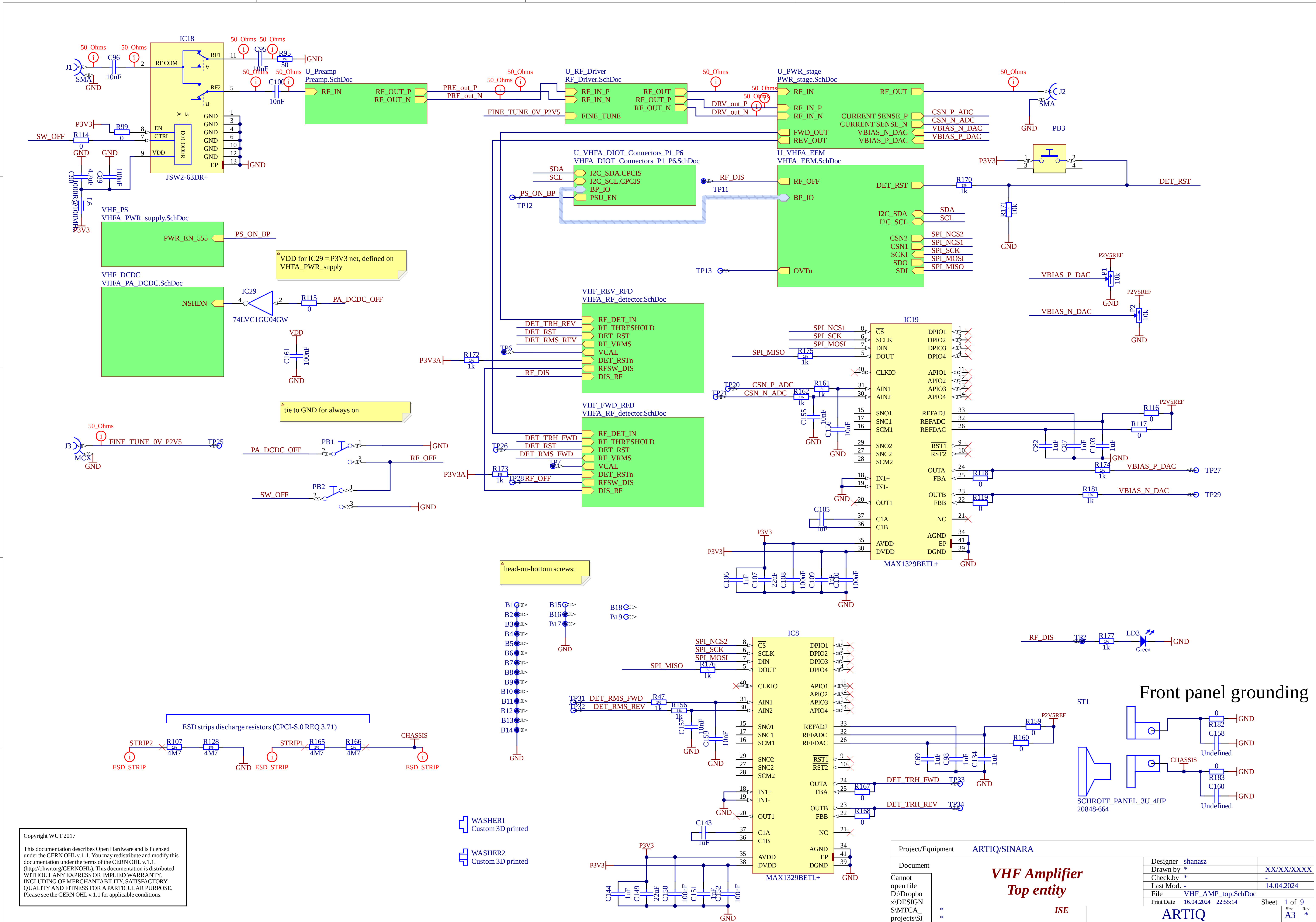

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Project/Equipment	ARTIQ/SINARA
Document	***VHF Amplifier Top entity***
Designer	shanasz
Drawn by	* XX/XX/XXXX
Check.by	* -
Last Mod.	- 14.04.2024
File	VHF_AMP_top.SchDoc
Print Date	16.04.2024 22:55:14
Sheet	1 of 9
Size	A3
Rev	*

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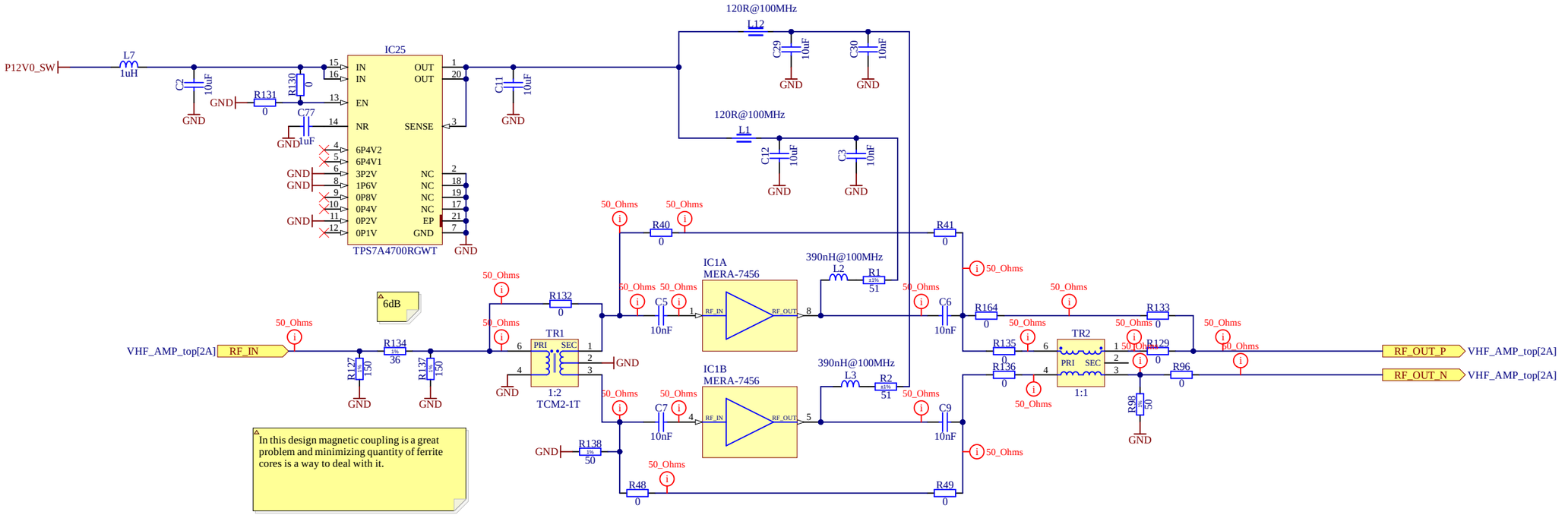
ISE

ARTIQ



R BIAS	
Vcc	"1%" Res. Values (ohms) for Optimum Biasing
7	28.7
8	41.2
9	53.6
10	66.5
11	78.7
12	90.9
13	102
14	115
15	127

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Project/Equipment ARTIQ/SINARA

Document

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VHF Amplifier Preamplifier

ISE

Designer	shanasz
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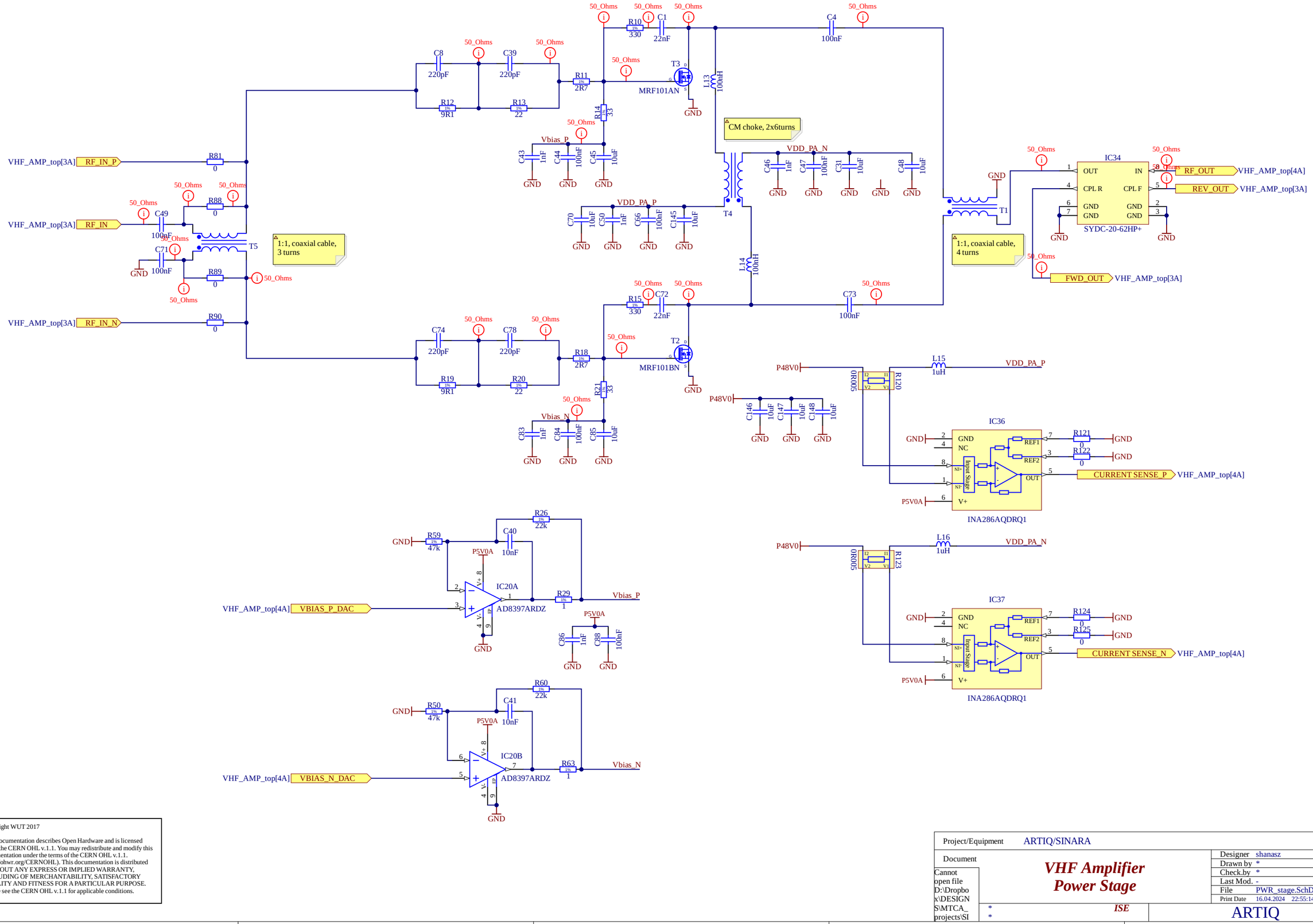
Last Mod.	-
File	Preamp.SchDoc
Print Date	16.04.2024 22:55:14
Sheet	2 of 9
Size	A3
Rev	*

ARTIQ



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Project/Equipment ARTIQ/SINARA

Document

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VHF Amplifier Power Stage

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Drawn by	*
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Last Mod.	-
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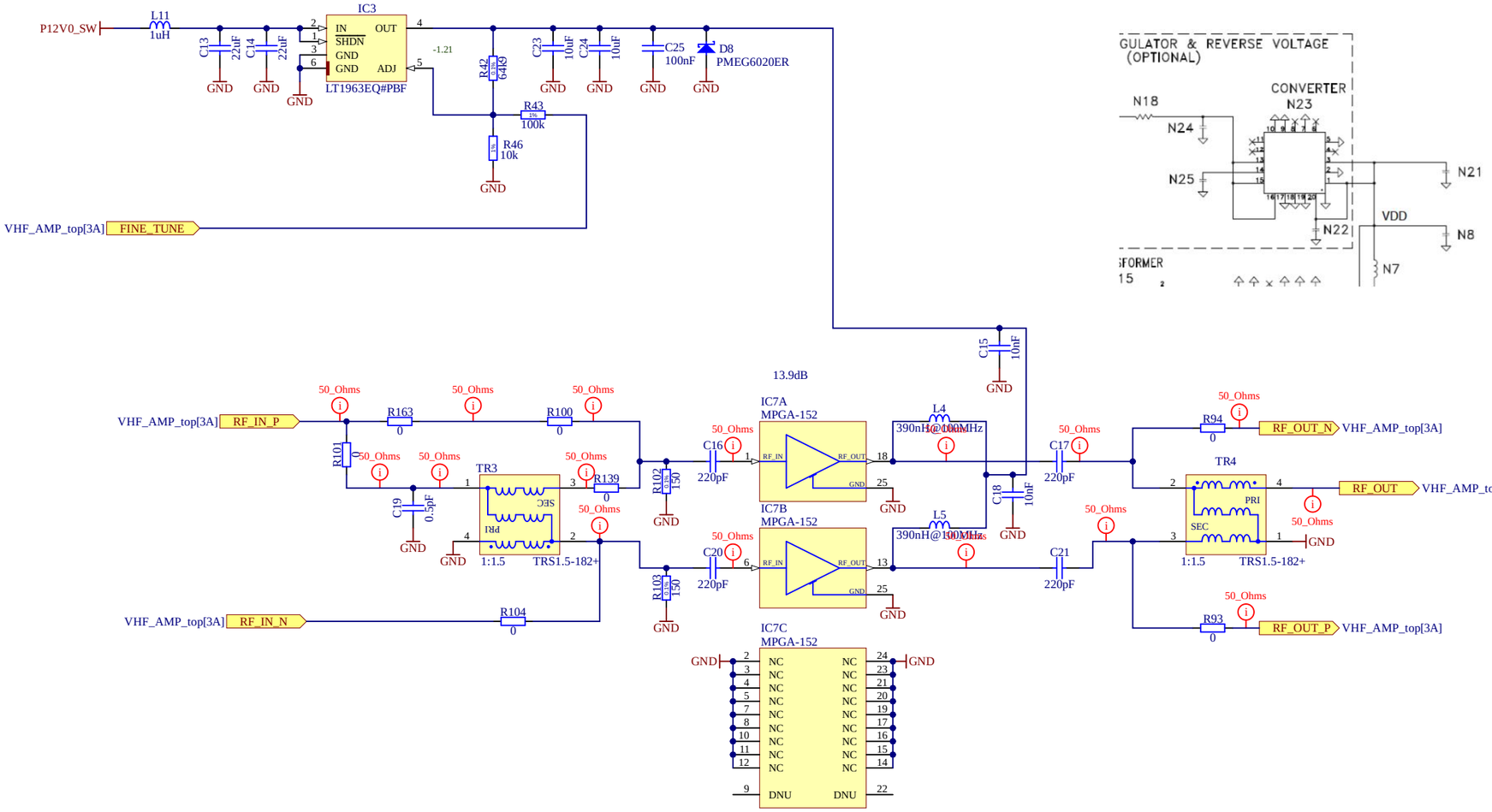
Sheet	3 of 9
Size	A3
Rev	*
	XX/XX/XXXX
	-
	14.04.2024

ISE

ARTIQ



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Project/Equipment ARTIQ/SINARA

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VHF Amplifier
Driver Amplifier

ISE

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Last Mod.	-
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Print Date	16.04.2024 22:55:15
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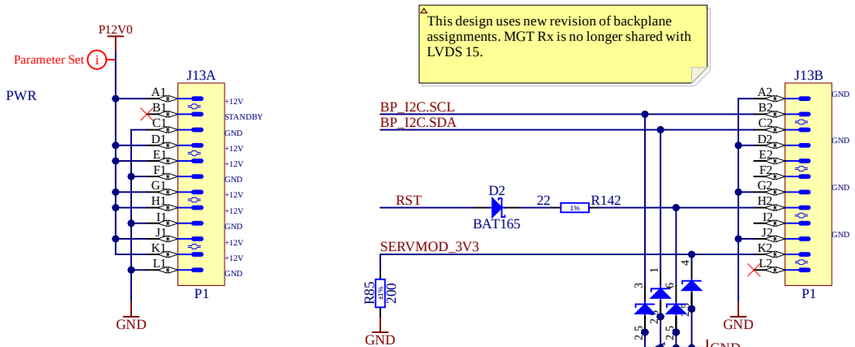
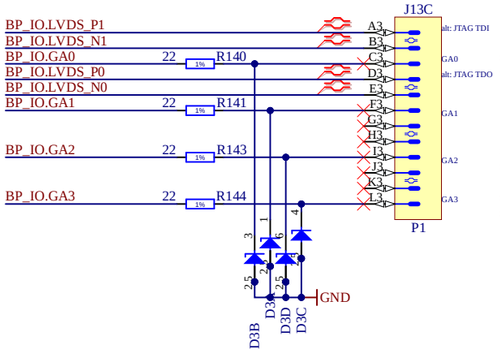
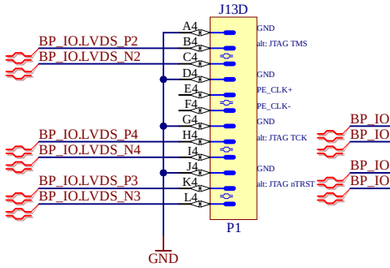
Size	A3
Rev	*

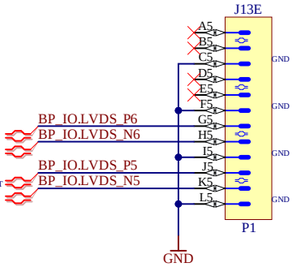
ARTIQ

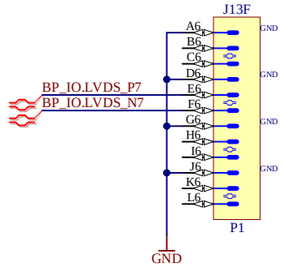
P1 connector

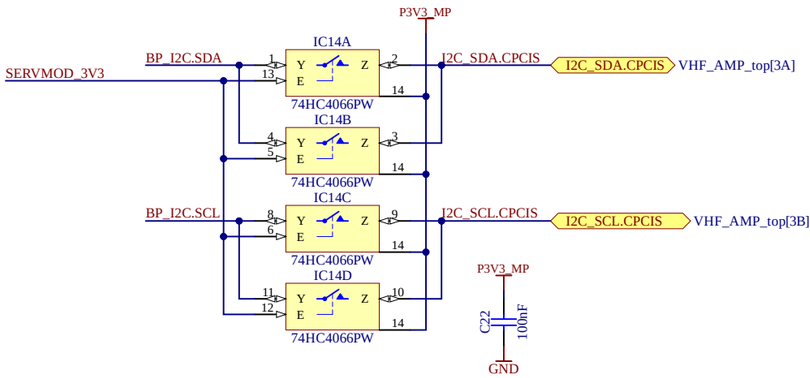


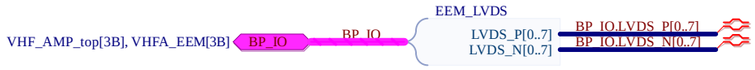


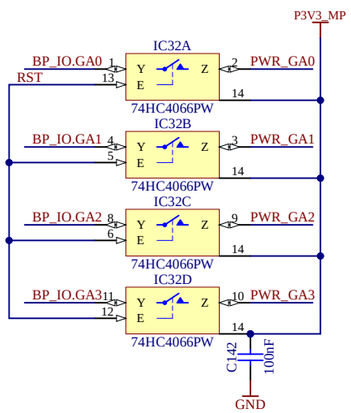


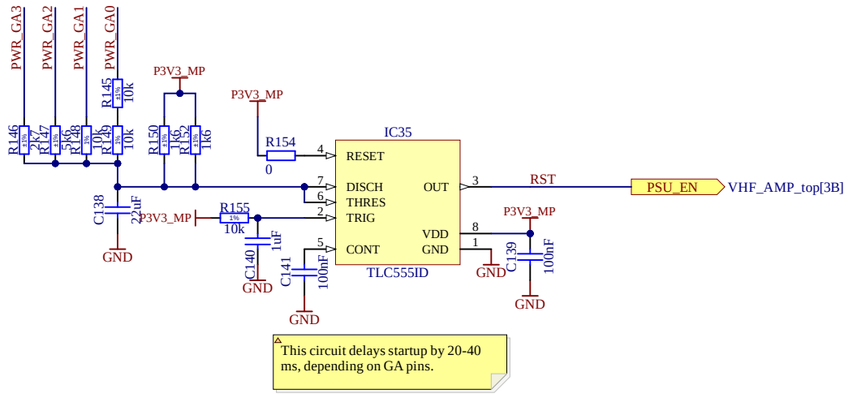












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Project/Equipment	VHF_AMP.PrjPcb
Document	**VHF Amplifier DIOT connectors**
Designer	G.Kasprowicz
Drawn by	G.Kasprowicz
Check.by	
Last Mod.	- 28.03.2024
File	VHFA_DIOT_Connectors_P1_P6.SchDoc
Print Date	16.04.2024 22:55:15 Sheet 5 of 9
Size	A3
Rev	2

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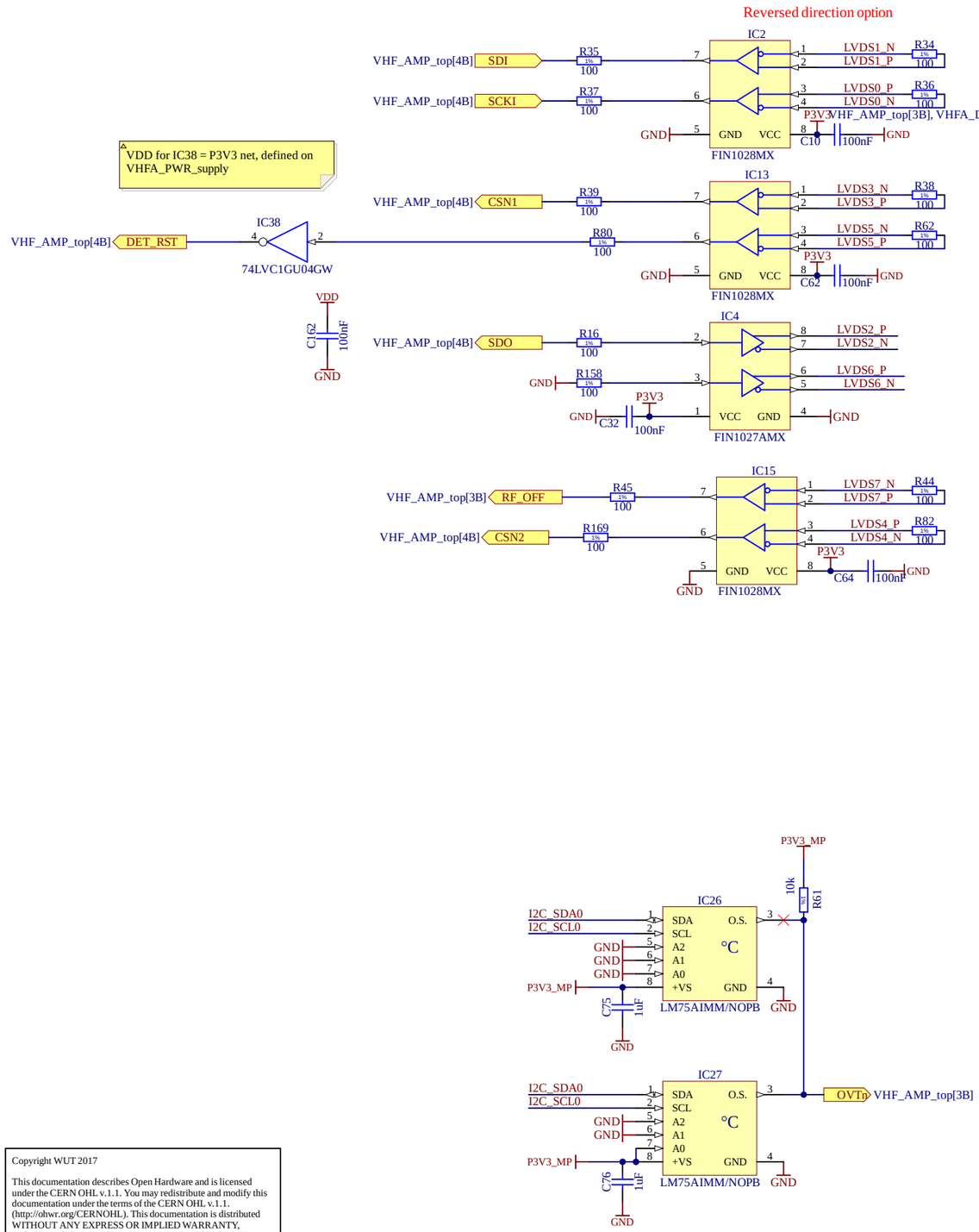
Contact gkasprow@gmail.com



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Project/Equipment ARTIQ/SINARA

Document

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VHF Amplifier EEM connectors

Designer	G.Kasprowicz	
Drawn by	G.Kasprowicz	
Check.by		-
Last Mod.	-	14.04.2024
File	VHFA_EEM.SchDoc	
Print Date	16.04.2024 22:55:15	Sheet 6 of 9

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Nowowiejska 15/19 00-665 Warsaw

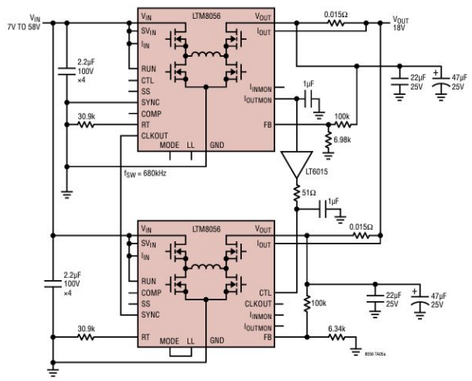
ARTIQ

Size A3 Rev 2

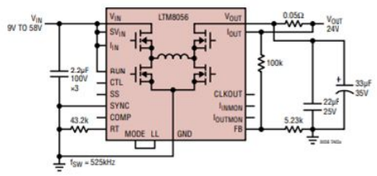
P12V0_SW
highPower
IC21
VHF_AMP_top[1B]
NSHDN
C118 2.2uF
C119 2.2uF
C120 2.2uF
C121 2.2uF
C122 Undefined
R126 0
C91 10uF
C92 10uF
C94 10uF
C115 10uF
C116 10uF
C117 10uF
R64 0R01
P48V0
R65 0R01
R66 0
R67 200K
R70 6K98
R71 0
C133 Undefined
R69 42k2
R73 Undefined
R74 Undefined
R75 51
C135 1uF
C137 1uF
IC23A
IC23B
AD8397ARDZ
P12V0_SW
IC22
C129 2.2uF
C130 2.2uF
C131 2.2uF
C132 2.2uF
C123 10uF
C124 10uF
C125 10uF
C126 10uF
C127 10uF
C128 10uF
C111 Undefined
R84 0
C136 Undefined
R78 42k2
R86 Undefined
R87 Undefined
R76 0
R77 200K
R79 6K34
LTM8056IY#PBF
GND

Switching freq: 500kHz
MODE: forced continous mode (low EMI)

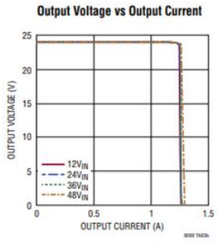
Two LTM8056s Paralleled to Get More Output Current. The Two µModules Are Synchronized and Switching 180° Out Of Phase



24V$_{OUT}$ from 9V$_{IN}$ to 58V$_{IN}$ with 1.1A Accurate Current Limit



Output Voltage vs Output Current



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Project/Equipment ARTIQ/SINARA

Document

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VHF Amplifier Power Stage Supply

Designer	G.Kasprowicz
Drawn by	G.Kasprowicz
Check.by	
Last Mod.	- 28.03.2024
File	VHFA_PA_DCDC.SchDoc
Print Date	16.04.2024 22:55:15 Sheet 7 of 9

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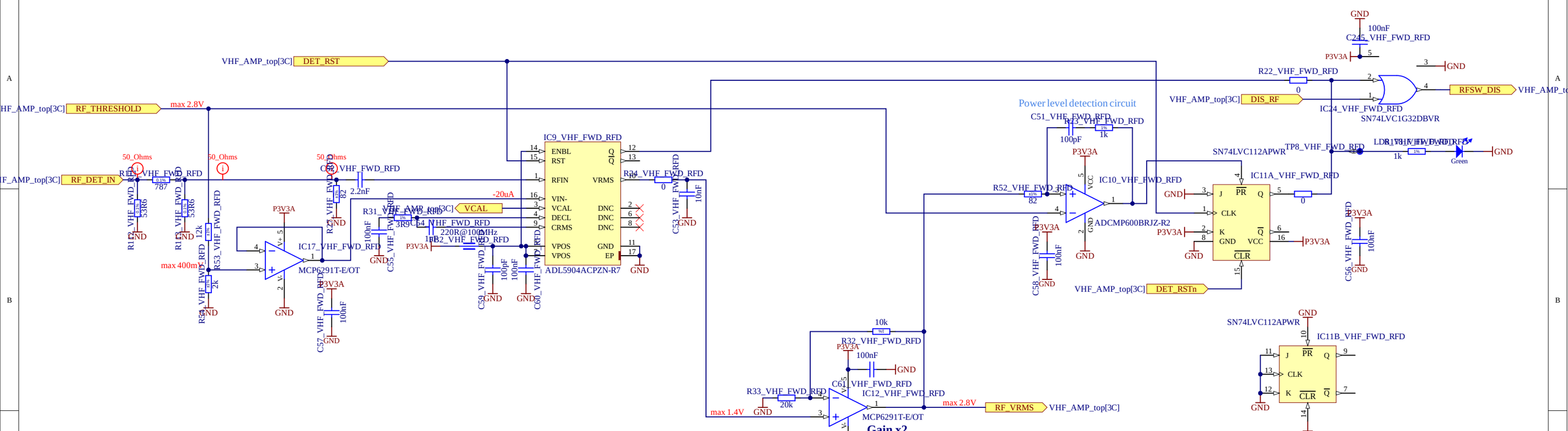
Nowowiejska 15/19 00-665 Warsaw

ARTIQ

Size A3 Rev 2



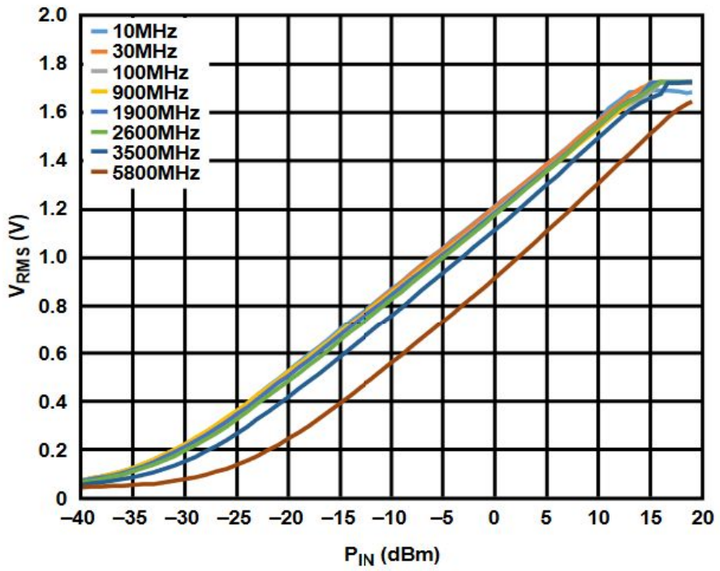


Figure 3. V_{RMS} vs. Input Level (P_{IN}) for Various Frequencies (30 MHz to 6 GHz) at 25°C

13838-003

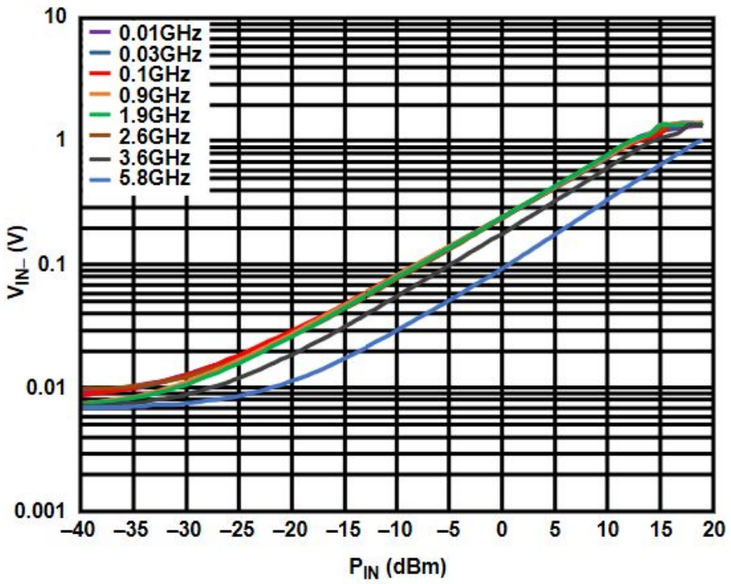


Figure 39. V_{IN-} vs. P_{IN} at Various Frequencies

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Project/Equipment	Sampler		
Document	***VHF Amplifier Power detector & protection***	Designer G.Kasprowicz	
Cannot open file D:\Dropbox\DESIGNS\MTCA_projects\SI		Drawn by G.Kasprowicz	
		Check.by	-
		Last Mod. -	14.04.2024
		File VHFA_RF_detector.SchDoc	
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PW ISE *WUT ISE* *Nowowiejska 15/19 00-665 Warsaw*	ARTIQ	Size A3	Rev 2

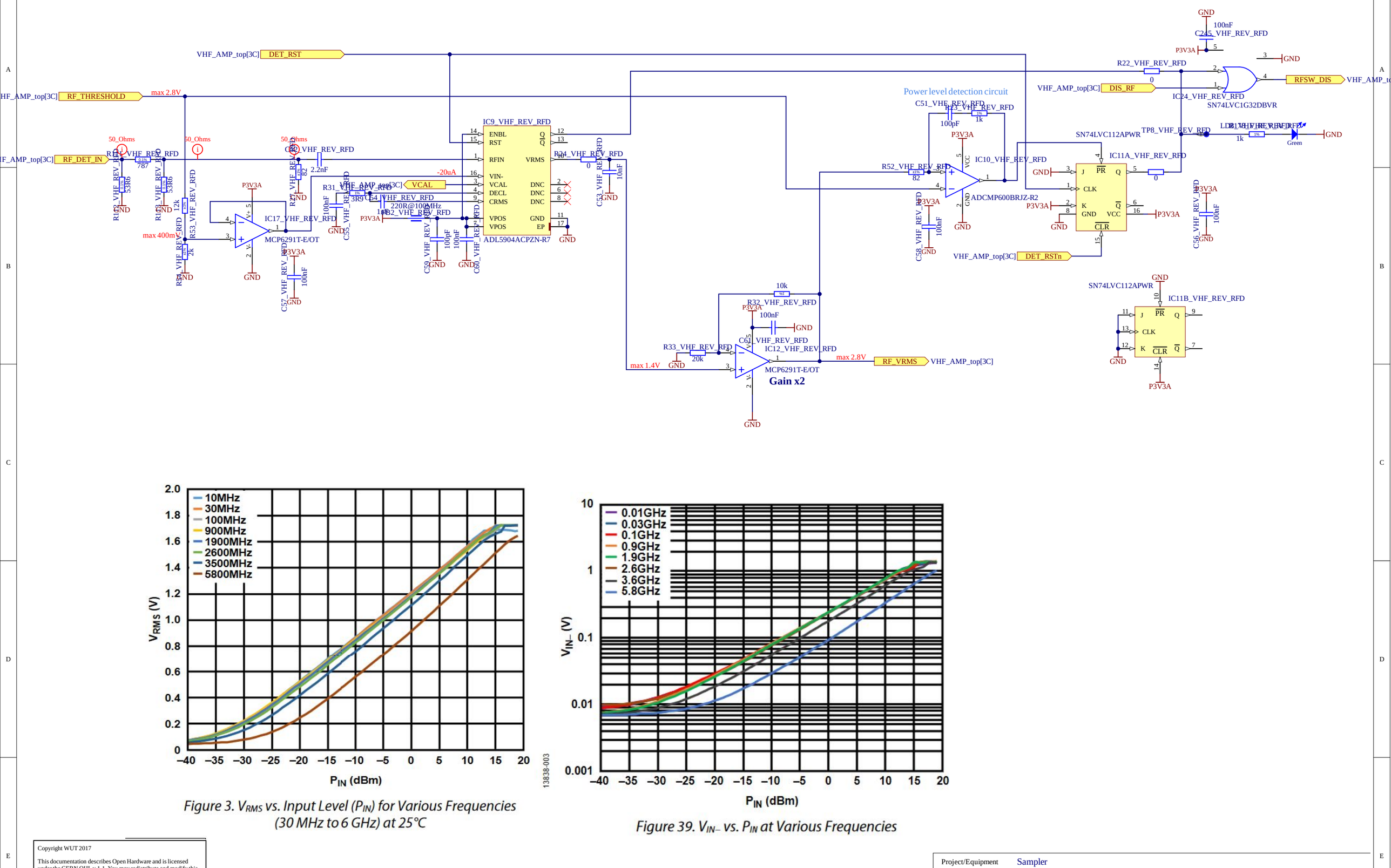

Figure 3. V_{RMS} vs. Input Level (P_{IN}) for Various Frequencies (30 MHz to 6 GHz) at 25°C

Figure 39. V_{IN-} vs. P_{IN} at Various Frequencies

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Project/Equipment	Sampler		
Document	***VHF Amplifier Power detector & protection***	Designer G.Kasprowicz	
		Drawn by G.Kasprowicz	
Cannot open file D:\Dropbox\DESIGNS\MTCA_projects\SI		Check.by	-
		Last Mod. -	14.04.2024
		File VHFA_RF_detector.SchDoc	
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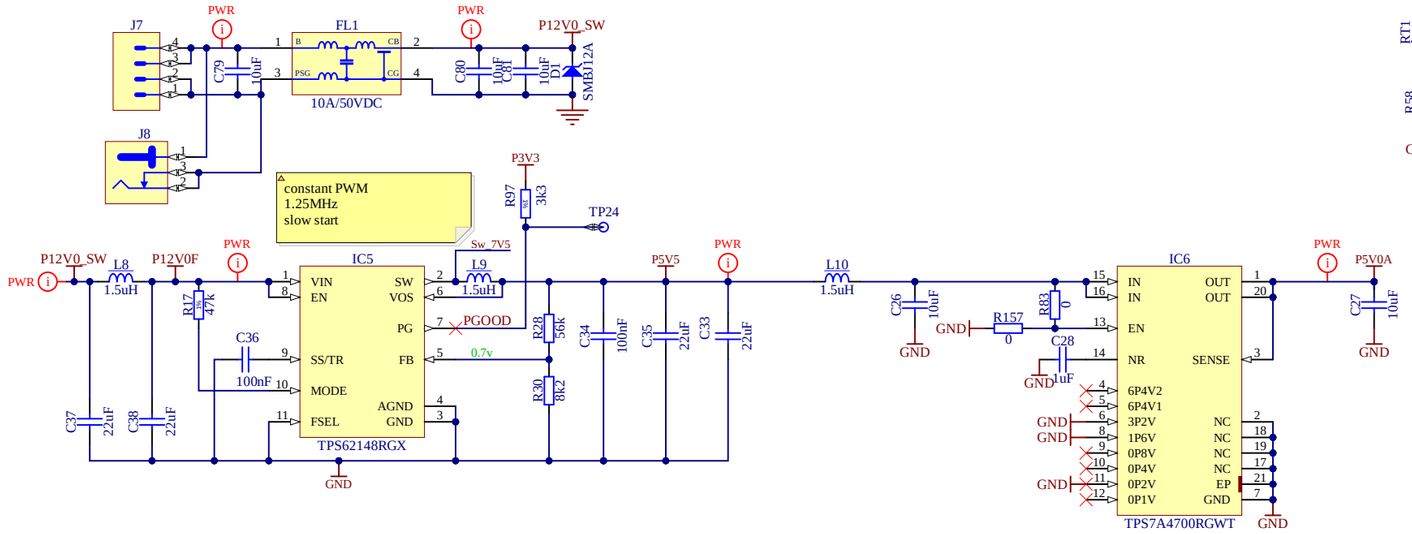
PW ISE *WUT ISE* *Nowowiejska 15/19 00-665 Warsaw*	ARTIQ	Size A3	Rev 2



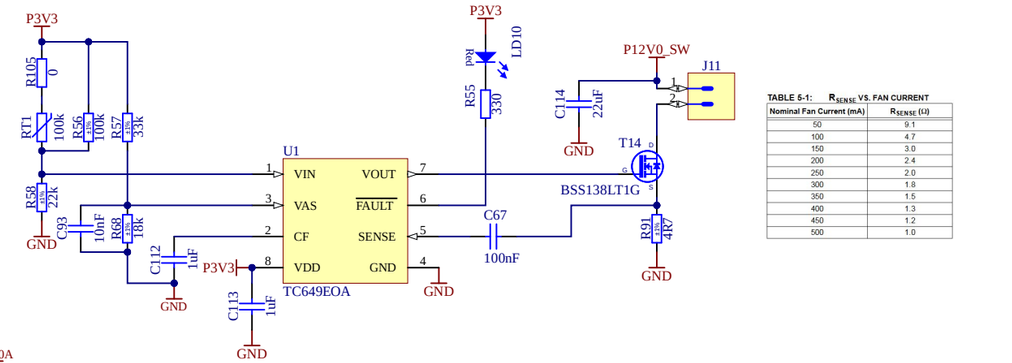
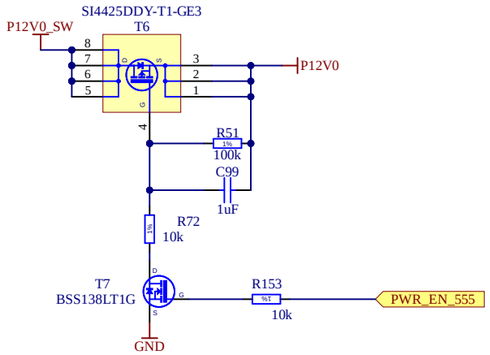
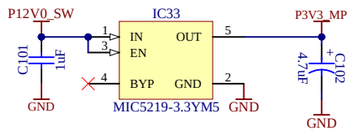


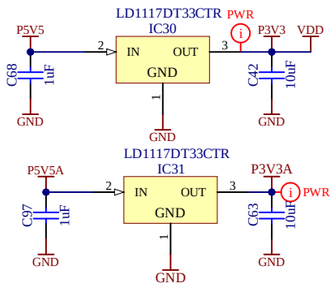
TABLE 5-1: R_{SENSE} VS. FAN CURRENT

Nominal Fan Current (mA)	R_{SENSE} (Ω)
50	9.1
100	4.7
150	3.0
200	2.4
250	2.0
300	1.8
350	1.5
400	1.3
450	1.2
500	1.0

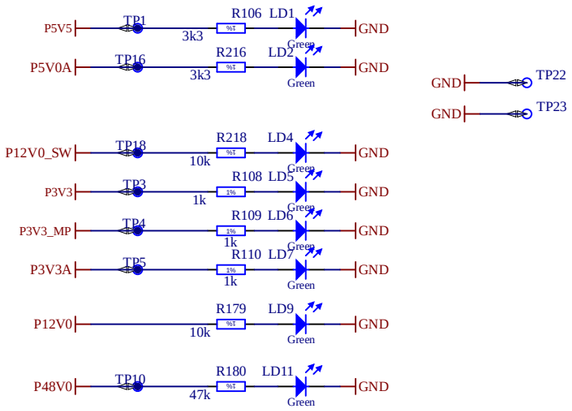


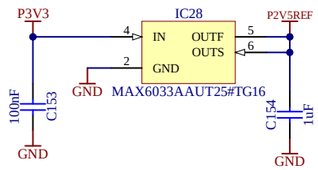


In DIOT variant backplane doesn't supply MP.



ADL5536 210mA
PHA-1+ 360mA





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Project/Equipment: ARTIQ/SINARA

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VHF Amplifier Power supply & fan

Designer	G.Kasprowicz	
Drawn by	G.Kasprowicz	
Check.by		-
Last Mod.	-	14.04.2024
File	VHFA_PWR_Supply.SchDoc	
Print Date	16.04.2024 22:55:16	Sheet 9 of 9

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Nowowiejska 15/19 00-665 Warsaw

ARTIQ

Size A3 Rev 2