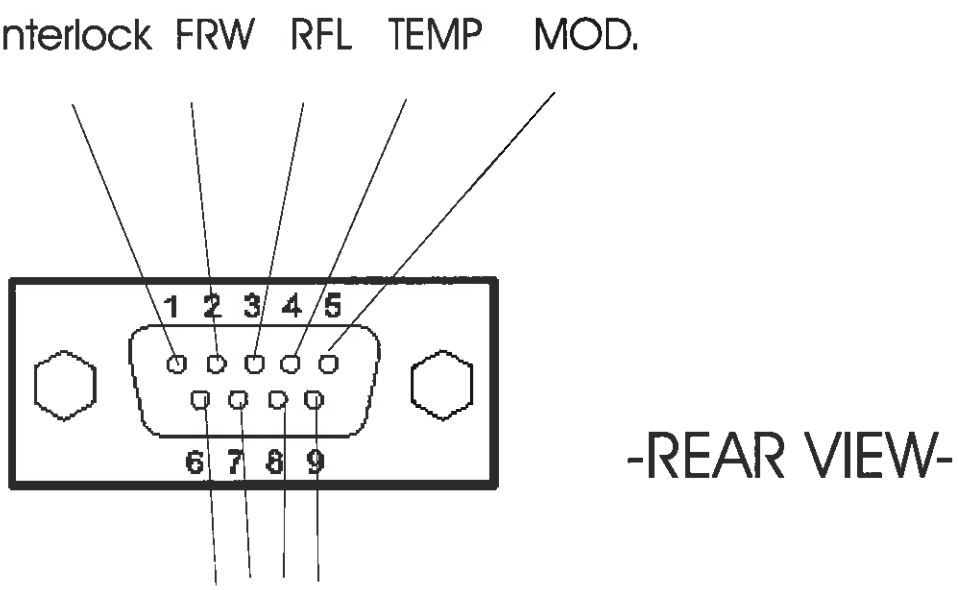
MODULATION

You can connect now the modulation. For MONO operation connect your signal to the BNC connectors (2) as indicated in the back panel and then regulate the input level with the apposite trimmer. For stereo input, use the BNC connector labeled "MPX".
Regulate the audio with the apposite trimmer.
The front panel LCD display shows the modulation through a sequence of white squares going from left to right. At about ¾ of the all sequence there is a small empty square that indicates 100% modulation.
When regulating the modulation, be careful not to go over that limit otherwise your audio will be over-modulated and consequently distorted and out of the legal parameters.

Note:A low level of modulation will produce an increase of the Signal noise ratio that can introduce noise in your emission. We highly recommend the use of an audio processor to take care of every possible modulation problem.

NT-LCD Series Transmitters

DB-9 TELEMETRY CONNECTION



-REAR VIEW-

Pin #	**Description**
1	Interlock (to ground)
2	Forward Power
3	Reflected Power
4	Temperature (celsius)
5	Modulation
6-9	GROUND

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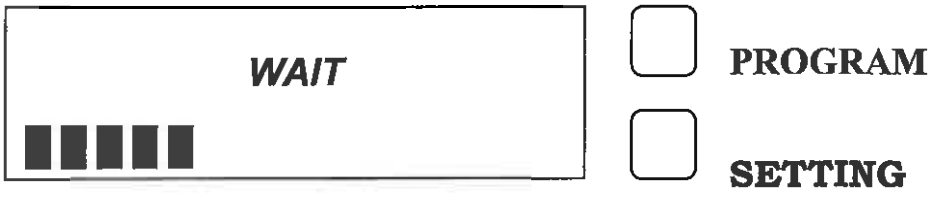
NT 500 PROGRAMMING

Connect a 50 ohm load or 50 ohm antenna to the RF output, connect the equipment into a mains supply (120 or 240 VAC). The equipment is factory pre-set to 50 W.

Switch ON the power and the yellow V POWER LED will light.

The Display will show:



After 3 seconds the green PLL LOCK led will light and the Display will show an increasing bar. After a further 5 seconds the green ENABLE will light and there will be output power.

At this point the Display will show the next parameter:

- *Level Modulation (MOD >*
- *Forward Power (FRW 50.0W);*
- *Reflected Power (RFL 0.4W).*

The default frequency is 98.000 MHz.
To display the frequency push the SETTING key.
In order to display the parameter push the SELECT key.

Display Password

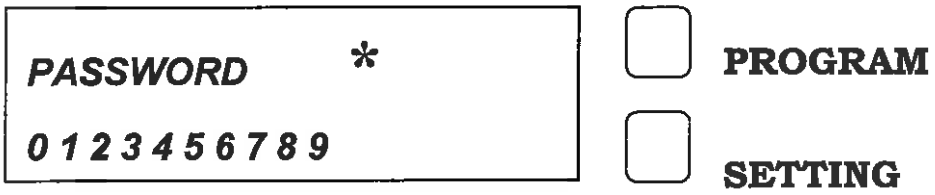
The Password mode is factory set to enable, and is not possible change this setting.

*The default password is **1 2 3**.*

The way for changing the password is the following:

- *Press the PROGRAM key for 3 seconds;*

- *Press the PROGRAM key to move the underscore character position at the required digit, and press the SETTING key to confirm the digit.*



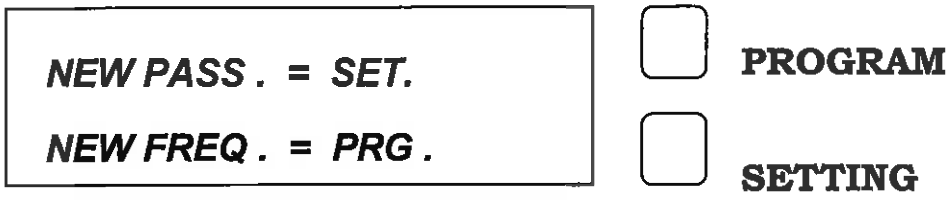
Repeat the same for the two remaining digits.

- *If the password is correct press the SETTING key to confirm, otherwise press the PROGRAM key to select again.*

If the password is not correct an error is displayed:

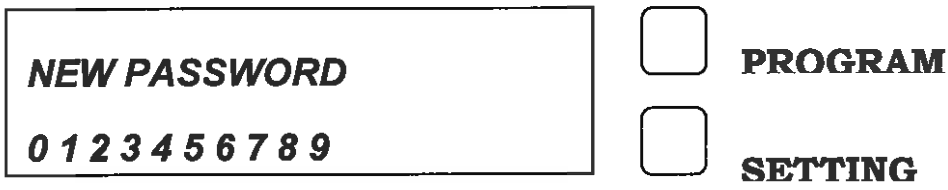
After a few seconds the display will show the parameters again.

When the password is correct, the display will show:

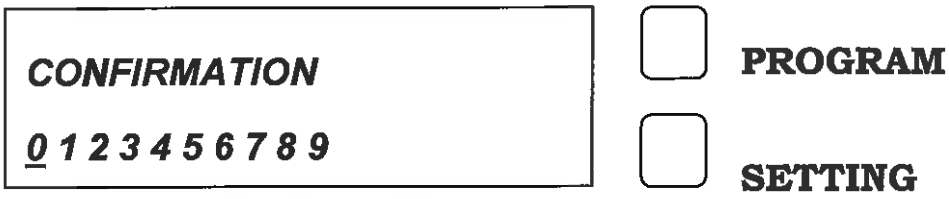


To change the password press the SETTING key.
To change the frequency press the PROGRAM key.

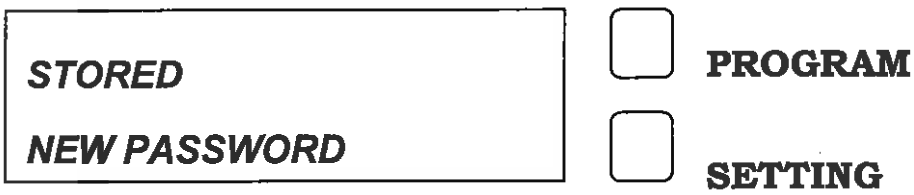
- *For changing the password proceed with the same method for the required password:*



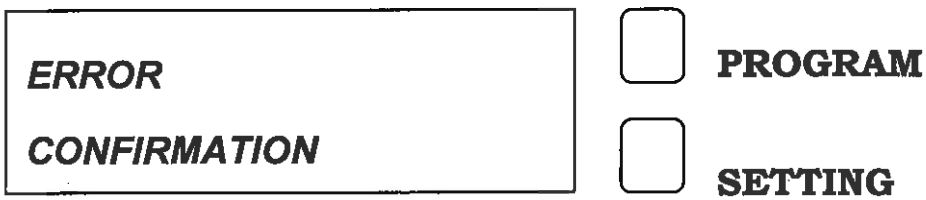
The confirmation password will be required.



If the password is correct the display will show:



If the confirmation password is wrong the display will show:



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IMPORTANT NOTE

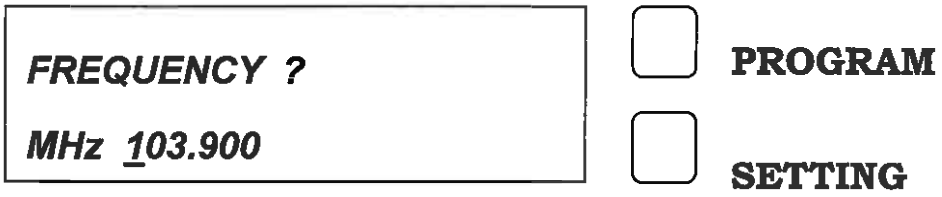
! BE CAREFUL !

Once the password is set, it must be remembered, otherwise neither the frequency nor the password can be reset and the unit will have to be returned to Nicom for resetting.

Display Change of Frequency.

- *Press the PROGRAM key for 3 seconds and enter the correct password. At this point press again the SELECT key:*

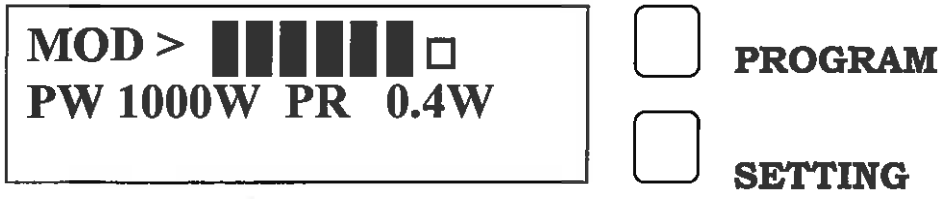
- *Press the PROGRAM key to change the desired digit and press the SETTING key to confirm it.*



The underscore character indicates which digit can be change.
To move the underscore character hit the PROGRAM key.

When the new frequency is chosen, then press the SETTING key confirm it.

After a "WAIT CYCLE", the display will show the parameters:



After 7 minutes the display light will switch off and the display will show:

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CHAPTER 2

ELECTRICAL SPECIFICATIONS

NT 500 TECHNICAL DATA

Power output:	*5 to 500 Watts continuously variable*
Frequency of operation:	*Sinthesized with TXCO crystal reference*
RF output connector/ Impedance:	*N TYPE / 50 Ohms*
Frequency Stability:	*Better than 5ppm (± 500 Hz) , 0 to 50° C.*
Frequency Range:	*87.5 - 108 Mhz*
Frequency programming:	*Digitally in 10 Khz increments.*
Modulation type:	*Direct FM at the carrier frequency*
S/N Ratio (ref. to 50 Khz / 1000 Hz):	*Mono > 70dB - Stereo > 65 dB.*
Distortion, THD:	*< 0.1 %, Typ. 0.05 %*
Asyncronous AM S/N ratio:	*65 dB below reference carrier with 100% AM (no FM modulation, 75 usec de-emphasis*
Syncronous AM S/N ratio:	*modulation present).* *60 dB below reference carrier with 100% AM Modulation (FM modulation± 75 Khz).*
DC input power:	*48 V VDC 20 A*
AC input power:	*Single phase,110-120or220-240V*
Ambient Temperature Range:	*0° to 50° C (+32° to +122° F)*
Spurious and Harmonic or Subharmonic Emissions:	*< -80 dB or better*
Stereo Separation	*55 dB @ 1 Khz*

COMPOSITE OPERATION

Composite inputs	*four total, 1 for MPX and 3 for SCA*
MPX input	*1 unbalanced bnc connector*
MPX input impedance	*2 K ohms*
MPX input level	*3,5 V p-p (1,237 Vrms/3.64 dBm)*

Composite FM unweighed S/N ratio	*> 78 dB below ±75 Khz deviation at 400 Hz*
	measured in a 30 Hz - 100Khz bandwidth with
	75 usec de-emphasis (RMS)
Composite Total Harmonic Distortion	*0.05 % typical*
Composite Intermodulation Distortion	*0.05 %, measured with a 1 Khz and a 1.3 Khz*
	tone, 1:1 ratio, at 100% modulation
Baseband	*30 Hz - 60 Khz within 0.15 dB*
Crosstalk	*main to stereo subchannel and stereo subchannel*
	to main > 55 dB (60 dB typical)
SCA Inputs	*3 unbalanced BNC connectors*
SCA Input Impedance	*10 K Ohms*
SCA Input Levels	*0 dBm (775 mV rms/ 2.2 V p-p) nominal for*
	±75 Khz deviation, adjustable
SCA Amplitude Response	*± 0.8 dB, 40 Khz to 100 Khz*
Crosstalk	*67 Khz SCA to main or to stereo subchannel >65dB*
	92 Khz SCA to main or to stereo subchannel >70 dB

MONOAURAL OPERATION

Audio Input Impedance	*600 Ohms balanced or unbalanced; 50 dB common mode suppression*
Audio Input Level	*0 dBm (775 mV rms/ 2.2 V p-p) nominal for*
	±75 Khz deviation, adjustable
FM S/N Ratio	*> 70 dB below ±75 Khz deviation at 400 Hz*
	measured in a 30 Hz - 20Khz bandwidth with
	75 usec de-emphasis (RMS)
Audio Frequency Response	*± 0.8 dB, 30 Hz to 15 Khz*
Intermodulation Distortion	*0.05 %, measured with a 1 Khz and a 1.3 Khz*
	tone, 1:1 ratio, at 100% modulation

MECHANICAL SPECIFICATIONS

Chassis Dimensions:	132 mm (5.1") H 540 mm (21")D 483 mm (19) W
Front panel dimensions:	483 mm (19") W 132 mm (5.1") H
Ambient operating temperature:	from 0 to + 50 C (+32 to +122 F)
Humidity:	90% maximum, non condensing.
Weight:	45 Lbs (20Kg)
Shipping Dimensions:	30" x 23" x 8"

REF1
LCD1
J19
J17
J20
J3
Q6
C96
C97
C15
R82
C93
R53
R64
C50
C53
Q1
R3
C52
R65
R2
C4
L1
C3
R187
R180
R1
Q16
J36
J35
R88
R87
C98
R55
R197
C168
R201
R188
R200
C167
R184
R202
R203
R199
R183
R198
R193
R194
R196
C160
R182
R181
C159
R185
R204
R84
R205
R192
J34
J33
Q2
R89
R90
J30
J29
D19
R100
R102
C94
Q7
Q3
Q5
R92
D17
R96
R97
R98
R99
C99
R93
R91
C92
R81
R86
C91
R95
R94
C95
Q4
D18
C85
C11
L5
C12
C9
L4
C10
C13
L6
C14
C7
L3
C8
C5
L2
C6
TERM1
TERM2
TERM3
TERM4
TERM5
U19
U12
U6
U4
U5
J16
J17
R70
R71
R72
R67
R66
R68
R69
C46
R58
R62
R61
R57
R56
R60
R59
R55
R54
R63
C47
C51
D9
C49
C48
V1
C57
C56
C58
C59
C54
C55
U7
R104
R106
R110
C101
R105
C100
C102
U13
R112
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C103
R107
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D15
R73
R74
R77
R80
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J31
R164
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C141
R168
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R169
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R174
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C150
J2
C142
L20
Q12
C152
R162
C143
R167
C145
R173
R165
C157
C156
L24
L23
R175
R166
C151
C154
C155
R170
R171
R177
R178
Q13
C144
C146
C153
C158
C140
C136
C139
R158
R156
R160
R159
R150
R154
C128
R137
R145
R142
U18
R147
R153
C124
C126
R136
R139
R146
C131
C135
C137
C166
J21
J22
J23
J24
D29
Q11
R157
R161
D31
D30
D32
D33
D34
D13
D12
C165
U10
Q15
Q14
U20
C77
C76
C164
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C162
C161
L14
C63
C78
R189
C64
C67
C62
L13
L12
U8
C66
J38
C61
J37
C68
U9
C69
C65
J1
C60
C125
R148
R143
R190
R140
D18
R151
R152
D10
C127
TCXO1
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C138
R149
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R103
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R141
C134
J28
J27
R144
R191
C130
D28
R135
R138
C121
R133
R9
COAX1
C118
L17
R128
R130
C119
C117
U16
C122
C123
R134
L18
L19
D20
D21
D22
D23
D24
D25
D27
D26
Q9
Q8
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C112
C116
C111
C110
C115
L16
R129
C120
C114
C106
C109
C108
U15
C107
R120
R122
J12
C16
C17
L7
L9
C20
C21
J13
SW1
R4
D2
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L8
C19
C23
L10
C22
C24
L11
C25
D1
C104
R109
R108
R111
U14
R116
R119
R118
R24
R33
C37
C34
C38
R26
D8
R32
D7
R31
R25
U2
D6
D5
R30
C39
R35
R15
R18
D3
D4
R17
R19
J14
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R13
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J11
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C86
C71
R75
R5
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R6
C28
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U1
C87
R7
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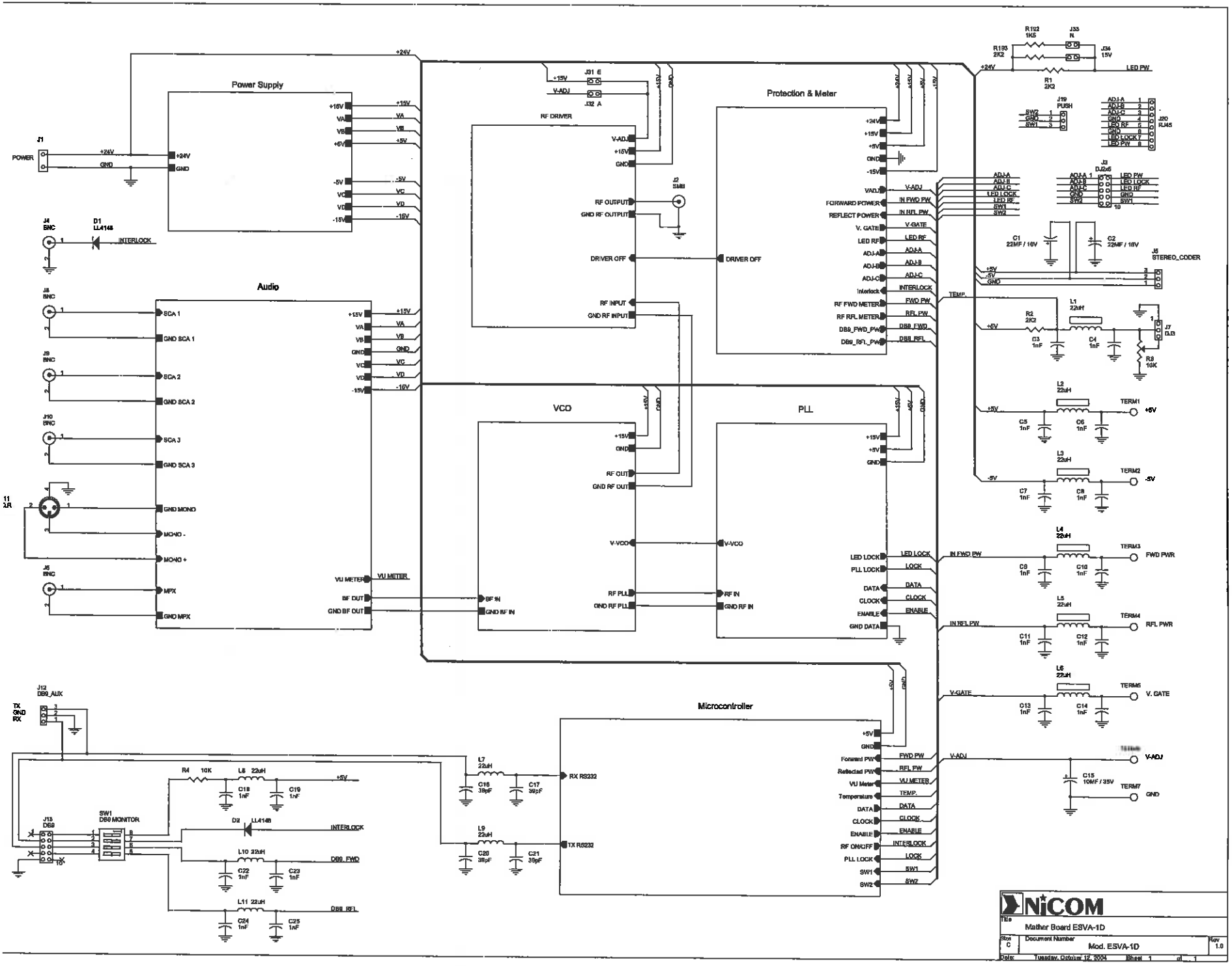
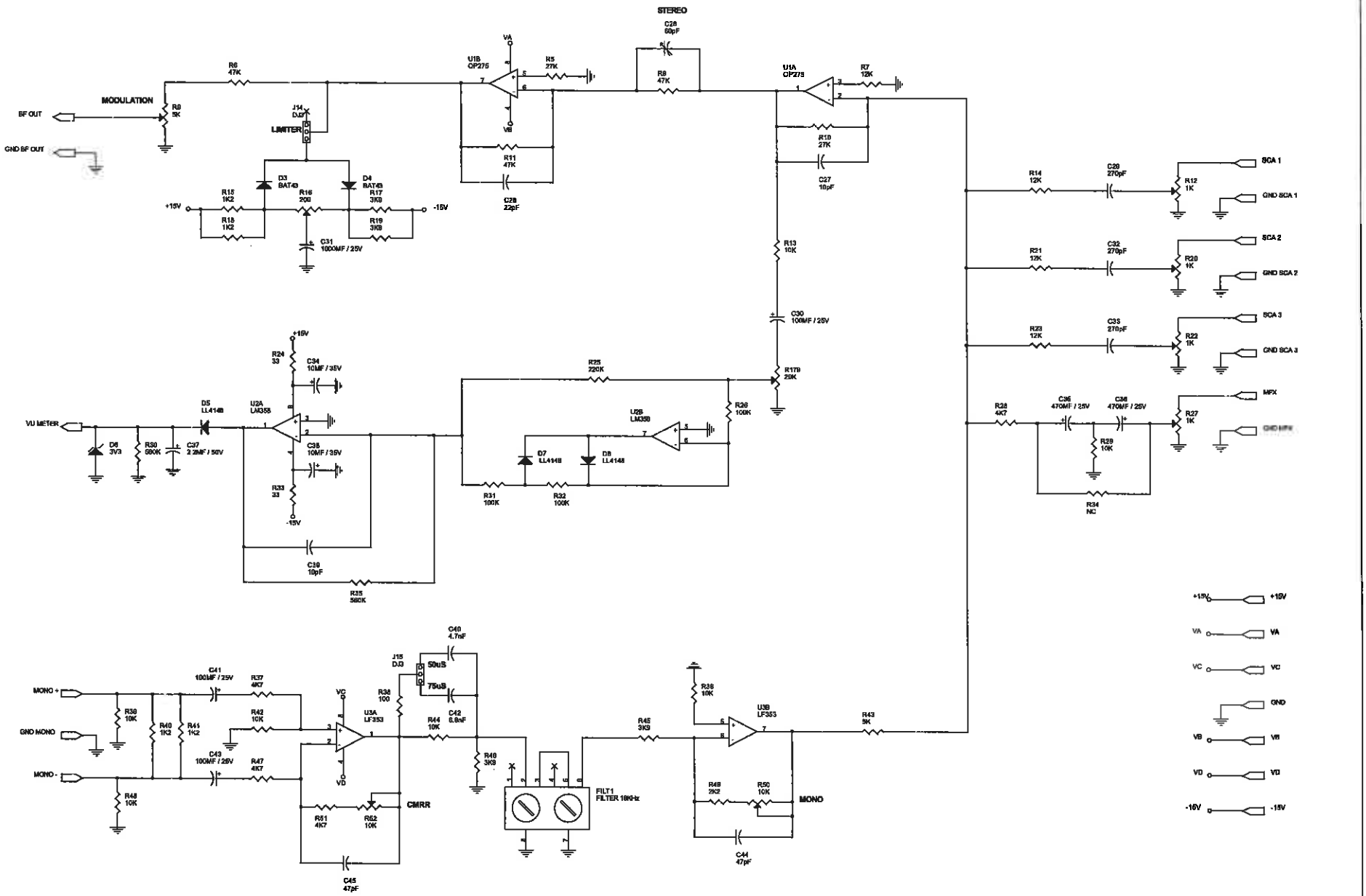
C27
R49
R43
C85
R78
C74
R76
R45
R36
C44
R46
C75
R44
C40
R38
C42
J15
R52
FILT1
C73
C89
C88
R79
C90
R42
R37
R47
C45
R51
R41
R39
R40
R48
C43
C41
U3
C35
C36
R28
R29
R34
R27
J4
J8
J9
J10
J6
R12
R20
R22
R50
C29
R14
C32
R21
C33
R23
REF2


Power Supply
Audio
RF DRIVER
Protection & Meter
VCO
PLL
Microcontroller
POWER
INTERLOCK
RF OUTPUT
GND RF OUTPUT
DRIVER OFF
RF INPUT
GND RF INPUT
V-ADJ
LED PW
LED LOCK
LED RF
FORWARD POWER
IN FWD PW
REFLECT POWER
IN RFL PW
V. GATE
TEMP.
RF FWD METER
RF RFL METER
DB9_FWD_PW
DB9_RFL_PW
VU METER
RF OUT
GND RF OUT
V-VCO
RF PLL
GND RF PLL
RF IN
GND RF IN
LOCK
PLL LOCK
DATA
CLOCK
ENABLE
GND DATA
RF ON/OFF
SCA 1
GND SCA 1
SCA 2
GND SCA 2
SCA 3
GND SCA 3
GND MONO
MONO -
MONO +
MPX
GND MPX
TERM1
TERM2
TERM3
TERM4
TERM5
TERM7
FWD PWR
RFL PWR
V. GATE
STEREO_CODER
DB9_AUX
DB9
DB9 MONITOR
RX RS232
TX RS232
DB9_FWD
DB9_RFL
NiCOM
Mather Board ESVA-1D
Mod. ESVA-1D
Tuesday, October 12, 2004

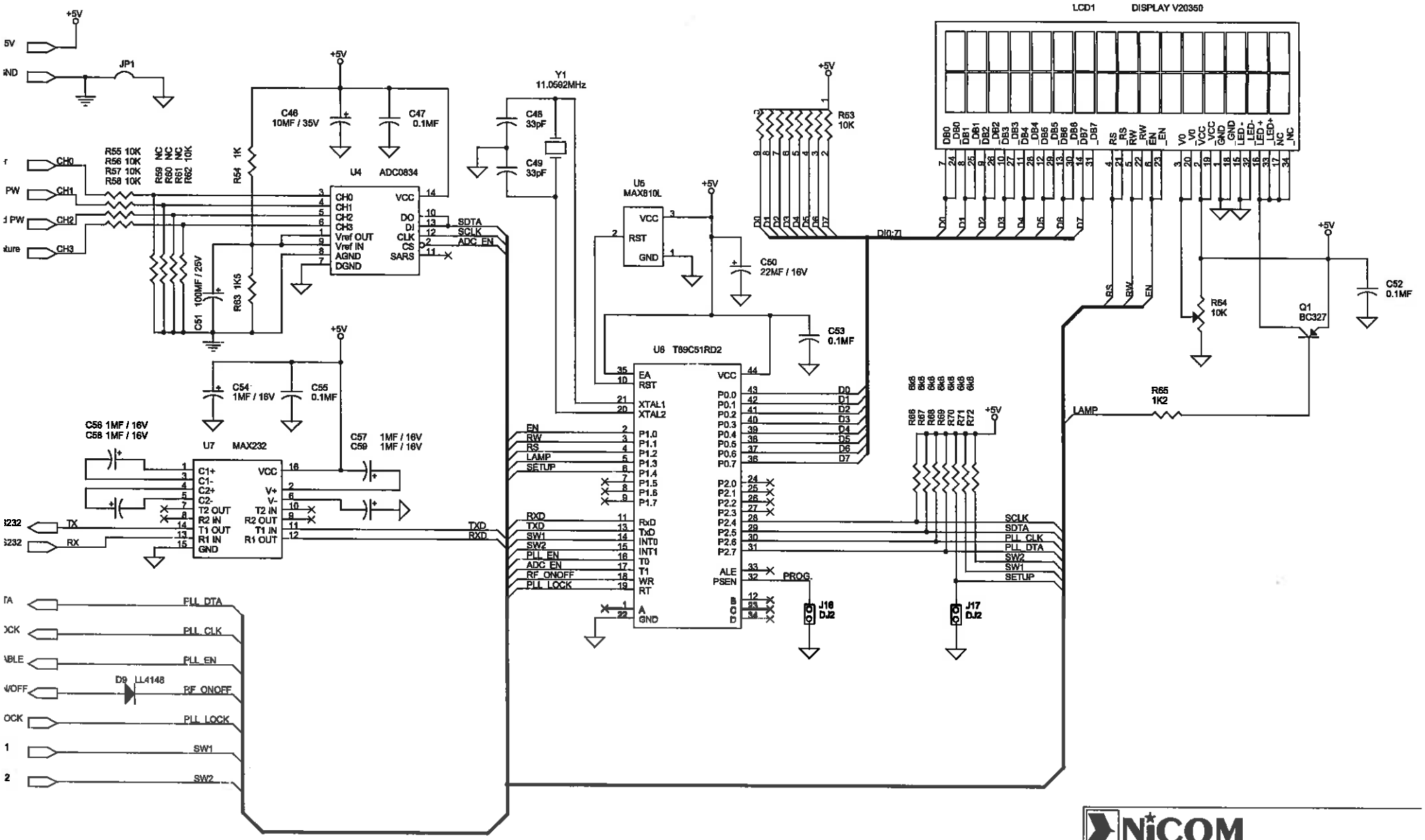


NiCOM

Title: Audio Output

Size: C | Document Number: Mod. ESVA-1D | Rev: 1.0

Date: Tuesday, October 12, 2004 | Sheet 1 of 1

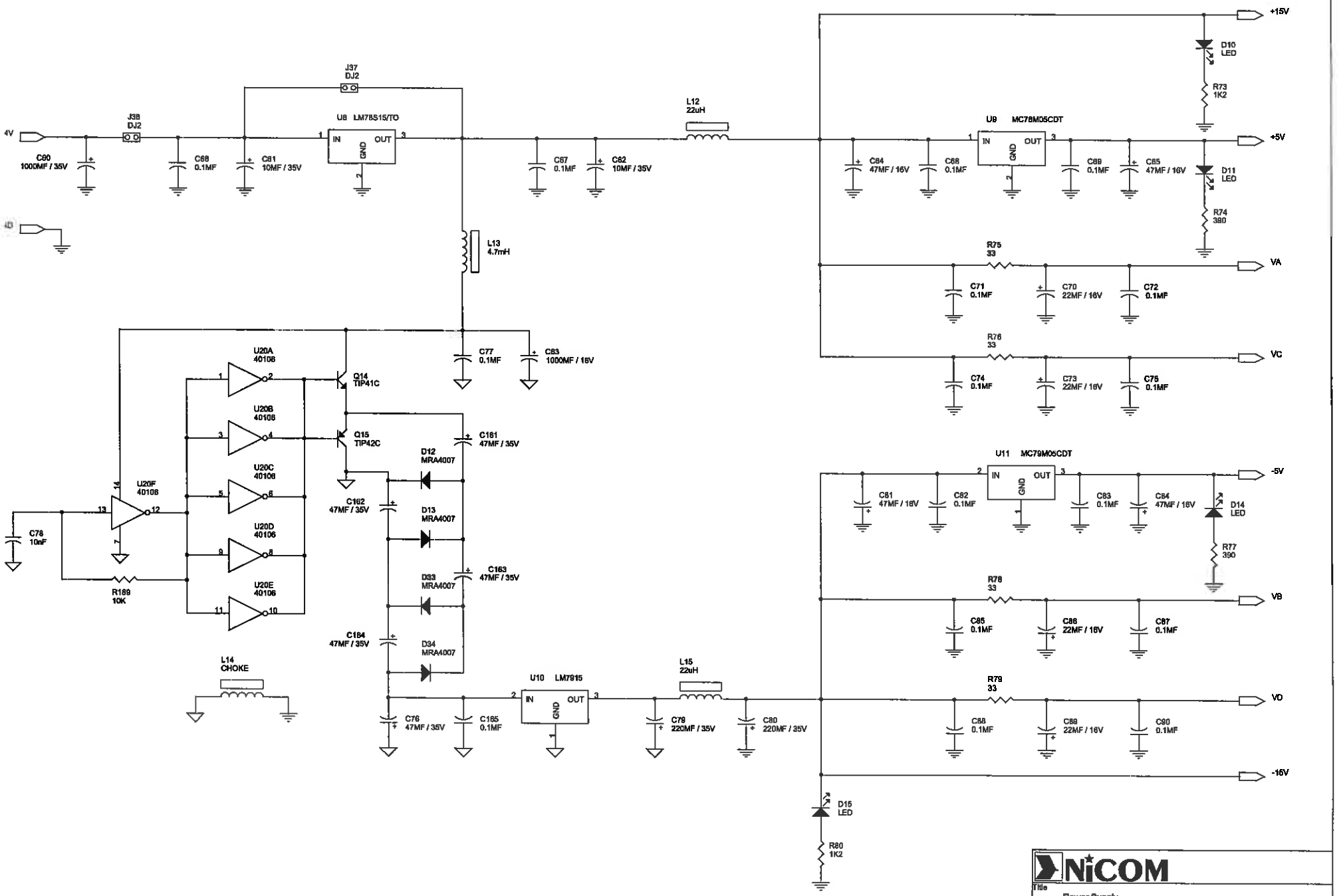


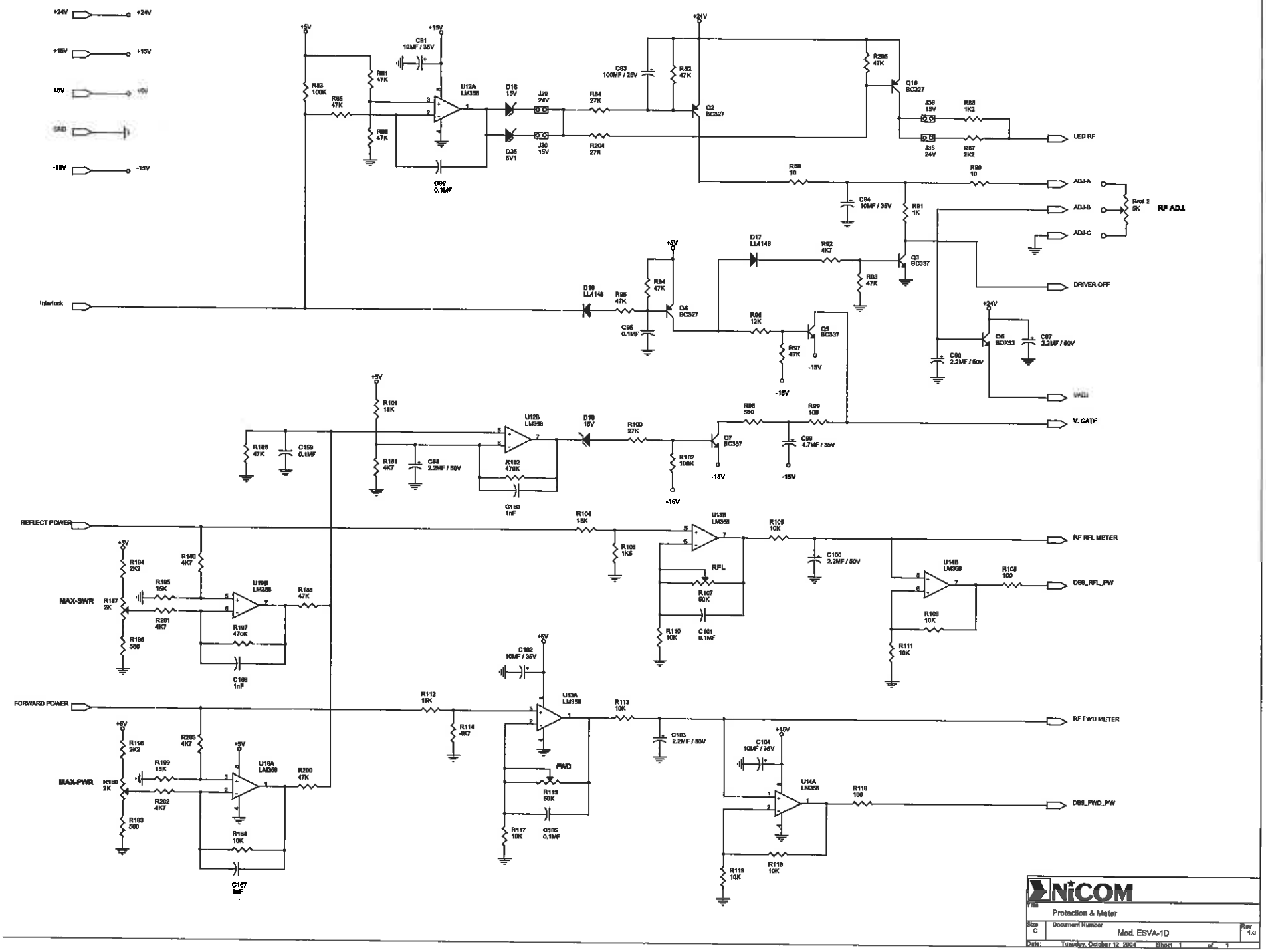
NiCOM

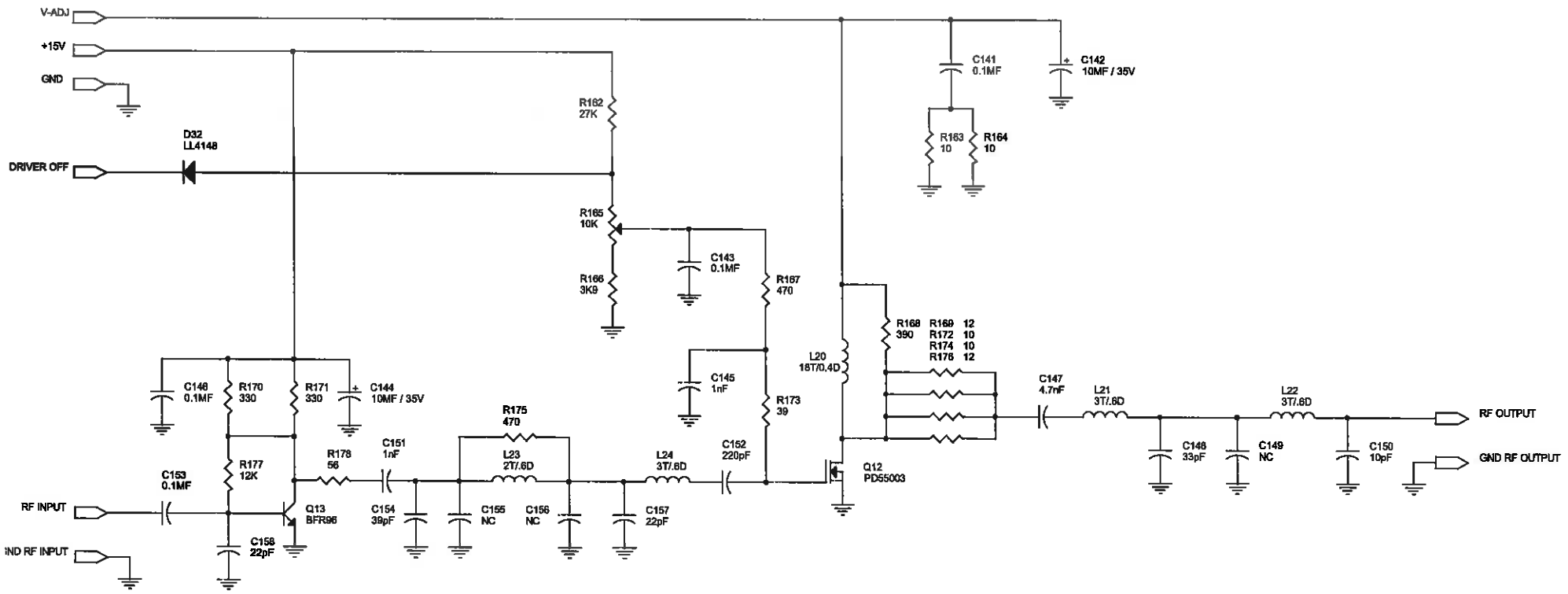
Title: Microcontroller

Size: B | Document Number: Mod. ESVA-1D | Rev: 1

Date: Tuesday, October 12, 2004 | Sheet 1 of 1


4V
4D
J38
DJ2
J37
DJ2
C60
1000MF / 35V
C68
0.1MF
C81
10MF / 35V
U8 LM78S15/TO
IN
OUT
GND
C67
0.1MF
C82
10MF / 35V
L12
22uH
L13
4.7mH
C77
0.1MF
C83
1000MF / 16V
U20A
40106
U20B
40106
U20C
40106
U20D
40106
U20E
40106
U20F
40106
Q14
TIP41C
Q15
TIP42C
C78
10nF
R189
10K
C161
47MF / 35V
C162
47MF / 35V
C163
47MF / 35V
C164
47MF / 35V
D12
MRA4007
D13
MRA4007
D33
MRA4007
D34
MRA4007
L14
CHOKE
U10 LM7915
C76
47MF / 35V
C165
0.1MF
L15
22uH
C79
220MF / 35V
C80
220MF / 35V
U9 MC78M05CDT
C84
47MF / 16V
C88
0.1MF
C89
0.1MF
C85
47MF / 16V
D10
LED
R73
1K2
D11
LED
R74
390
+15V
+5V
R75
33
C71
0.1MF
C70
22MF / 16V
C72
0.1MF
VA
R76
33
C74
0.1MF
C73
22MF / 16V
C75
0.1MF
VC
U11 MC79M05CDT
C81
47MF / 16V
C82
0.1MF
C83
0.1MF
C84
47MF / 16V
D14
LED
R77
390
-5V
R78
33
C85
0.1MF
C86
22MF / 16V
C87
0.1MF
VB
R79
33
C88
0.1MF
C89
22MF / 16V
C90
0.1MF
VD
-15V
D15
LED
R80
1K2
NiCOM
Title
Power Supply
Size
A3
Document Number
Mod. ESVA-1D
Rev
1.0
Date:
Tuesday, October 12, 2004
Sheet
1
of
1


+24V
+15V
+5V
GND
-15V
Interlock
LED RF
ADJ-A
ADJ-B
ADJ-C
RF ADJ.
DRIVER OFF
V. GATE
REFLECT POWER
RF RFL METER
DBB_RFL_PW
MAX-SWR
FORWARD POWER
RF FWD METER
MAX-PWR
DBB_FWD_PW
RFL
FWD
NiCOM
Protection & Meter
Mod. ESVA-1D
Tuesday, October 12, 2004



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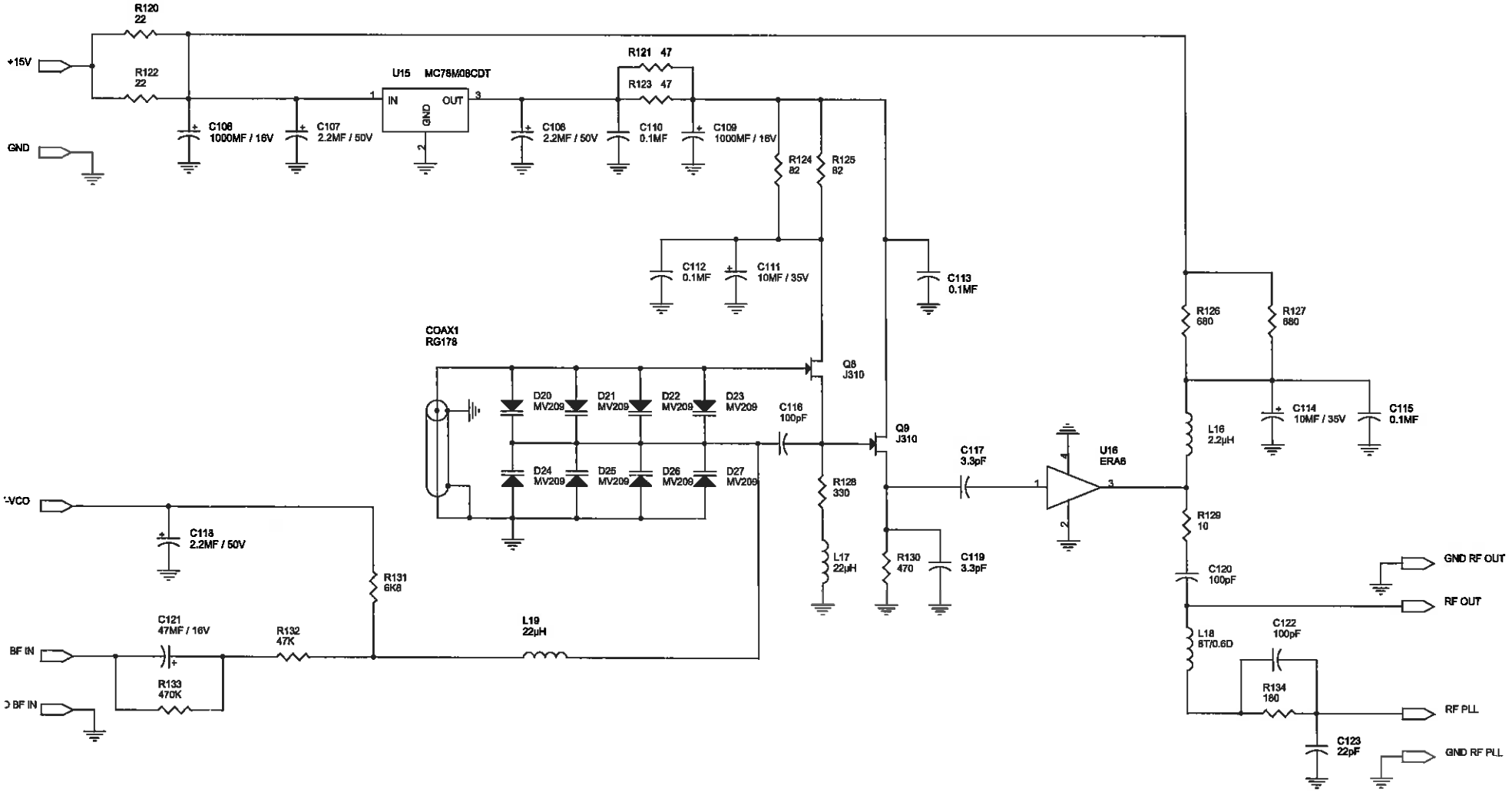
Title: RF Driver

Size: B | Document Number: Mod. ESVA-1D | Rev: 1

Date: Tuesday, October 12, 2004 | Sheet 1 of 1

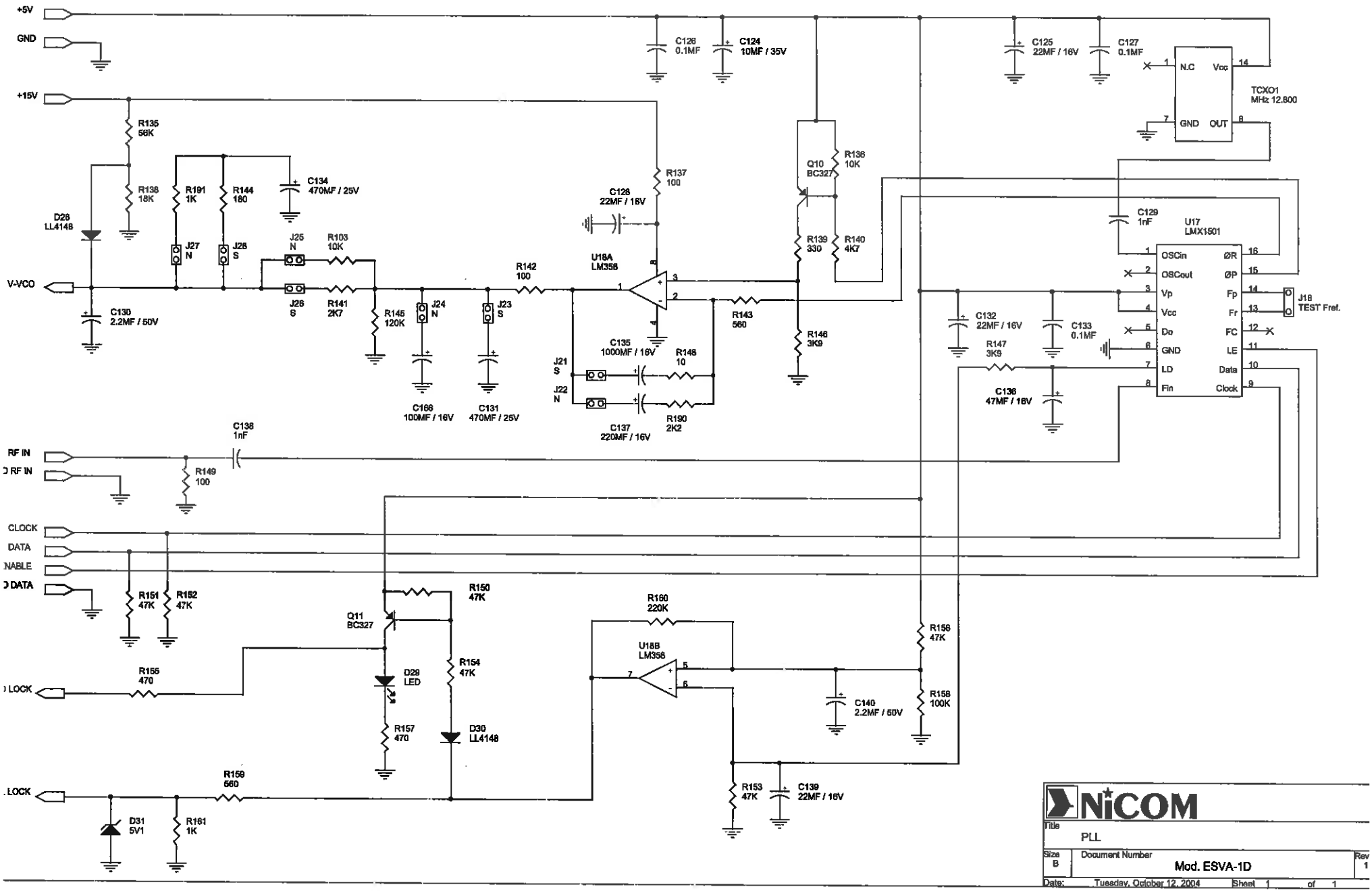


NiCOM

Title: VCO

Size: B | Document Number: Mod. ESVA-1D | Rev: 1

Date: Tuesday, October 12, 2004 | Sheet 1 of 1



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Title: PLL

Size: B | Document Number: Mod. ESVA-1D | Rev: 1

Date: Tuesday, October 12, 2004 | Sheet 1 of 1

Part List Schematic : ESVA-1D

Rif.	Value	Remarks	Description	Code
C1	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C2	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C3	1nF		SMD Multilayer Ceramic Capacitor	
C4	1nF		SMD Multilayer Ceramic Capacitor	
C5	1nF		SMD Multilayer Ceramic Capacitor	
C6	1nF		SMD Multilayer Ceramic Capacitor	
C7	1nF		SMD Multilayer Ceramic Capacitor	
C8	1nF		SMD Multilayer Ceramic Capacitor	
C9	1nF		SMD Multilayer Ceramic Capacitor	
C10	1nF		SMD Multilayer Ceramic Capacitor	
C11	1nF		SMD Multilayer Ceramic Capacitor	
C12	1nF		SMD Multilayer Ceramic Capacitor	
C13	1nF		SMD Multilayer Ceramic Capacitor	
C14	1nF		SMD Multilayer Ceramic Capacitor	
C15	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C16	39pF		SMD Multilayer Ceramic Capacitor	
C17	39pF		SMD Multilayer Ceramic Capacitor	
C18	1nF		SMD Multilayer Ceramic Capacitor	
C19	1nF		SMD Multilayer Ceramic Capacitor	
C20	39pF		SMD Multilayer Ceramic Capacitor	
C21	39pF		SMD Multilayer Ceramic Capacitor	
C22	1nF		SMD Multilayer Ceramic Capacitor	
C23	1nF		SMD Multilayer Ceramic Capacitor	
C24	1nF		SMD Multilayer Ceramic Capacitor	
C25	1nF		SMD Multilayer Ceramic Capacitor	
C26	60pF		Trimmer Polyethylene Film Capacitor	
C27	10pF		SMD Multilayer Ceramic Capacitor	
C28	22pF		SMD Multilayer Ceramic Capacitor	
C29	270pF		SMD Multilayer Ceramic Capacitor	
C30	100MF	16V	SMD Aluminium Electrolytic Capacitor	
C31	1000MF	25V	Aluminium Electrolytic Capacitor	
C32	270pF		SMD Multilayer Ceramic Capacitor	
C33	270pF		SMD Multilayer Ceramic Capacitor	
C34	10MF	35V	Aluminium Electrolytic Capacitor	
C35	470MF	35V	Aluminium Electrolytic Capacitor	
C36	470MF	35V	Aluminium Electrolytic Capacitor	
C37	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C38	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C39	10pF		SMD Multilayer Ceramic Capacitor	
C40	4.7nF		Polyester Capacitor	
C41	100MF	25V	SMD Aluminium Electrolytic Capacitor	
C42	6.8nF		Polyester Capacitor	
C43	100MF	25V	SMD Aluminium Electrolytic Capacitor	
C44	47pF		SMD Multilayer Ceramic Capacitor	
C45	47pF		SMD Multilayer Ceramic Capacitor	
C46	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C47	0.1MF		SMD Multilayer Ceramic Capacitor	
C48	33pF		SMD Multilayer Ceramic Capacitor	
C49	33pF		SMD Multilayer Ceramic Capacitor	

Rif.	Value	Remarks	Description	Code
C50	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C51	100MF	25V	SMD Aluminium Electrolytic Capacitor	
C52	0.1MF		SMD Multilayer Ceramic Capacitor	
C53	0.1MF		SMD Multilayer Ceramic Capacitor	
C54	1MF / 16V		SMD Aluminium Electrolytic Capacitor	
C55	0.1MF		SMD Multilayer Ceramic Capacitor	
C56	1MF	16V	SMD Aluminium Electrolytic Capacitor	
C57	1MF	16V	SMD Aluminium Electrolytic Capacitor	
C58	1MF	16V	SMD Aluminium Electrolytic Capacitor	
C59	1MF	16V	SMD Aluminium Electrolytic Capacitor	
C60	1000MF	35V	Aluminium Electrolytic Capacitor	
C61	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C62	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C63	1000MF	16V	Aluminium Electrolytic Capacitor	
C64	47MF	16V	SMD Aluminium Electrolytic Capacitor	
C65	47MF	16V	SMD Aluminium Electrolytic Capacitor	
C66	0.1MF		SMD Multilayer Ceramic Capacitor	
C67	0.1MF		SMD Multilayer Ceramic Capacitor	
C68	0.1MF		SMD Multilayer Ceramic Capacitor	
C69	0.1MF		SMD Multilayer Ceramic Capacitor	
C70	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C71	0.1MF		SMD Multilayer Ceramic Capacitor	
C72	0.1MF		SMD Multilayer Ceramic Capacitor	
C73	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C74	0.1MF		SMD Multilayer Ceramic Capacitor	
C75	0.1MF		SMD Multilayer Ceramic Capacitor	
C76	47MF	35V	Aluminium Electrolytic Capacitor	
C77	0.1MF		SMD Multilayer Ceramic Capacitor	
C78	10nF		SMD Multilayer Ceramic Capacitor	
C79	220MF	35V	Aluminium Electrolytic Capacitor	
C80	220MF	35V	Aluminium Electrolytic Capacitor	
C81	47MF	16V	SMD Aluminium Electrolytic Capacitor	
C82	0.1MF		SMD Multilayer Ceramic Capacitor	
C83	0.1MF		SMD Multilayer Ceramic Capacitor	
C84	47MF	16V	SMD Aluminium Electrolytic Capacitor	
C85	0.1MF		SMD Multilayer Ceramic Capacitor	
C86	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C87	0.1MF		SMD Multilayer Ceramic Capacitor	
C88	0.1MF		SMD Multilayer Ceramic Capacitor	
C89	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C90	0.1MF		SMD Multilayer Ceramic Capacitor	
C91	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C92	0.1MF		SMD Multilayer Ceramic Capacitor	
C93	100MF	25V	Aluminium Electrolytic Capacitor	
C94	10MF	35V	Aluminium Electrolytic Capacitor	
C95	0.1MF		SMD Multilayer Ceramic Capacitor	
C96	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C97	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C98	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C99	4.7MF	35V	SMD Aluminium Electrolytic Capacitor	
C100	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C101	0.1MF		SMD Multilayer Ceramic Capacitor	

Rif.	Value	Remarks	Description	Code
C102	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C103	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C104	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C105	0.1MF		SMD Multilayer Ceramic Capacitor	
C106	1000MF	16V	Aluminium Electrolytic Capacitor	
C107	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C108	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C109	1000MF	16V	Aluminium Electrolytic Capacitor	
C110	0.1MF		SMD Multilayer Ceramic Capacitor	
C111	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C112	0.1MF		SMD Multilayer Ceramic Capacitor	
C113	0.1MF		SMD Multilayer Ceramic Capacitor	
C114	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C115	0.1MF		SMD Multilayer Ceramic Capacitor	
C116	100pF		SMD Multilayer Ceramic Capacitor	
C117	3.3pF		SMD Multilayer Ceramic Capacitor	
C118	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C119	3.3pF		SMD Multilayer Ceramic Capacitor	
C120	100pF		SMD Multilayer Ceramic Capacitor	
C121	47MF	16V	SMD Aluminium Electrolytic Capacitor	
C122	100pF		SMD Multilayer Ceramic Capacitor	
C123	22pF		SMD Multilayer Ceramic Capacitor	
C124	10MF	35V	SMD Multilayer Ceramic Capacitor	
C125	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C126	0.1MF		SMD Multilayer Ceramic Capacitor	
C127	0.1MF		SMD Multilayer Ceramic Capacitor	
C128	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C129	1nF		SMD Multilayer Ceramic Capacitor	
C130	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C131	470MF	16V	Aluminium Electrolytic Capacitor	
C132	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C133	0.1MF		SMD Multilayer Ceramic Capacitor	
C134	470MF	16V	Aluminium Electrolytic Capacitor	
C135	1000MF	16V	Aluminium Electrolytic Capacitor	
C136	47MF	16V	SMD Aluminium Electrolytic Capacitor	
C137	220MF	16V	Aluminium Electrolytic Capacitor	
C138	1nF		SMD Multilayer Ceramic Capacitor	
C139	22MF	16V	SMD Aluminium Electrolytic Capacitor	
C140	2.2MF	50V	SMD Aluminium Electrolytic Capacitor	
C141	0.1MF		SMD Multilayer Ceramic Capacitor	
C142	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C143	0.1MF		SMD Multilayer Ceramic Capacitor	
C144	10MF	35V	SMD Aluminium Electrolytic Capacitor	
C145	1nF		SMD Multilayer Ceramic Capacitor	
C146	0.1MF		SMD Multilayer Ceramic Capacitor	
C147	4.7nF		SMD Multilayer Ceramic Capacitor	
C148	33pF		SMD Multilayer Ceramic Capacitor	
C149	NC		NC	
C150	10pF		SMD Multilayer Ceramic Capacitor	
C151	1nF		SMD Multilayer Ceramic Capacitor	
C152	220pF		SMD Multilayer Ceramic Capacitor	
C153	0.1MF		SMD Multilayer Ceramic Capacitor	

Rif.	Value	Remarks	Description	Code
C154	39pF		SMD Multilayer Ceramic Capacitor	
C155	NC		NC	
C156	NC		NC	
C157	22pF		SMD Multilayer Ceramic Capacitor	
C158	22pF		SMD Multilayer Ceramic Capacitor	
C159	0.1MF		SMD Multilayer Ceramic Capacitor	
C160	1nF		SMD Multilayer Ceramic Capacitor	
C161	47MF	35V	Aluminium Electrolytic Capacitor	
C162	47MF	35V	Aluminium Electrolytic Capacitor	
C163	47MF	35V	Aluminium Electrolytic Capacitor	
C164	47MF	35V	Aluminium Electrolytic Capacitor	
C165	0.1MF		SMD Multilayer Ceramic Capacitor	
C166	100MF	16V	SMD Aluminium Electrolytic Capacitor	
C167	1nF		SMD Multilayer Ceramic Capacitor	
C168	1nF		SMD Multilayer Ceramic Capacitor	
L1	22uH		SMD Inductor	
L2	22uH		SMD Inductor	
L3	22uH		SMD Inductor	
L4	22uH		SMD Inductor	
L5	22uH		SMD Inductor	
L6	22uH		SMD Inductor	
L7	22uH		SMD Inductor	
L8	22uH		SMD Inductor	
L9	22uH		SMD Inductor	
L10	22uH		SMD Inductor	
L11	22uH		SMD Inductor	
L12	22uH		Suppression Choke	
L13	4.7mH		Suppression Choke	
L14	CHOKE		Suppression Choke	
L15	22uH		Suppression Choke	
L16	2.2µH		SMD Inductor	
L17	22µH		SMD Inductor	
L18	8T/0.6D		Enamelled Copper Wire	
L19	22µH		SMD Inductor	
L20	18T/0.4D		Enamelled Copper Wire	
L21	3T/.6D		Tinned Copper Wire	
L22	3T/.6D		Tinned Copper Wire	
L23	2T/.6D		Enamelled Copper Wire	
L24	3T/.6D		Tinned Copper Wire	
R1	2K2	1/4W	SMD Thick Film Resistor	
R2	2K2	1/4W	SMD Thick Film Resistor	
R3	10K	1/4W	SMD Cermet Skeleton Trimmer Resistor	
R4	10K	1/4W	SMD Thick Film Resistor	
R5	27K	1/4W	SMD Thick Film Resistor	
R6	47K	1/4W	SMD Thick Film Resistor	
R7	12K	1/4W	SMD Thick Film Resistor	
R8	47K	1/4W	SMD Thick Film Resistor	
R9	5K	1/4W	Multi Turn Cermet Trimmer Resistor	
R10	27K	1/4W	SMD Thick Film Resistor	
R11	47K	1/4W	SMD Thick Film Resistor	

Rif.	Value	Remarks	Description	Code
R12	1K	1/4W	Multi Turn Cermet Trimmer Resistor Panel Mount	
R13	10K	1/4W	SMD Thick Film Resistor	
R14	12K	1/4W	SMD Thick Film Resistor	
R15	1K2	1/4W	SMD Thick Film Resistor	
R16	200	1/4W	SMD Cermet Skeleton Trimmer Resistor	
R17	3K9	1/4W	SMD Thick Film Resistor	
R18	1K2	1/4W	SMD Thick Film Resistor	
R19	3K9	1/4W	SMD Thick Film Resistor	
R20	1K	1/4W	Multi Turn Cermet Trimmer Resistor Panel Mount	
R21	12K	1/4W	SMD Thick Film Resistor	
R22	1K	1/4W	Multi Turn Cermet Trimmer Resistor Panel Mount	
R23	12K	1/4W	SMD Thick Film Resistor	
R24	33	1/4W	SMD Thick Film Resistor	
R25	220K	1/4W	SMD Thick Film Resistor	
R26	100K	1/4W	SMD Thick Film Resistor	
R27	1K	1/4W	Multi Turn Cermet Trimmer Resistor Panel Mount	
R28	4K7	1/4W	SMD Thick Film Resistor	
R29	10K	1/4W	SMD Thick Film Resistor	
R30	560K	1/4W	SMD Thick Film Resistor	
R31	100K	1/4W	SMD Thick Film Resistor	
R32	100K	1/4W	SMD Thick Film Resistor	
R33	33	1/4W	SMD Thick Film Resistor	
R34	NC	1/4W	SMD Thick Film Resistor	
R35	560K	1/4W	SMD Thick Film Resistor	
R36	10K	1/4W	SMD Thick Film Resistor	
R37	4K7	1/4W	SMD Thick Film Resistor	
R38	100	1/4W	SMD Thick Film Resistor	
R39	10K	1/4W	SMD Thick Film Resistor	
R40	1K2	1/4W	SMD Thick Film Resistor	
R41	1K2	1/4W	SMD Thick Film Resistor	
R42	10K	1/4W	SMD Thick Film Resistor	
R43	10K	1/4W	SMD Thick Film Resistor	
R44	10K	1/4W	SMD Thick Film Resistor	
R45	3K9	1/4W	SMD Thick Film Resistor	
R46	3K9	1/4W	SMD Thick Film Resistor	
R47	4K7	1/4W	SMD Thick Film Resistor	
R48	10K	1/4W	SMD Thick Film Resistor	
R49	2K2	1/4W	SMD Thick Film Resistor	
R50	10K	1/4W	Multi Turn Cermet Trimmer Resistor Panel Mount	
R51	4K7	1/4W	SMD Thick Film Resistor	
R52	10K	1/4W	Multi Turn Cermet Trimmer Resistor	
R53	10K	1/4W	SMD Thick Film Resistor	
R54	1K	1/4W	SMD Thick Film Resistor	
R55	10K	1/4W	SMD Thick Film Resistor	
R56	10K	1/4W	SMD Thick Film Resistor	
R57	10K	1/4W	SMD Thick Film Resistor	
R58	10K	1/4W	SMD Thick Film Resistor	
R59	NC		NC	
R60	NC		NC	
R61	NC		NC	
R62	10K	1/4W	SMD Thick Film Resistor	
R63	1K5	1/4W	SMD Thick Film Resistor	

Rif.	Value	Remarks	Description	Code
R64	10K	1/4W	SMD Cermet Skeleton Trimmer Resistor	
R65	1K2	1/4W	SMD Thick Film Resistor	
R66	6k8	1/4W	SMD Thick Film Resistor	
R67	6k8	1/4W	SMD Thick Film Resistor	
R68	6k8	1/4W	SMD Thick Film Resistor	
R69	6k8	1/4W	SMD Thick Film Resistor	
R70	6k8	1/4W	SMD Thick Film Resistor	
R71	6k8	1/4W	SMD Thick Film Resistor	
R72	6k8	1/4W	SMD Thick Film Resistor	
R73	1K2	1/4W	SMD Thick Film Resistor	
R74	390	1/4W	SMD Thick Film Resistor	
R75	33	1/4W	SMD Thick Film Resistor	
R76	33	1/4W	SMD Thick Film Resistor	
R77	390	1/4W	SMD Thick Film Resistor	
R78	33	1/4W	SMD Thick Film Resistor	
R79	33	1/4W	SMD Thick Film Resistor	
R80	1K2	1/4W	SMD Thick Film Resistor	
R81	47K	1/4W	SMD Thick Film Resistor	
R82	47K	1/4W	SMD Thick Film Resistor	
R83	100K	1/4W	SMD Thick Film Resistor	
R84	27K	1/4W	SMD Thick Film Resistor	
R85	47K	1/4W	SMD Thick Film Resistor	
R86	47K	1/4W	SMD Thick Film Resistor	
R87	2K2	1/4W	SMD Thick Film Resistor	
R88	1K2	1/4W	SMD Thick Film Resistor	
R89	10	1/4W	SMD Thick Film Resistor	
R90	10	1/4W	SMD Thick Film Resistor	
R91	1K	1/4W	SMD Thick Film Resistor	
R92	4K7	1/4W	SMD Thick Film Resistor	
R93	47K	1/4W	SMD Thick Film Resistor	
R94	47K	1/4W	SMD Thick Film Resistor	
R95	47K	1/4W	SMD Thick Film Resistor	
R96	12K	1/4W	SMD Thick Film Resistor	
R97	47K	1/4W	SMD Thick Film Resistor	
R98	560	1/4W	SMD Thick Film Resistor	
R99	100	1/4W	SMD Thick Film Resistor	
R100	27K	1/4W	SMD Thick Film Resistor	
R101	18K	1/4W	SMD Thick Film Resistor	
R102	100K	1/4W	SMD Thick Film Resistor	
R103	10K	1/4W	SMD Thick Film Resistor	
R104	18K	1/4W	SMD Thick Film Resistor	
R105	10K	1/4W	SMD Thick Film Resistor	
R106	1K5	1/4W	SMD Thick Film Resistor	
R107	50K	1/4W	Multi Turn Cermet Trimmer Resistor	
R108	100	1/4W	SMD Thick Film Resistor	
R109	10K	1/4W	SMD Thick Film Resistor	
R110	10K	1/4W	SMD Thick Film Resistor	
R111	10K	1/4W	SMD Thick Film Resistor	
R112	15K	1/4W	SMD Thick Film Resistor	
R113	10K	1/4W	SMD Thick Film Resistor	
R114	4K7	1/4W	SMD Thick Film Resistor	
R115	50K	1/4W	Multi Turn Cermet Trimmer Resistor	

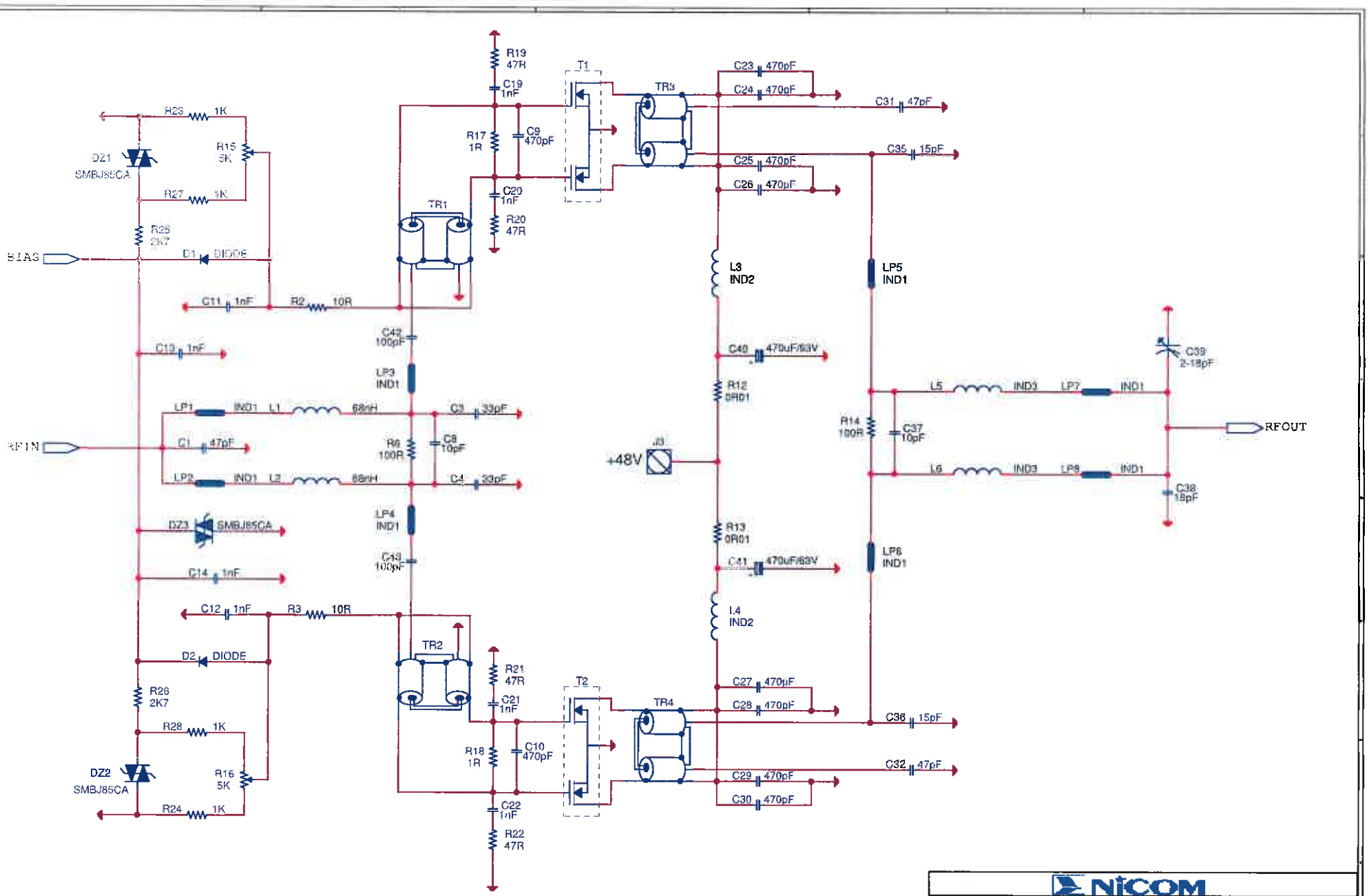
Rif.	Value	Remarks	Description	Code
R116	100	1/4W	SMD Thick Film Resistor	
R117	10K	1/4W	SMD Thick Film Resistor	
R118	10K	1/4W	SMD Thick Film Resistor	
R119	10K	1/4W	SMD Thick Film Resistor	
R120	22	1/4W	SMD Thick Film Resistor	
R121	47	1/4W	SMD Thick Film Resistor	
R122	22	1/4W	SMD Thick Film Resistor	
R123	47	1/4W	SMD Thick Film Resistor	
R124	82	1/4W	SMD Thick Film Resistor	
R125	82	1/4W	SMD Thick Film Resistor	
R126	680	1/4W	SMD Thick Film Resistor	
R127	680	1/4W	SMD Thick Film Resistor	
R128	330	1/4W	SMD Thick Film Resistor	
R129	10	1/4W	SMD Thick Film Resistor	
R130	470	1/4W	SMD Thick Film Resistor	
R131	6K8	1/4W	SMD Thick Film Resistor	
R132	47K	1/4W	SMD Thick Film Resistor	
R133	470K	1/4W	SMD Thick Film Resistor	
R134	180	1/4W	SMD Thick Film Resistor	
R135	56K	1/4W	SMD Thick Film Resistor	
R136	10K	1/4W	SMD Thick Film Resistor	
R137	100	1/4W	SMD Thick Film Resistor	
R138	18K	1/4W	SMD Thick Film Resistor	
R139	330	1/4W	SMD Thick Film Resistor	
R140	4K7	1/4W	SMD Thick Film Resistor	
R141	2K7	1/4W	SMD Thick Film Resistor	
R142	100	1/4W	SMD Thick Film Resistor	
R143	560	1/4W	SMD Thick Film Resistor	
R144	180	1/4W	SMD Thick Film Resistor	
R145	120K	1/4W	SMD Thick Film Resistor	
R146	3K9	1/4W	SMD Thick Film Resistor	
R147	3K9	1/4W	SMD Thick Film Resistor	
R148	10	1/4W	SMD Thick Film Resistor	
R149	100	1/4W	SMD Thick Film Resistor	
R150	47K	1/4W	SMD Thick Film Resistor	
R151	47K	1/4W	SMD Thick Film Resistor	
R152	47K	1/4W	SMD Thick Film Resistor	
R153	47K	1/4W	SMD Thick Film Resistor	
R154	47K	1/4W	SMD Thick Film Resistor	
R155	470	1/4W	SMD Thick Film Resistor	
R156	47K	1/4W	SMD Thick Film Resistor	
R157	470	1/4W	SMD Thick Film Resistor	
R158	100K	1/4W	SMD Thick Film Resistor	
R159	560	1/4W	SMD Thick Film Resistor	
R160	220K	1/4W	SMD Thick Film Resistor	
R161	1K	1/4W	SMD Thick Film Resistor	
R162	27K	1/4W	SMD Thick Film Resistor	
R163	10	1/4W	SMD Thick Film Resistor	
R164	10	1/4W	SMD Thick Film Resistor	
R165	10K	1/4W	SMD Cermet Skeleton Trimmer Resistor	
R166	3K9	1/4W	SMD Thick Film Resistor	
R167	470	1/4W	SMD Thick Film Resistor	

Rif.	Value	Remarks	Description	Code
R168	390	1/4W	SMD Thick Film Resistor	
R169	12	1/4W	SMD Thick Film Resistor	
R170	330	1/4W	SMD Thick Film Resistor	
R171	330	1/4W	SMD Thick Film Resistor	
R172	10	1/4W	SMD Thick Film Resistor	
R173	39	1/4W	SMD Thick Film Resistor	
R174	10	1/4W	SMD Thick Film Resistor	
R175	470	1/4W	SMD Thick Film Resistor	
R176	12	1/4W	SMD Thick Film Resistor	
R177	12K	1/4W	SMD Thick Film Resistor	
R178	56	1/4W	SMD Thick Film Resistor	
R179	20K	1/4W	SMD Cermet Skeleton Trimmer Resistor	
R180	2K	1/4W	Multi Turn Cermet Trimmer Resistor	
R181	4K7	1/4W	SMD Thick Film Resistor	
R182	470K	1/4W	SMD Thick Film Resistor	
R183	560	1/4W	SMD Thick Film Resistor	
R184	10K	1/4W	SMD Thick Film Resistor	
R185	47K	1/4W	SMD Thick Film Resistor	
R186	4K7	1/4W	SMD Thick Film Resistor	
R187	2K	1/4W	SMD Cermet Skeleton Trimmer Resistor	
R188	47K	1/4W	SMD Thick Film Resistor	
R189	10K	1/4W	SMD Thick Film Resistor	
R190	2K2	1/4W	SMD Thick Film Resistor	
R191	1K	1/4W	SMD Thick Film Resistor	
R192	1K5	1/4W	SMD Thick Film Resistor	
R193	2K2	1/4W	SMD Thick Film Resistor	
R194	2K2	1/4W	SMD Thick Film Resistor	
R195	15K	1/4W	SMD Thick Film Resistor	
R196	560	1/4W	SMD Thick Film Resistor	
R197	470K	1/4W	SMD Thick Film Resistor	
R198	2K2	1/4W	SMD Thick Film Resistor	
R199	15K	1/4W	SMD Thick Film Resistor	
R200	47K	1/4W	SMD Thick Film Resistor	
R201	4K7	1/4W	SMD Thick Film Resistor	
R202	4K7	1/4W	SMD Thick Film Resistor	
R203	4K7	1/4W	SMD Thick Film Resistor	
R204	27K	1/4W	SMD Thick Film Resistor	
R205	47K	1/4W	SMD Thick Film Resistor	
D1	LL4148		SMD Low Power Signal Diode	
D2	LL4148		SMD Low Power Signal Diode	
D3	BAT43		Diode Schottky	
D4	BAT43		Diode Schottky	
D5	LL4148		SMD Low Power Signal Diode	
D6	3V3		SMD Diode Zener	
D7	LL4148		SMD Low Power Signal Diode	
D8	LL4148		SMD Low Power Signal Diode	
D9	LL4148		SMD Low Power Signal Diode	
D10	LED	YELLOW	SMD Light Emitting Diode	
D11	LED	YELLOW	SMD Light Emitting Diode	
D12	MRA4007		Medium Power Signal Diode	
D13	MRA4007		Medium Power Signal Diode	

Rif.	Value	Remarks	Description	Code
D14	LED	YELLOW	SMD Light Emitting Diode	
D15	LED	YELLOW	SMD Light Emitting Diode	
D16	15V		SMD Diode Zener	
D17	LL4148		SMD Low Power Signal Diode	
D18	LL4148		SMD Low Power Signal Diode	
D19	15V		SMD Diode Zener	
D20	MV209		Tuning Diode	
D21	MV209		Tuning Diode	
D22	MV209		Tuning Diode	
D23	MV209		Tuning Diode	
D24	MV209		Tuning Diode	
D25	MV209		Tuning Diode	
D26	MV209		Tuning Diode	
D27	MV209		Tuning Diode	
D28	LL4148		SMD Low Power Signal Diode	
D29	LED	GREEN	SMD Light Emitting Diode	
D30	LL4148		SMD Low Power Signal Diode	
D31	5V1		SMD Diode Zener	
D32	LL4148		SMD Low Power Signal Diode	
D33	MRA4007		Medium Power Signal Diode	
D34	MRA4007		Medium Power Signal Diode	
D35	5V1		SMD Diode Zener	
Q1	BC327		Low Power Bipolar Transistor	
Q2	BC327		Low Power Bipolar Transistor	
Q3	BC337		Low Power Bipolar Transistor	
Q4	BC327		Low Power Bipolar Transistor	
Q5	BC337		Low Power Bipolar Transistor	
Q6	BDX53		Medium Power Bipolar Transistor	
Q7	BC337		Low Power Bipolar Transistor	
Q8	J310		JFET	
Q9	J310		JFET	
Q10	BC327		Low Power Bipolar Transistor	
Q11	BC327		Low Power Bipolar Transistor	
Q12	PD55003		LDMOS	
Q13	BFR96		RF Bipolar Transistor	
Q14	TIP41C		Medium Power Bipolar Transistor	
Q15	TIP42C		Medium Power Bipolar Transistor	
Q16	BC327		Low Power Bipolar Transistor	
U1	OP275		Operational Amplifier	
U2	LM358		Operational Amplifier	
U3	LF353		Operational Amplifier	
U4	ADC0834		A/D Converter	
U5	MAX810L		Special Function Integrated Circuit	
U6	T89C51RD2		Microcontroller	
U7	MAX232		Special Function Integrated Circuit	
U8	LM78S15/TO		Fixed Voltage Regulator	
U9	MC78M05CDT		Fixed Voltage Regulator	
U10	LM7915		Fixed Voltage Regulator	
U11	MC79M05CDT		Fixed Voltage Regulator	
U12	LM358		Operational Amplifier	

Rif.	Value	Remarks	Description	Code
U13	LM358		Operational Amplifier	
U14	LM358		Operational Amplifier	
U15	MC78M08CDT		Fixed Voltage Regulator	
U16	ERA6		Operational Amplifier	
U17	LMX1501		Special Function Integrated Circuit	
U18	LM358		Operational Amplifier	
U19	LM358		Operational Amplifier	
U20	CD40106		Logic Integrated Circuit	
Y1	11.0592MHz		Quartz Crystal	
TCXO1	MHz 12.800		Crystal Oscillator Module	
LCD1	DISPLAY		Male PCB Mounting Header	
SW1	DB9 MONITOR		Microswitcher	
FILT1	FILTER 19KHz		Filter TOKO	
COAX1	RG178		Coaxial Cable	
J1	POWER		PCB Mounting Terminal Block	
J2	SMB		SMB PCB Jack - 50 Ohm	
J3	DJ2x5		Male PCB Mounting Header	
J4	NC			
J5	STEREO		PCB Pin Strip Header	
J6	NC			
J7	DJ3		PCB Pin Strip Header	
J8	NC			
J9	NC			
J10	NC			
J11	NC			
J12	DB9_AUX		PCB Pin Strip Header	
J13	DB9		Male PCB Mounting Header	
J14	DJ3		PCB Pin Strip Header	
J15	DJ3		PCB Pin Strip Header	
J16	DJ2		PCB Pin Strip Header	
J17	DJ2		PCB Pin Strip Header	
J18	TEST Fref.		PCB Pin Strip Header	
J19	PUSH		PCB Pin Strip Header	
J20	RJ45		RJ45 PCB Socket	
J21	S		Jumper for setting	
J22	N		Jumper for setting	
J23	S		Jumper for setting	
J24	N		Jumper for setting	
J25	N		Jumper for setting	
J26	S		Jumper for setting	
J27	N		Jumper for setting	
J28	S		Jumper for setting	
J29	24V		Jumper for setting	
J30	15V		Jumper for setting	
J31	E		Jumper for setting	
J32	A		Jumper for setting	
J33	N		Jumper for setting	
J34	15V		Jumper for setting	
J35	24V		Jumper for setting	

Rif.	Value	Remarks	Description	Code
J36	15V		Jumper for setting	
J37	DJ2		Jumper for setting	
J38	DJ2		Jumper for setting	

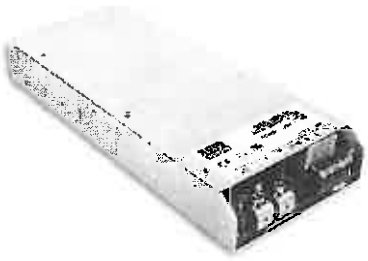


NiCOM

Title: Amplifier 800 W FM Card			System: 2/3 KW AMPLIFIER	
Size: A4	Document Number: Cod. 01EL103	Design: F. PIACENTINI	Verify: F. PIACENTINI	Rev: 00
Date: Tuesday, July 15, 2008		Sheet 1 of 1		

MEAN WELL

1000W Single Output Power Supply — RSP-1000 series



■ Features :

- Universal AC input / Full range
- AC input active surge current limiting
- Built-in 5V/0.5A auxiliary power
- Built-in active PFC function, PF>0.95
- Protections: Short circuit / Overload / Over voltage / Over temperature
- Output voltage can be trimmed between 40 ~ 110% of the rated output voltage
- Forced air cooling by built-in DC fan
- High power density 10.7w/inch^3
- 1U low profile 41mm
- Active current sharing up to 4000W(3+1) (Note.8)
- DC OK Signal
- Built-in remote ON-OFF control
- Built-in remote sense function
- 3 years warranty

SPECIFICATION

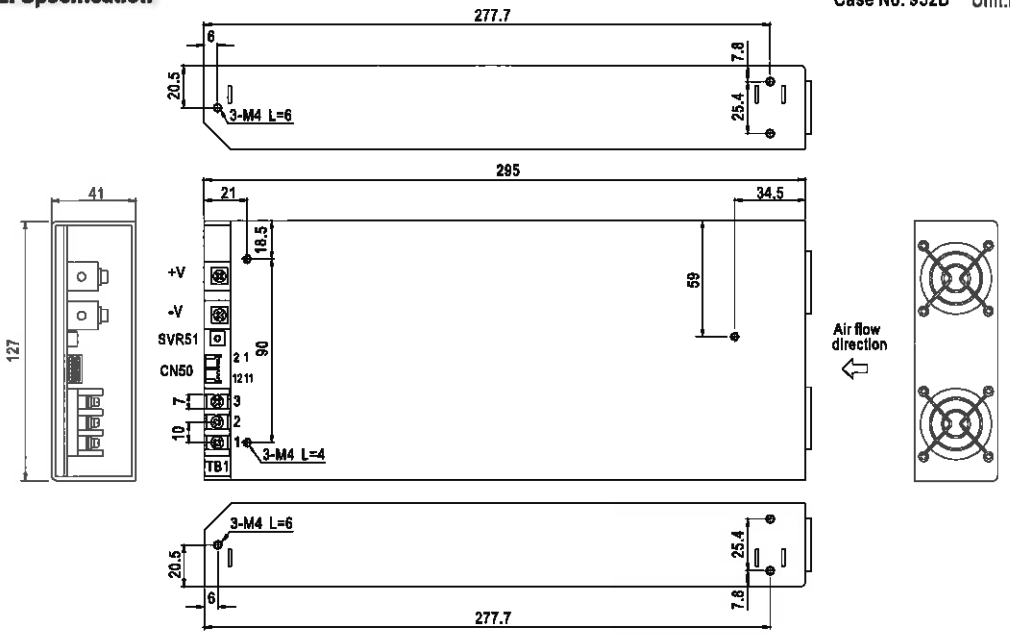
MODEL		RSP-1000-12	RSP-1000-15	RSP-1000-24	RSP-1000-27	RSP-1000-48
OUTPUT	DC VOLTAGE	12V	15V	24V	27V	48V
	RATED CURRENT	60A	50A	40A	37A	21A
	CURRENT RANGE	0 ~ 60A	0 ~ 50A	0 ~ 40A	0 ~ 37A	0 ~ 21A
	RATED POWER	720W	750W	960W	999W	1008W
	RIPPLE & NOISE (max.) Note.2	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p
	VOLTAGE ADJ. RANGE	10 ~ 13.5V	13.5 ~ 16.5V	20 ~ 26.4V	24 ~ 30V	43 ~ 55V
	VOLTAGE TOLERANCE Note.3	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME	300ms, 50ms at full load				
	HOLD UP TIME (Typ.)	16ms/230VAC 16ms/115VAC at full load				
INPUT	VOLTAGE RANGE Note.5	90 ~ 264VAC 127 ~ 370VDC				
	FREQUENCY RANGE	47 ~ 63Hz				
	POWER FACTOR (Typ.)	0.95/230VAC 0.98/115VAC at full load				
	EFFICIENCY (Typ.)	83%	85%	88%	88%	90%
	AC CURRENT (Typ.)	12A/115VAC 6A/230VAC				
	INRUSH CURRENT (Typ.)	25A/115VAC 40A/230VAC				
	LEAKAGE CURRENT	<2.0mA / 240VAC				
PROTECTION	OVERLOAD	105 ~ 125% rated output power				
		Protection type : Constant current limiting, recovers automatically after fault condition is removed				
	OVER VOLTAGE	13.8 ~ 16.8V	17 ~ 20.5V	27.6 ~ 32.4V	31 ~ 36.5V	56.6 ~ 66.2V
		Protection type : Shut down o/p voltage, re-power on to recover				
	OVER TEMPERATURE	85℃±5℃ (TSW2) detect on heatsink of O/P diode; 75℃±5℃ (TSW1) detect on heatsink of power transistor				
		Protection type : Shut down o/p voltage, recovers automatically after temperature goes down				
FUNCTION	AUXILIARY POWER(AUX)	5V @ 0.5A (+5%, -8%)				
	REMOTE ON/OFF CONTROL Note.6	Power on : short between on/off(pin6) & -S(pin2) on CN50 Power off : open between on/off(pin6) & -S(pin2) on CN50				
	DC OK SIGNAL	The TTL signal out, PSU turn on = 3.3 ~ 5.6V ; PSU turn off = 0 ~ 1V				
	OUTPUT VOLTAGE TRIM Note.8	Adjustment of output voltage is possible between 40 ~ 110% of rated output				
	CURRENT SHARING(CS)Note.7	Please refer to function manual				
ENVIRONMENT	WORKING TEMP.	-20 ~ +60℃ (Refer to output load derating curve)				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH				
	TEMP. COEFFICIENT	±0.02%/℃ (0 ~ 50℃)				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL60950-1, TUV EN60950-1 approved				
	WITHSTAND VOLTAGE	I/P-O/P:3KVAC I/P-FG:1.5KVAC O/P-FG:0.5KVAC				
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms/500VDC				
	EMI CONDUCTION & RADIATION	Compliance to EN55022 (CISPR22)				
	HARMONIC CURRENT	Compliance to EN61000-3-2,-3				
	EMS IMMUNITY	Compliance to EN61000-4-2,3,4,5,6,8,11; ENV50204, EN55024, EN61000-6-2, EN61204-3, heavy industry level, criteria A				
OTHERS	MTBF	35K hrs min. MIL-HDBK-217F (25℃)				
	DIMENSION	295*127*41mm (L*W*H)				
	PACKING	1.95Kg; 6pcs/12.7Kg/0.99CUFT				

NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uf & 47uf parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.
5. Derating may be needed under low input voltages. Please check the derating curve for more details.
6. The power supply unit will have no output if the shorting connector is not assembled. It contains two shorting wires: one is from on/off(pin6) to -s(pin2) and the other is from Vco(pin8) to Vca(pin10). Please refer to function manual for details.
7. In parallel connection, maybe only one unit operate if the total output load is less than 5% of rated load condition.
8. Please consult MEAN WELL for applications of more units connecting in parallel.

Mechanical Specification

Case No. 952B Unit:mm



AC Input Terminal Pin No. Assignment

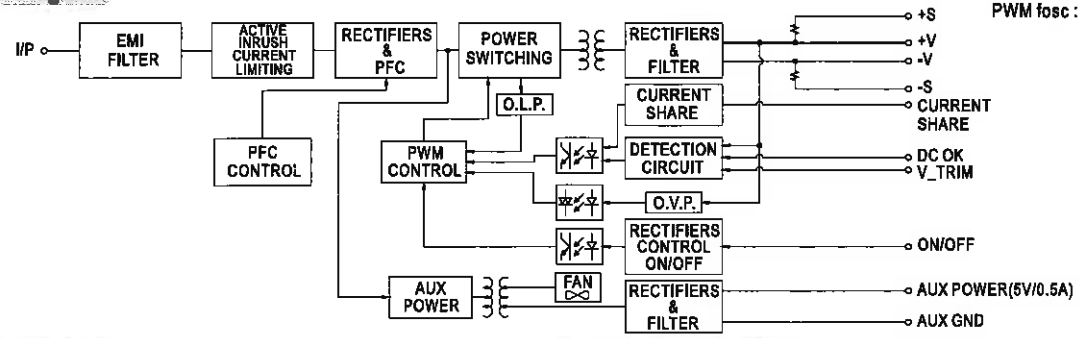
Pin No.	Assignment
1	AC/N
2	AC/L
3	FG ⏚

Control Pin No. Assignment (CN50) : HRS DF11-12DP-2DS or equivalent

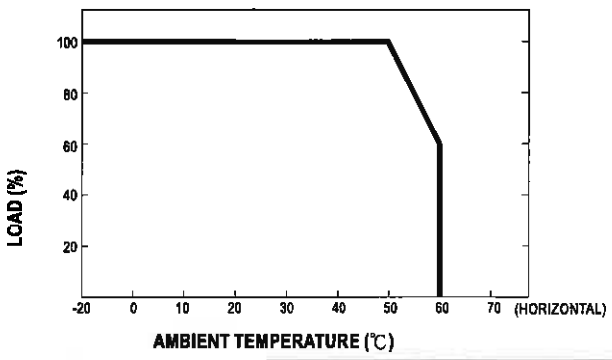
Pin No.	Assignment	Pin No.	Assignment	Pin No.	Assignment	Mating Housing	Terminal
1	+S	5	DC-OK	9	Vci	HRS DF11-12DS or equivalent	HRS DF11-**SC or equivalent
2	-S	6	ON/OFF	10	Vca		
3	G-AUX	7	CS	11,12	GND		
4	5V-AUX	8	Vco				

Block Diagram

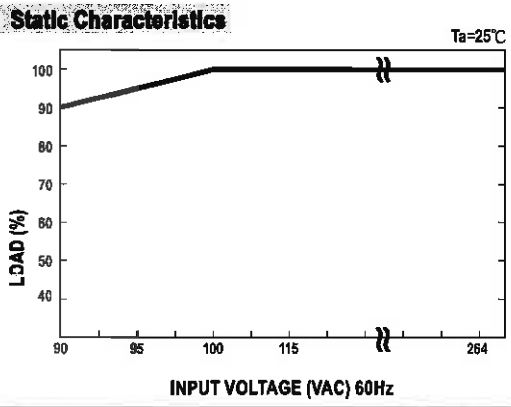
PFC fosc : 110KHz
PWM fosc : 90KHz



Derating Curve



Static Characteristics



Function Description of CN50

Pin No.	Function	Description
1	+S	Positive sensing. The +S signal should be connected to the positive terminal of the load. The +S and -S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V.
2	-S	Negative sensing. The -S signal should be connected to the negative terminal of the load. The -S and +S leads should be twisted in pair to minimize noise pick-up effect. The maximum line drop compensation is 0.5V.
3	G-AUX	Auxiliary voltage output ground. The signal return is isolated from the output terminals (+V & -V).
4	5V-AUX	Auxiliary voltage output, 4.6~5.25V, referenced to pin 3(G-AUX). The maximum load current is 0.5A. This output has the built-in oring diodes and is not controlled by the "remote ON/OFF control".
5	DC_OK	Open collector signal, referenced to pin11,12(GND). Low when PSU turns on. The maximum sink current is 10mA and the maximum external voltage is 5.6V.
6	ON/OFF	Turns the output on and off by electrical or dry contact between pin 6 (ON/OFF) and pin 2 (-S). Short: Power ON, Open: Power OFF.
7	CS	Current sharing signal. When units are connected in parallel, the CS pins of the units should be connected to allow current balance between units.
8	Vco	Short connecting between Vco (pin8) and Vca (pin10) if output voltage trim function is not used.
9	Vci	Connect to external DC voltage source for output voltage triming, referenced to pin 2 (-S). Output voltage can be trimmed between 40 ~ 110% of the rated output voltage.
10	Vca	Connect to external resistor (1/8W) for output voltage triming. Output voltage can be trimmed between 40 ~ 110% of the rated output voltage. Please refer to function manual for details.
11,12	GND	These pins connect to the negative terminal (-V). Return for DC_OK Signal output.

Function Manual

1."Remote ON/OFF" and "Output voltage trim" functions are not used.

The power supply unit will have no output if the shorting connector (accessory comes along with the PSU) is not assembled. It contains two shorting wires : one is from ON/OFF (pin6) to -S (pin2) and the other is from Vco (pin8) to Vca (pin10).

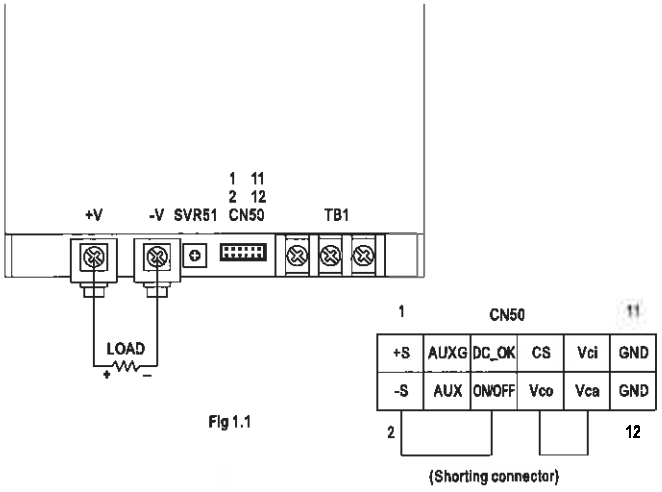


Fig 1.1

2.Remote ON/OFF

The PSU can be turned ON/OFF by using the "Remote ON/OFF" function

Between ON/OFF(pin6) and -S(pin2)	Output Status
SW ON (Short)	ON
SW OFF (Open)	OFF

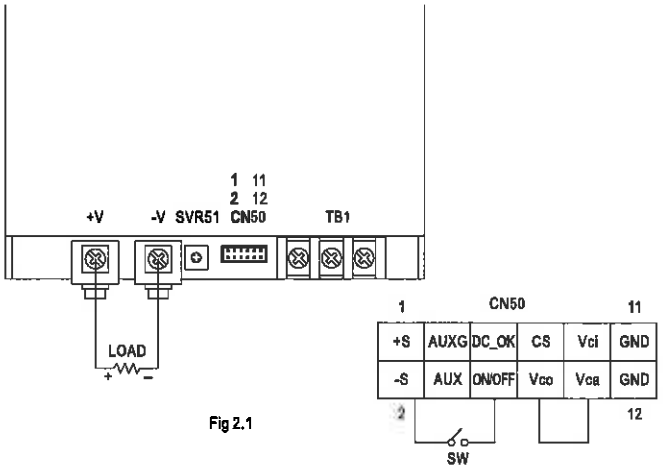


Fig 2.1

3.DC_OK signal

"DC_OK" is an open collector signal.

It indicates the output status of the PSU. It can operate in two ways : One is sinking current from external TTL signal ; the other is sending out a TTL voltage signal.

3-1 Sink current :

The maximum sink current is 10mA and the maximum external voltage is 5.6V.

3-2 TTL voltage signal :

Between DC- OK(pin5) and GND(pin11&12)	Output Status
0 ~ 1V	ON
3.3 ~ 5.6V	OFF

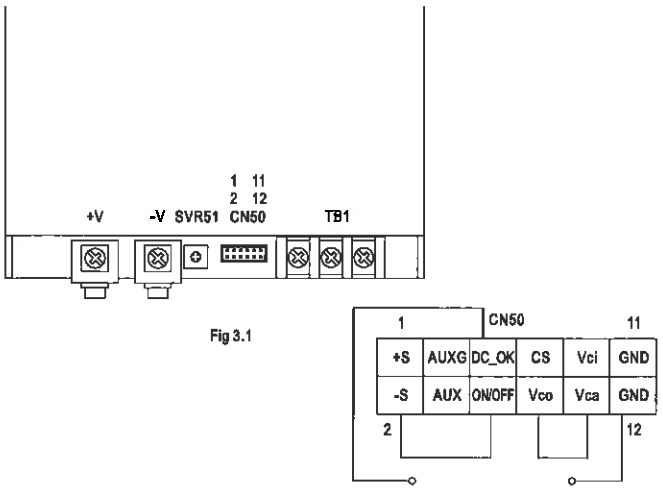


Fig 3.1

4.Remote Sense

The remote sensing compensates voltage drop on the load wiring up to 0.5V.

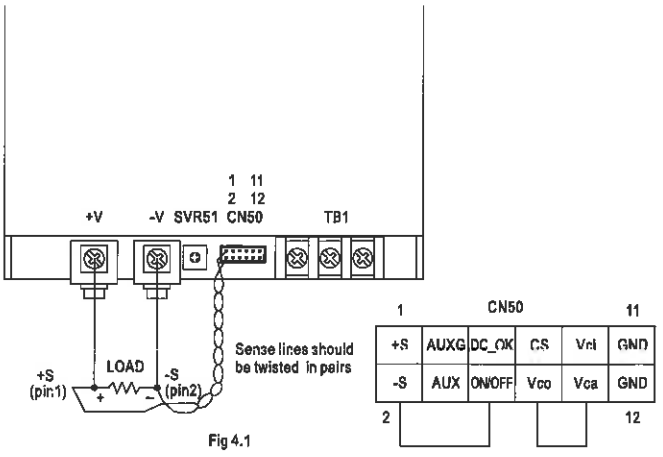
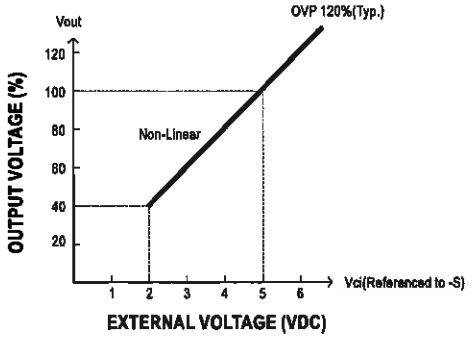


Fig 4.1

5.Output Voltage TRIM

Output voltage of RSP-1000 can be trimmed between 40% ~ 110% of its rated value by the following methods :

(1)Using external voltage source between "Vci"(pin9) and "-S"(pin2) that is shown in Fig5.1



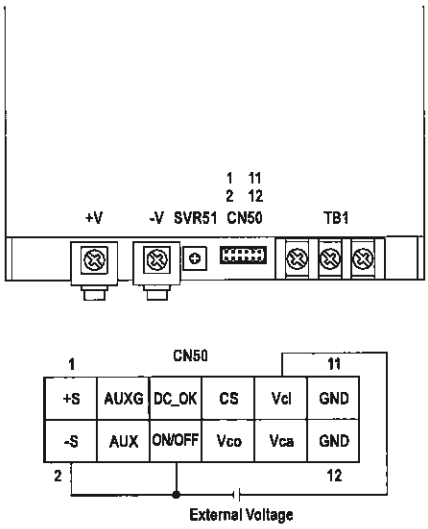
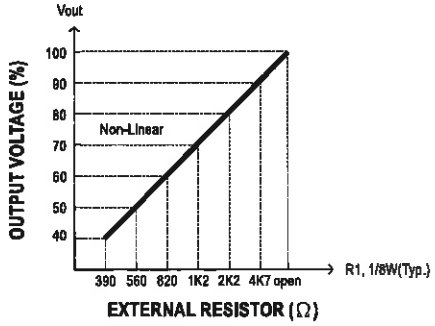


Fig 5.1

(2)Connecting a resistor externally that in shown in Fig 5.2 & Fig 5.3

(A) O/P voltage goes down



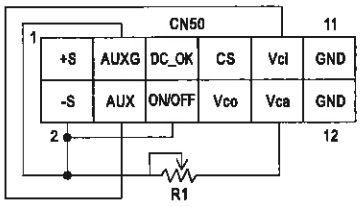
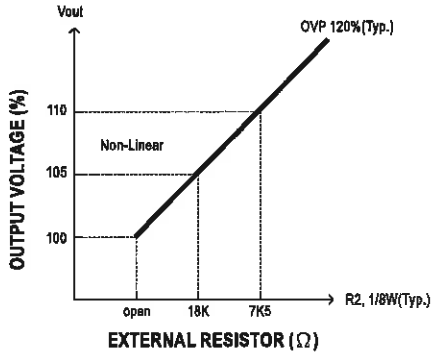


Fig 5.2

(B)O/P voltage goes up



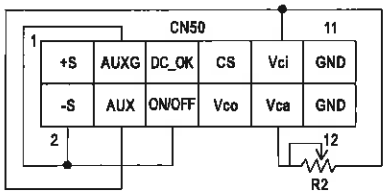


Fig 5.3

6.Current Sharing with Remote Sensing

RSP-1000 has the built-in active current sharing function and can be connected in parallel to provide higher output power :

(1)Parallel operation is available by connecting the units shown as below.
(+S,-S and CS are connected mutually in parallel).

(2)Difference of output voltages among parallel units should be less than 2%.

(3)The total output current must not exceed the value determined by the following equation.
(output current at parallel operation)=(Rated current per unit)x(Number of unit)x0.9

(4)In parallel operation 4 units is the maximum, please consult the manufacturer for applications of more connecting in parallel.

(5)The power supplies should be paralleled using short and large diameter wiring and then connected to the load.

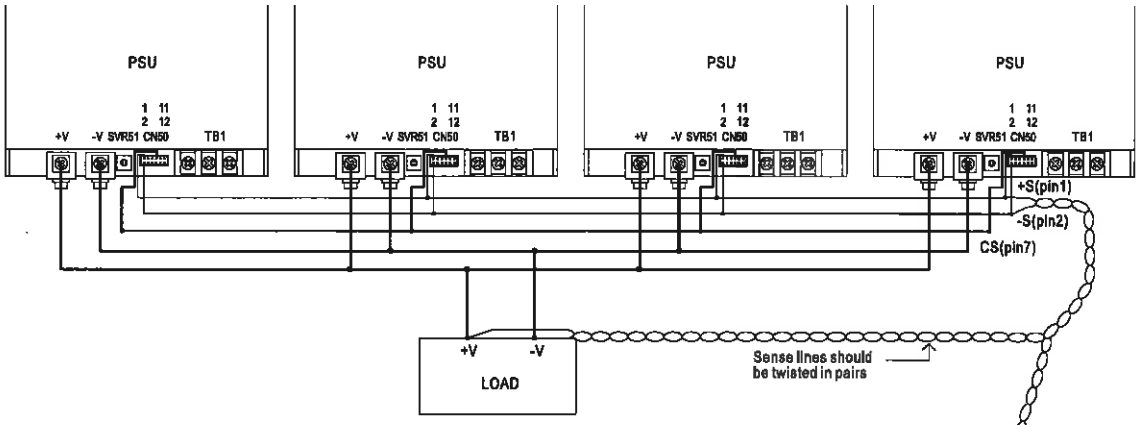
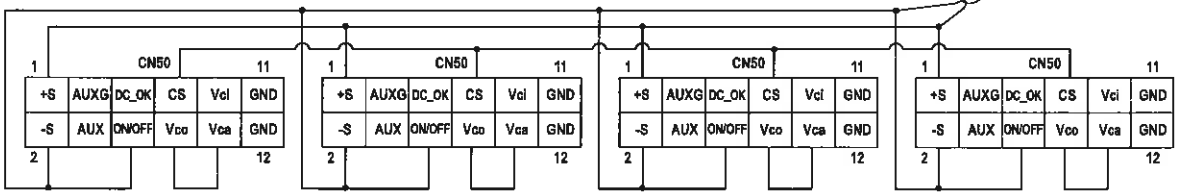
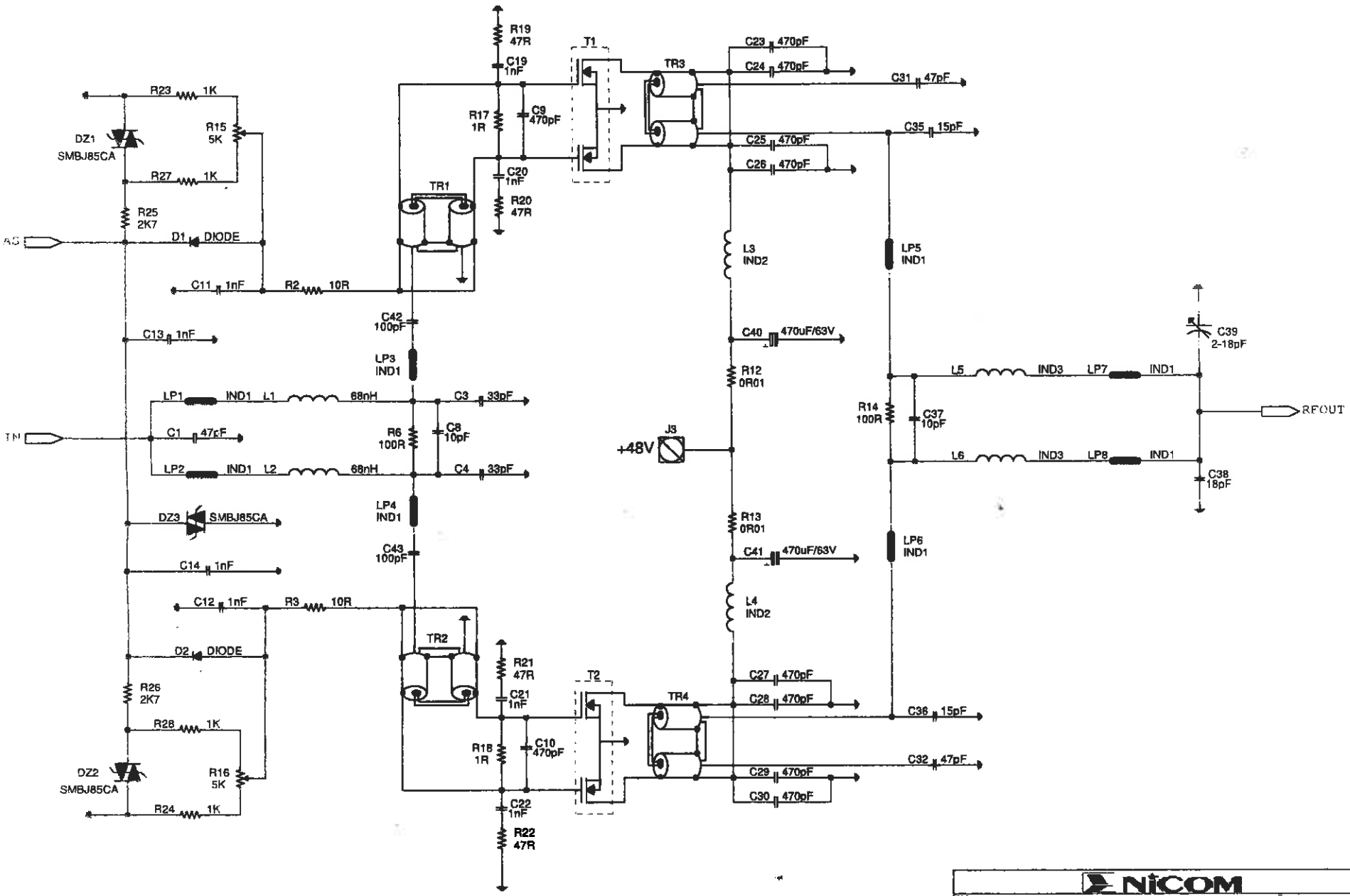


Fig 6.1



Note : In parallel connection, maybe only one unit (master) operate if the total output load is less than 5% of rated load condition.
The other PSUs (slaves) may go into standby mode and their output LEDs will not turn on.



NiCOM

Title		System
Amplifier 800 W FM Card		2/3 KW AMPLIFIER
Size: A4	Document Number: Cod. 01EL103	Design: F. PIACENTINI / Verify: F. PIACENTINI / Rev: 00
Date: Tuesday, July 15, 2008	Sheet 1 of 1	

Amplifier 800 W FM Card Code: 01EL103 Revision 00				Date: Tuesday, July 15, 2008			
4	CODE	Description	Manufacturer	Mfr Code	Size	Q.ty	Design reference
27	01EL103	AMPLIFIER 800 W FM Card	0	0	0	1	
62	111A010-050	CAPACITOR , 10pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C100J5GAC	0805	2	C8,C37
63	111A015-050	CAPACITOR , 15pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C150J5GAC	0805	2	C35,C36
64	111A018-050	CAPACITOR , 18pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C180J5GAC	0805	1	C38
65	111A033-050	CAPACITOR , 33pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C330J5GAC	0805	2	C3,C4
66	111A047-050	CAPACITOR , 47pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C470J5GAC	0805	2	C42,C43
67	111A100-050	CAPACITOR, 100pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C101J5GAC	0805	3	C1,C31,C32
68	111A470-050	CAPACITOR, 470pF, 50V, 5% CERAMIC,C0G SM0805	KEMET	C0805C471J5GAC	0805	10	C9,C10,C23,C24,C25,C26,C27,C28, C29,C30
69	111B001-050	CAPACITOR, 1 nF, 50V, 10% CERAMIC,X7R SM0805	KEMET	C0805C102K5RAC	0805	8	C11,C12,C13,C14,C19,C20,C21,C22
107	119CV00-000	CERAMIC TRIMMER CAPACITORS, FROM 4,5 TO 20,0 +50/-0%, TZB4 Series	MURATA	TZB4R200BA10	0	1	C39
119	123C470-063	CAPACITOR, 470uF, 63V, 20%, ALUMINUM ELECTROLYTIC, SMT	PANASONIC	EEVFK1J471M	19x21	2	C40,C41
139	130D000-000	DIODE, SIG 150 mA, 75V,MINI MELF, LL4148	GENERAL SEMIC	LL4148T	MINIMELF	2	D1,D2
258	148RF00-350	RF POWER TRANSISTORS HF/VHF/UHF N-channel MOSFETs SD2942	ST	SD2942	0	4	TR1,TR2,TR3,TR4
266	191V100-085	600 Watt TRANSIENT VOLTAGE SUPPRESSORS, 85 Volt	FAIRCHILD	SMBJ85CA	DO-214AA(SMB)	3	DZ1,DZ2,DZ3
346	202A010-000	RESISTOR 10 Ohm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	2	R2,R3
347	202A047-000	RESISTOR 47 Ohm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	4	R19,R20,R21,R22
348	202A100-000	RESISTOR 100 Ohm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	2	R8,R14
355	202B001-000	RESISTOR 1 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	4	R23,R24,R27,R28
362	202B002-700	RESISTOR 2.7 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	2	R25,R26
430	212A000-010	RESISTOR 0,01Ohm, 2W 10% PTH	MEGGITT	ER74	ASSIALE	2	R12,R13
431	212A001-000	RESISTOR 1 Ohm, 2 W 5%, PTH	TYCO	ROX2S	ASSIALE	2	R17,R18
439	217PTSM-005	SMT 4 mm Square,Trimming Potentiometer, Multiturn 5K, 0,25W	BOURNS	3224X-1-502 E	SMT	2	R15,R16
546	900S000-000	TRACE INDUCTOR	0	0	0	8	LP1,LP2,LP3,LP4,LP5,LP6,LP7,LP8
547	900S001-000	68nH INDUCTOR	0	0	0	2	L1,L2
548	900S002-000	QUARK INDUCTOR 1	0	0	0	2	L3,L4
549	900S003-000	QUARK INDUCTOR 2	0	0	0	2	L5,L6
550	900S020-000	QUARK COIL 1	0	0	0	2	T1,T2

4	202B010-000	RESISTOR 10 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	10	R6,R7,R54,R64,R67.R72,R77,R82, R87,R92
8	202B022-100	RESISTOR 22.1 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	3	R41,R44,R61
0	202B027-400	RESISTOR 27.4 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	1	R42
1	202B030-000	RESISTOR 30 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	1	R3
4	202B047-500	RESISTOR 47.5 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	5	R20,R27,R62,R106,R107
6	202B075-000	RESISTOR 75 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	1	R4
7	202B100-000	RESISTOR 100 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	7	R21,R22,R28,R31,R34,R45,R51
8	202B110-000	RESISTOR 110 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	1	R102
0	202B220-000	RESISTOR 220 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	1	R1
2	202B475-000	RESISTOR 475 KOhm, 1/8W, 1%, 0805	PANASONIC	ERJ	0805	1	R9
3	202C001-000	RESISTOR 1 MOhm, 1/10W, 1%, 0805	PANASONIC	ERJ	0805	1	R2
6	211A000-560	RESISTOR 0,56Ohm, 1W 10% PTH	0	0	ASSIALE	1	R108
5	215B000-005	RESISTOR 5mOhm, 1%,5W,1000 Volt SERIE LVR05	VISHAY	LVR055L000F	ASSIALE	6	R65,R70,R75,R80,R85,R90
0	217PTSK-010	POTENZIOMETRO DA 10 KOhm 1 GIRO SMT 5x6,5x2.55	BOURNS	3314G-1-103E	SMT 5x6.5x2.55	3	RV1,RV2,RV3
1	298I200-1V7	INDUCTOR 200uH, 1.5 A, PTH P 5, D 13mm, H 15mm	PANASONIC	ELC10D201E	D13xH15 mm	1	L1
5	300CP00-000	CMOS VOLTAGE CONVERTERS CHARGE PUMP INVERTER FROM 5 TO 20 Vdc ICL7662 SOIC8	MAXIM	ICL7662CBA	SOIC8	1	U12
6	300P100-ADJ	1.5 A, STEP-UP/DOWN/INVERTING SWITCHING REGULATORS 40 Vdc, MC33063AVP,DIP 8	ONSEMI	MC33063AVP	DIP 8	1	U13
9	309U405-300	TRIPLE 2-CHANNEL ANALOG MUX/DEMUX	TEXAS INSTRUMENT	CD4053	0	1	U1
0	350A001-000	LinCMOS PRECISION DUAL OPERATIONAL-AMPLIFIER TLC272 SOIC8	TEXAS INSTRUMENT	TLC272CD	SOIC8	1	U4
2	350A002-000	CMOS DUAL OP. AMP. 600 Ohm Load, NE5532 SOP8	TEXAS INSTRUMENT	NE5532D	SOIC8	1	U5
3	350A007-000	LinCMOS PRECISION QUAD OPERATIONAL-AMPLIFIER TLC274 SOIC14	TEXAS INSTRUMENT	TLC274CD	SOIC14	2	U2,U3
7	395S000-000	HIGHT SIDE CURRENT SENSE MONITOR ZXCT1009.	ZETEX	ZXCT1009FTA	SOT23	6	U7,U8,U9,U10,U11,U14