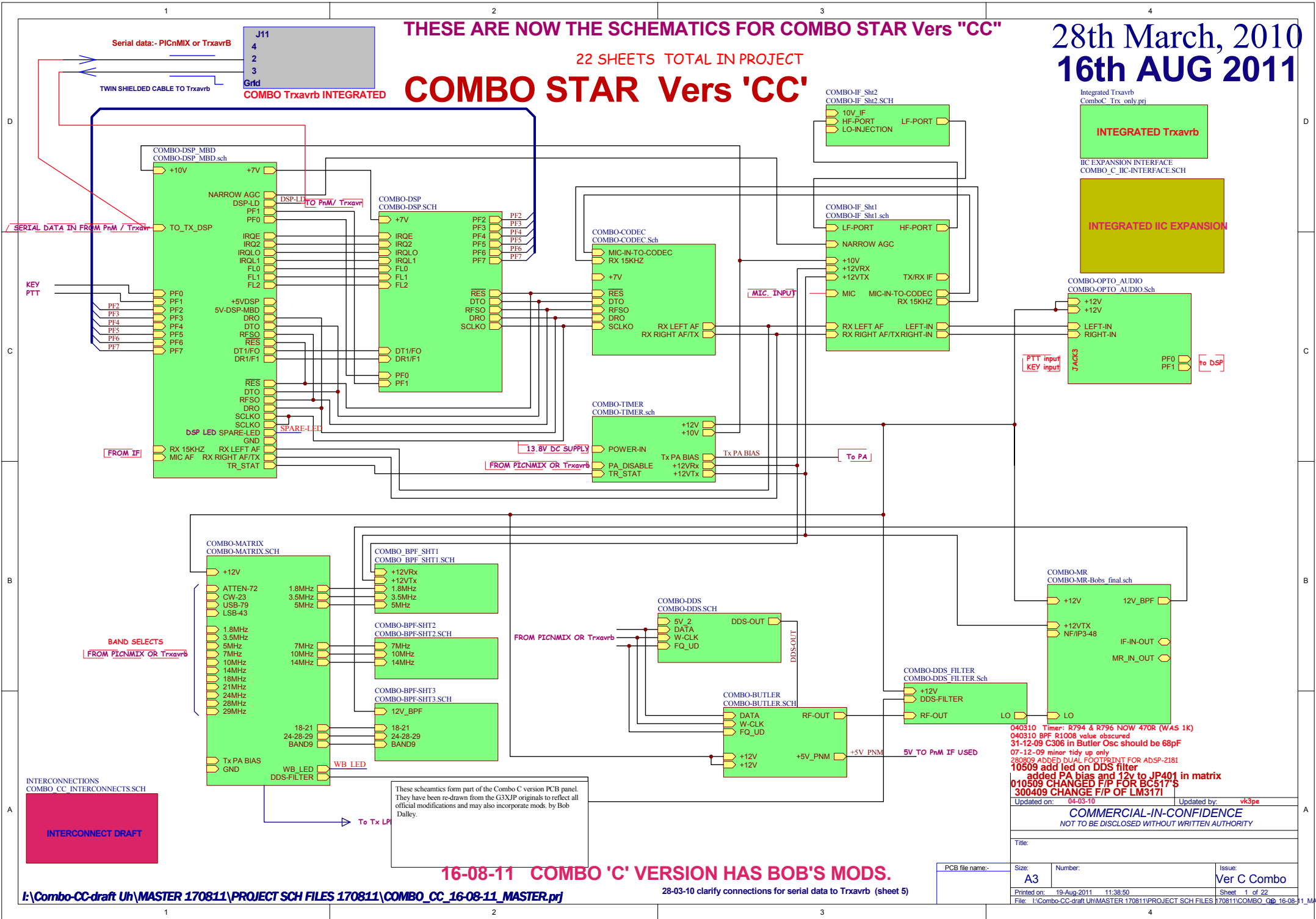


28th March, 2010
16th AUG 2011

THESE ARE NOW THE SCHEMATICS FOR COMBO STAR Vers "CC"

22 SHEETS TOTAL IN PROJECT

COMBO STAR Vers 'CC'



D
C
B
A

D
C
B
A

These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

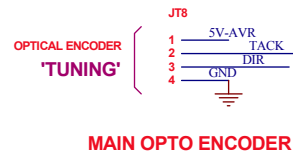
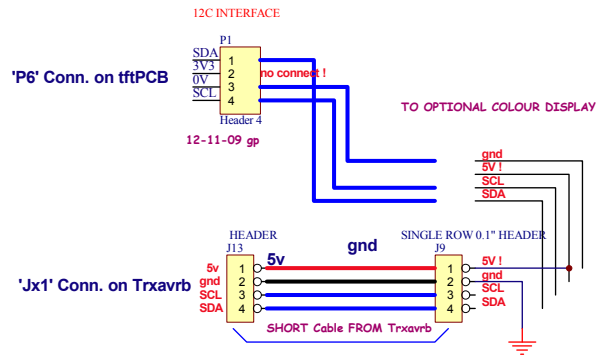
16-08-11 COMBO 'C' VERSION HAS BOB'S MODS.

THIS SHEET WILL SHOW THE INTERCONNECTIONS FROM MAIN PCB

02-08-2011

TFT_A

ENCODER



These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

Updated on:		Updated by:	
COMMERCIAL-IN-CONFIDENCE NOT TO BE DISCLOSED WITHOUT WRITTEN AUTHORITY			
Title:			
PCB file name:-	Size:	Number:	Issue:
	A3		
Printed on: 19-Aug-2011 11:39:04		Sheet 18 of 22	
File: I:\Combo-CC-draft\UM\MASTER 170811\PROJECT SCH FILES\170811\COMBO_CC_INTERCONNECTS.SCH			

I2C - 16 OUTPUT RELAY DRIVER
FOR TrxAVR - PICASTAR Project
Original is by Ian Sumner G3VPX, Sept, 2009

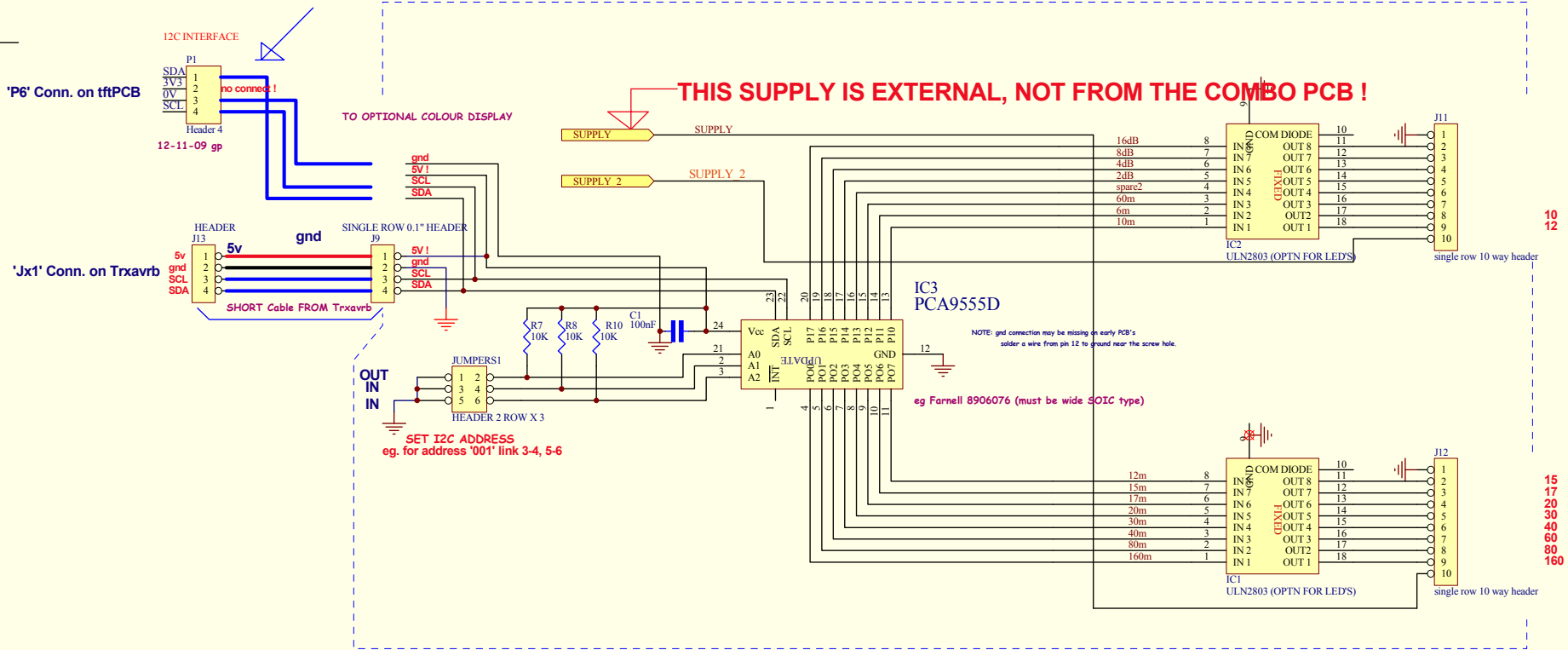
30-07-10 FOR COMBO C

30-07-11 now integrated onto combo CC

02-08-2011

This drawing also shows the connections to a colour display (tftpcb) if I2C interface PCB is used.

NOTE wiring is NOT 1:1 and pin 2 of P6 must NOT be connected



THIS SUPPLY IS EXTERNAL, NOT FROM THE COMBO PCB !

SET I2C ADDRESS
eg. for address '001' link 3-4, 5-6

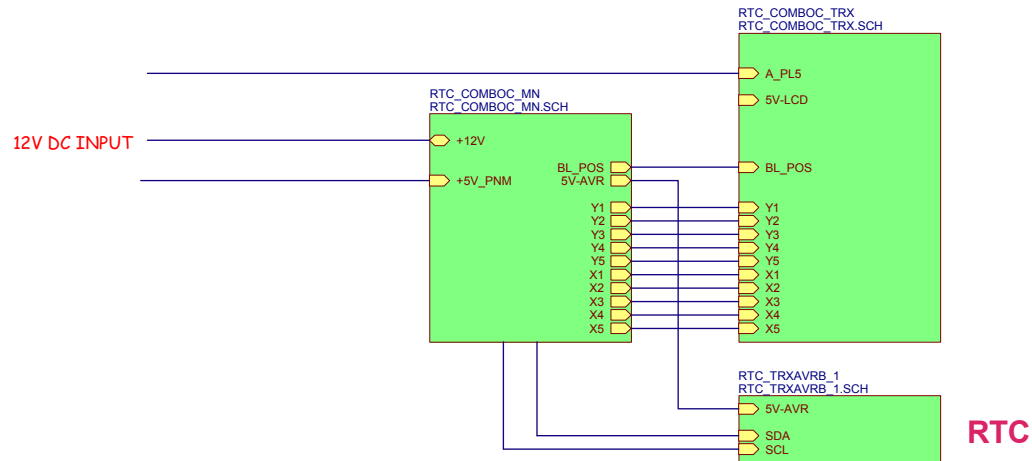
These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

16-08-11 USED NOW ON COMBO 'C' VERSION PANEL

Sheet:	SCHEMATICS BY VK3PE & C.S.	
17 of 22	TITLE:- I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\COMBO_C_I	
	"VK3PE"	Vers

TrxavrB for Combo "C" version only (integrated version)

02-08-2011



260711:- THIS PROJECT HAS NOW BEEN RE-NUMBERED AND ADDED TO COMBO CC PCB

NOTE K2 AND KTA A RE MISSING FROM SCH AND PCB

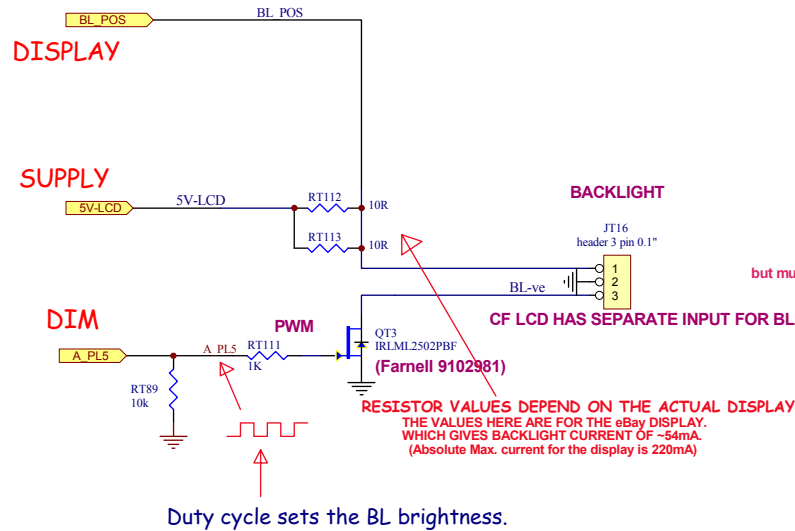
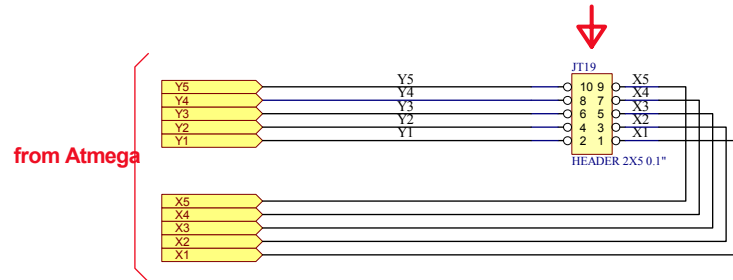
These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

280909 ORIGINAL		
Updated on:		Updated by:
COMMERCIAL-IN-CONFIDENCE		
<i>NOT TO BE DISCLOSED WITHOUT WRITTEN AUTHORITY</i>		
Title:		
PCB file name:-		
Size:	Number:	Issue:
A3		
Printed on:	19-Aug-2011 11:39:23	Sheet 19 of 22
File: I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\ComboC_Trx_only.prj		

THIS VERION IS TO ADD TO COMBO C VERSION FOR TFT DISPLAY ONLY

02-08-2011

THIS CONNECTOR TAKES A 10 WAY RIBBON CABLE WHICH CONNECTS TO THE KEYPAD and other switches.



but must remove 2 x 0R resistors on the board

CF LCD HAS SEPARATE INPUT FOR BL

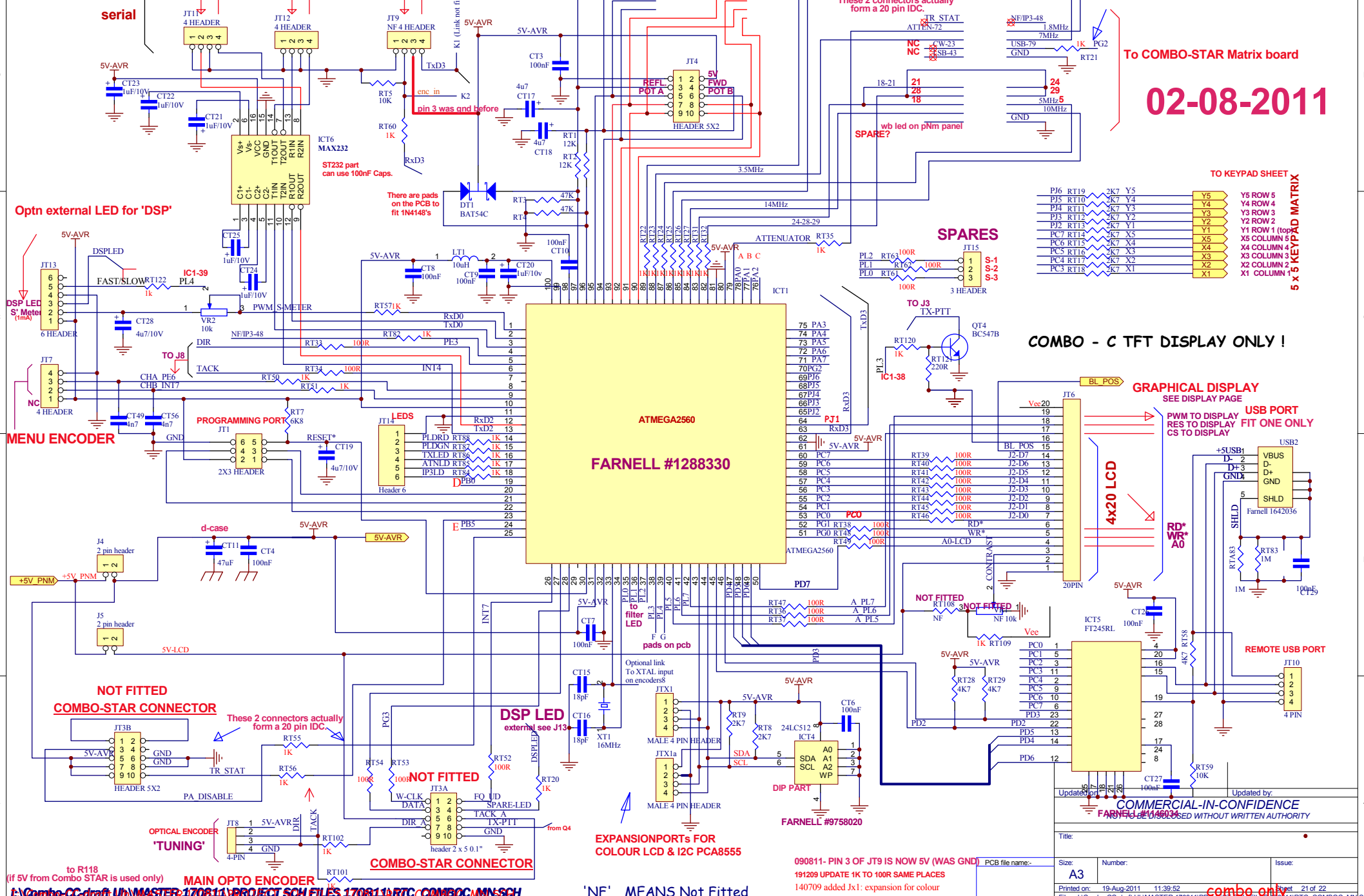
RESISTOR VALUES DEPEND ON THE ACTUAL DISPLAY. THE VALUES HERE ARE FOR THE eBay DISPLAY, WHICH GIVES BACKLIGHT CURRENT OF ~54mA. (Absolute Max. current for the display is 220mA)

Updated on:		Updated by:	
COMMERCIAL-IN-CONFIDENCE NOT TO BE DISCLOSED WITHOUT WRITTEN AUTHORITY			
Title:			
PCB file name:-	Size:	Number:	Issue:
	A3		
Printed on: 19-Aug-2011 11:39:31		Sheet 20 of 22	
File: I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES\170811\RTC_COMBOC_TRX.SCH			

'NF' MEANS Not Fitted

0712080603 parts

combo CC only



02-08-2011

To COMBO-STAR Matrix board

TO KEYPAD SHEET

5 x 5 KEYPAD MATRIX

Y5	Y5 ROW 5
Y4	Y4 ROW 4
Y3	Y3 ROW 3
Y2	Y2 ROW 2
Y1	Y1 ROW 1 (top)
X5	X5 COLUMN 5
X4	X4 COLUMN 4
X3	X3 COLUMN 3
X2	X2 COLUMN 2
X1	X1 COLUMN 1

COMBO - C TFT DISPLAY ONLY !

GRAPHICAL DISPLAY

SEE DISPLAY PAGE

USB PORT
FIT ONE ONLY
CS TO DISPLAY

PWM TO DISPLAY
RES TO DISPLAY
CS TO DISPLAY

REMOTE USB PORT

JT10

4 PIN

Updated by:

COMMERCIAL-IN-CONFIDENCE

FARNELL #170811

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

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Updated by:

Updated by:

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Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

Updated by:

(If 5V from Combo STAR is used only)

MAIN OPTO ENCODER

COMBO-STAR CONNECTOR

EXPANSION PORTS FOR COLOUR LCD & I2C PCA8555

090811- PIN 3 OF JT9 IS NOW 5V (WAS GND) PCB file name:-

191209 UPDATE 1K TO 100R SAME PLACES

140709 added Jx1: expansion for colour

Size: A3

Number: 11-39-52

Printed on: 19-Aug-2011 11:39:52

File: I:\Combo-CC-draft UNMASTER 170811\PROJECT SCH FILES 170811\RTIC_COMBO-CC-MN.SCH

combo only

I:\Combo-CC-draft UNMASTER 170811\PROJECT SCH FILES 170811\RTIC_COMBO-CC-MN.SCH

'NF' MEANS Not Fitted

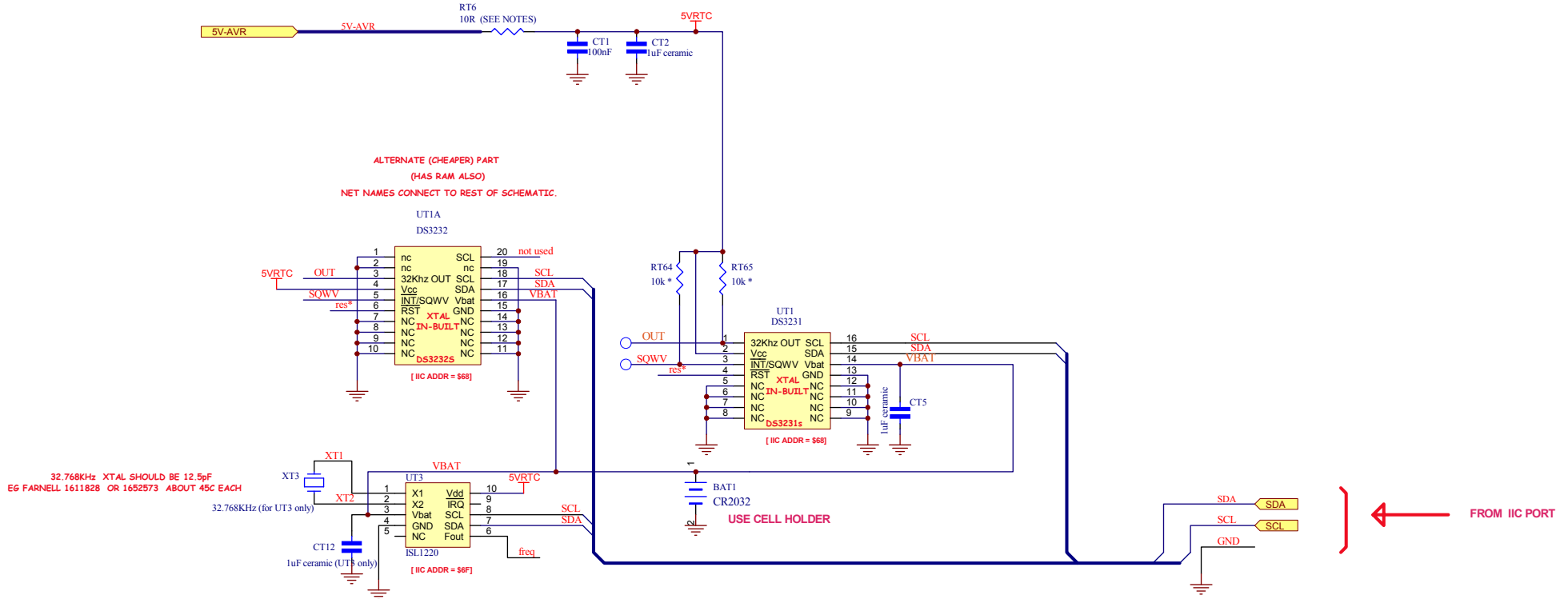
DS3231 or DS3232 OR ISL1220 REAL TIME CLOCK FOR Trxavr / TftA

30-07-11 now integrated onto combo CC

02-08-2011

CHOOSE ONE RTC TYPE ONLY !

USE 5V FROM TRXAVRB SECTION !



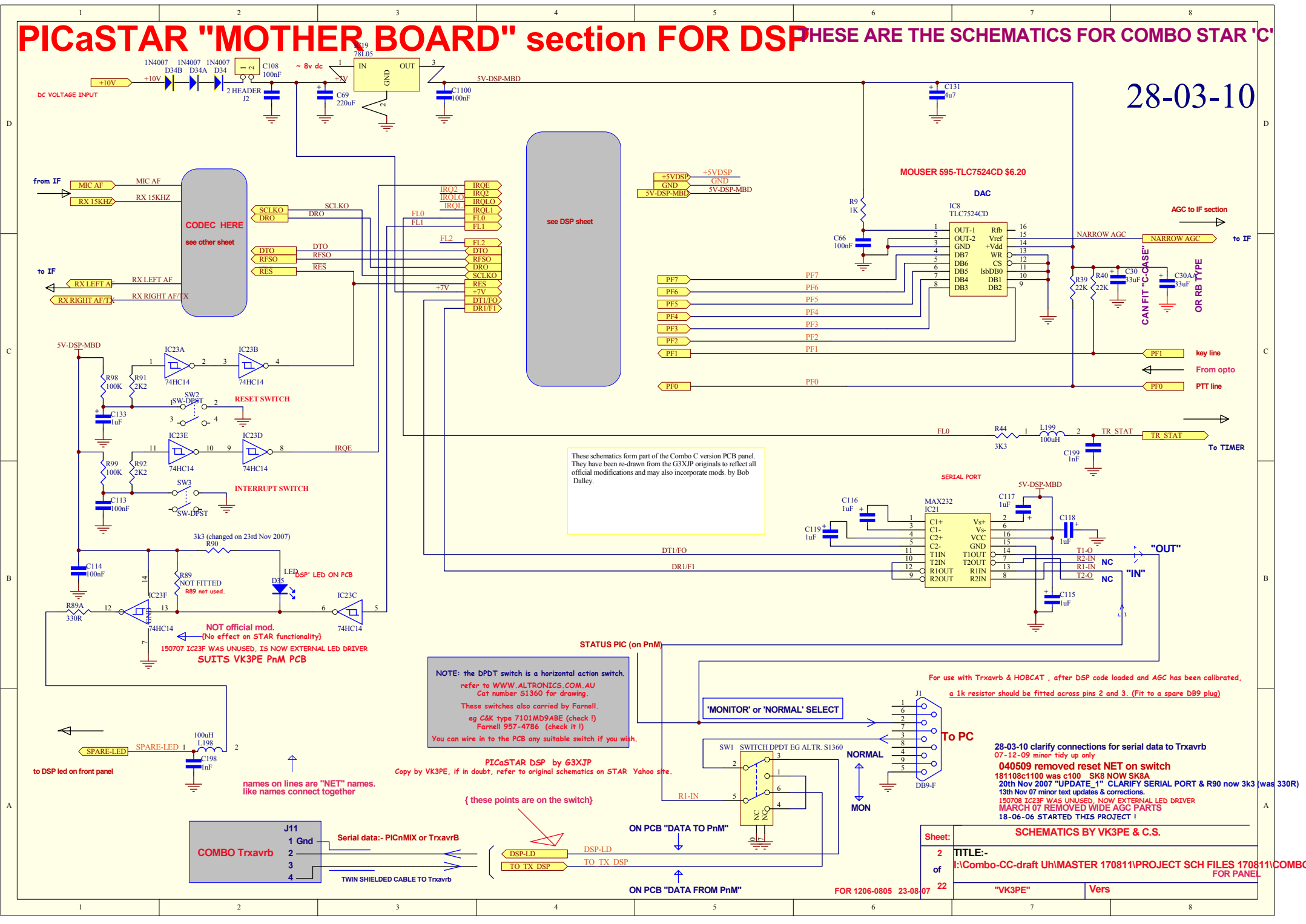
TO COMBINE WITH cCOMBO c VERSION tRXAVRB

'ROCKBY' REFERS TO www.rockby.com.au
'JAYCAR' is www.jaycar.com.au
FARNELL is www.farnell.com

Updated on: vk3pe		Updated by: Jan 19th, 2011	
COMMERCIAL-IN-CONFIDENCE NOT TO BE DISCLOSED WITHOUT WRITTEN AUTHORITY			
Title:			
PCB file name:-	Size: A3	Number:	Issue:
Printed on: 19-Aug-2011 11:40:02		Sheet 22 of 22	
File: I:\Combo-CC-draft Uh\MASTER 170811\PROJECT SCH FILES 170811\RTC_TRXAVRB_1.SCH			

PICaSTAR "MOTHER BOARD" section FOR DSP THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'

28-03-10



see DSP sheet

These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

NOTE: the DPDT switch is a horizontal action switch. refer to WWW.ALTRONICS.COM.AU Cat number S1360 for drawing. These switches also carried by Farnell. eg C&K type 7101MD9ABE (check it) Farnell 957-4786 (check it!) You can wire in to the PCB any suitable switch if you wish.

PICaSTAR DSP by G3XJP Copy by VK3PE, if in doubt, refer to original schematics on STAR Yahoo site.

{ these points are on the switch }

For use with TrxavrB & HOBCAT, after DSP code loaded and AGC has been calibrated, a 1k resistor should be fitted across pins 2 and 3. (Fit to a spare DB9 plug)

28-03-10 clarify connections for serial data to TrxavrB
07-12-09 minor tidy up only
040509 removed reset NET on switch
181108c1100 was c100 SK8 NOW SK8A
20th Nov 2007 "UPDATE_1" CLARIFY SERIAL PORT & R90 now 3k3 (was 330R)
13th Nov 07 minor text updates & corrections.
190708 IC23F WAS UNUSED, NOW EXTERNAL LED DRIVER
MARCH 07 REMOVED WIDE AGC PARTS
18-06-06 STARTED THIS PROJECT!



Sheet:	SCHEMATICS BY VK3PE & C.S.	
2	TITLE:-	
of	I:Combo-CC-draft Uh\MASTER 170811\PROJECT SCH FILES 170811\COMBO-DSP	
22	"VK3PE"	Vers

FOR 1206-0805 23-08-07

original build Vers 1.0 POWERED UP 17-07-06 !

MOTHER BOARD AND DSP ONLY

LED FLASHES !!!

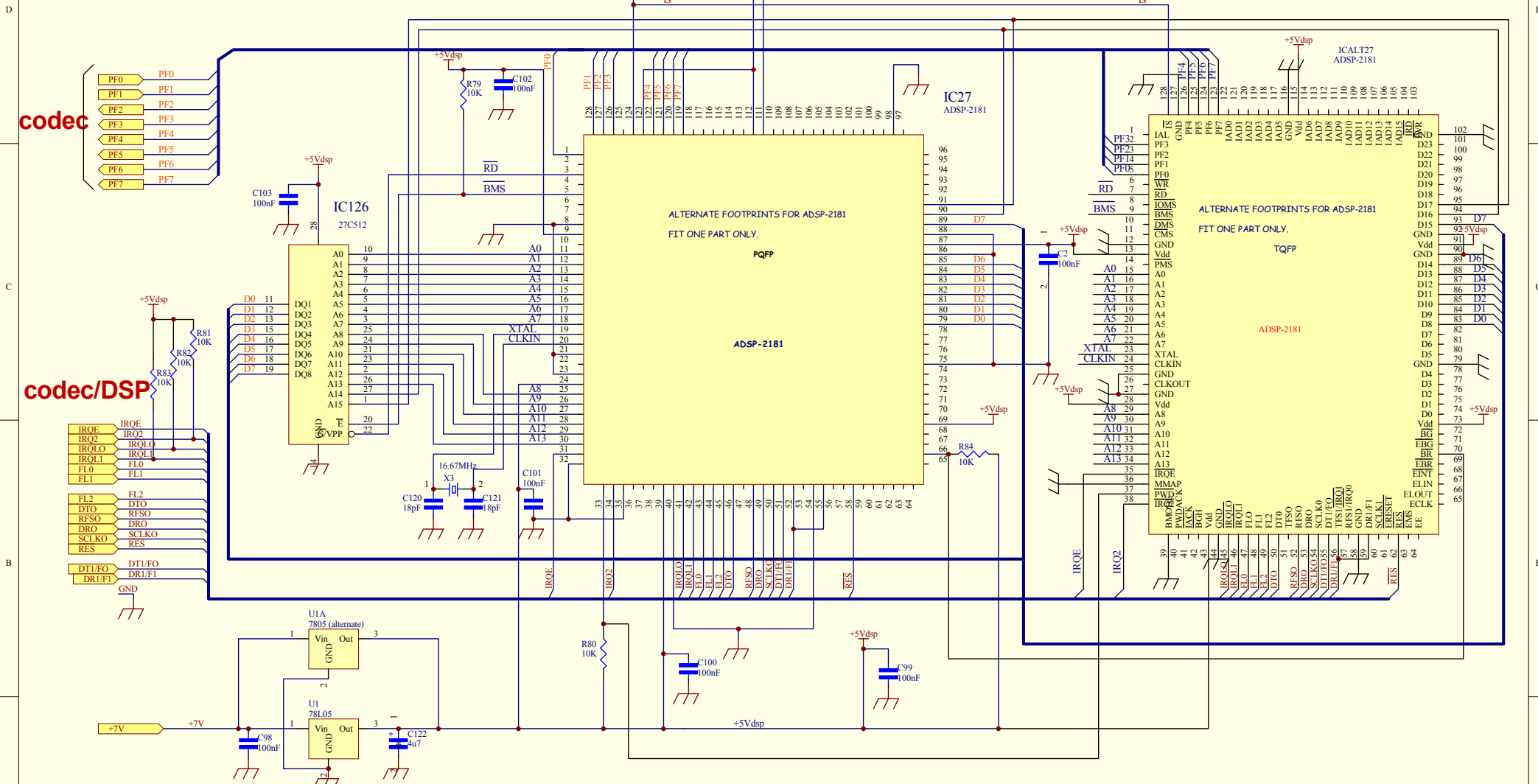
DRAWS ABOUT 112mA

PRESS RESET, DRAWS ABOUT 33mA

prefix 100

12-11-09

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'



codec

codec/DSP

These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

050809 ADDED ALTERNATE DSP FOOTPRINT
 14-01-09
 181108 IC26 NOW IC126
 16-11-08 added alternate U1 device (7805)
 19-08-07 changed to dual 1206-0805 footprints
 230207 VER 2 UPDATES AFTER PROTO BUILD
 220606 drawn.

DSP section for PICaSTAR
 Copy by VK3PE, for Master, refer to original schematics on STAR Yahoo site.

Sheet:	SCHEMATICS BY VK3PE & C.S.	
3	TITLE:-	
of	I:\Combo-CC-draft\U1\MASTER 170811\PROJECT SCH FILES 170811\COMBO-DSP	
22	"VK3PE"	Vers

PICaSTAR CODEC section

ORIGINAL SCHEMATIC BY G3XJP

THIS VERSION BY VK3PE & C.S.

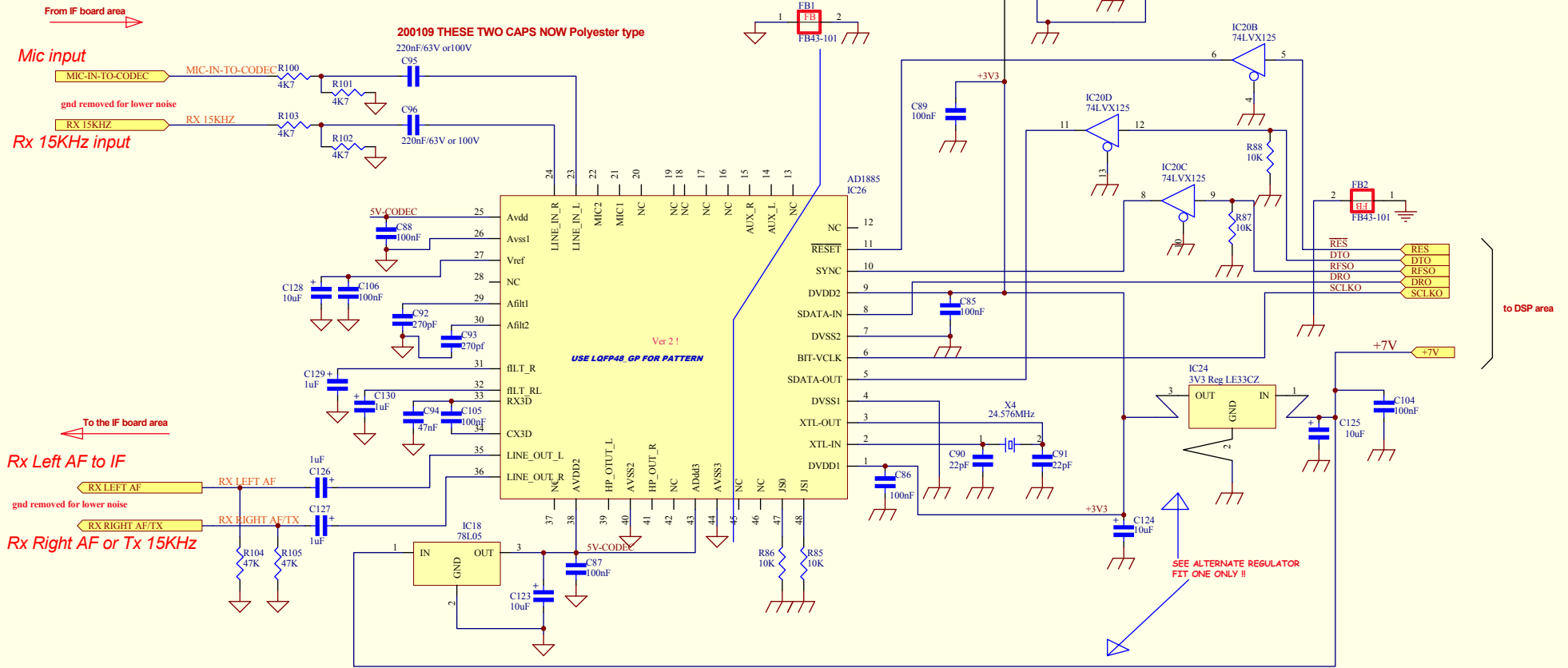
THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'

12-11-09

02-08-2011

prefix mostly <100

FIT FERRITE BEAD here!



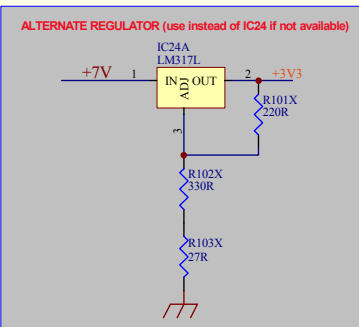
Mic input

Rx 15KHz input

Rx Left AF to IF

Rx Right AF or Tx 15KHz

PLEASE DOUBLE CHECK VOLTAGES TO CODEC BEFORE FITTING THE CHIP !!



- 20-01-09 change 2 caps to poly at input
- 04-02-08 Vers "B":- fix LM317 and AD1885 footprints
- Update_1 31-10-07 IC24A PINOUT IS WRONG
- 290907 UPDATED TEXT ETC
- 040807 changed C123 to axial type cap AND added alternate 3v3 reg

Sheet:	SCHEMATICS BY VK3PE & C.S.	
4 of 22	TITLE:-	I:\Combo-CC-draft Uh\MASTER 170811\PROJECT SCH FILES 170811\COMBO-CC
	"VK3PE"	Vers

These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

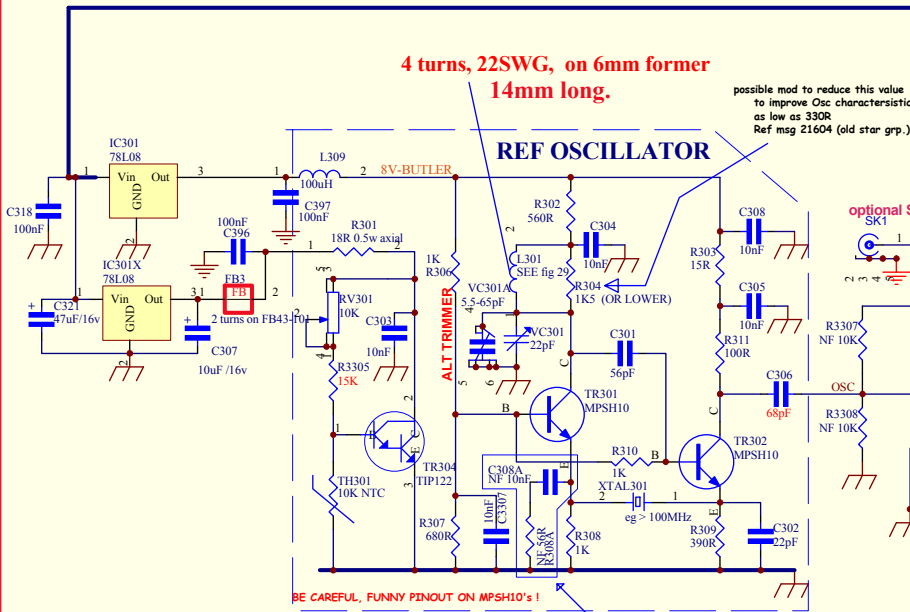
Schematic by VK3PE but please also refer to original by G3XJP on Yahoo STAR site
 codec_ver_a_300807.pcb.PCB"

USE 1/2W Resistor minimum. 1 or 2W is better

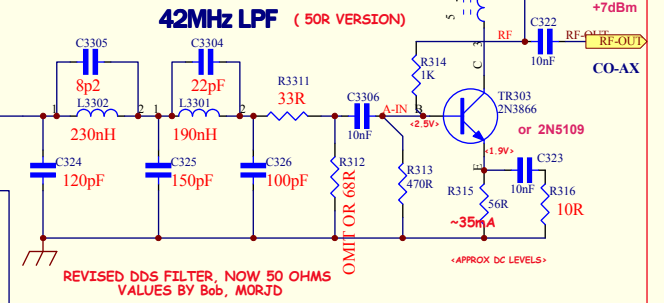
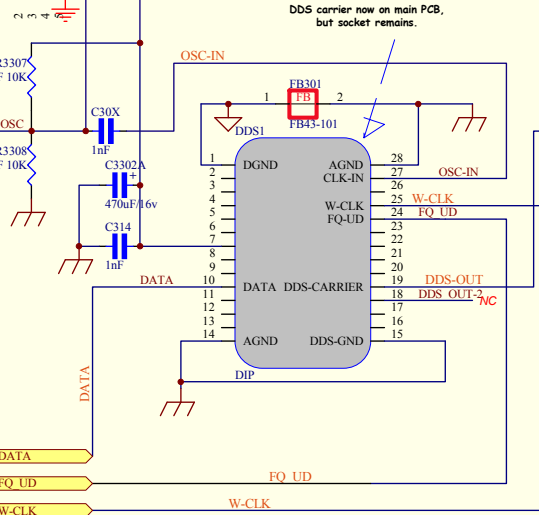
4 turns, 22SWG, on 6mm former
14mm long.

possible mod to reduce this value to improve Osc characteristics as low as 330R
Ref msg 21604 (old star grp.)

REF OSCILLATOR



AD9951 DDS CARRIER PCB



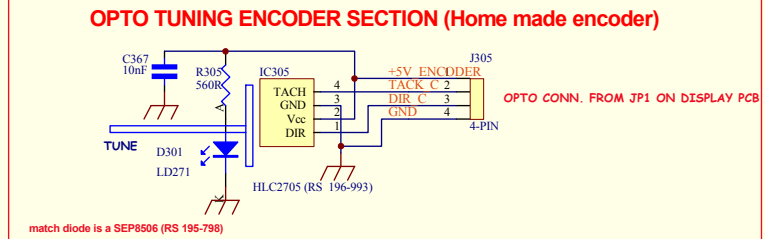
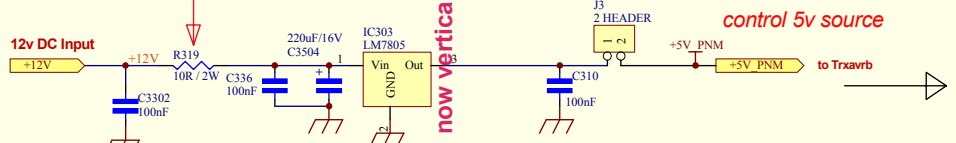
THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'
prefix 300

BUTLER/DDS CARRIER/AMP SECTION

16-08-11

THIS IS THE 5V SUPPLY FOR THE integrated Trxavr

USE 2W Resistor minimum.



BUTLER OSC, DDS CARRIER AND AMP PCB

This schematic is a re-drawn version of the G3X.JP PnM schematic who owns the (C). This schematic is provided for completeness only for the VK3PE & C.S. pcb.

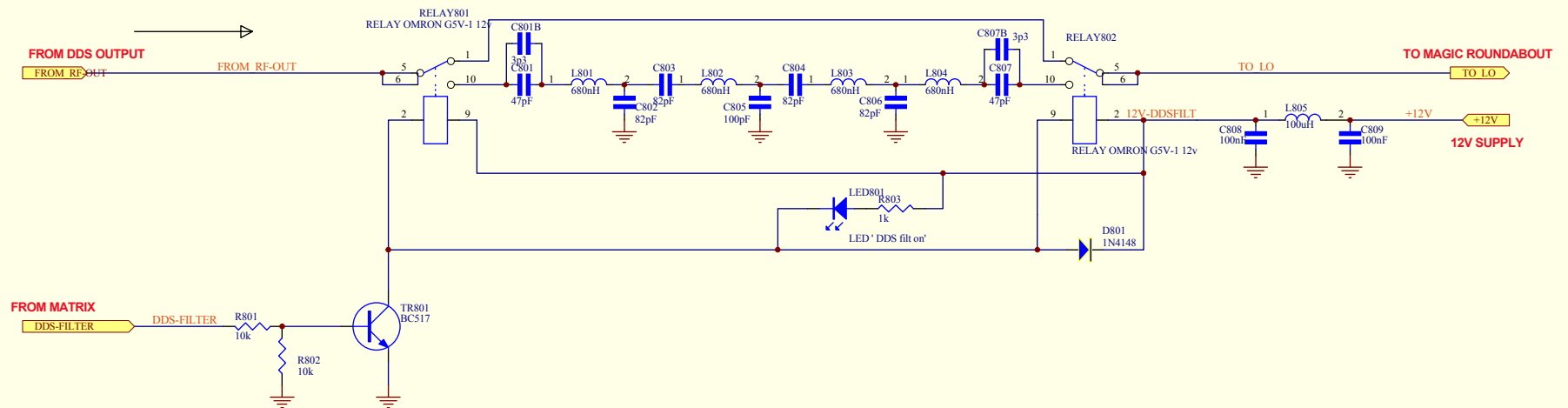
31-12-09 C306 (Butler) SHOULD BE 68pF FOR CORRECT O/P LEVEL ESPECIALLY ON 10M

14-01-09 Update 2 26-11-07 TR103 is TIP122 not TIP123
31-10-07 C2 IS ON DISPLAY PCB

Sheet:	PICaSTAR SCHEMATICS BY VK3PE & C.S. BASED ON ORIGINALS (C) BY G3XJP	
5 of 22	TITLE:-	:\Combo-CC-draft U\MASTER 170811\PROJECT SCH FILES 170811\COMBO-BUT
	For Oct 2007 "VK3PE PCBs"	Vers A

PICaSTAR DDS FILTER SECTION

for combo, prefix with 800



SHOULD GIVE:

AT LEAST 30dB ATTEN OF IF FREQ
AND A SIMILAR FIGURE AT 50MHz AND RISING

(Ref Part 14 of documents for PICaSTAR)

ie. pass about 25 - 40MHz

16-08-11 altered bias in to the transistor
010509 add led on filter
010509 CHANGED F/P FOR BC517'S
14-01-09
15-12-08 UPDATED FOR COMBO USE
#994 9585 OMRON 65V-1 RELAY FROM FARNELL
also Altronics (Aus) S4113
01-10-09
SEPT 2007 VK3PE * C.S.

Original schematic is by G3XJP, this version by VK3PE & C.S.

These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

Sheet:	SCHEMATICS BY VK3PE & C.S.	
6 of 22	TITLE:- I:\Combo-CC-draft Uh\MASTER 170811\PROJECT SCH FILES 170811\COMBO-DDS	
	"VK3PE"	Vers A

NOW 1000 PREFIX FOR COMBO STAR

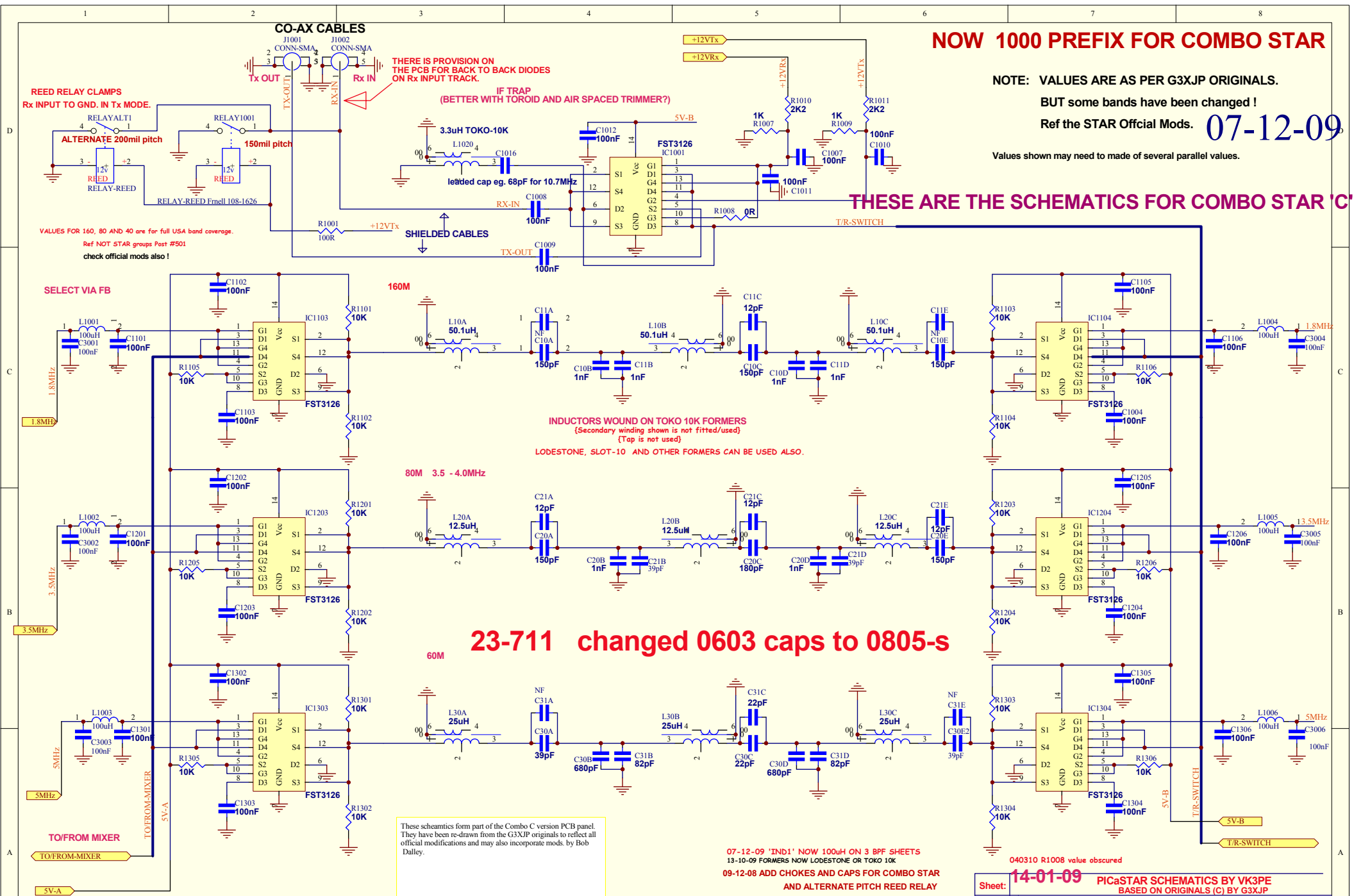
NOTE: VALUES ARE AS PER G3XJP ORIGINALS.

BUT some bands have been changed !

Ref the STAR Official Mods. **07-12-09**

Values shown may need to made of several parallel values.

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'



23-711 changed 0603 caps to 0805-s

These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

- 07-12-09 'IND1' NOW 100uH ON 3 BPF SHEETS
- 13-10-09 FORMERS NOW LODESTONE OR TOKO 10K
- 09-12-08 ADD CHOKES AND CAPS FOR COMBO STAR AND ALTERNATE PITCH REED RELAY
- 020508 changes to some incorrect values on sheet 3
- 13-02-08 added Reed relay to gnd on Rx AND PROVISION FOR DIODES.
- 110108 minor updates

040310 R1008 value obscured

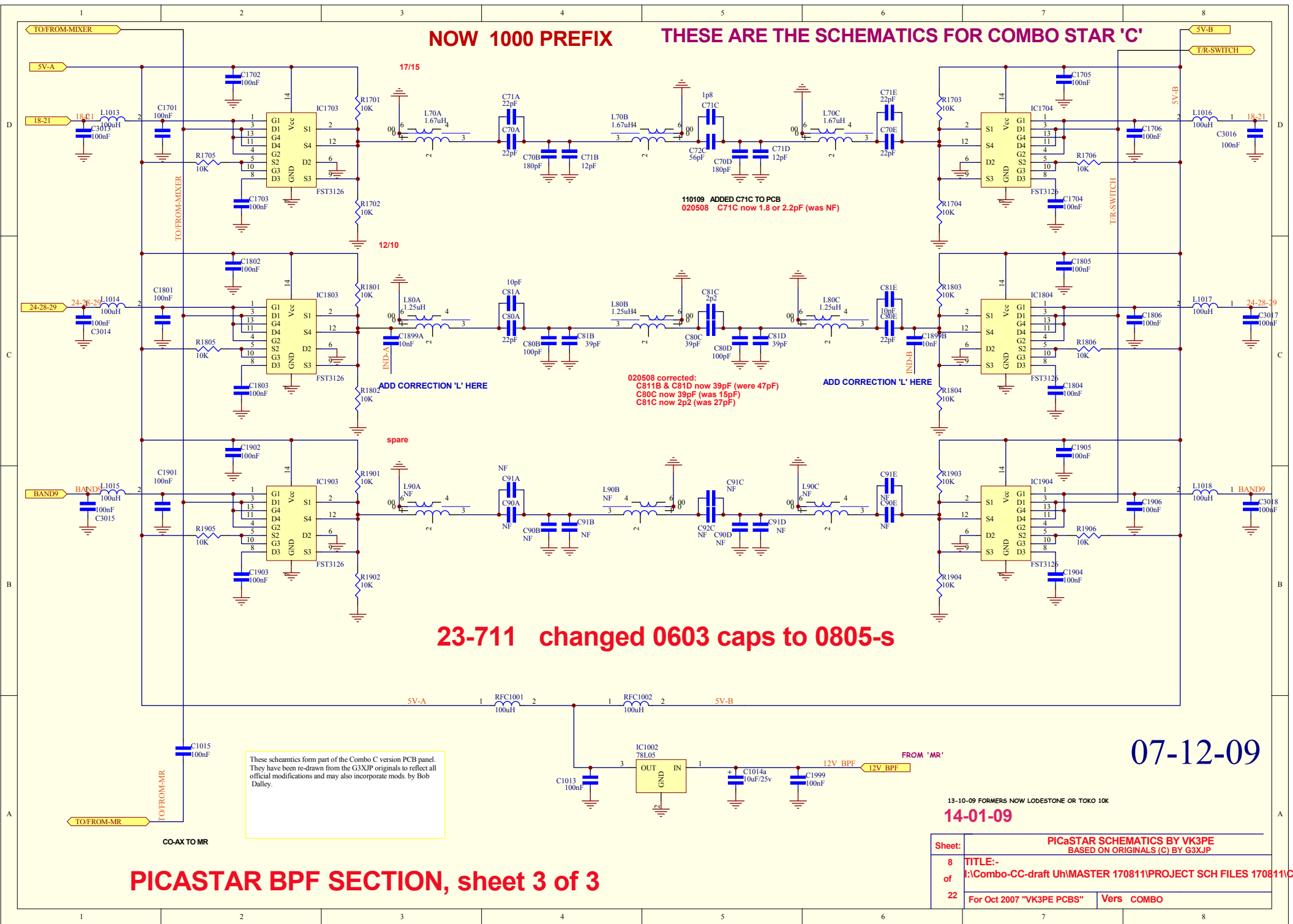
Sheet:	14-01-09	PICASTAR SCHEMATICS BY VK3PE
of	7	BASED ON ORIGINALS (C) BY G3XJP
22		
For Oct 2007 "VK3PE PCBs"		Vers COMBO

PICASTAR BPF SECTION, sheet 1 of 3

ref msg # 26404 for Toko10k turns ?

NOW 1000 PREFIX

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'



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23-711 changed 0603 caps to 0805-s

07-12-09

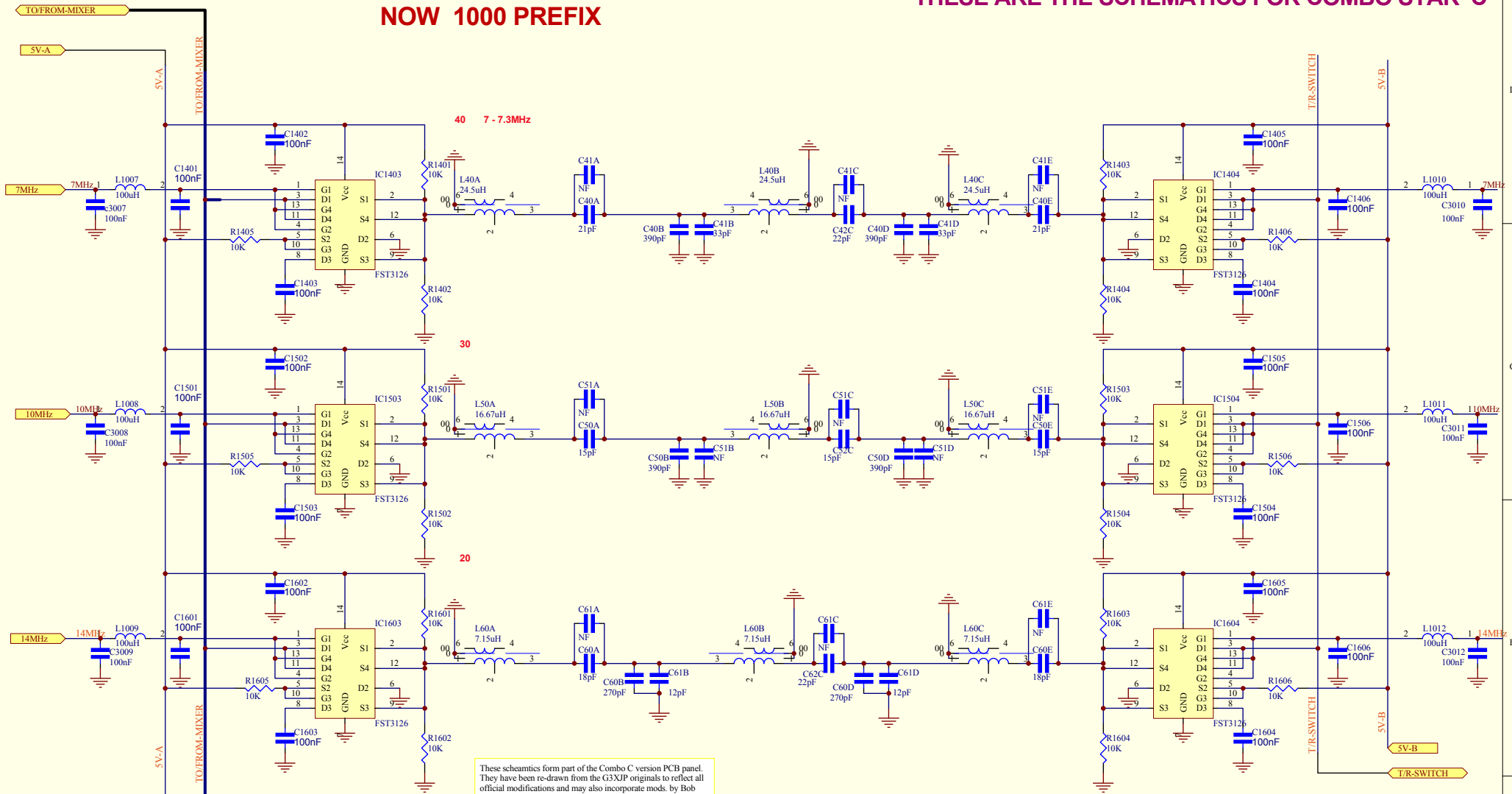
13-10-09 FORMERS NOW LODESTONE OR TOKO 10K
14-01-09

PICASTAR BPF SECTION, sheet 3 of 3

Sheet:	PICaSTAR SCHEMATICS BY VK3PE BASED ON ORIGINALS (C) BY G3XJP		
8 of 22	TITLE:- I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\COMBO-BPF		
	For Oct 2007 "VK3PE PCBs"	Vers	COMBO

NOW 1000 PREFIX

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'



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07-12-09

23-711 changed 0603 caps to 0805-s

13-10-09 FORMERS NOW LODESTONE OR TOKO 10K

14-01-09

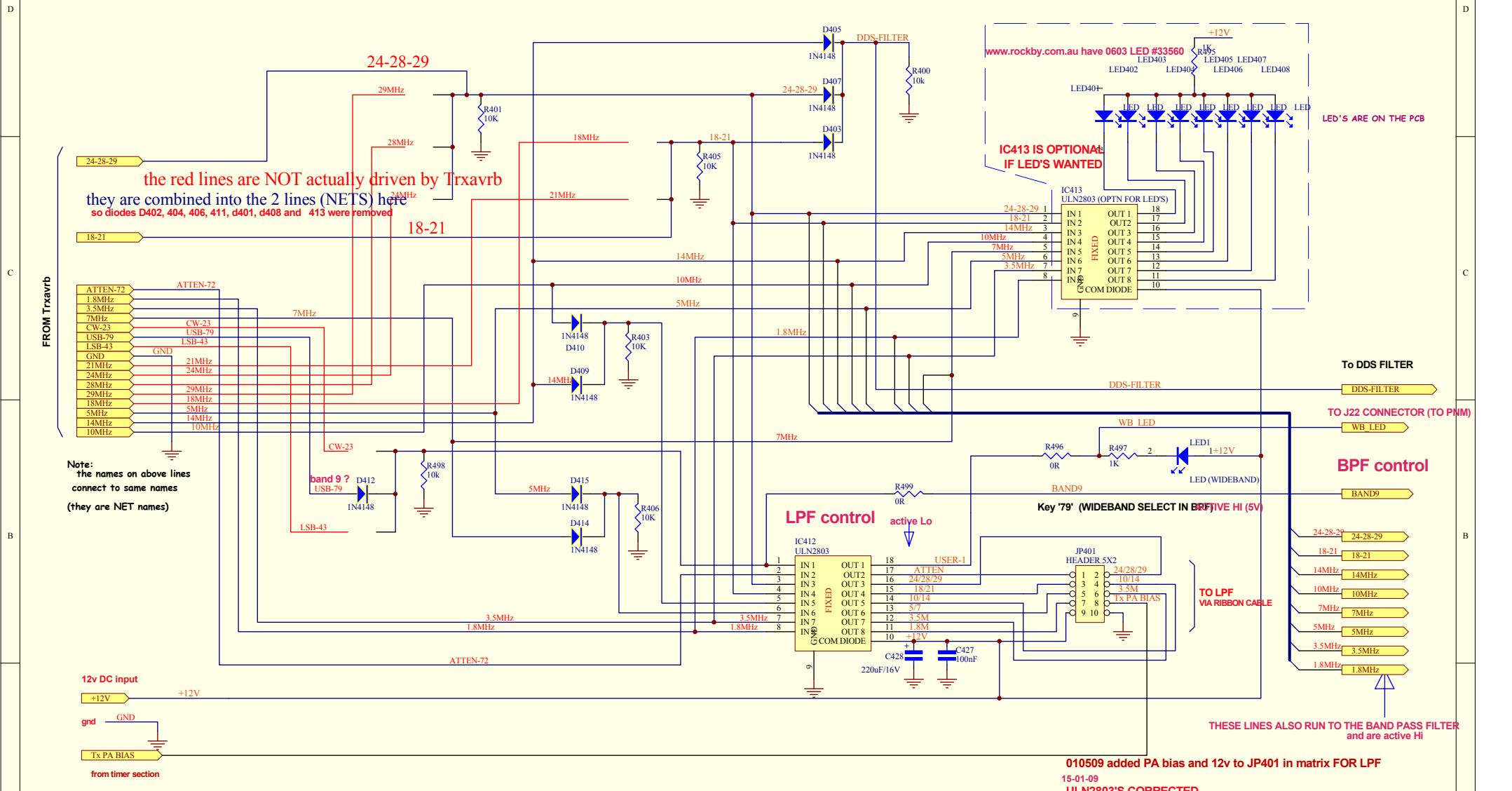
PICASTAR BPF SECTION, sheet 2 of 3

Sheet:	PICaSTAR SCHEMATICS BY VK3PE BASED ON ORIGINALS (C) BY G3XJP
9 of 22	TITLE:- I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\COMBO-BPF
	For Oct 2007 "VK3PE PCBs" Vers COMBO

STAR DIODE MATRIX

13-08-11

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'



the red lines are NOT actually driven by Trxavrb
they are combined into the 2 lines (NETS) here
so diodes D402, 404, 406, 411, d401, d408 and 413 were removed

www.rockby.com.au have 0603 LED #33560
LED400 LED403 LED404 LED405 LED406 LED407 LED408
LED409
IC413 IS OPTIONAL
IF LED'S WANTED

Note:
the names on above lines
connect to same names
(they are NET names)

010509 added PA bias and 12v to JP401 in matrix FOR LPF
15-01-09
ULN2803'S CORRECTED
5th Dec 2007 Update_1:- error in LPF control designation
011207 cosmetic update only

These schematics form part of the Combo C version PCB panel.
They have been re-drawn from the G3XJP originals to reflect all
official modifications and may also incorporate mods. by Bob
Dalley.

VK3PE
ORIGINAL SCHEMATIC BY G6ALU

Sheet:	10	PICaSTAR SCHEMATICS BY VK3PE & C.S. BASED ON ORIGINALS (C) BY G3XJP
of	22	TITLE:- I:\Combo-CC-draft Uh\MASTER 170811\PROJECT SCH FILES 170811\COMBO-MAT
		For Oct 2007 "VK3PE PCBs" Vers "A"

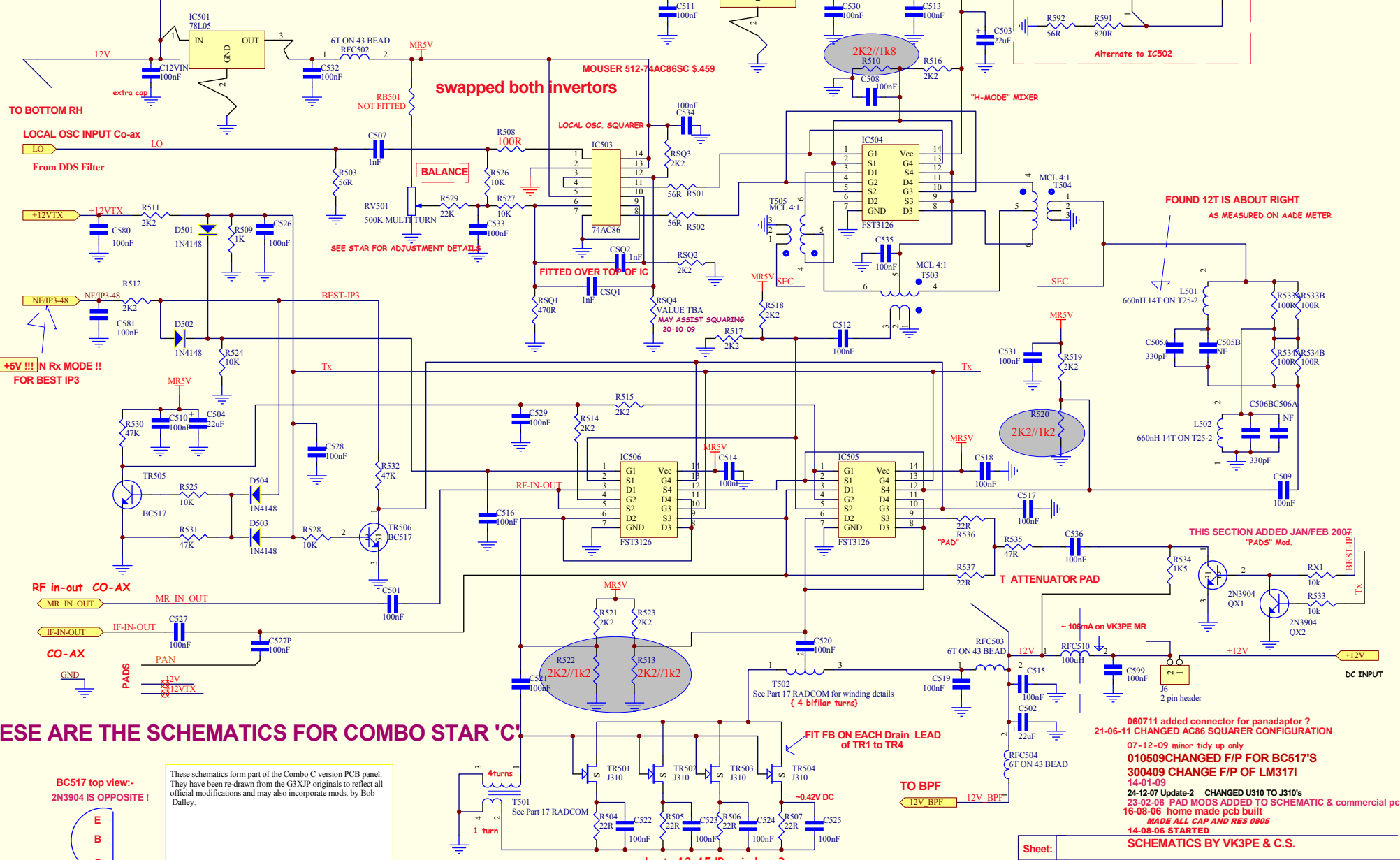
PICaSTAR MAGIC ROUNDABOUT

24-11-08 PREFIX ALL WITH 500

Version A 060907

07-12-09

16-08-11



THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'

BC517 top view:-
2N3904 IS OPPOSITE!



These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

15-04-11 FIXED DIODES SYMBOL TO SHORT TYPE

Post #3817 HAROLD USED BN61-302 CORES TO GET RESPONSE UP TO 6 METERS

Sheet:	11	TITLE:-	1:Combo-CC-draft UhMASTER 170811\PROJECT SCH FILES 170811\COMBO-MR-
of	22		G3XJP'S STAR MAGIC ROUNDABOUT Ref Parts 17 & 18
		Vers	Ver C Combo

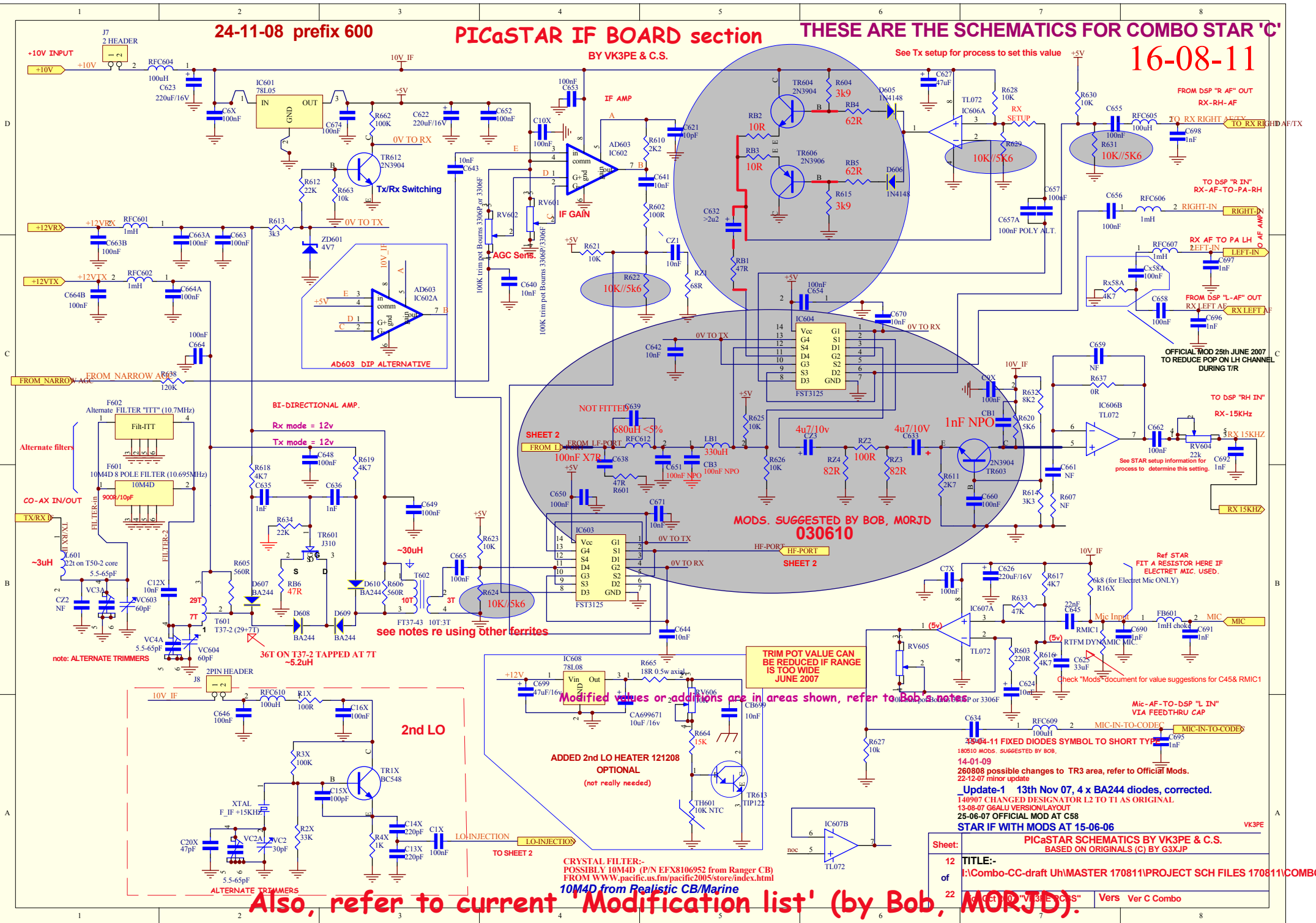
24-11-08 prefix 600

PICaSTAR IF BOARD section

BY VK3PE & C.S.

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'

16-08-11



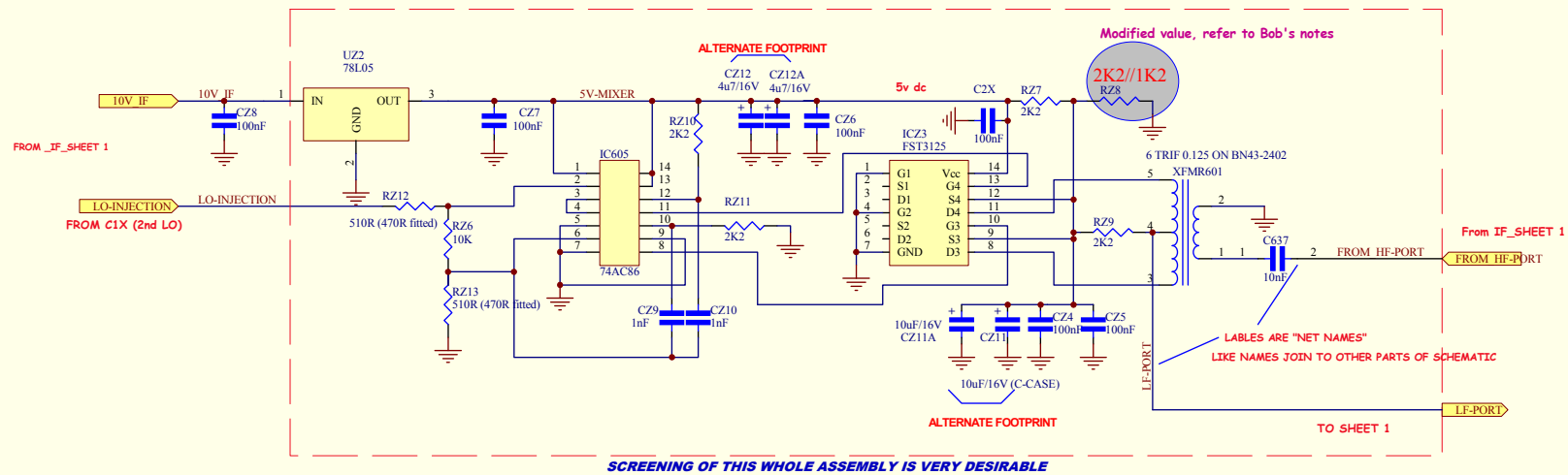
Sheet:	12	TITLE:-	PICaSTAR SCHEMATICS BY VK3PE & C.S. BASED ON ORIGINALS (C) BY G3XJP
of	22	Ver	Ver C Combo

Also, refer to current 'Modification list' (by Bob, MORJD).

PICaSTAR IF BOARD for G6ALU LAYOUT

BY VK3PE & C.S.

"MIXADAPTER" FST3125 MIXER BOARD (NOW PART OF IF PCB)



These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

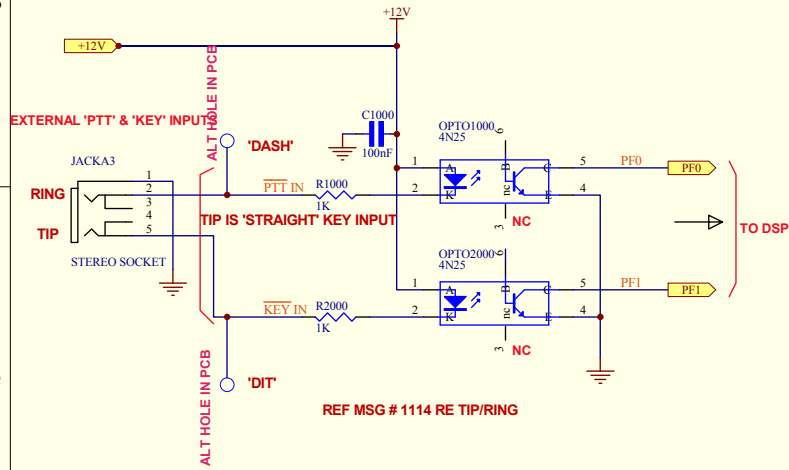
280909

14-01-09

300708 minor update.
22-12-07 minor update
10-07-07 CONVERT TO 0805 PARTS
DRAWN BY VK3PE

Sheet:	PICaSTAR SCHEMATICS BY VK3PE & C.S. BASED ON ORIGINALS (C) BY G3XJP
13 of 22	TITLE:- I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\COMBO-IF_S
	For Oct 2007 "VK3PE PCBs" Vers A

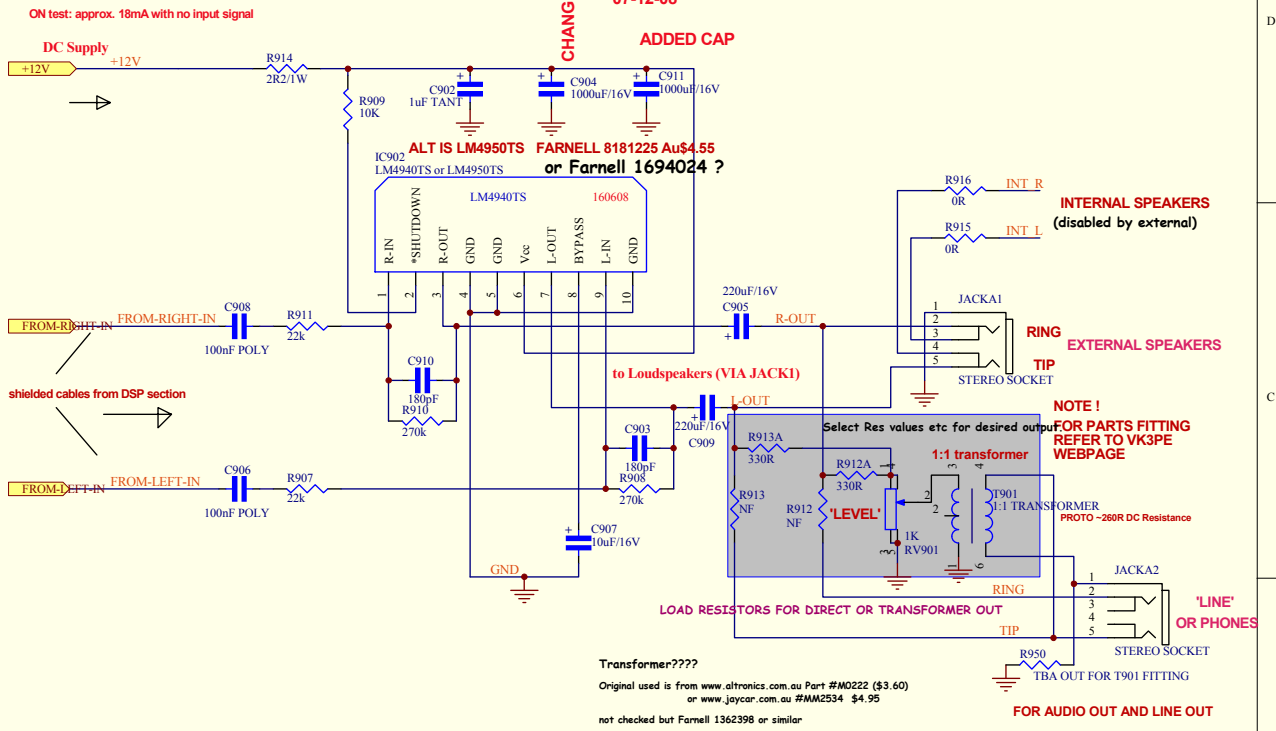
DSP OPTO ISOLATOR FOR PTT & KEY TO DSP prefix 1000



REF MSG # 1114 RE TIP/RING

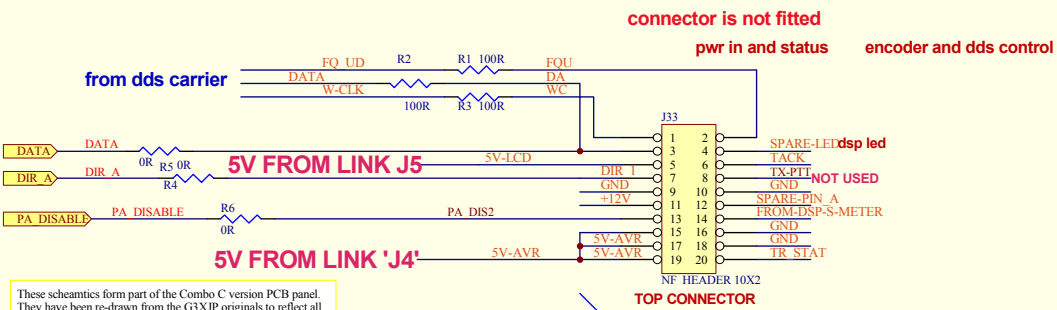
Audio Amp prefix 900

07-12-09
16-08-11



INTERCONNECT TO CONTROLLER

FROM integrated Trxavr



These schematics form part of the Combo C version PCB panel. They have been re-drawn from the G3XJP originals to reflect all official modifications and may also incorporate mods. by Bob Dalley.

270711 removed bottom idc conns
270712 removed bottom idc conns

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'

There are mating connectors on the Picmix board.
and IDC ribbon cables are used to connect.
Trxavr also has mating connector.

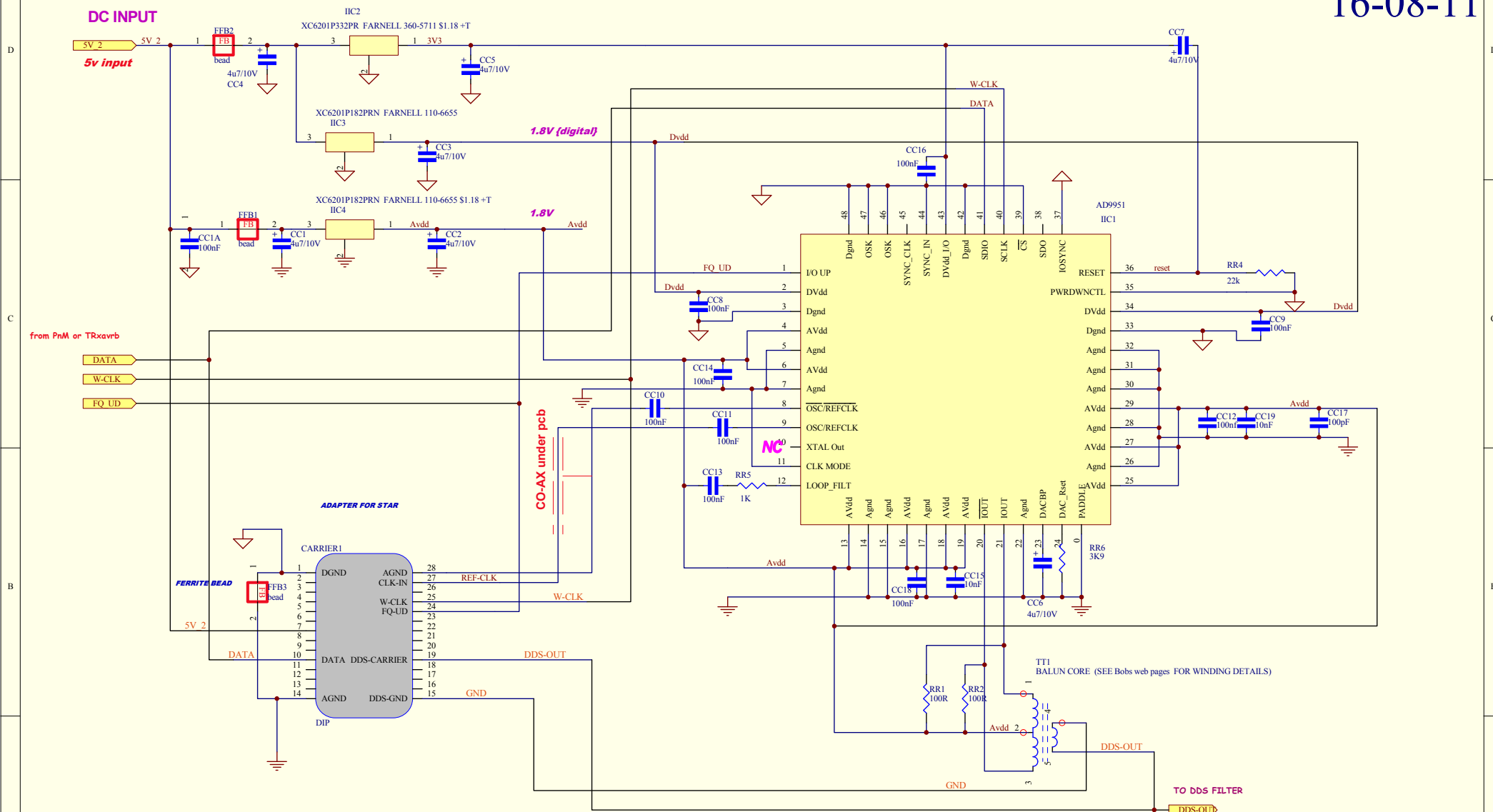
16-08-11 COMBO 'C' VERS. REMOVED ALT JACKS AND UNUSED CONNECTORS
07-12-09 minor tidy up only

Sheet:	PICaSTAR SCHEMATICS BY VK3PE & C.S. —BASED ON ORIGINALS (C) BY G3XJP
14 of 22	TITLE:- I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\COMBO-OPT
	For Oct 2007 "VK3PE PCBs" Vers

G3XJP PICaSTAR

AD9951 DDS "PLL" (VK3PE PCB) 'COMBO' VERS.

16-08-11



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DDS IS NOW INTEGRATED ONTO THE SINGLE BOARD VERSION

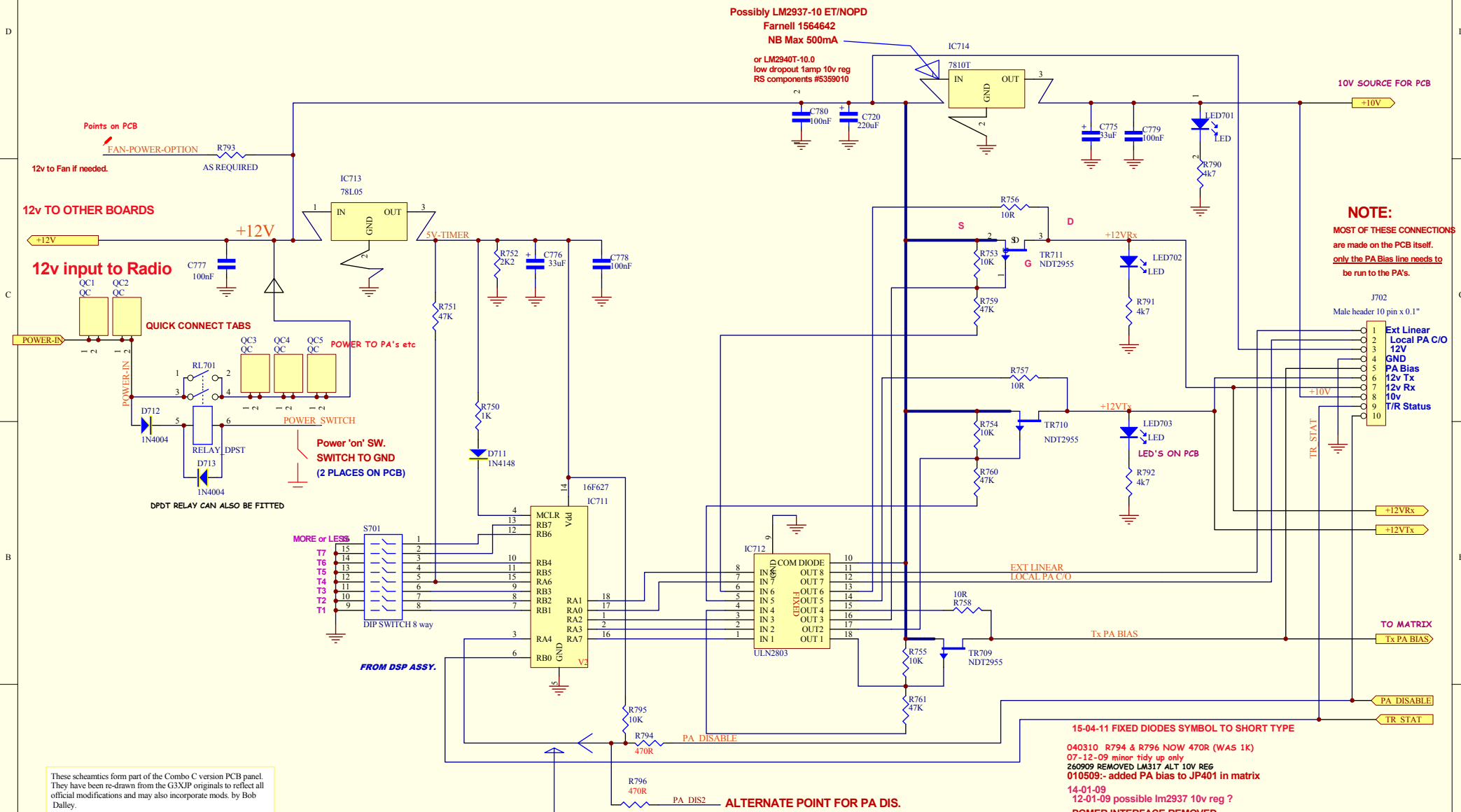
16-08-11 USED NOW ON COMBO 'C' VERSION PANEL
010611 reversed TT1 output for better PCB tracks
13-07-06 DRAWN ORIGINALLY

Sheet:	SCHEMATICS BY VK3PE & C.S.	
15 of 22	TITLE:-	!:\Combo-CC-draft Uh\MASTER 170811\PROJECT SCH FILES 170811\COMBO-DDS
	"VK3PE"	Vers

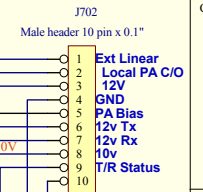
STAR TIMER SECTION

THESE ARE THE SCHEMATICS FOR COMBO STAR 'C'
 PREFIX ALL WITH 700 NOW FOR SINGLE BD STAR

07-12-09



NOTE:
 MOST OF THESE CONNECTIONS
 are made on the PCB itself.
 only the PA Bias line needs to
 be run to the PA's.



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REFER TO IAN G3VPX'S TIMER CHANGES
 (USED IF HIGH SWR FOR SHUTDOWN OF PA)

ALTERNATE POINT FOR PA DIS.
 LOCATED NEAR REG. FOR DDS.

- 15-04-11 FIXED DIODES SYMBOL TO SHORT TYPE
- 040310 R794 & R796 NOW 470R (WAS 1K)
- 07-12-09 minor tidy up only
- 260909 REMOVED LM317 ALT 10V REG
- 010509:- added PA bias to JP401 in matrix
- 14-01-09
- 12-01-09 possible lm2937 10v reg ?
- PGMER INTERFACE REMOVED
- 01-10-09 J3 now 10 pins
- 040907 PCB BY CHRIS STAKE
- 07-07-06

PREFIX 700

CORRECTED WIRING TO NEW FOOTPRINT OF IC712

Sheet:	SCHEMATICS BY VK3PE & C.S.	
16	TITLE:- STAR TIMER BY VK3PE & C.S.	
of	I:\Combo-CC-draft UH\MASTER 170811\PROJECT SCH FILES 170811\COMBO-TIME	
22	"VK3PE"	Vers single pcb star