

A	B	C	D	E	F
DUNE ANALOG MOTHER BOARD V2 WITH AC COUPLING & P1 ADC ASIC					
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COMPANY BROOKHAVEN NATIONAL LABORATORY					
TITLE DUNE ANALOG MOTHER BOARD					
SIZE B REV SHEET COVER OF DRAWN SHANSHAN GAO/Jack Fried DATE 21/12/2016:12:19					
A	B	C	D	E	F

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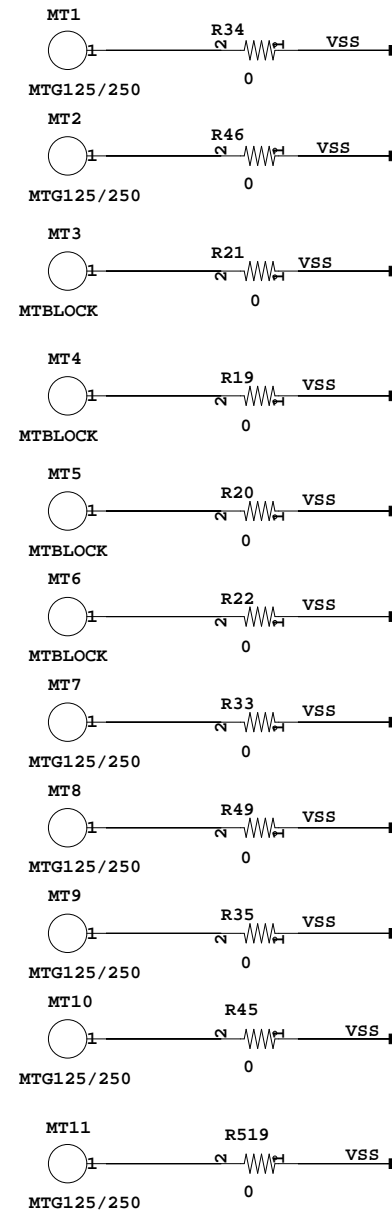
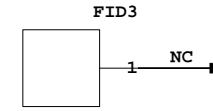
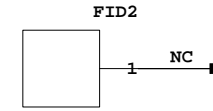
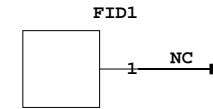
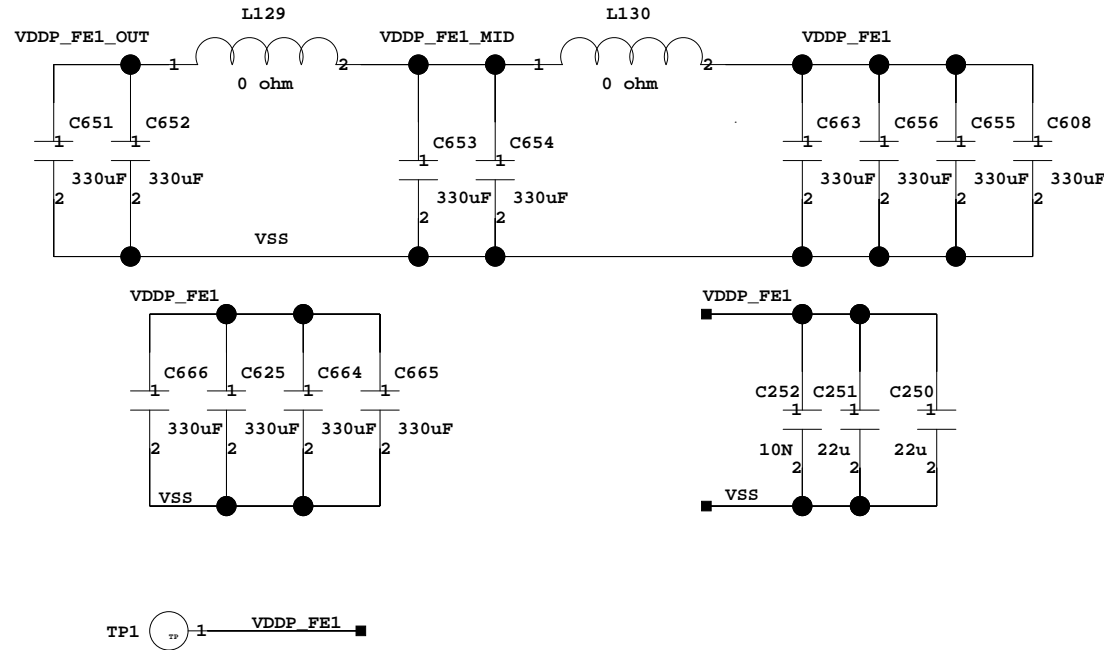
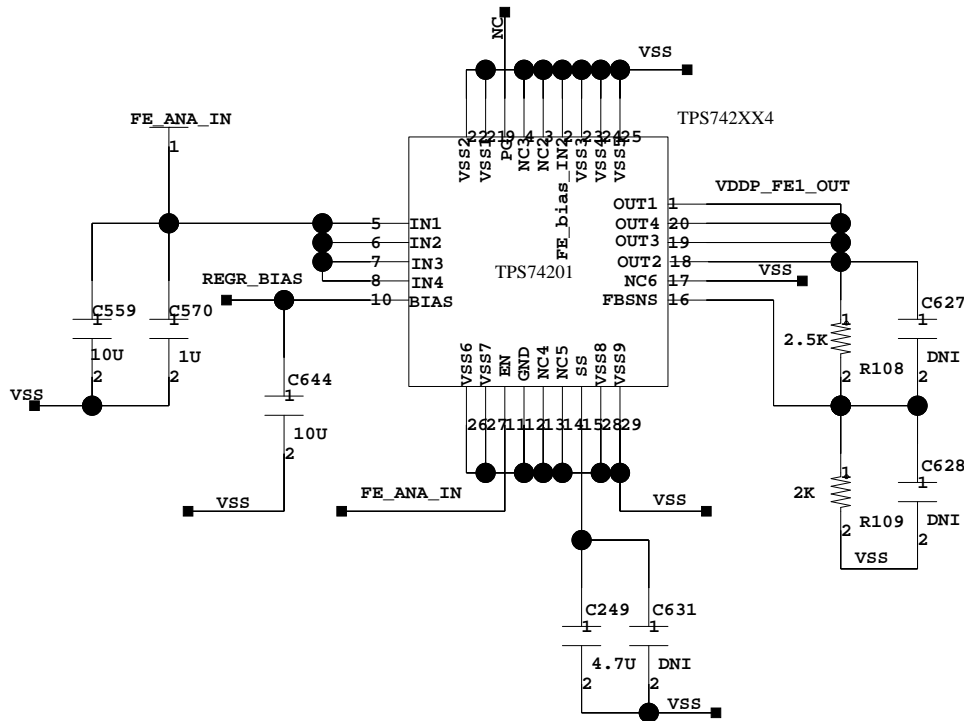
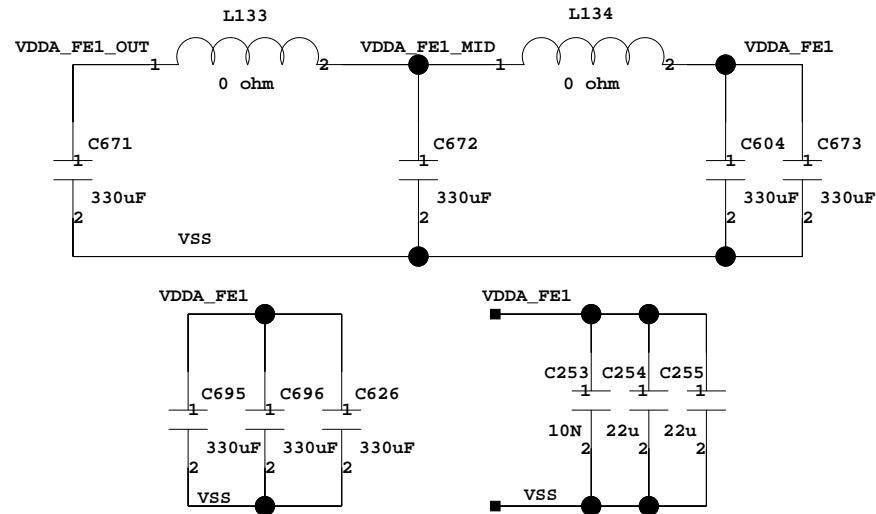
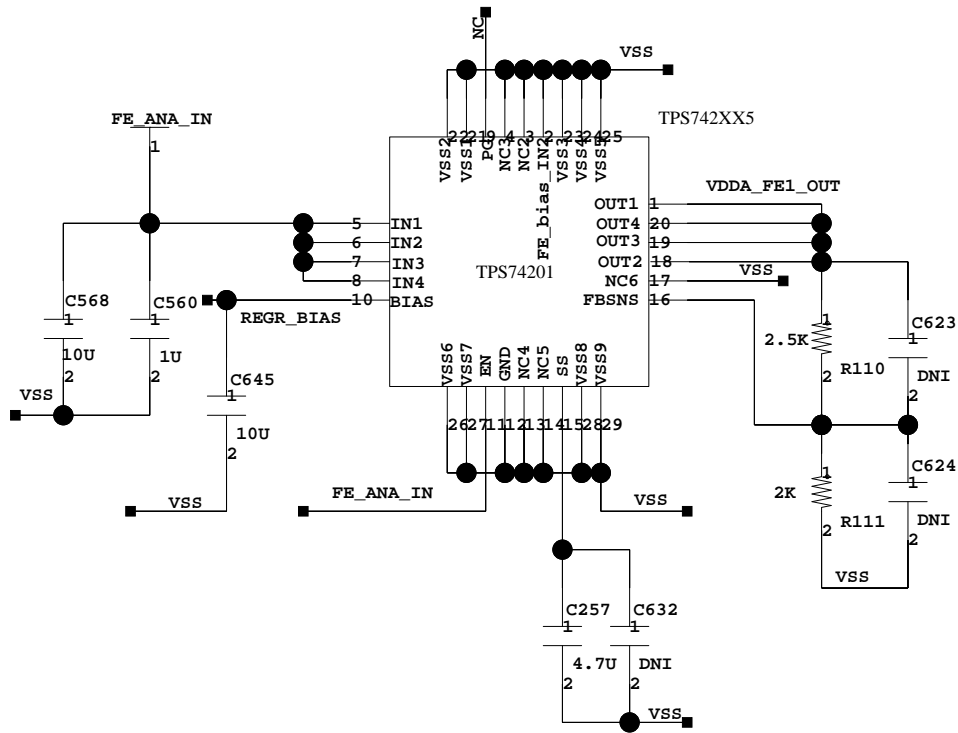
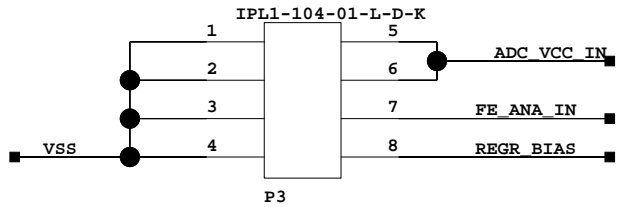
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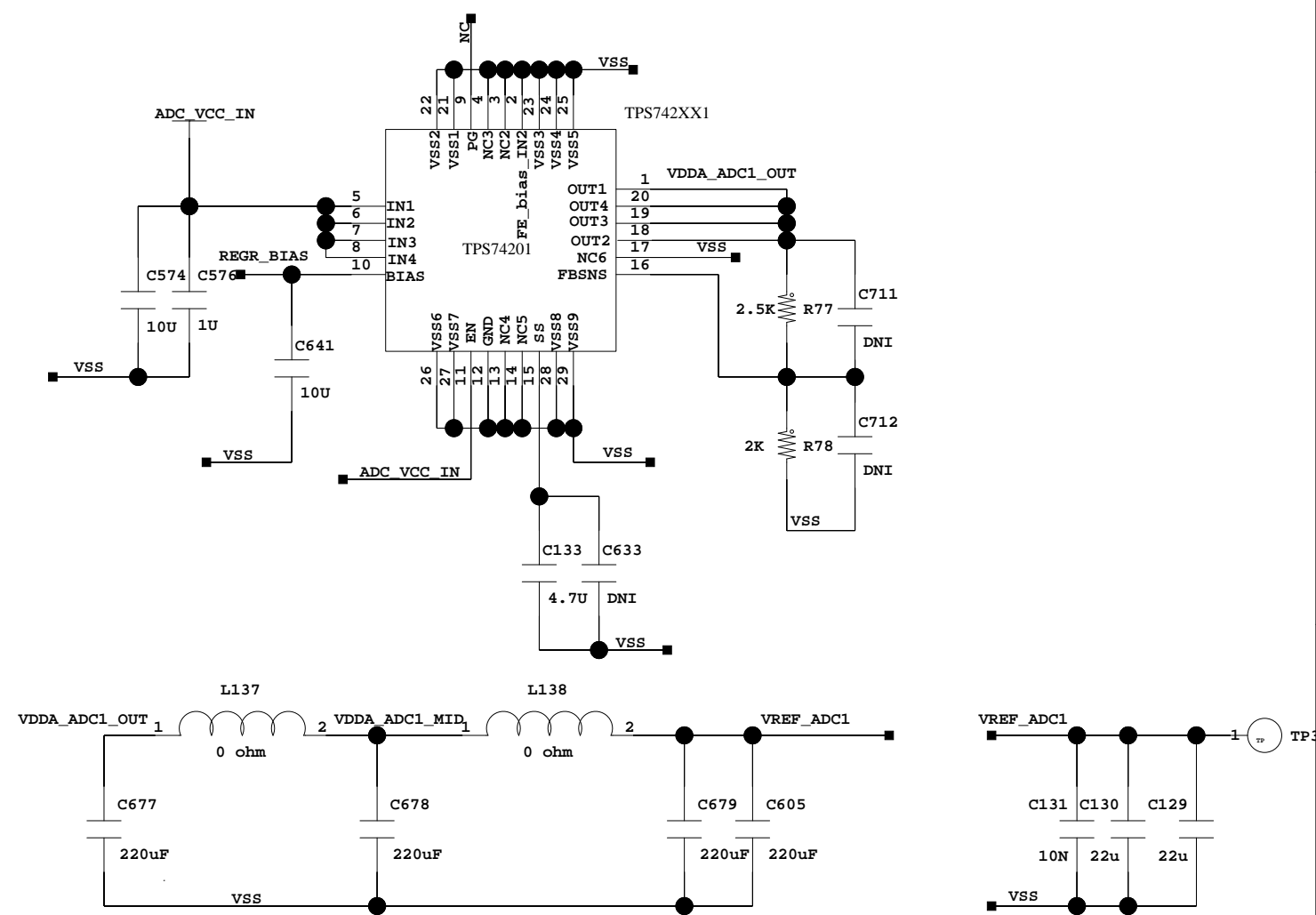
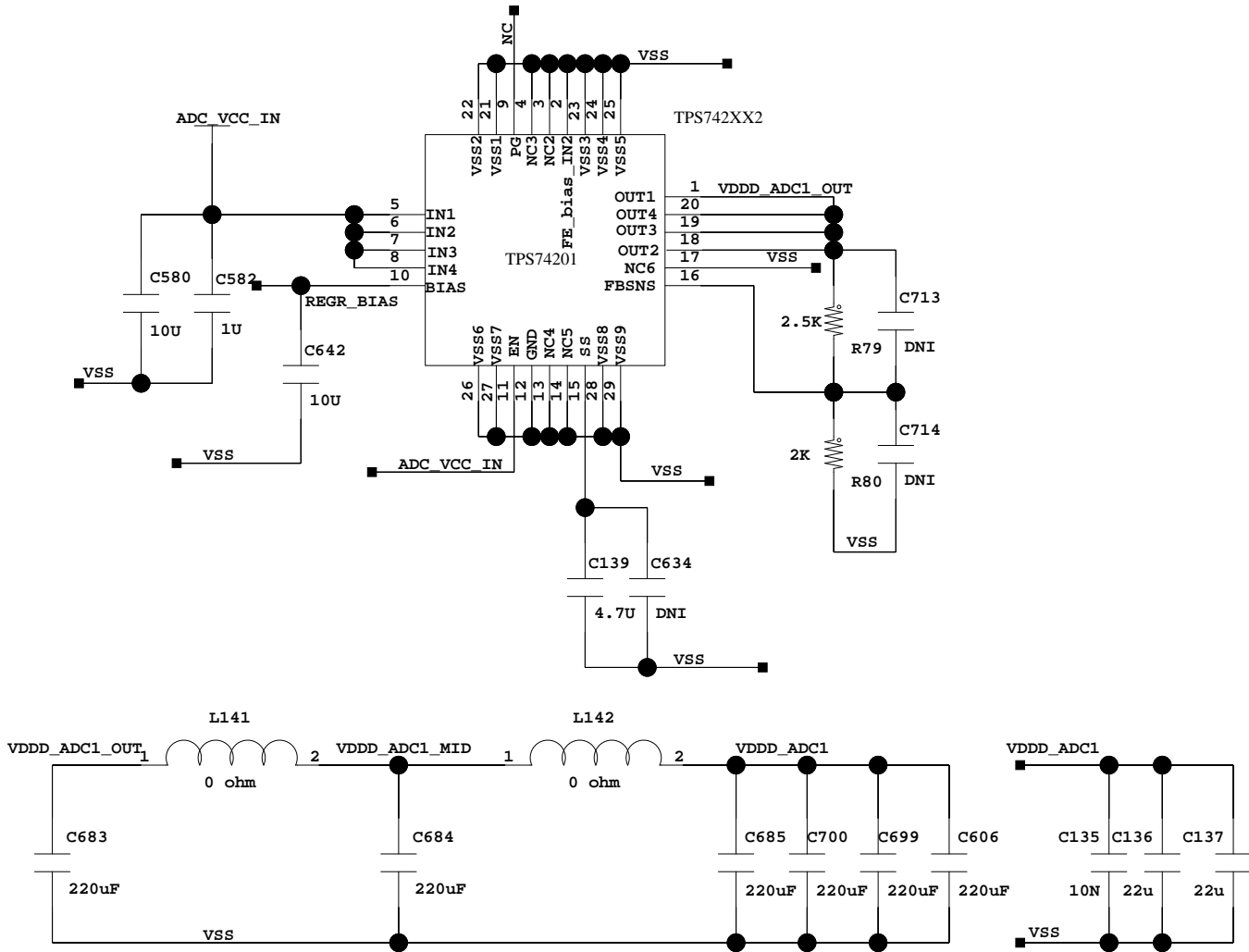
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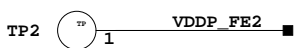
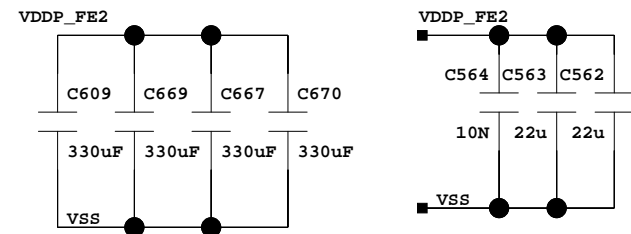
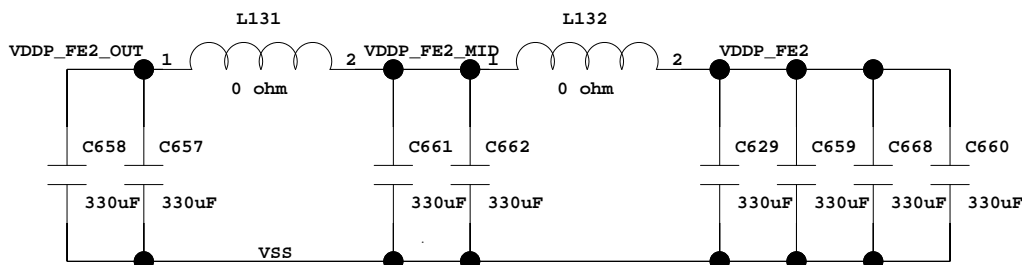
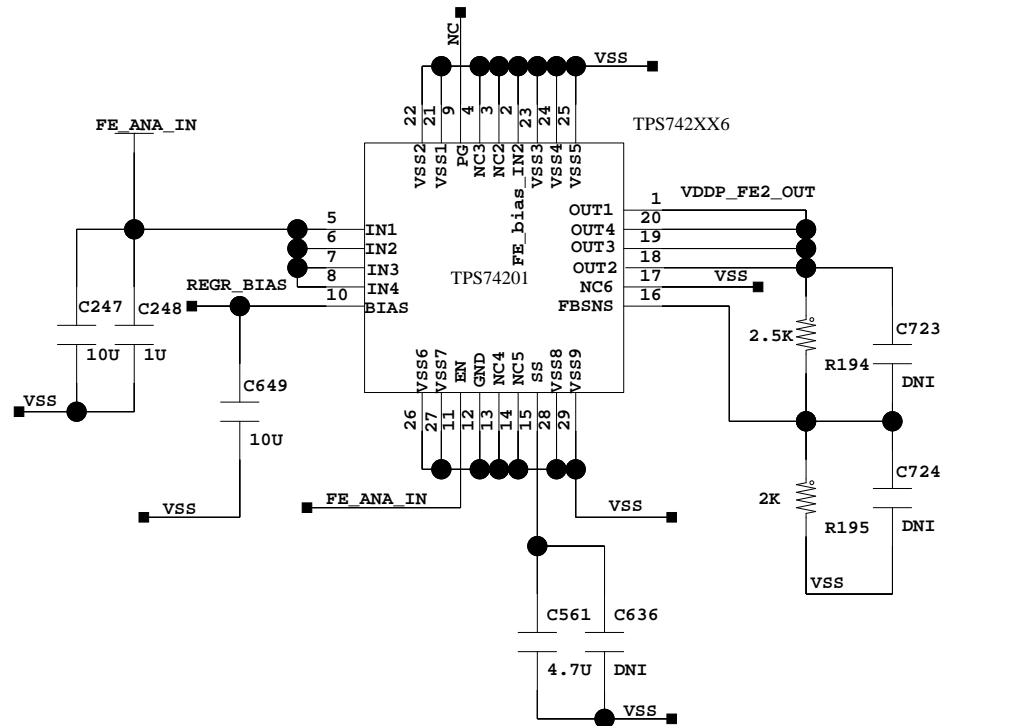
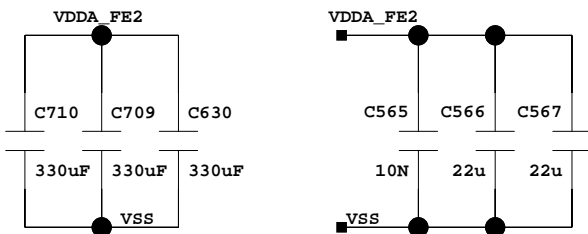
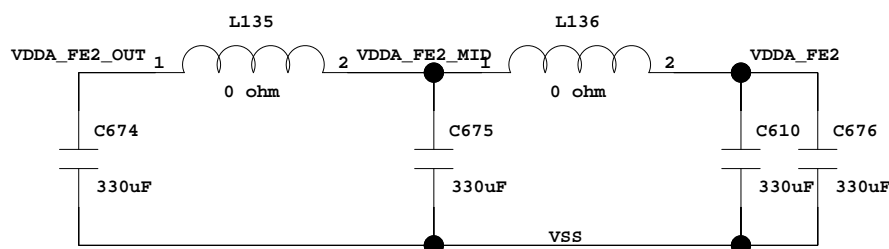
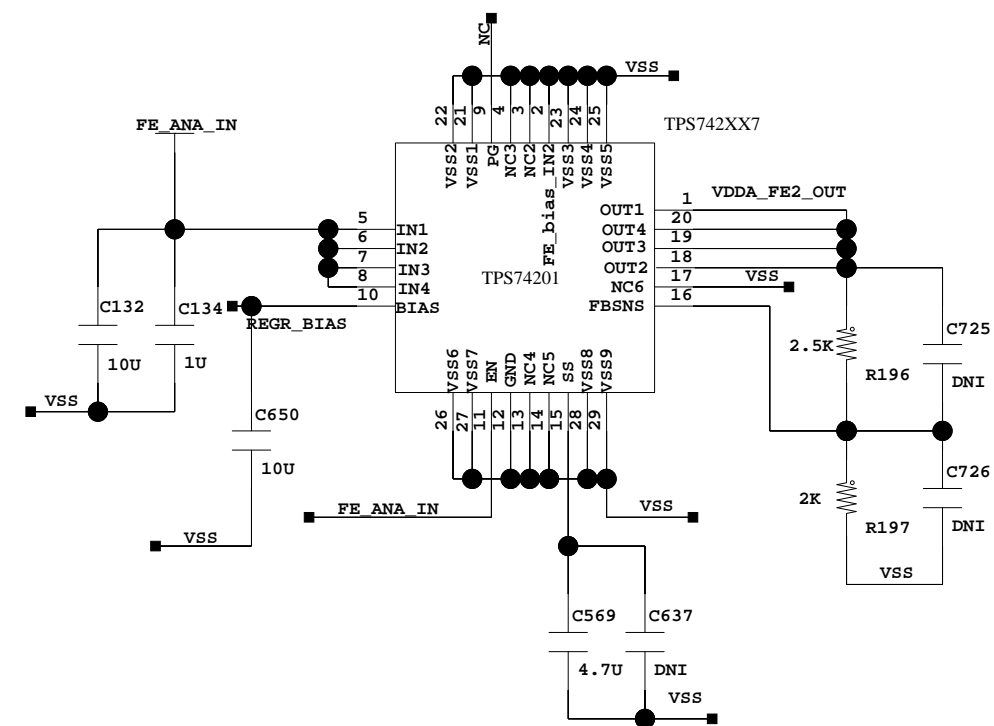


COMPANY					
BROOKHAVEN NATIONAL LABORATORY					
TITLE					
DUNE ANALOG MOTHER BOARD					
SIZE	B	REV	SHEET	1	OF 18
DRAWN	SHANSHAN GAO/Jack Fried		DATE	12/12/2016:11:07	

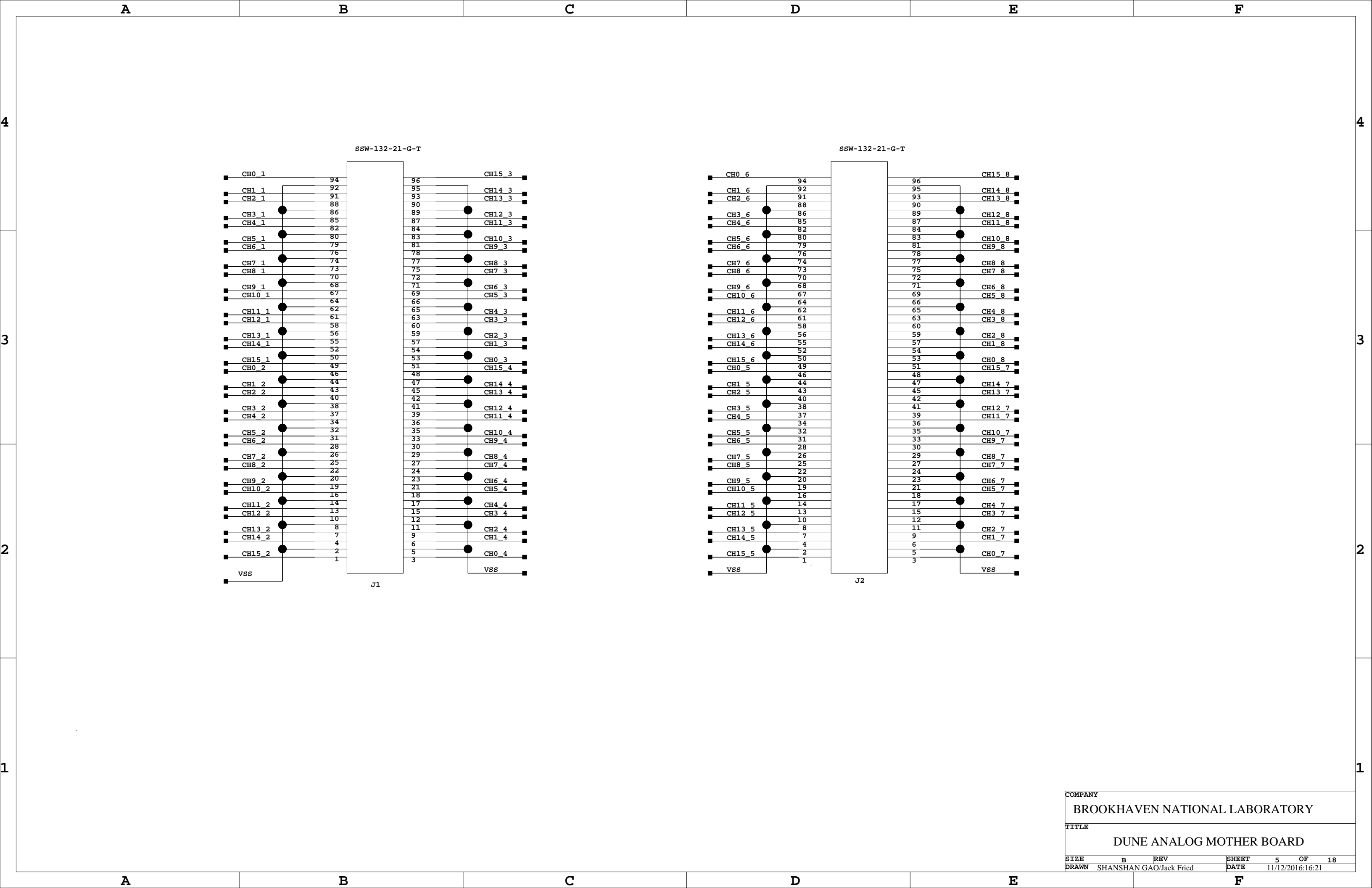


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COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	3 OF 18
DRAWN	SHANSHAN GAO/Jack Fried		DATE	11/12/2016:16:52



J1

SSW-132-21-G-T

CH0_6

CH1_6

CH2_6

CH3_6

CH4_6

CH5_6

CH6_6

CH7_6

CH8_6

CH9_6

CH10_6

CH11_6

CH12_6

CH13_6

CH14_6

CH15_6

CH0_5

CH1_5

CH2_5

CH3_5

CH4_5

CH5_5

CH6_5

CH7_5

CH8_5

CH9_5

CH10_5

CH11_5

CH12_5

CH13_5

CH14_5

CH15_5

VSS

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CH15_8

CH14_8

CH13_8

CH12_8

CH11_8

CH10_8

CH9_8

CH8_8

CH7_8

CH6_8

CH5_8

CH4_8

CH3_8

CH2_8

CH1_8

CH0_8

CH15_7

CH14_7

CH13_7

CH12_7

CH11_7

CH10_7

CH9_7

CH8_7

CH7_7

CH6_7

CH5_7

CH4_7

CH3_7

CH2_7

CH1_7

CH0_7

VSS

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J2

COMPANY

BROOKHAVEN NATIONAL LABORATORY

TITLE

DUNE ANALOG MOTHER BOARD

SIZE

B

REV

SHEET

5

OF

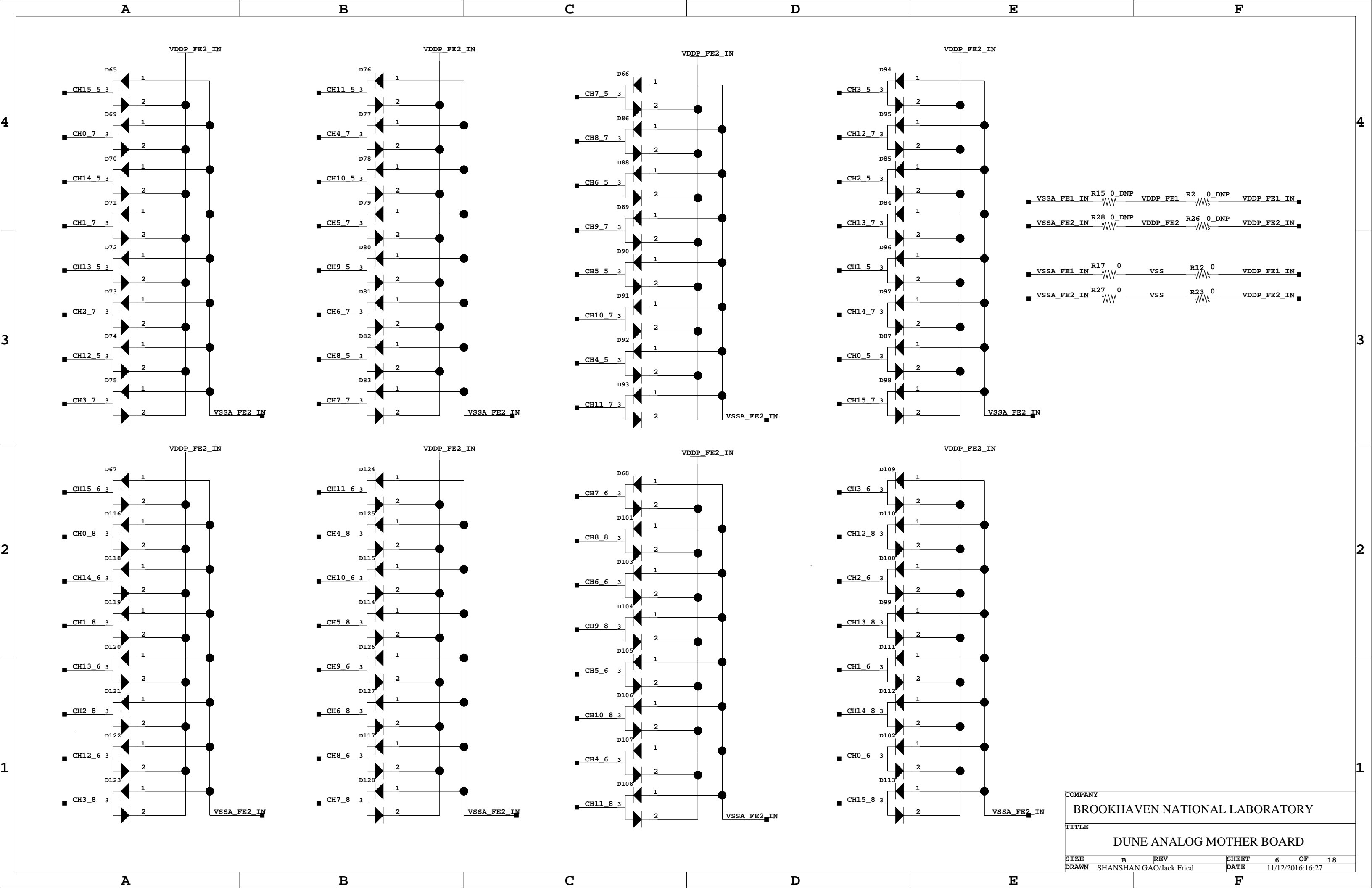
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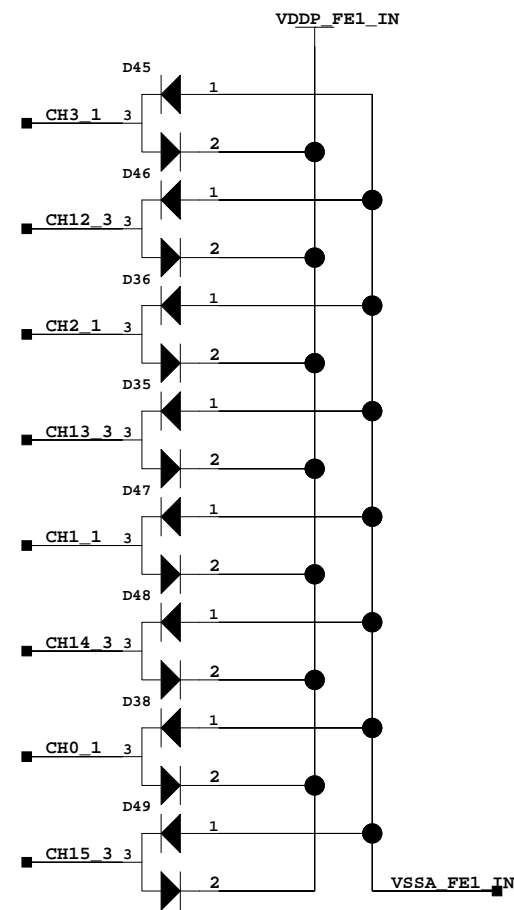
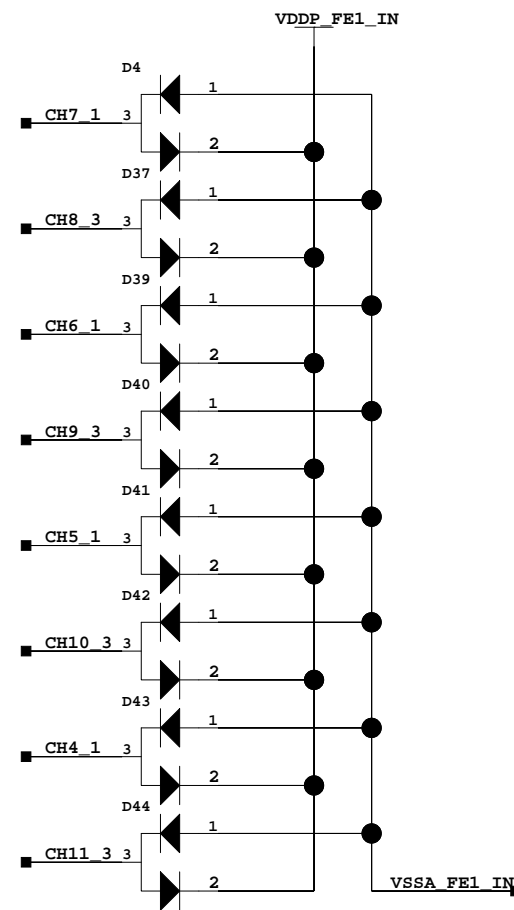
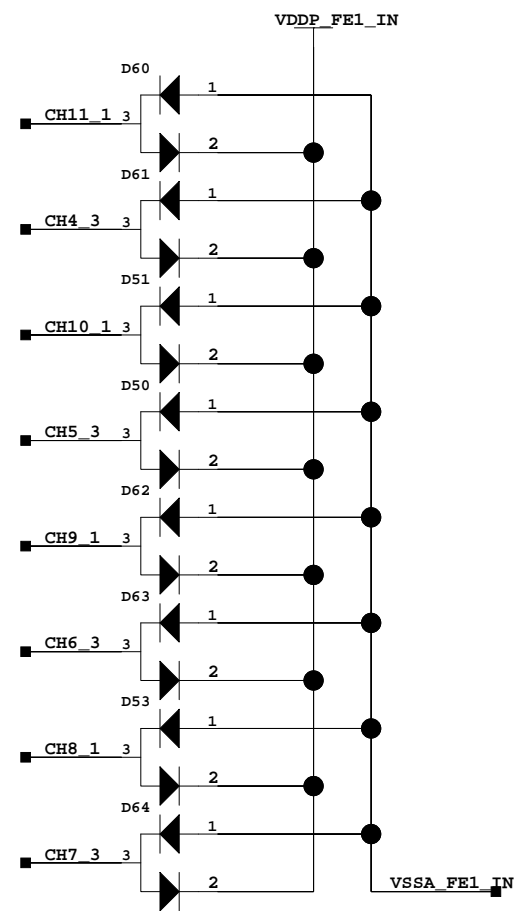
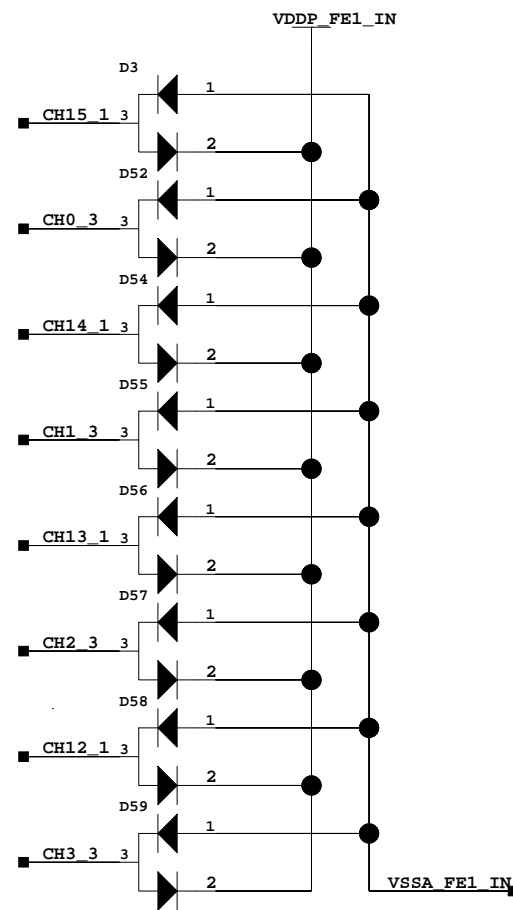
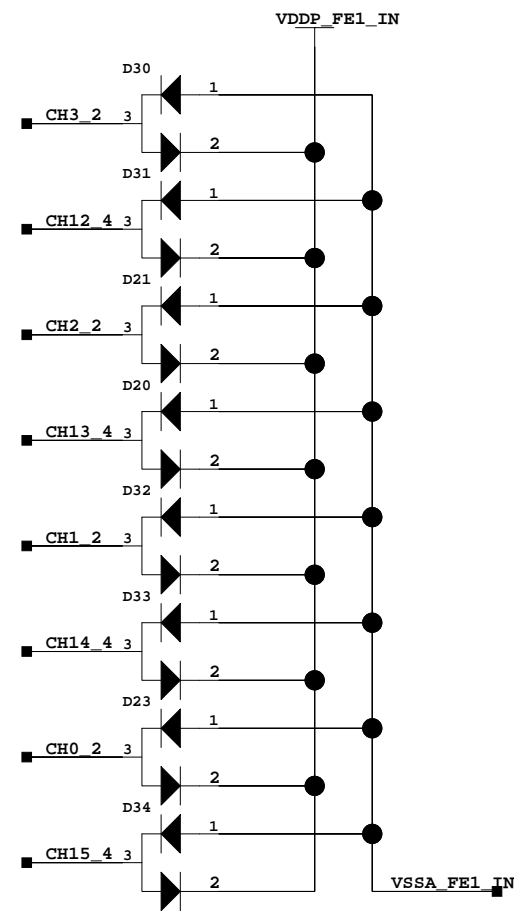
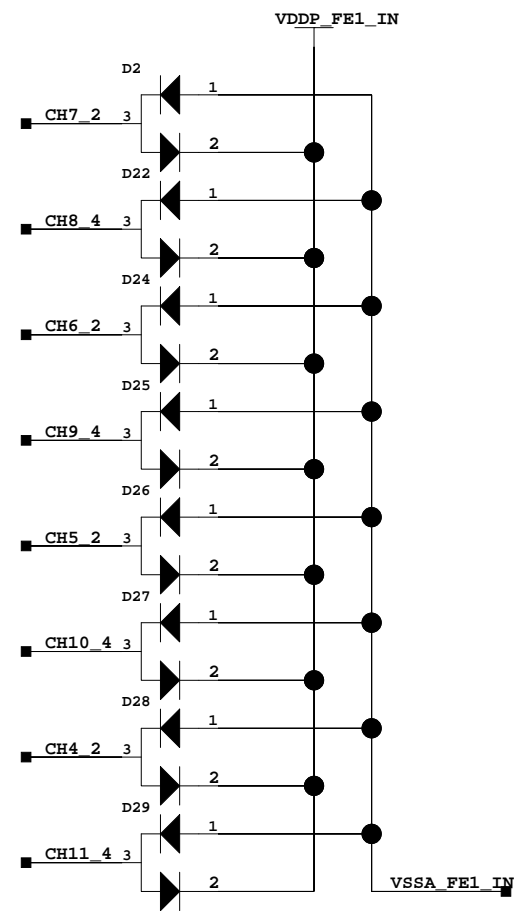
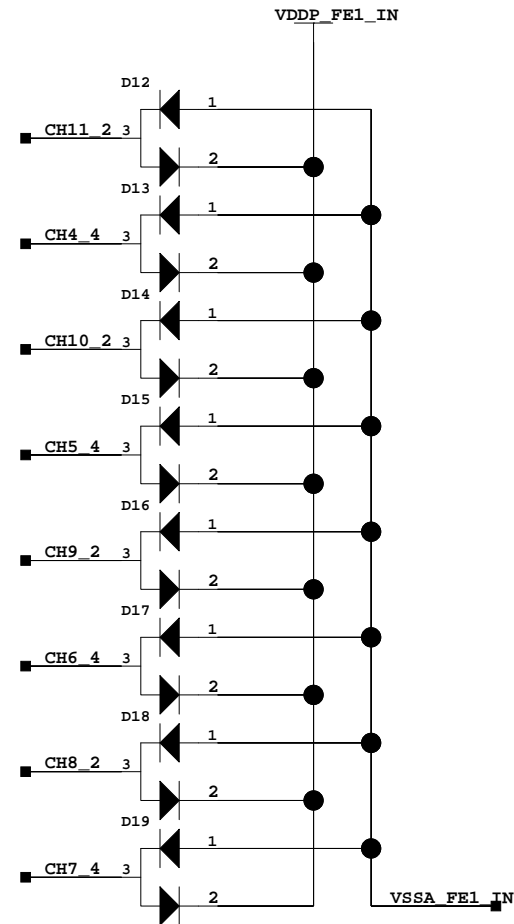
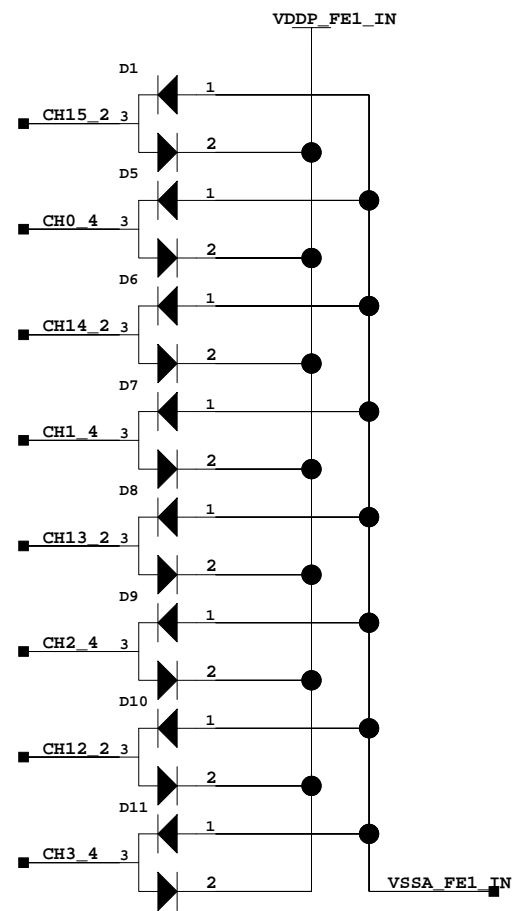
DRAWN

SHANSHAN GAO/Jack Fried

DATE

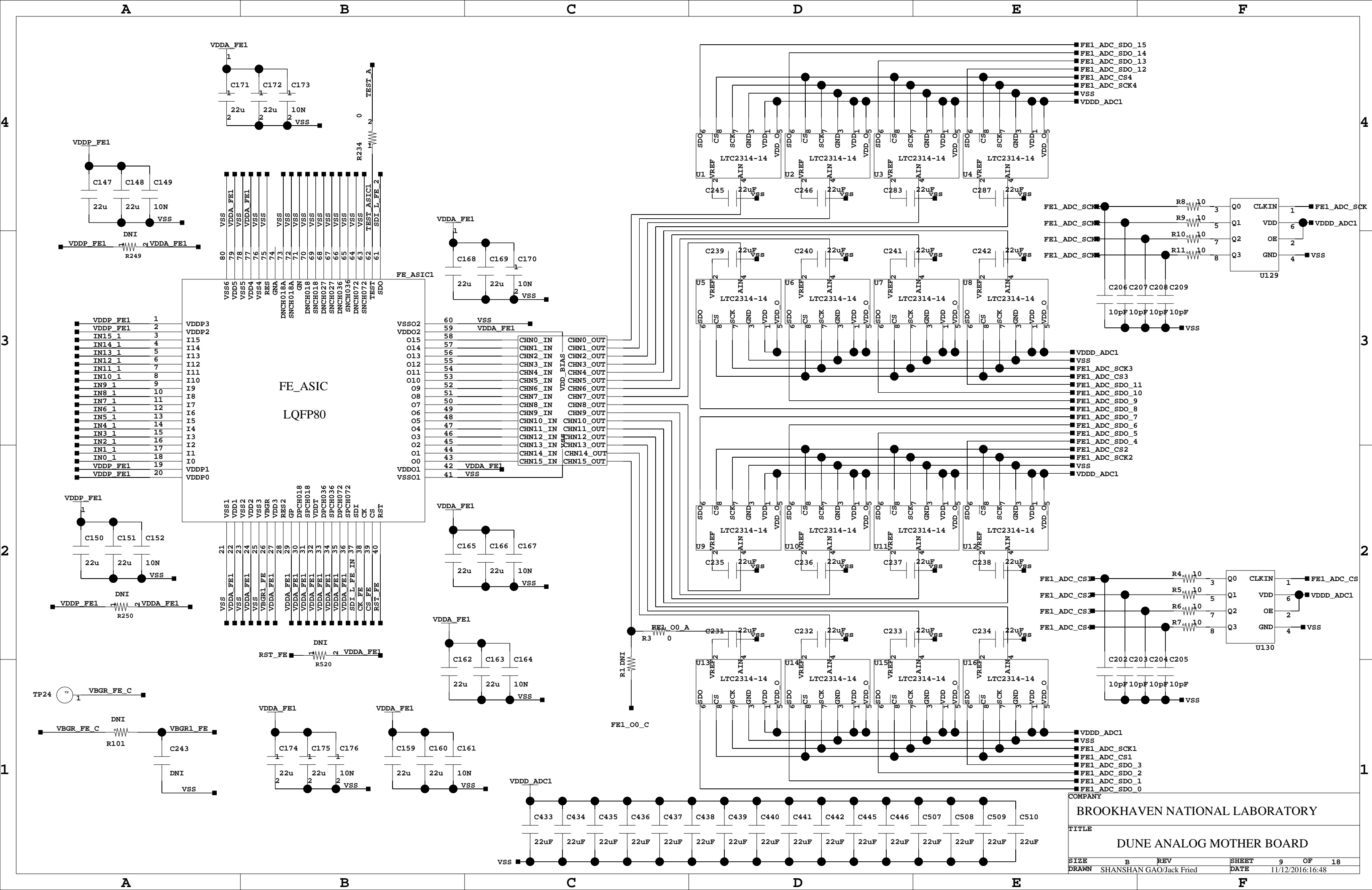
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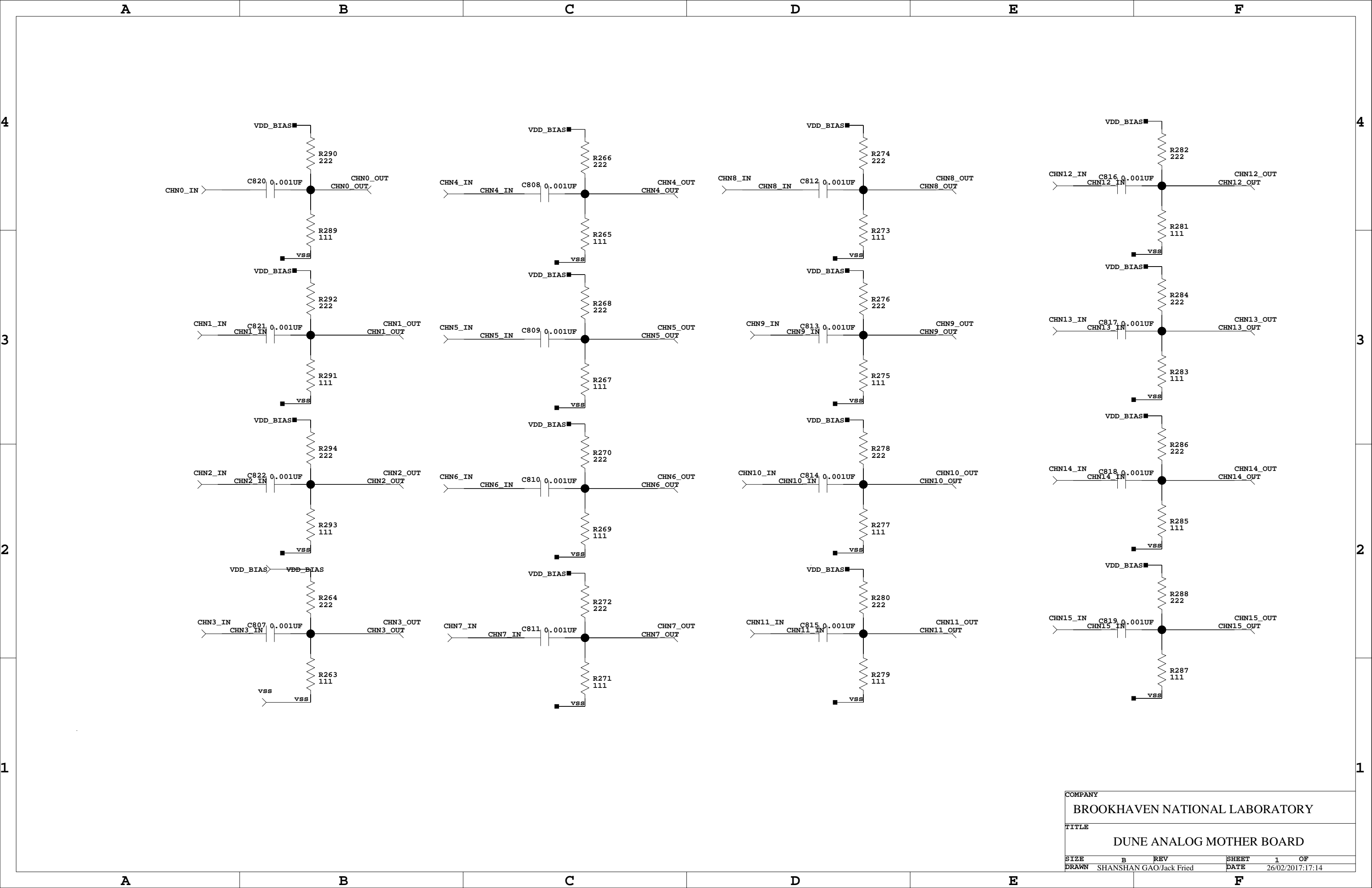


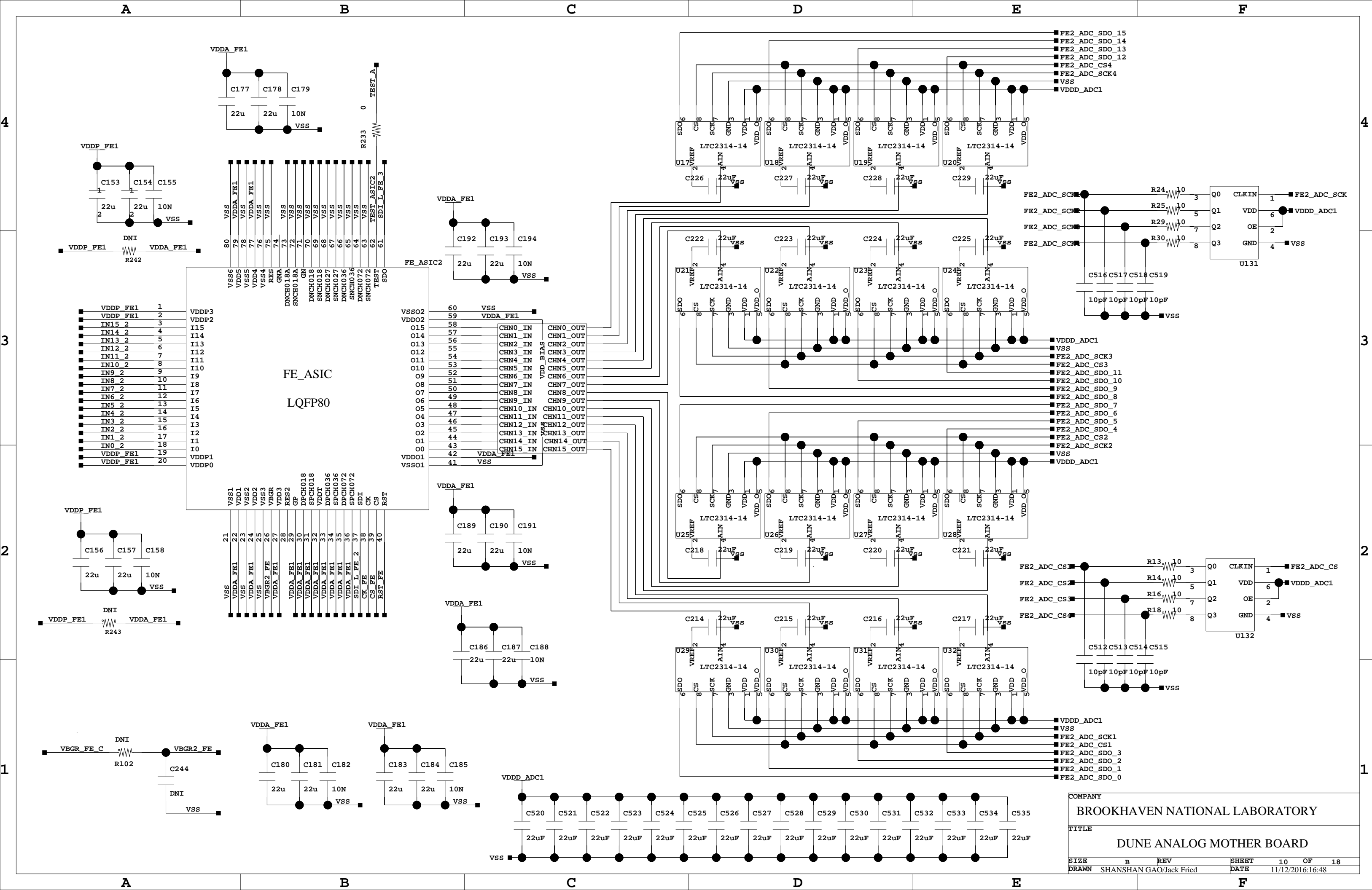


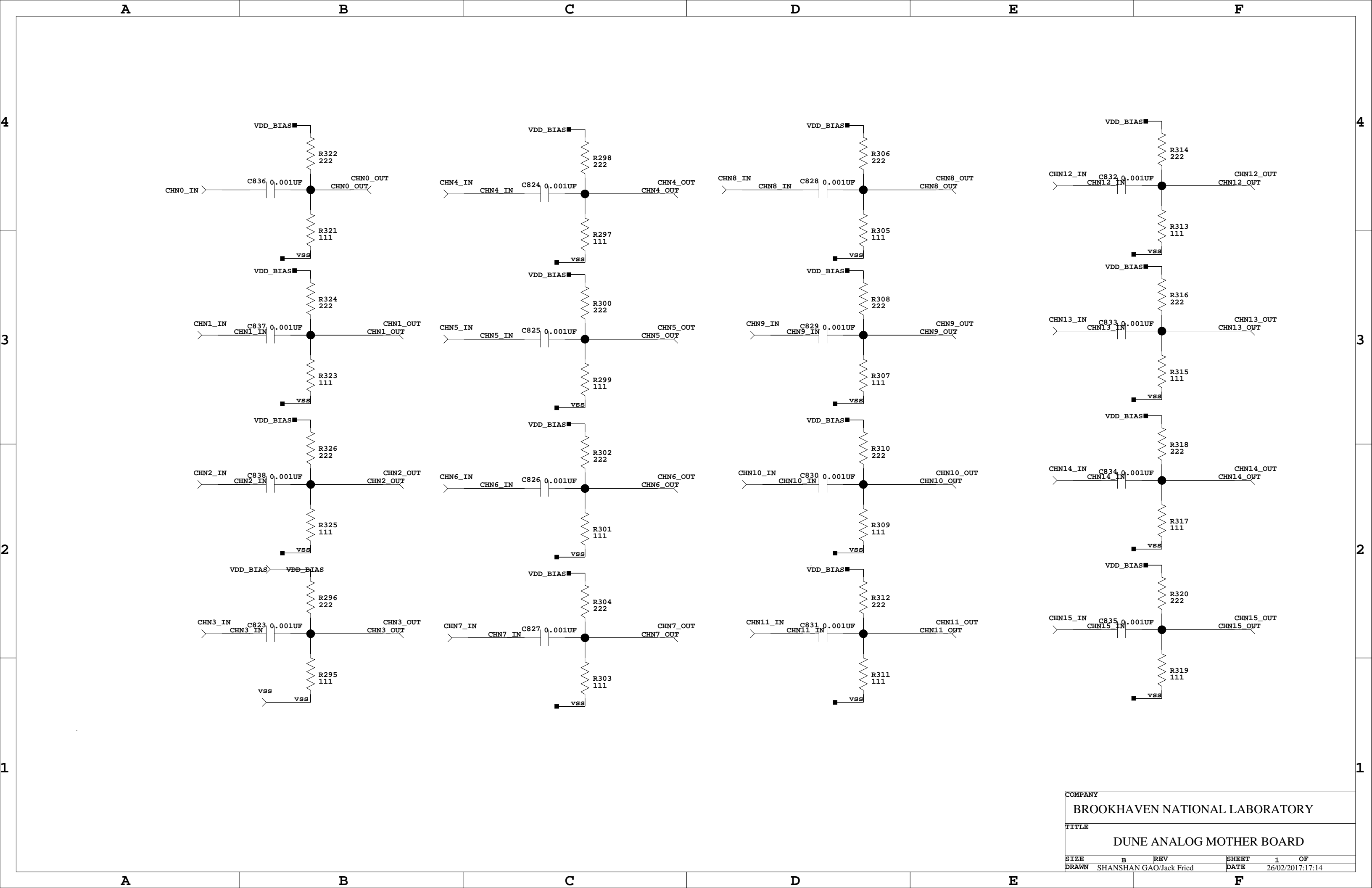


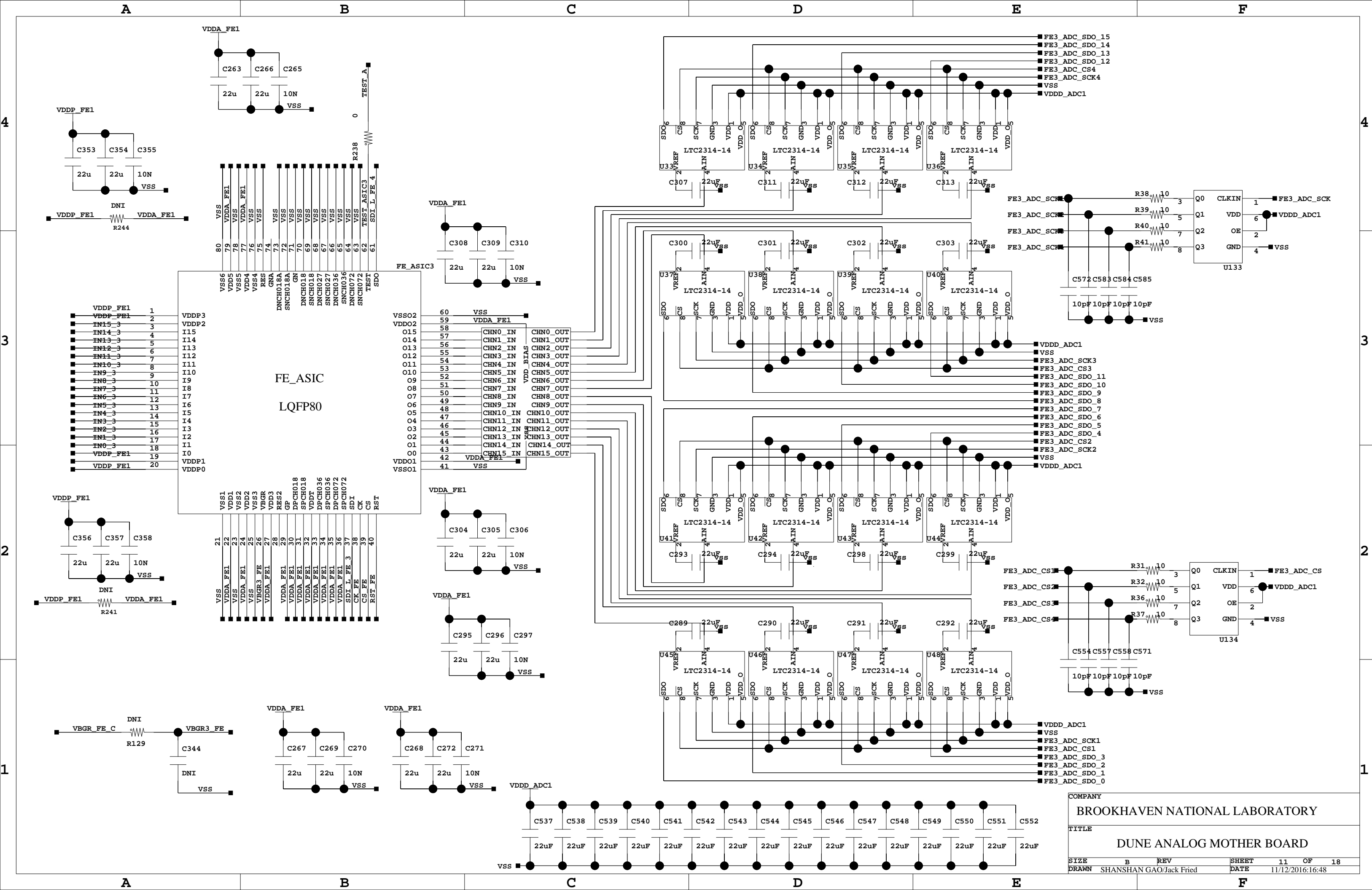
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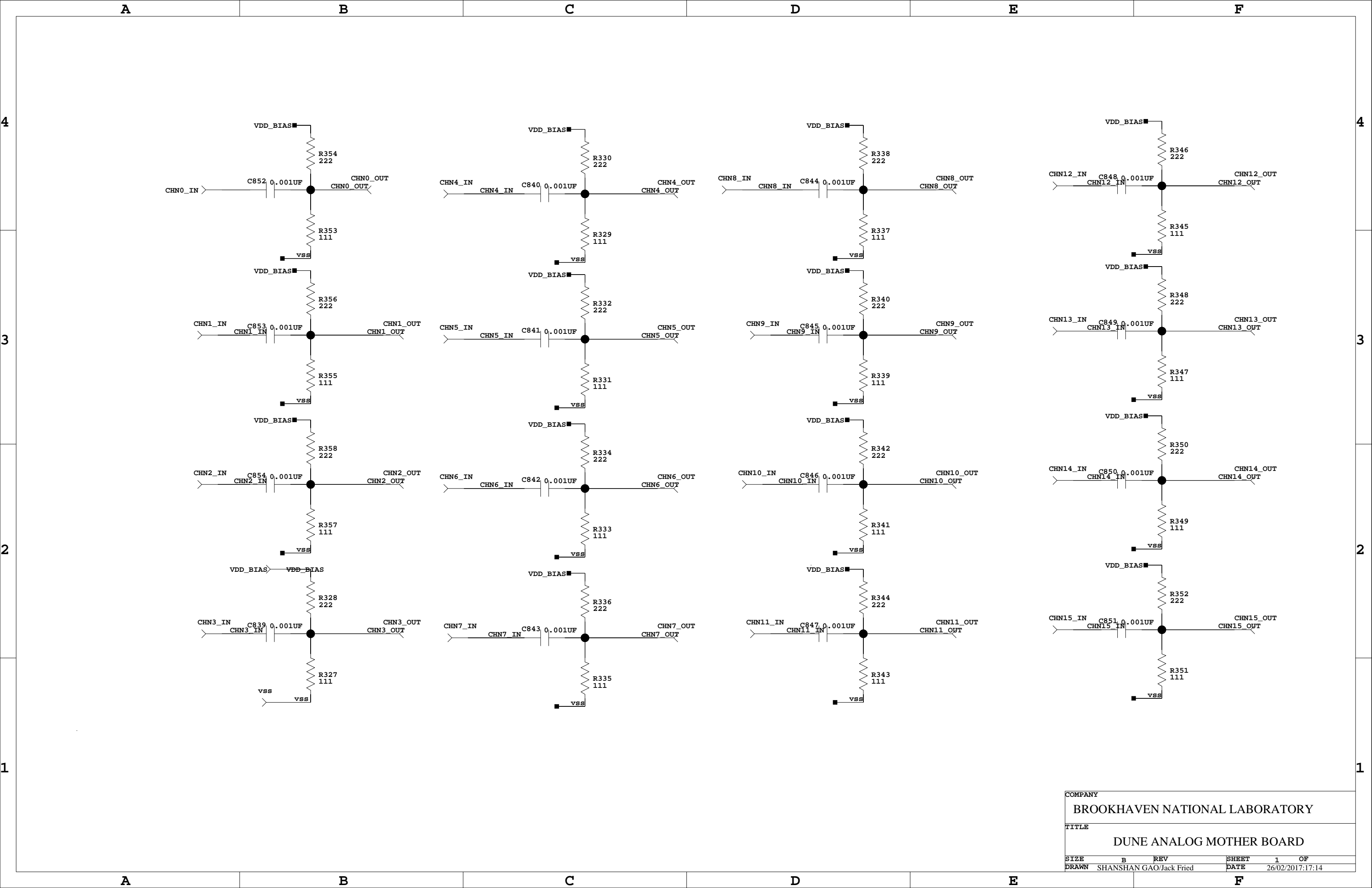












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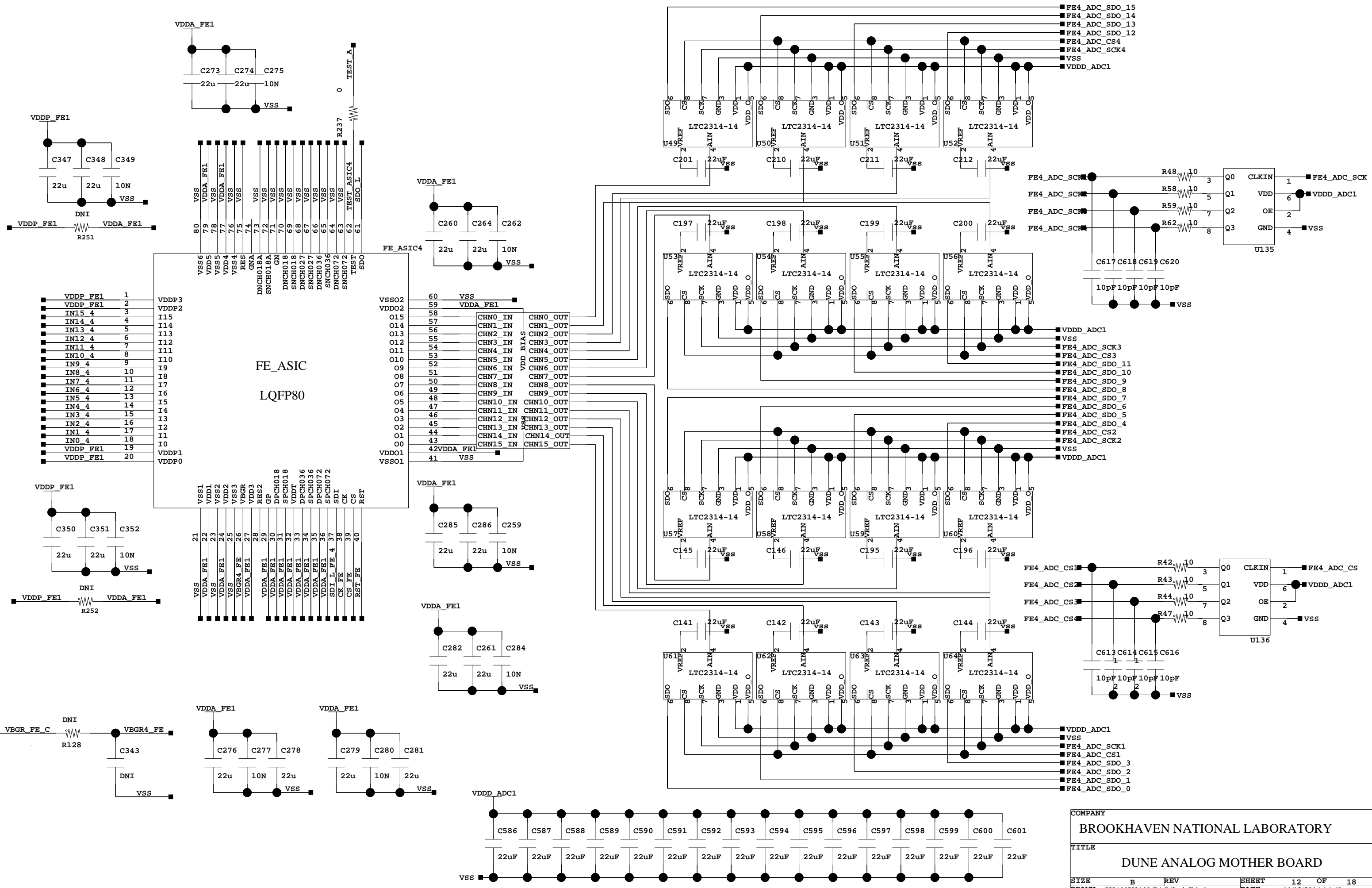
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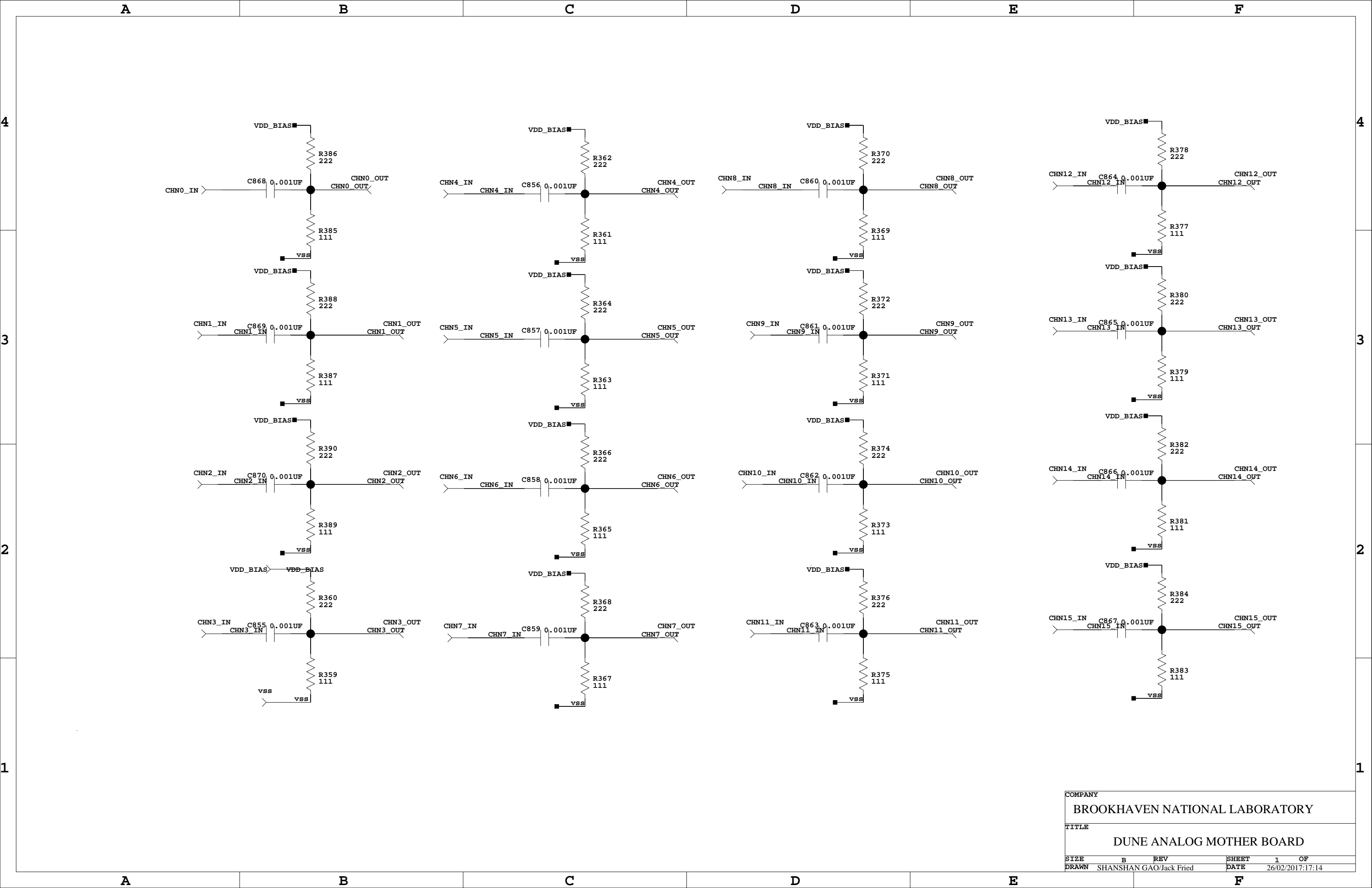
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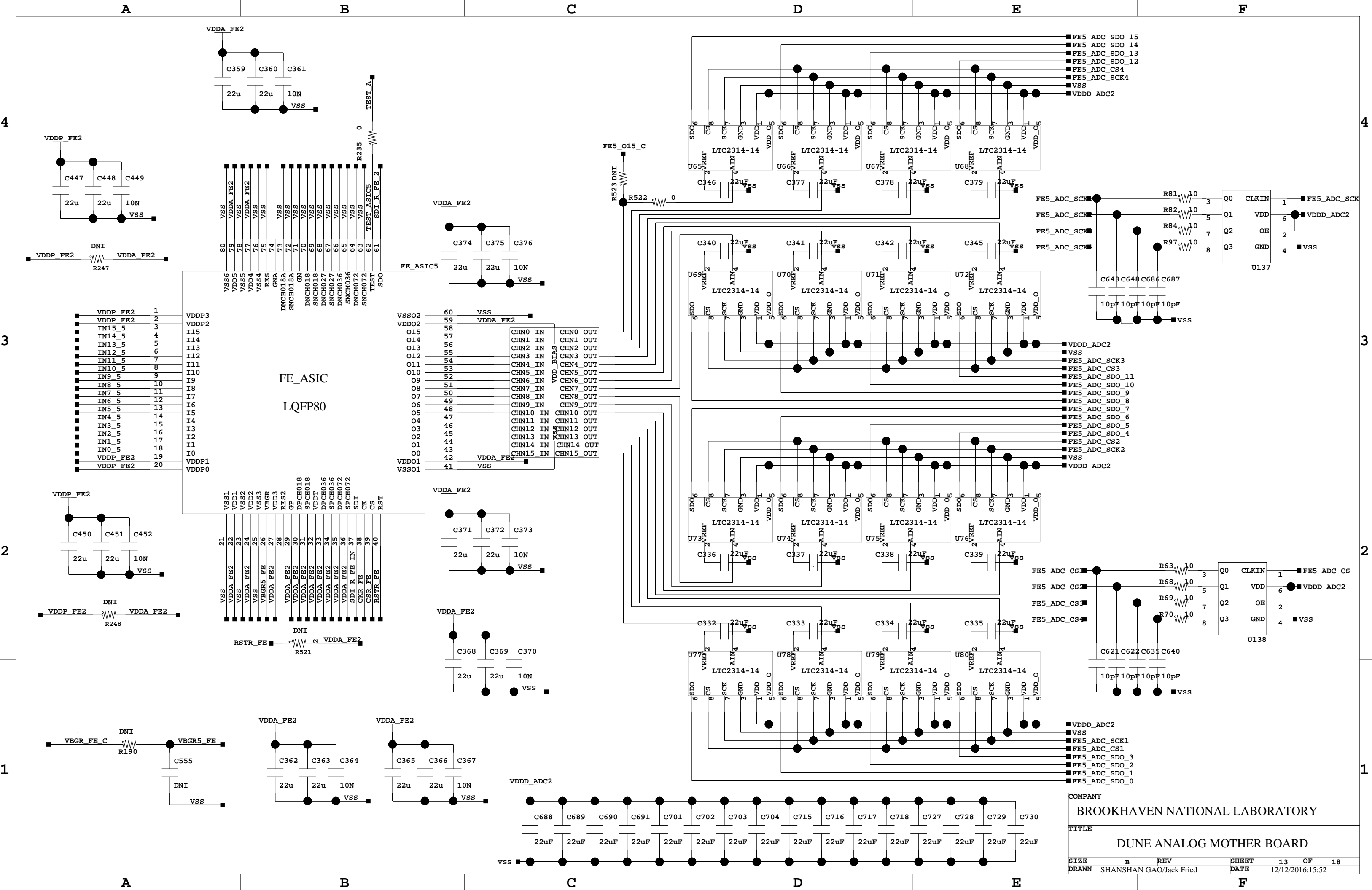
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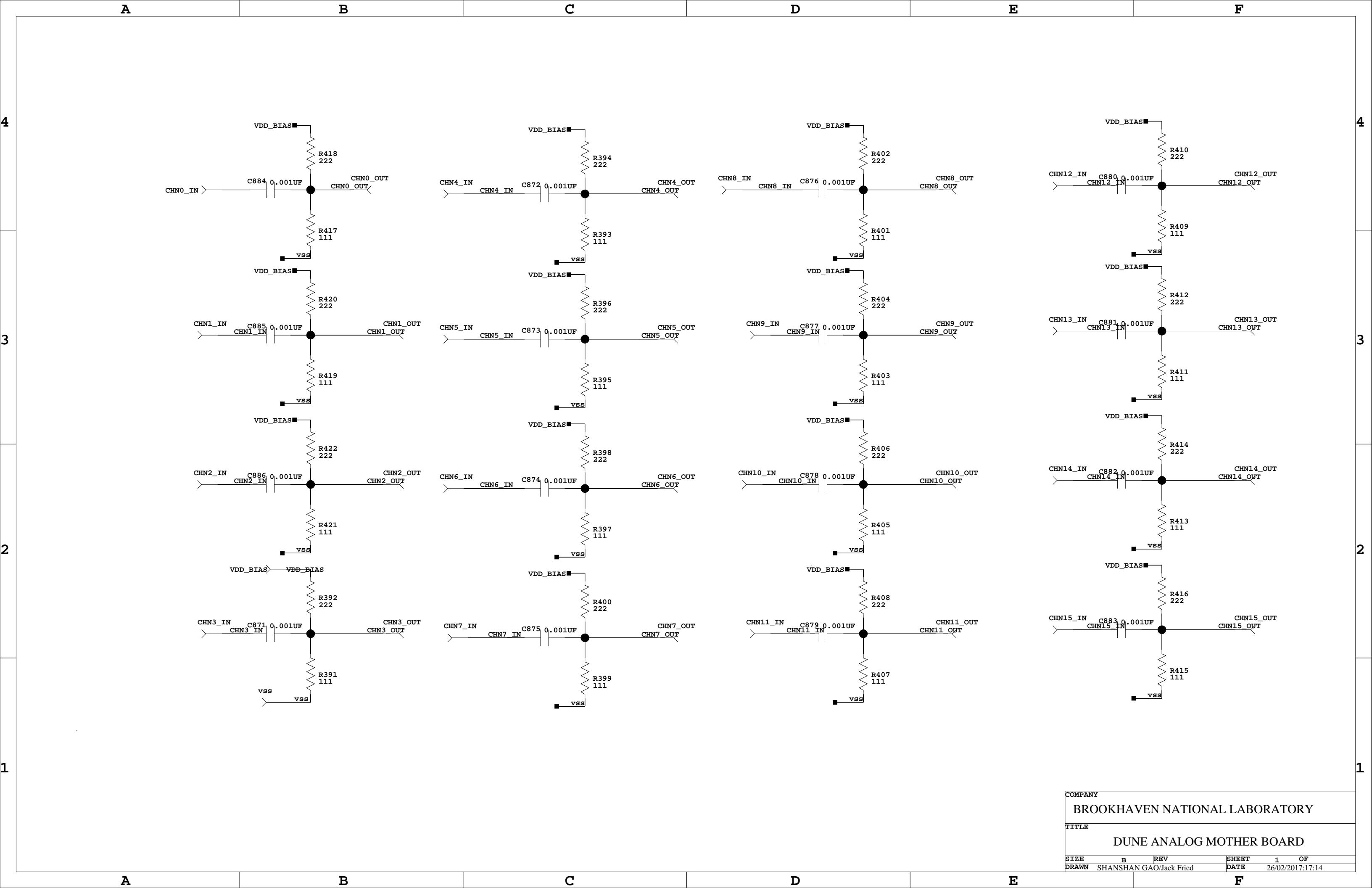
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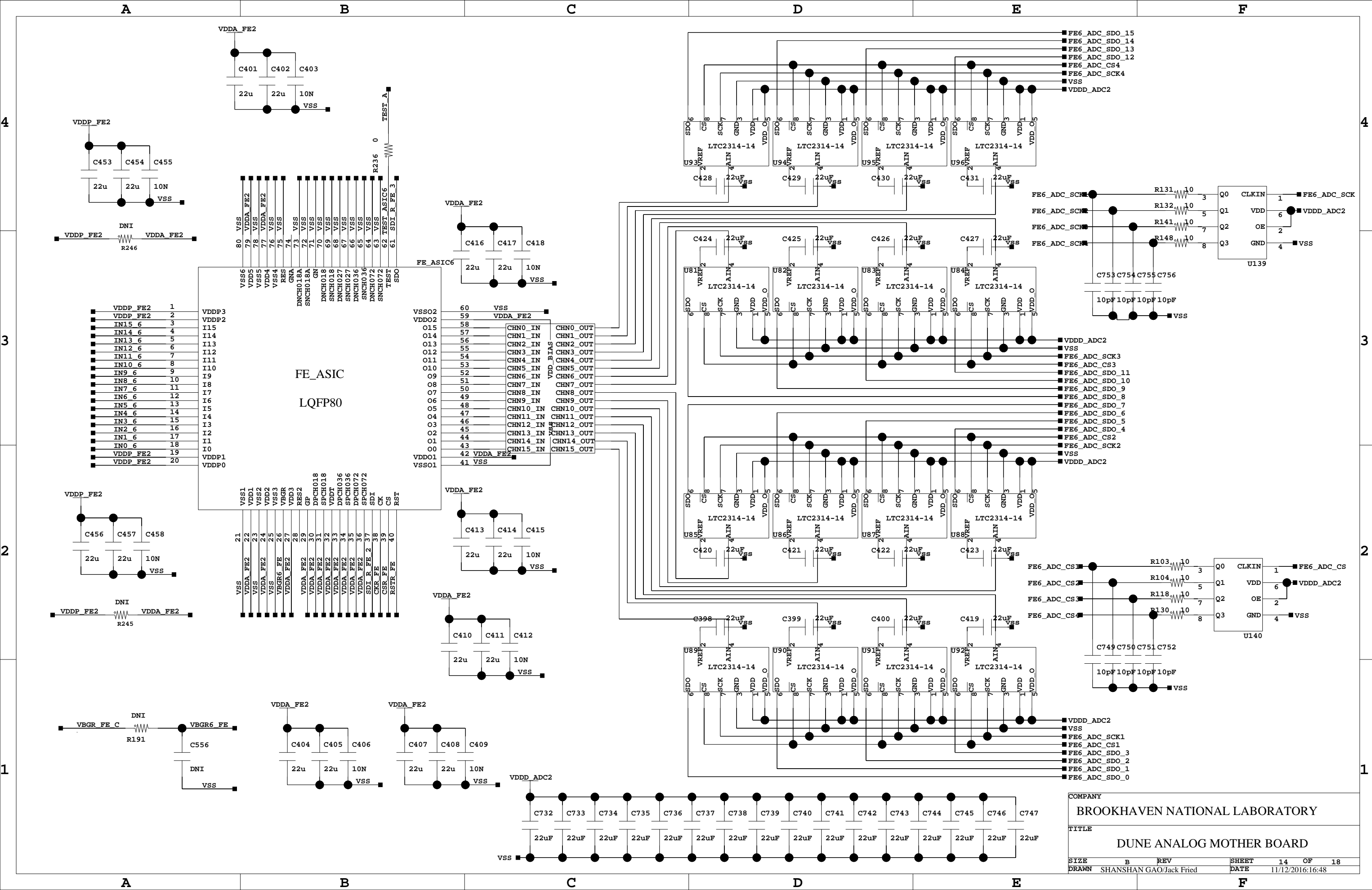


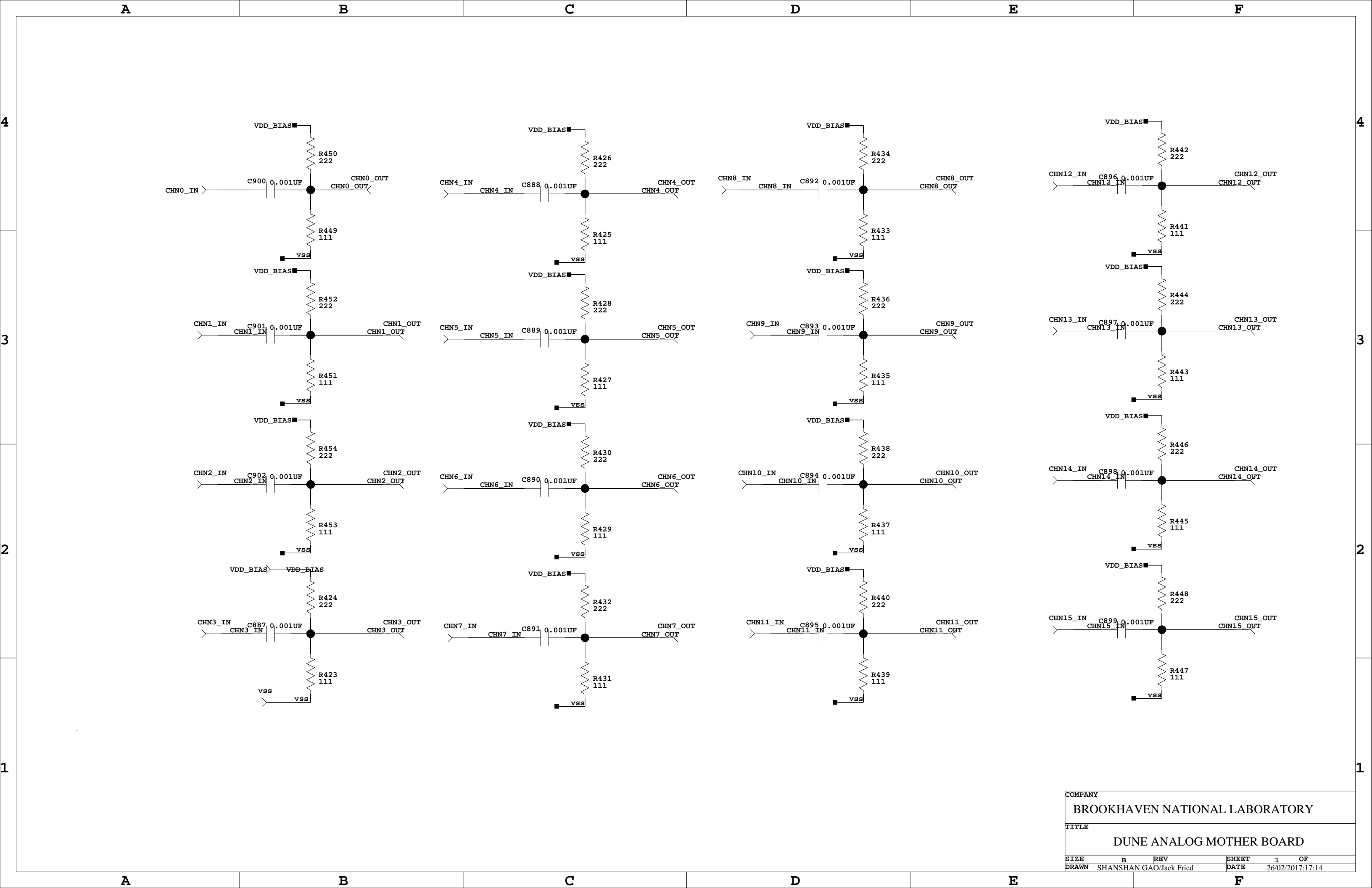
COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	12 OF 18
DRAWN	SHANSHAN GAO/Jack Fried	DATE	11/12/2016:16:48	

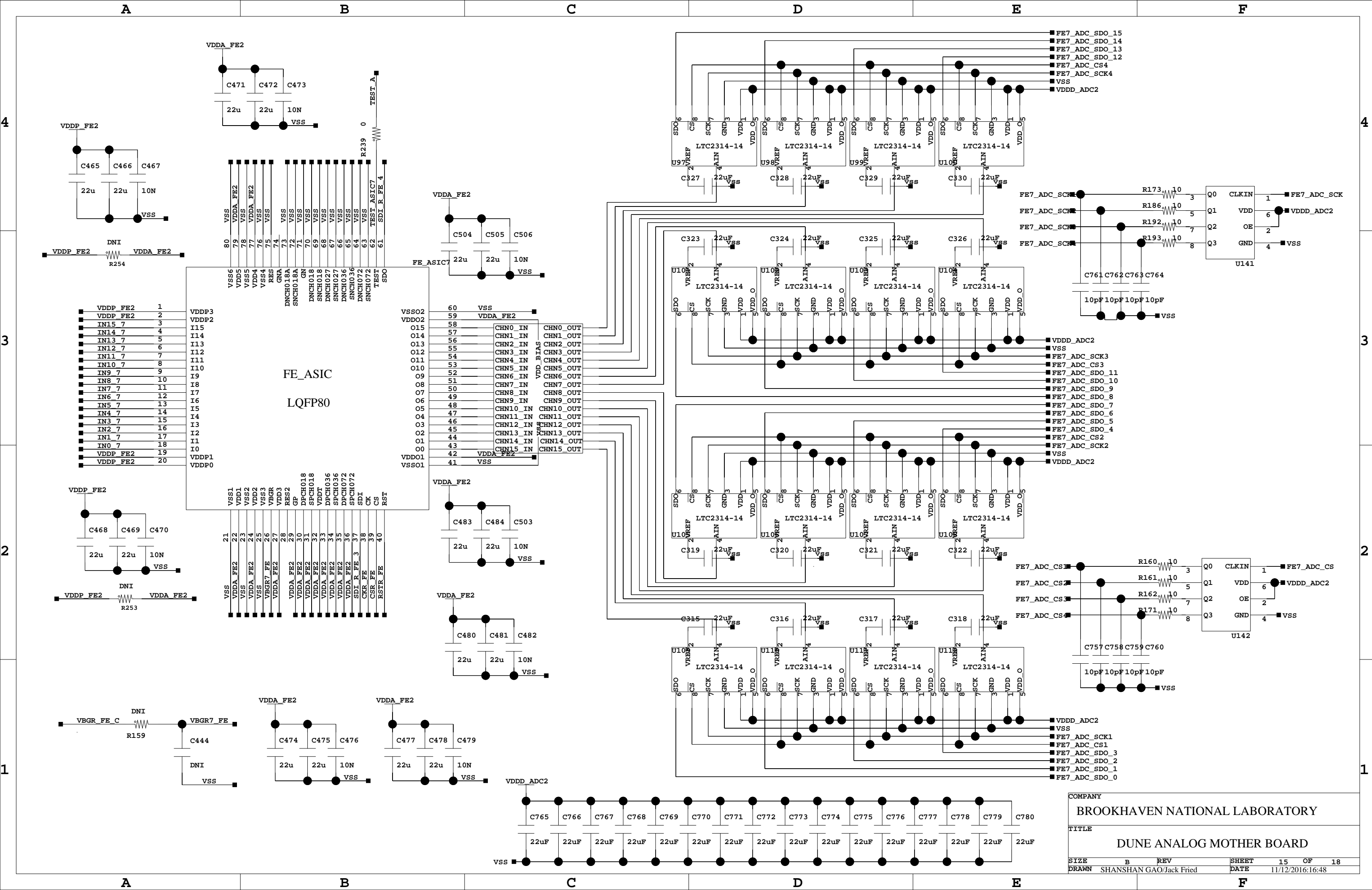


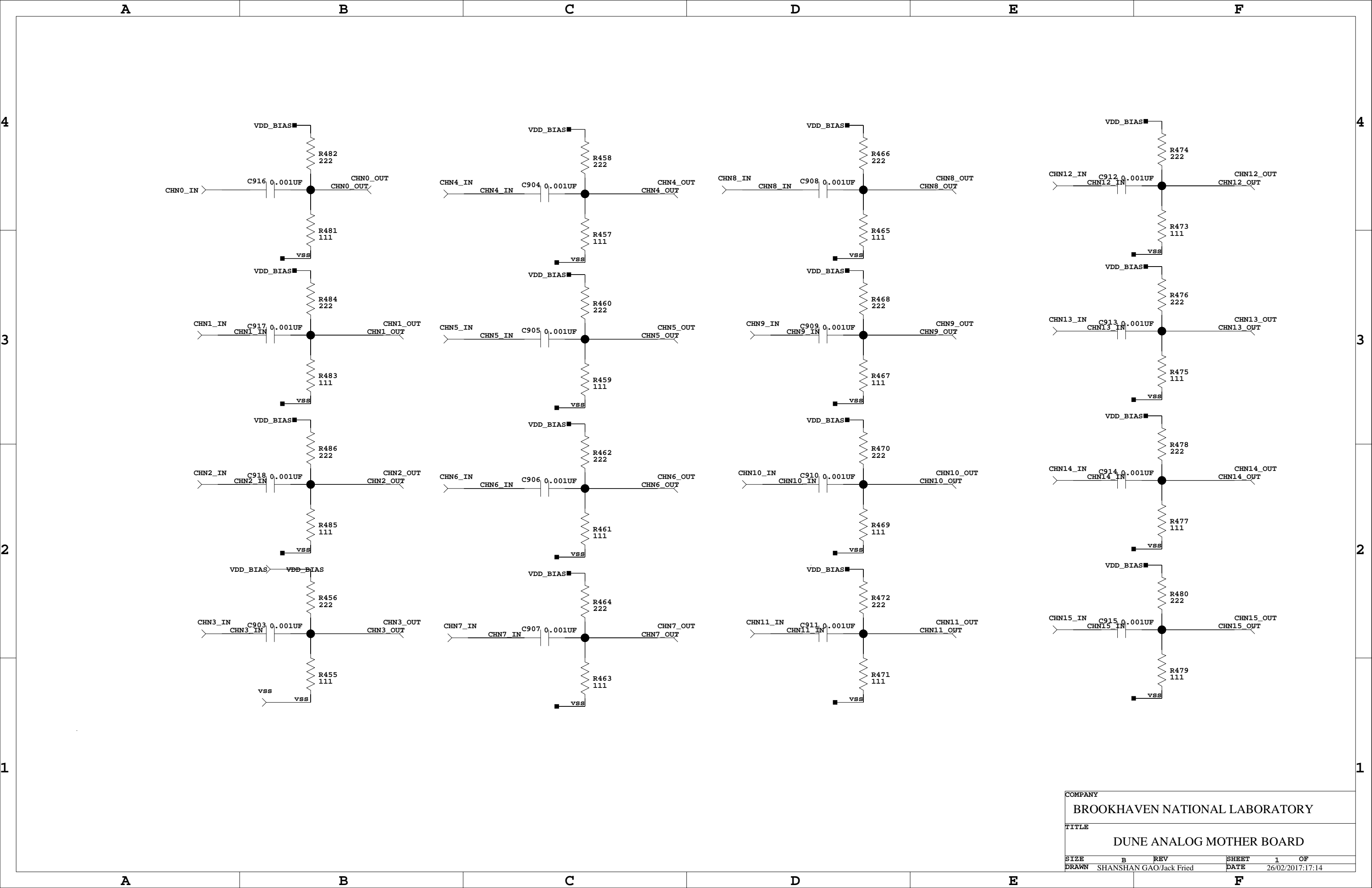


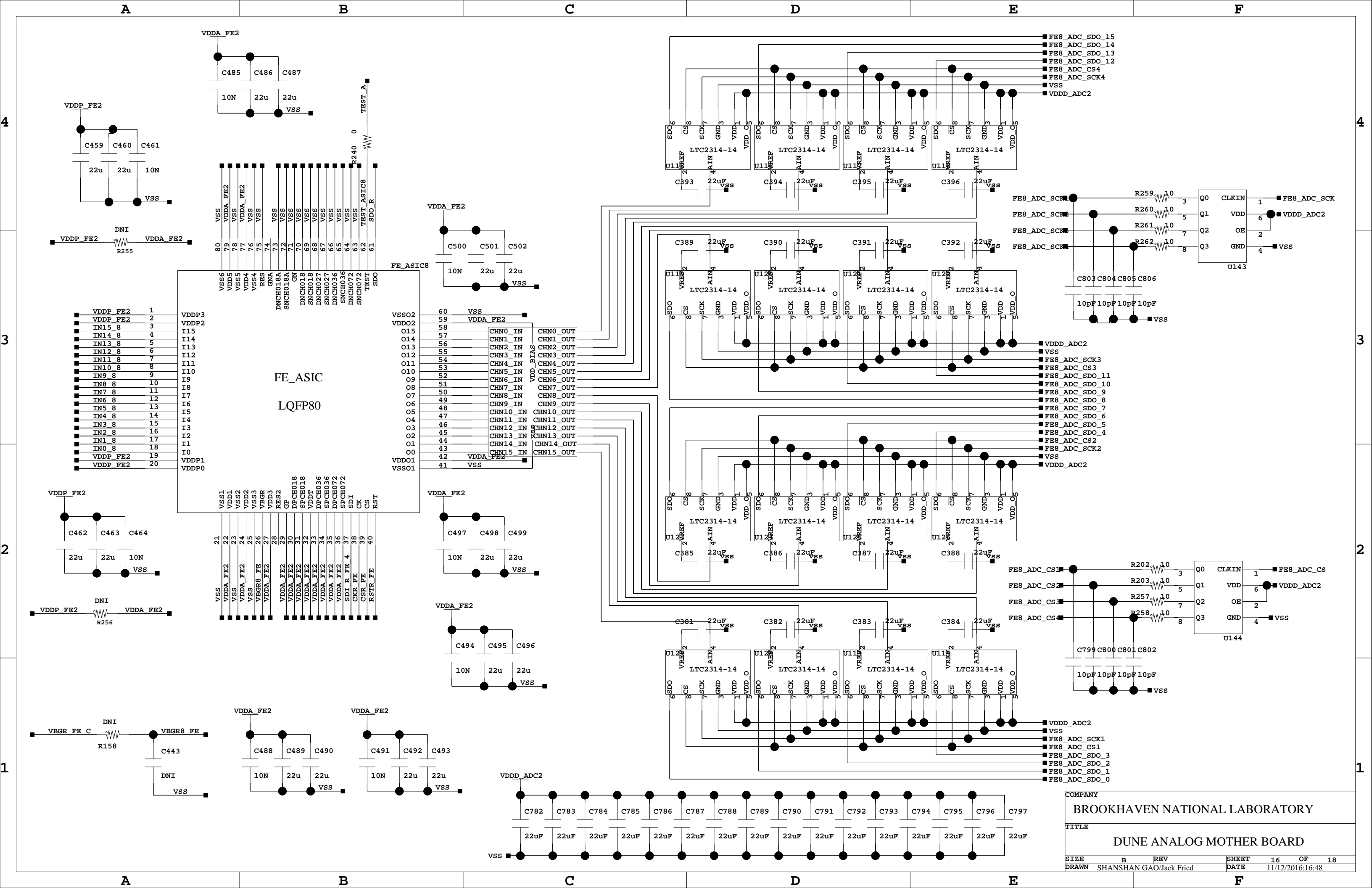


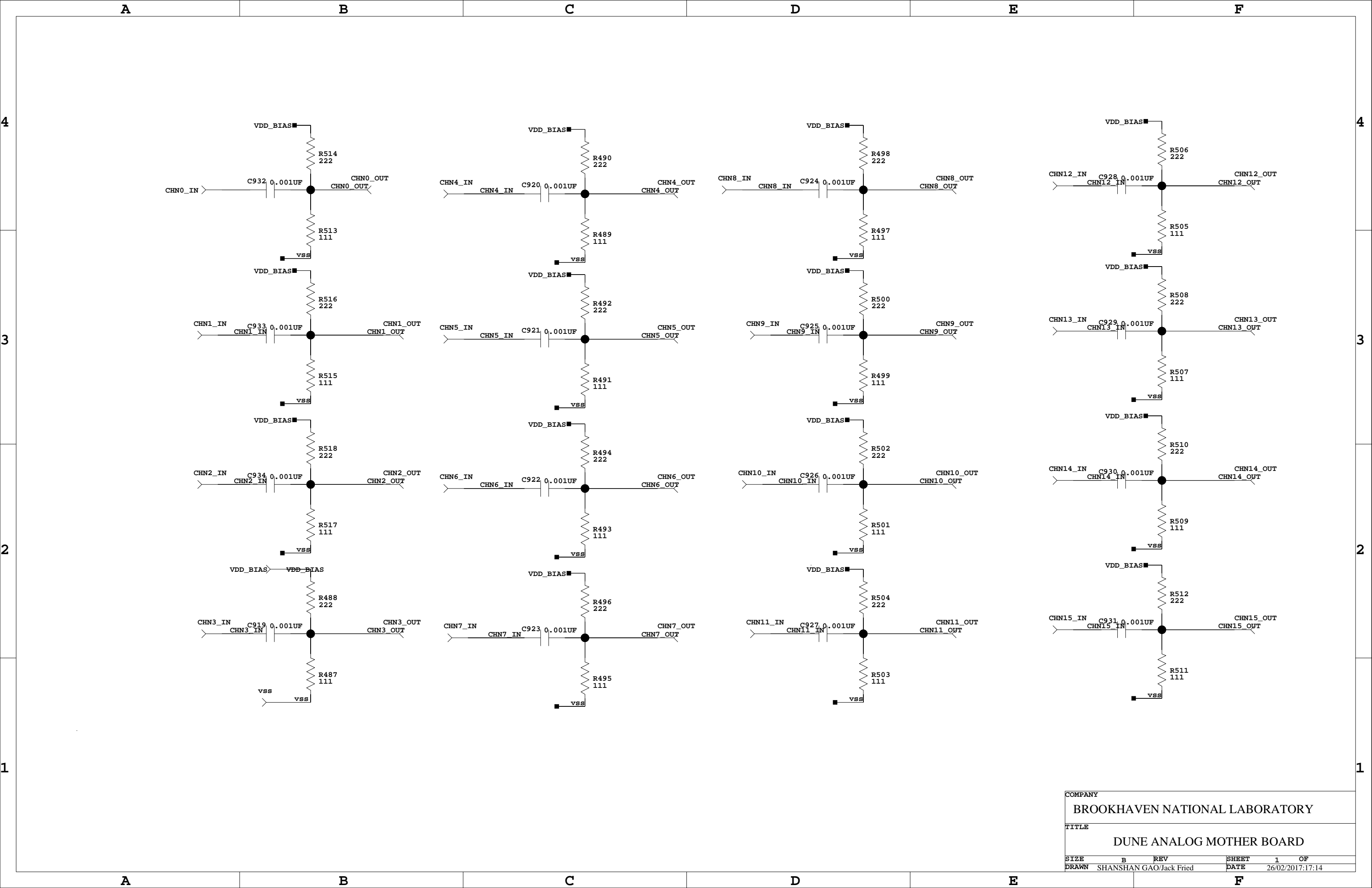


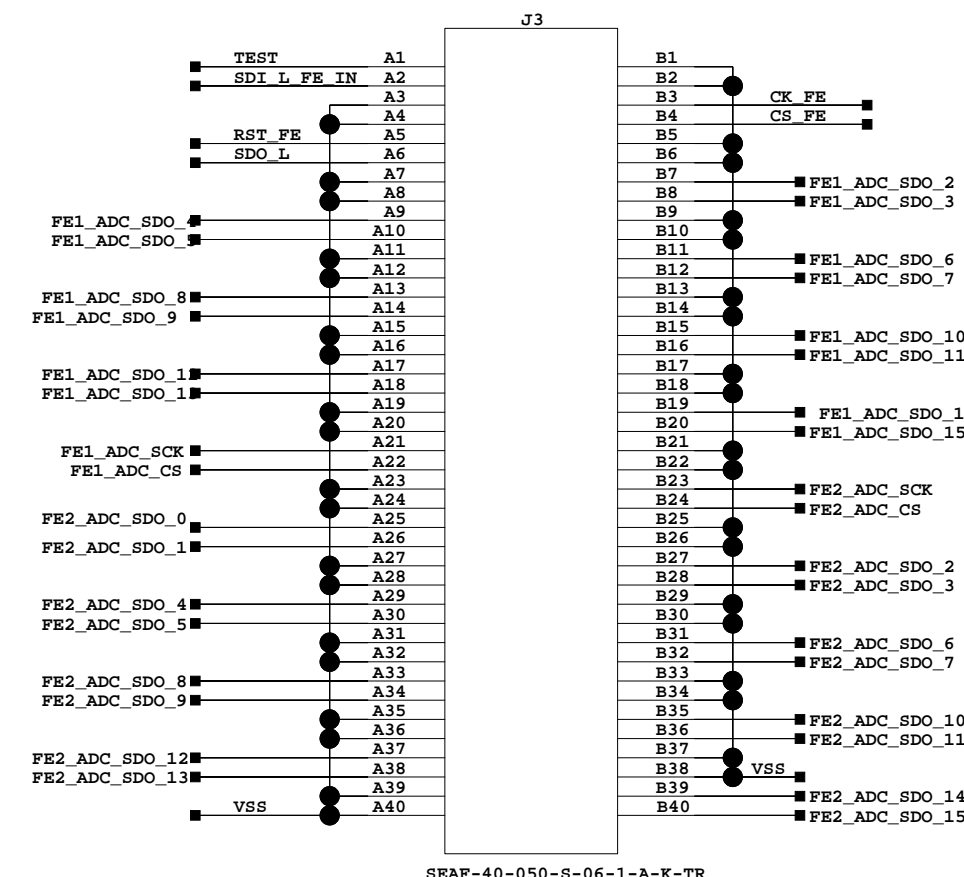
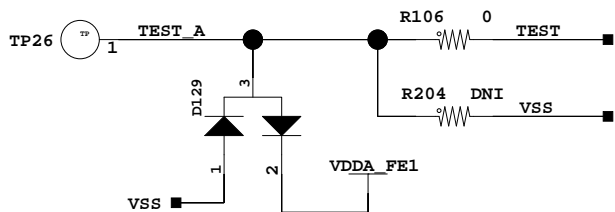




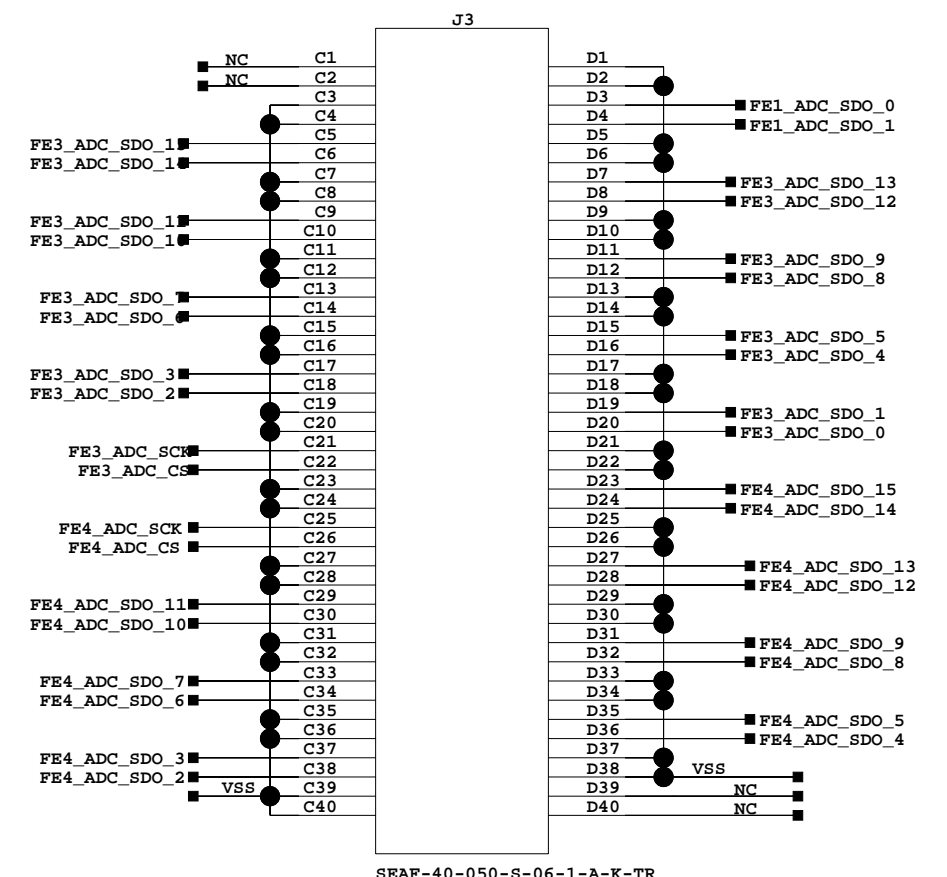




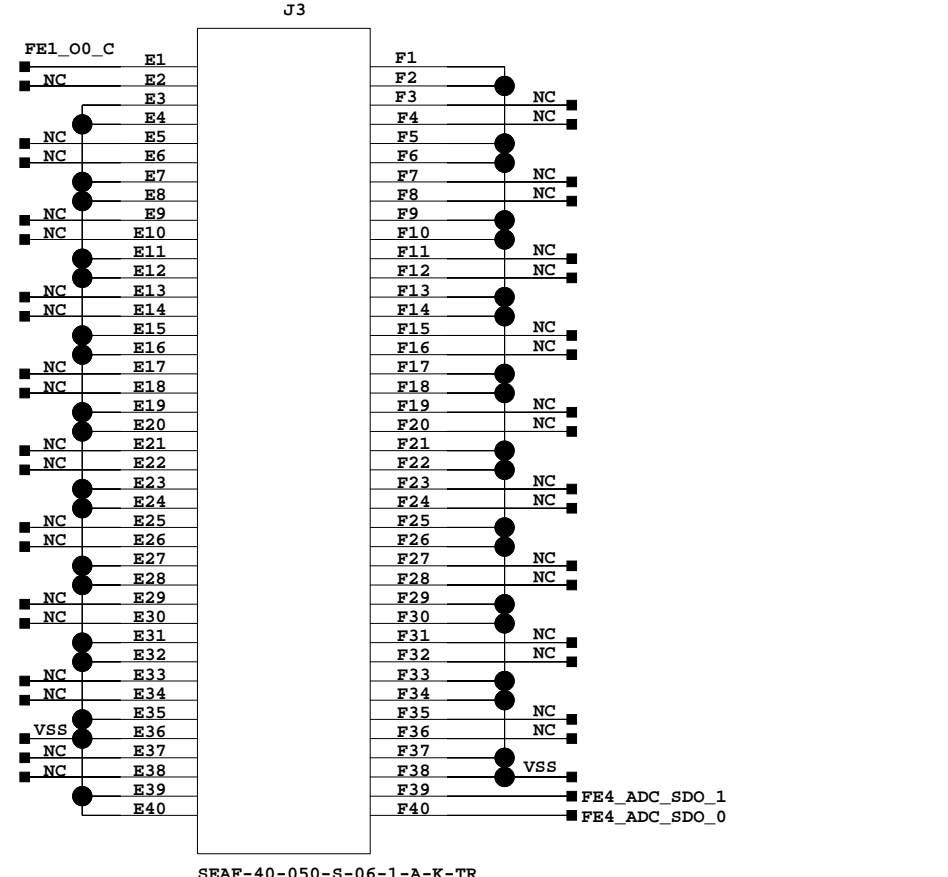




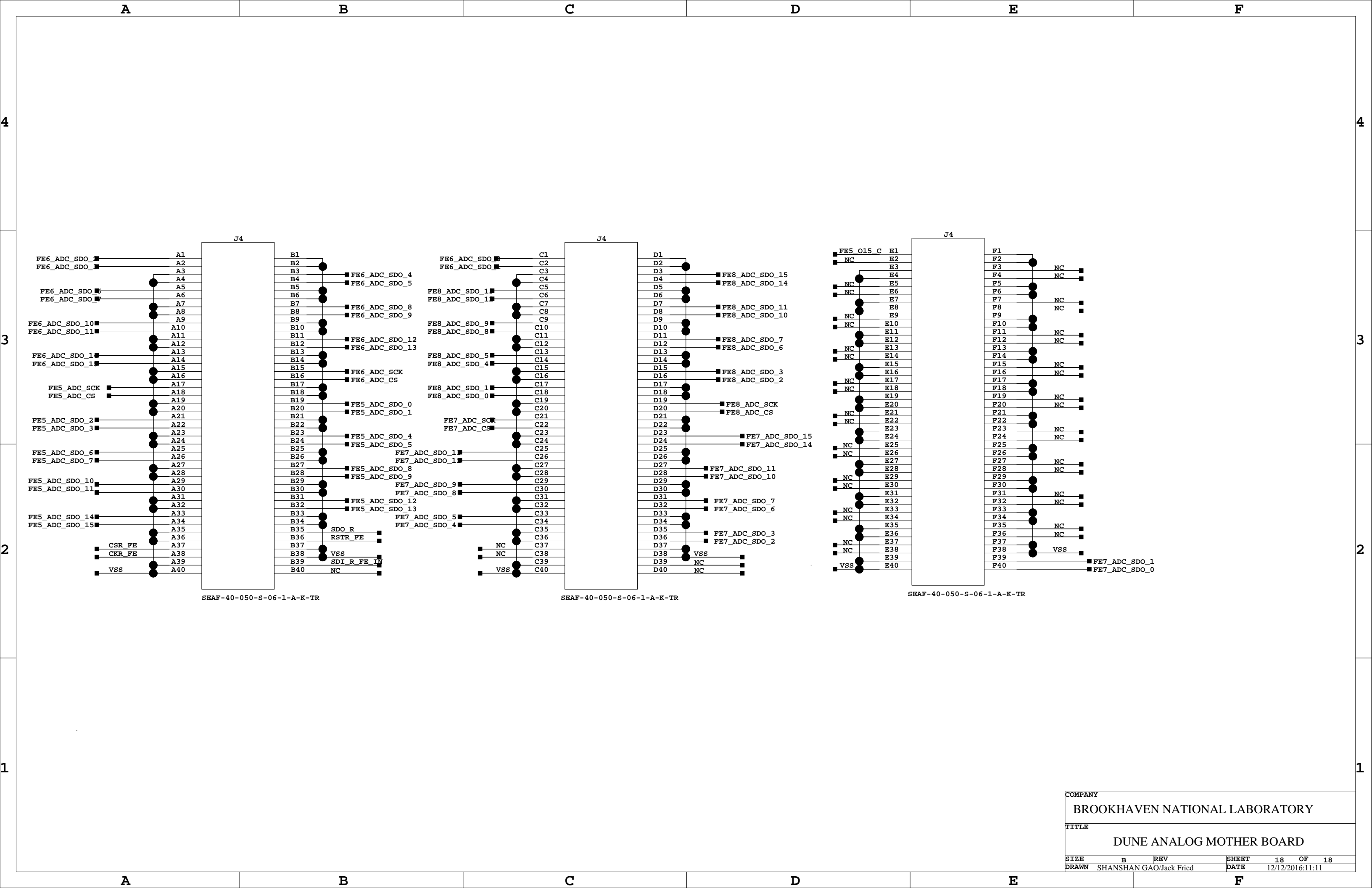
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A	B	C	D	E	F																												
4	DUNE ANALOG MOTHER BOARD (1Gohm version)					4																											
3	TABLE OF CONTENTS					3																											
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COMPANY																																	
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TITLE																																	
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SIZE	B	REV	SHEET	COVER	OF																												
DRAWN	SHANSHAN GAO/Jack Fried			DATE	28/10/2016:12:08																												

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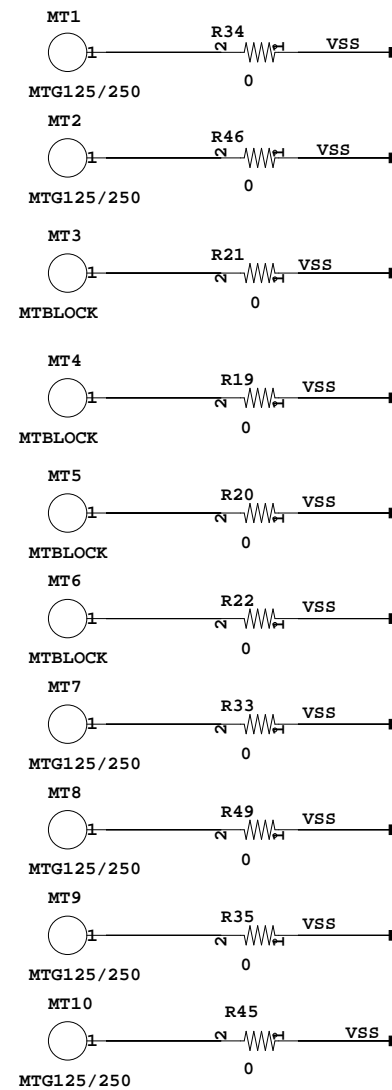
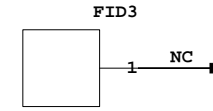
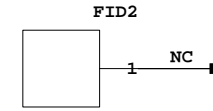
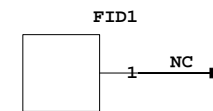
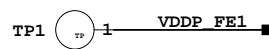
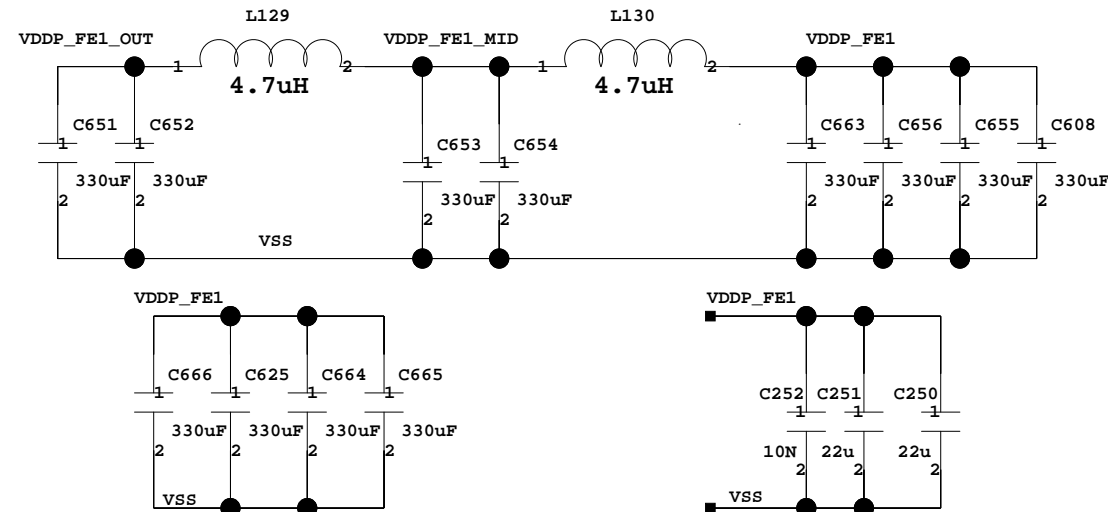
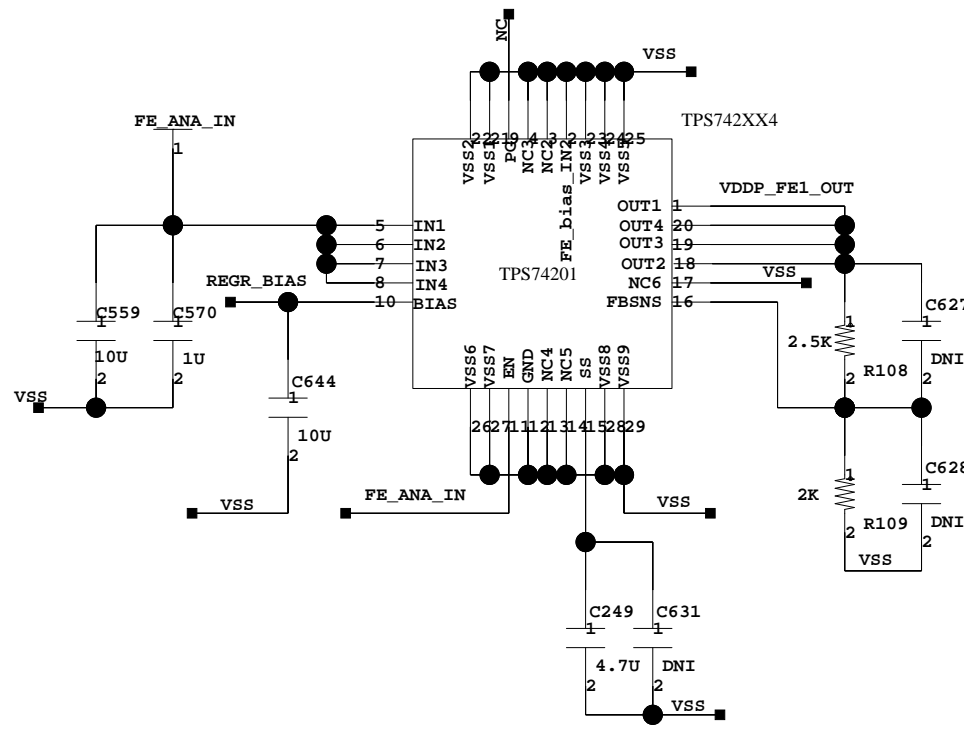
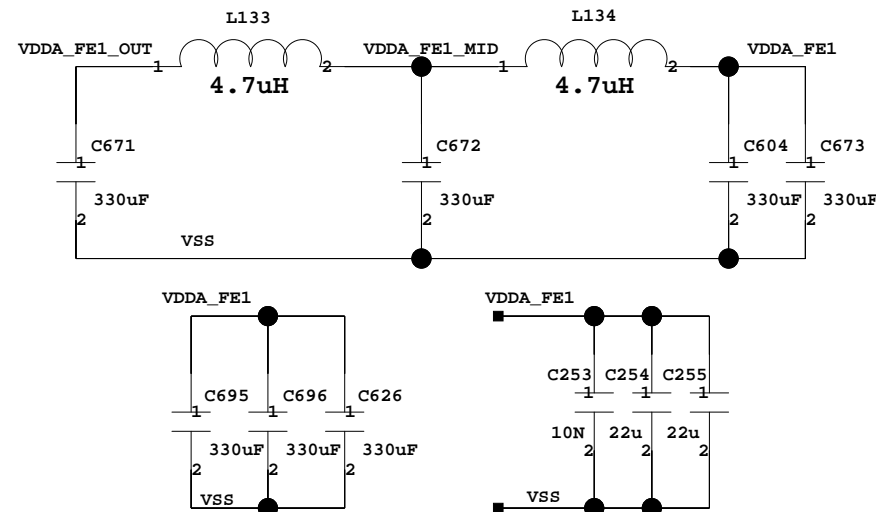
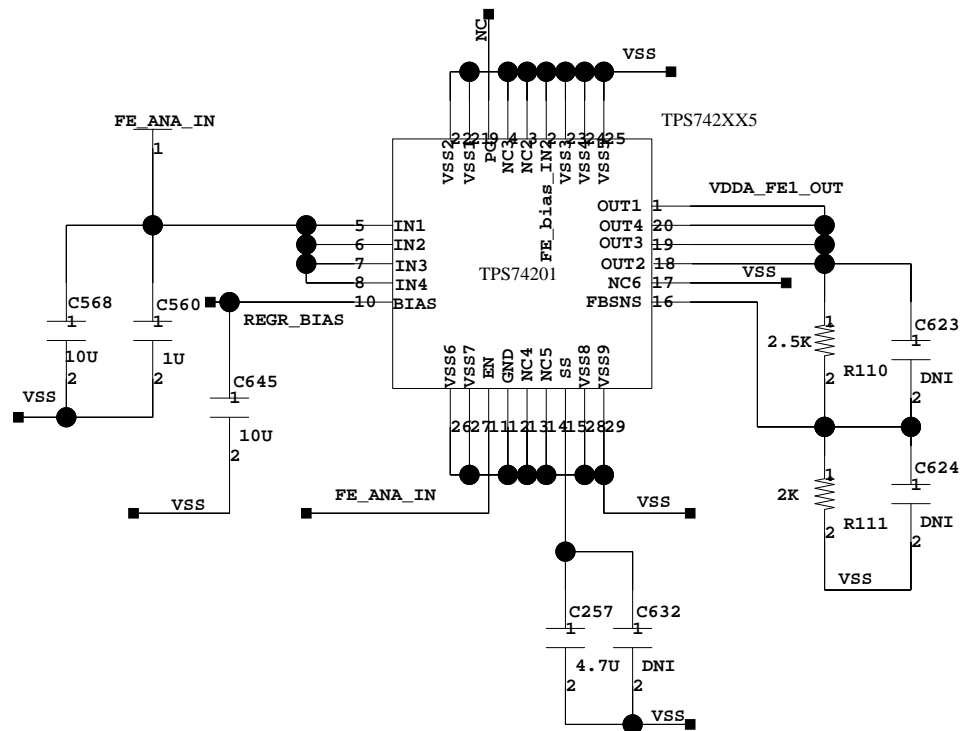
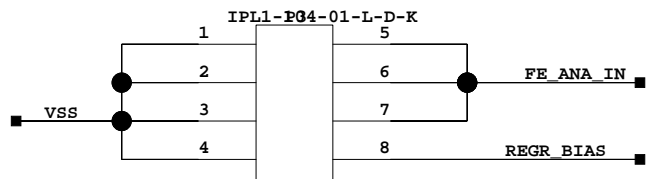
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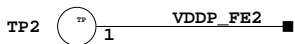
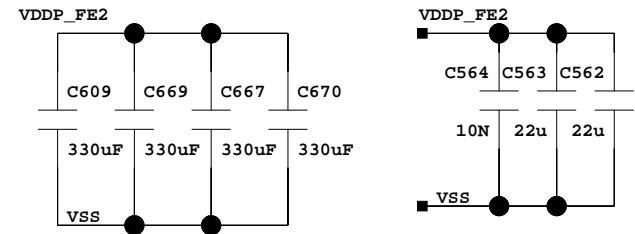
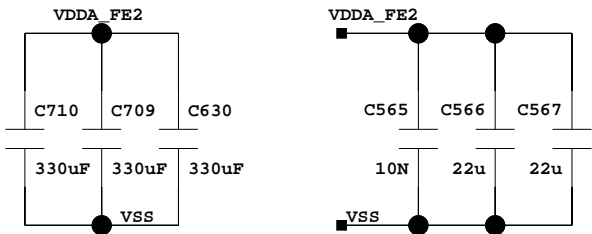
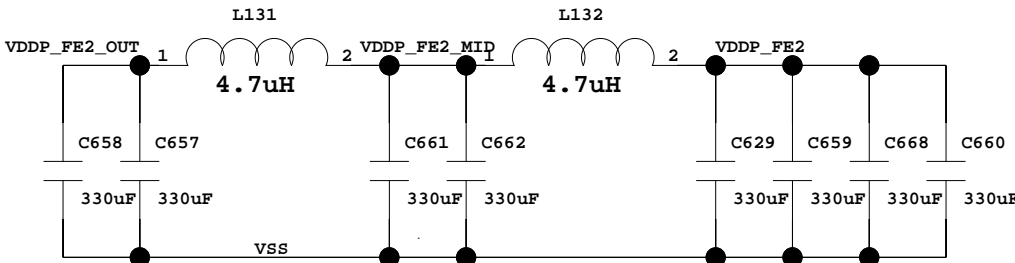
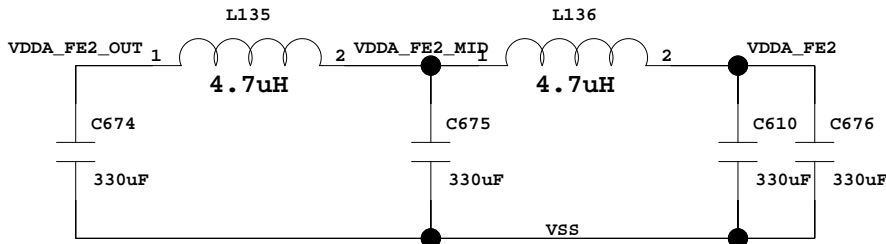
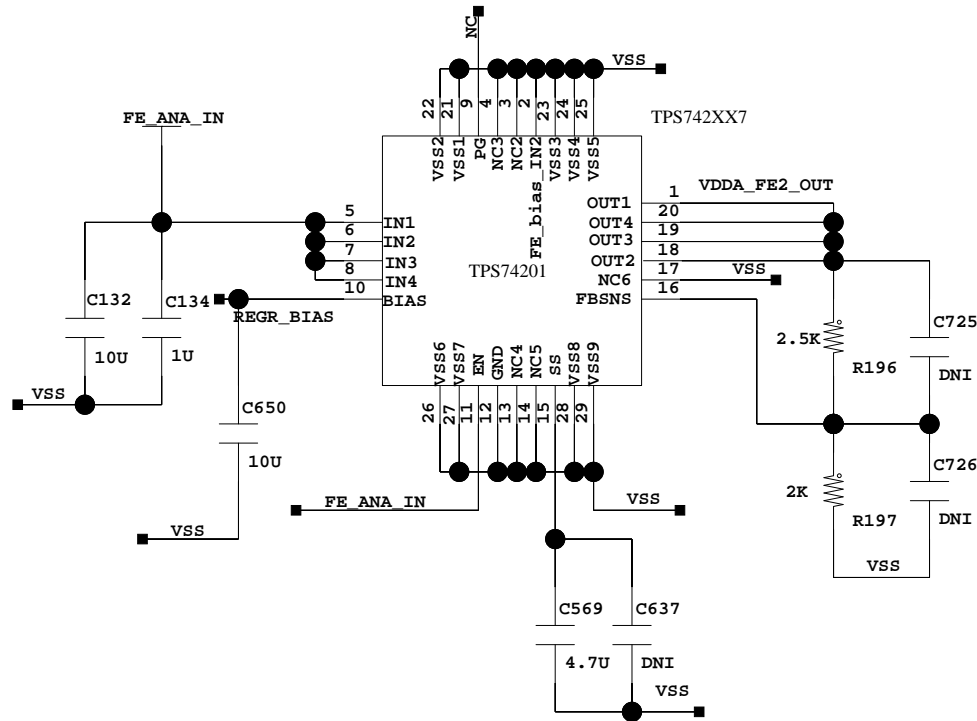
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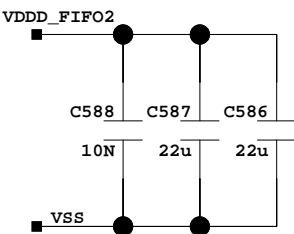
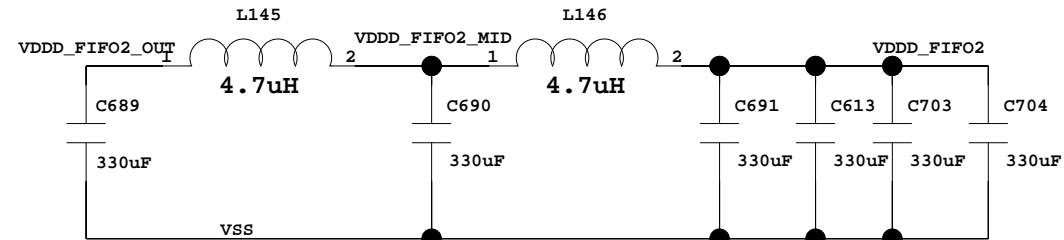
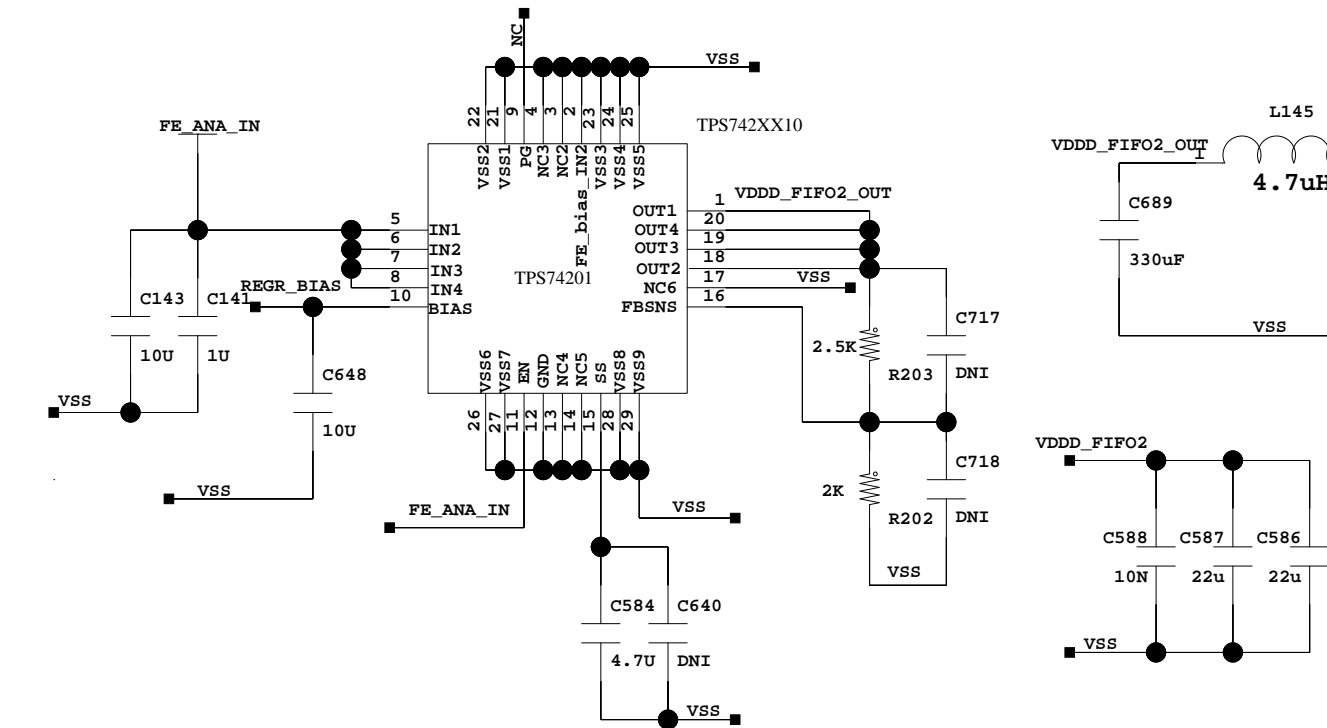
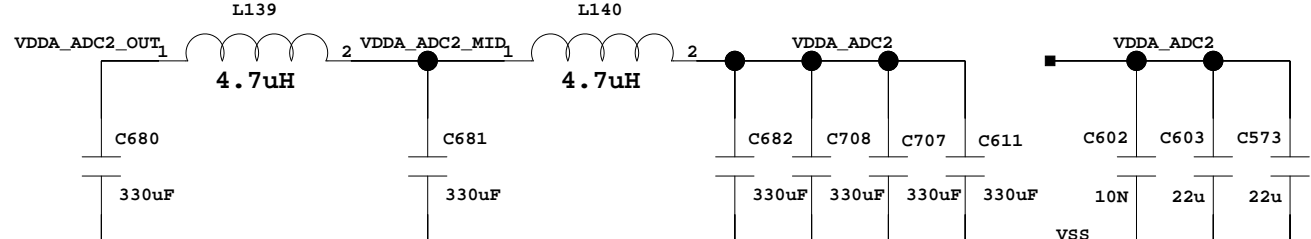
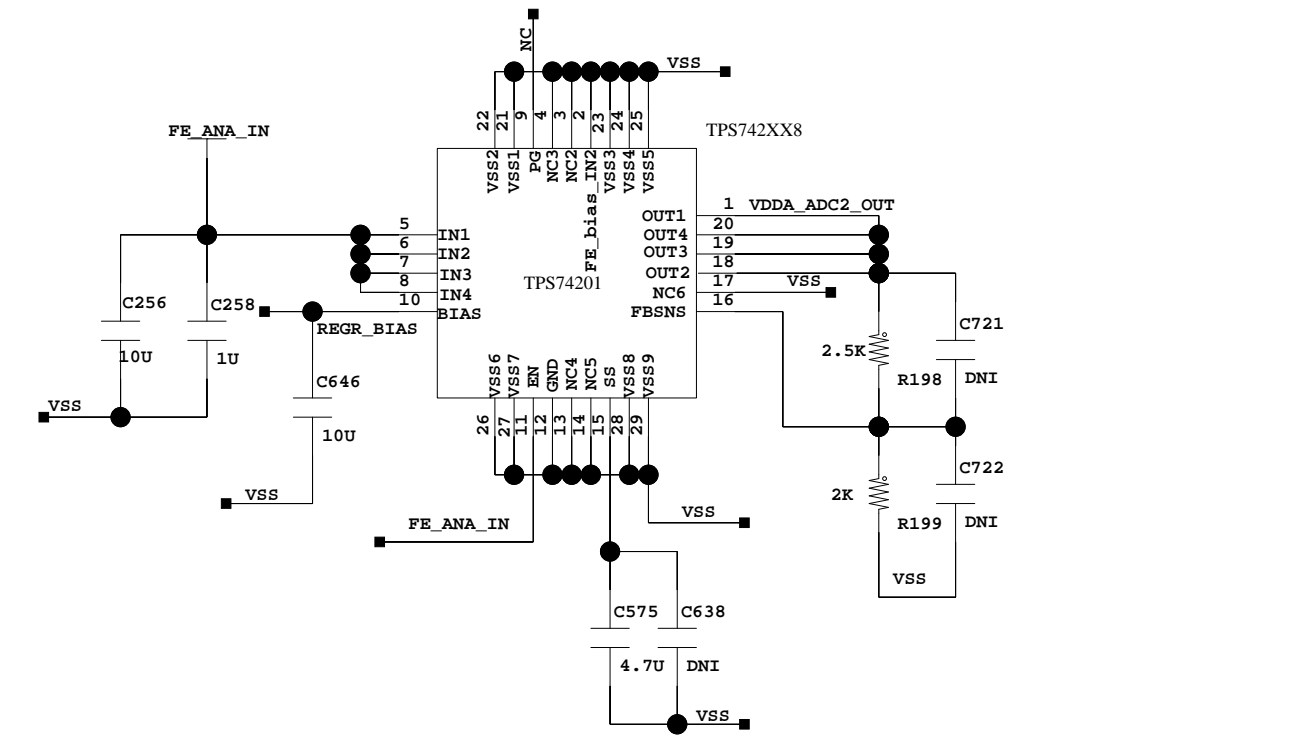
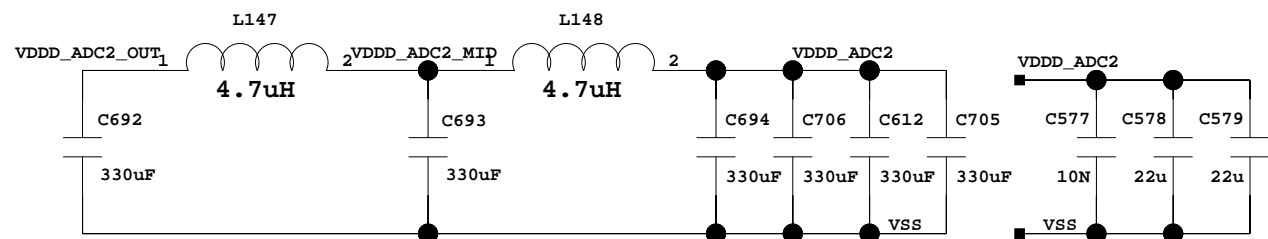
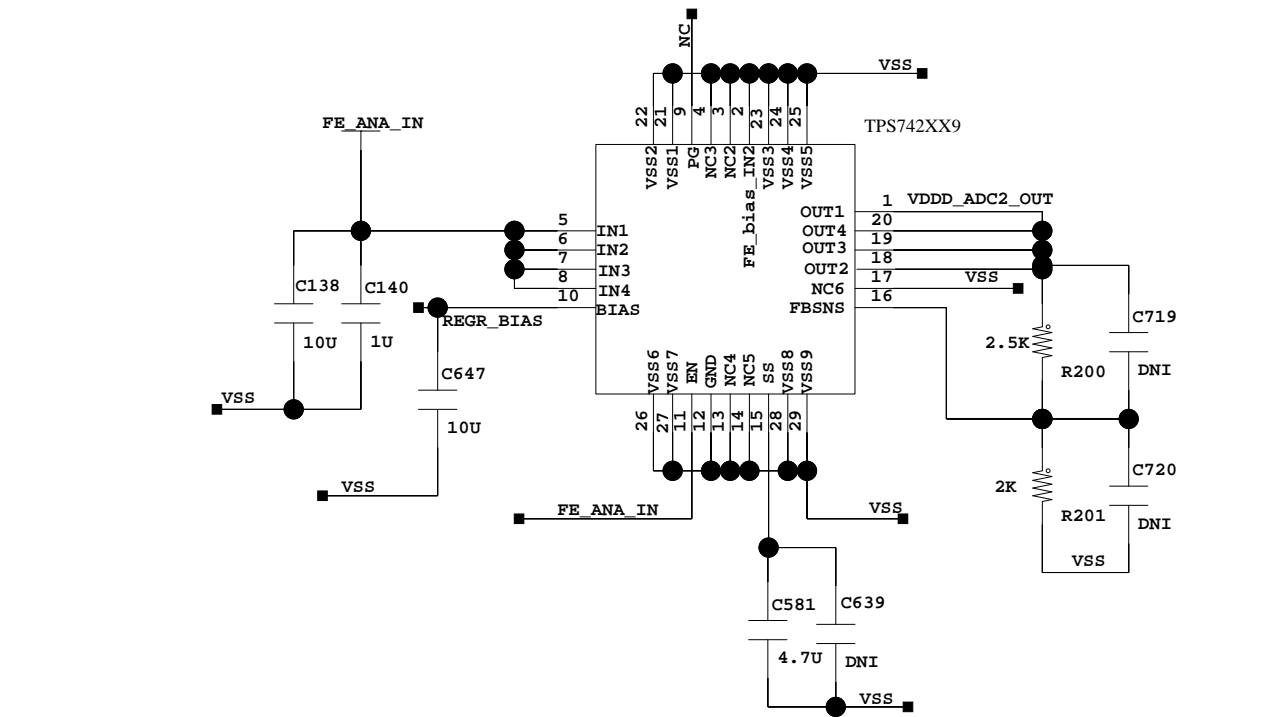
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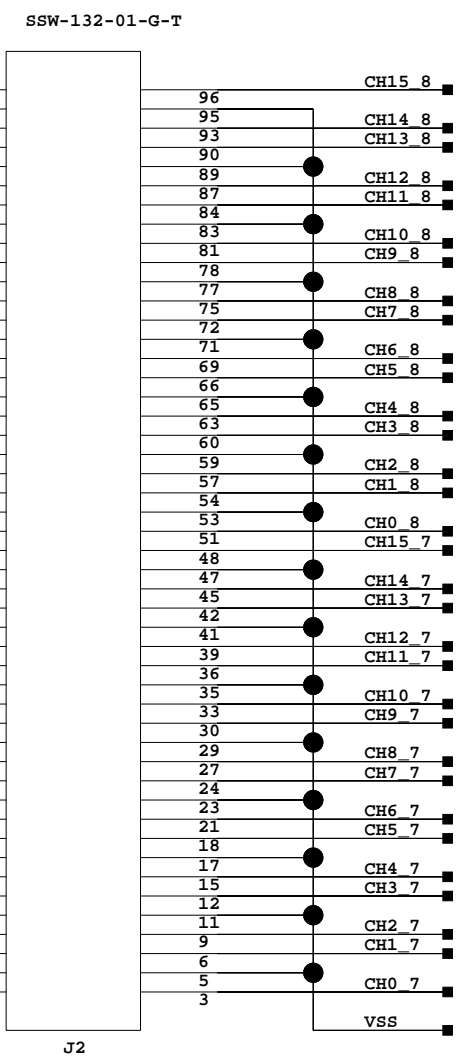


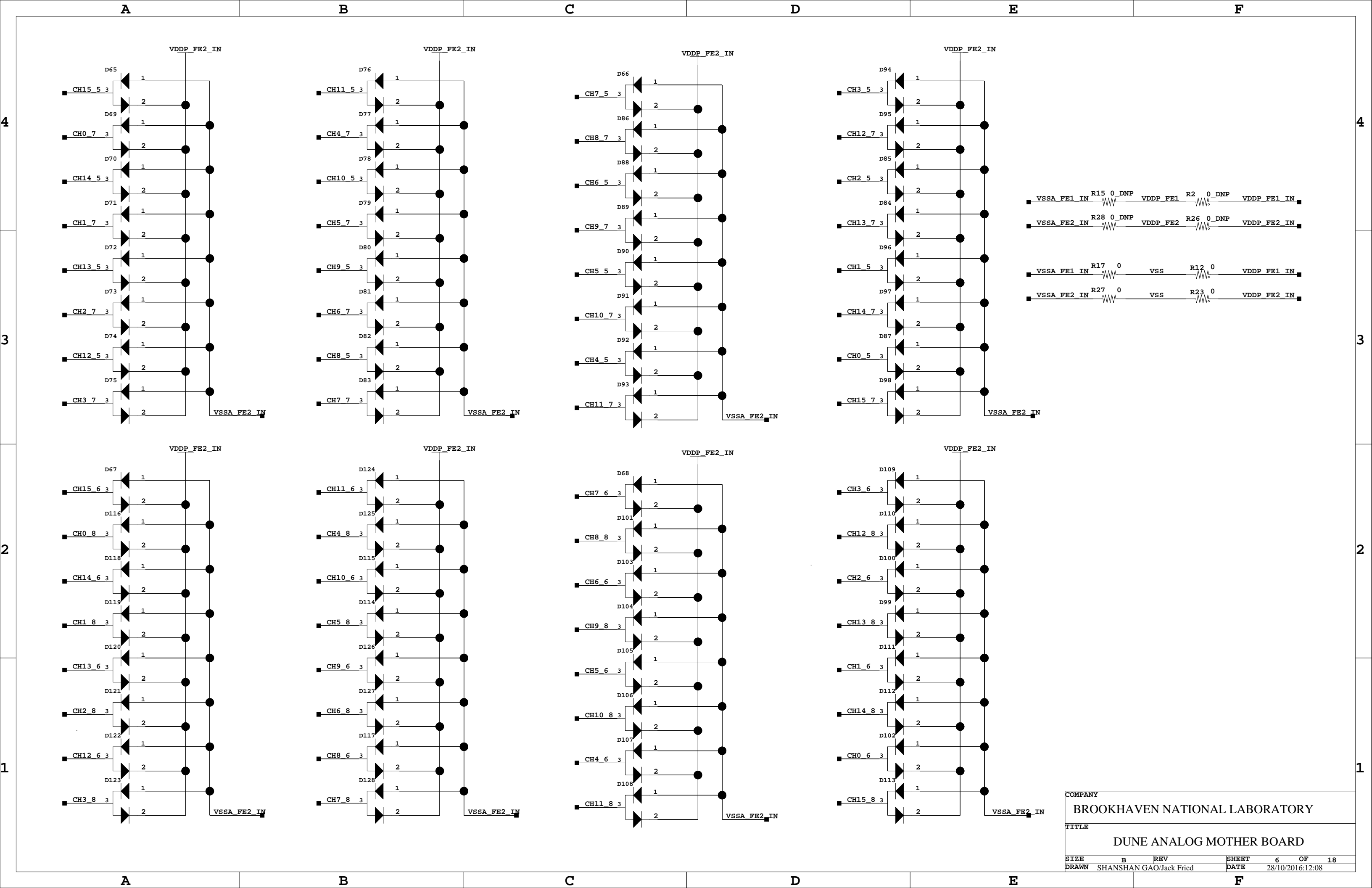
COMPANY					
BROOKHAVEN NATIONAL LABORATORY					
TITLE					
DUNE ANALOG MOTHER BOARD					
SIZE	B	REV	SHEET	1	OF 18
DRAWN	SHANSHAN GAO/Jack Fried		DATE	12/12/2016:11:06	



COMPANY					
BROOKHAVEN NATIONAL LABORATORY					
TITLE					
DUNE ANALOG MOTHER BOARD					
SIZE	B	REV	SHEET	3	OF 18
DRAWN	SHANSHAN GAO/Jack Fried		DATE	28/10/2016:12:08	

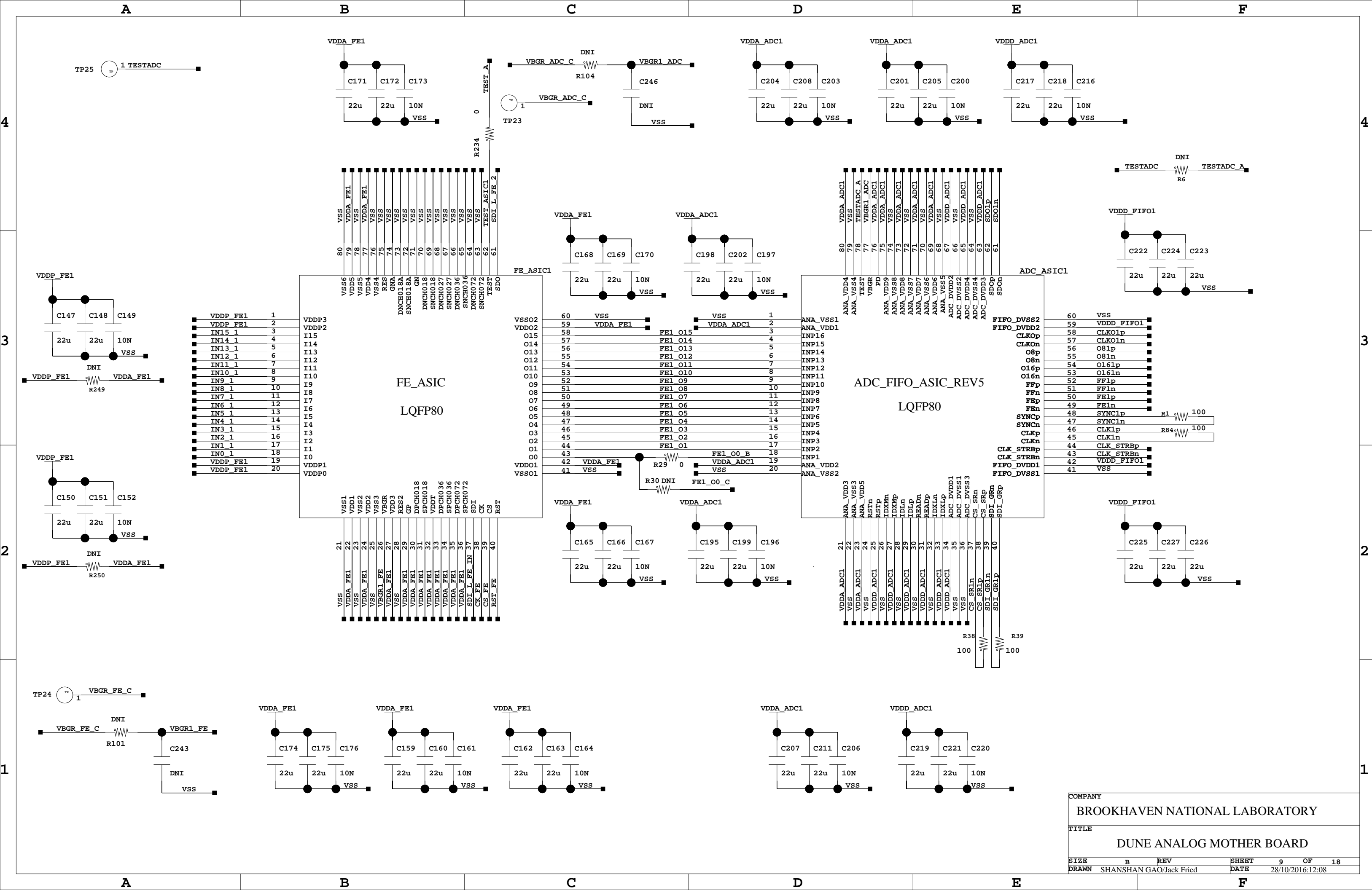


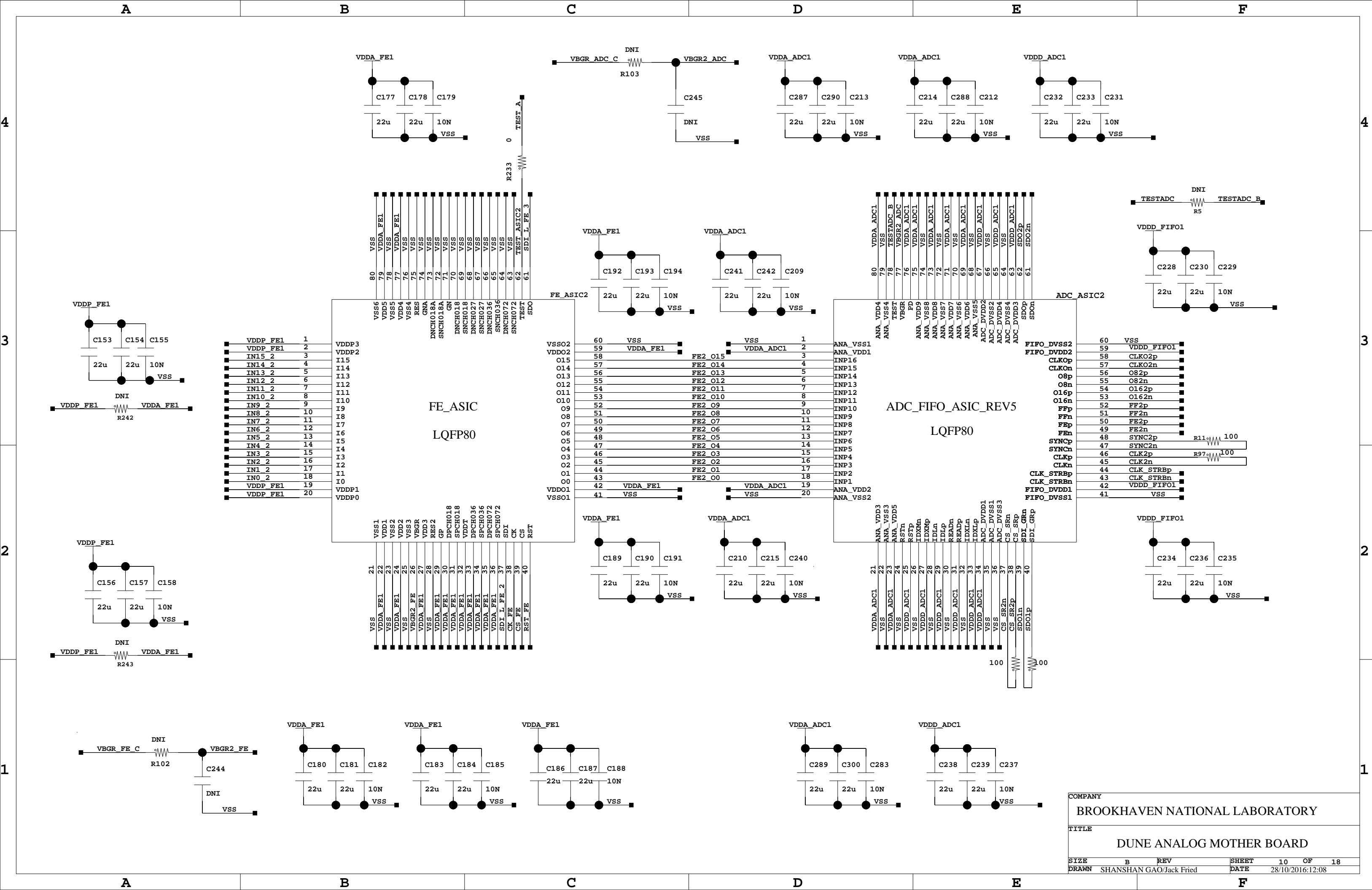


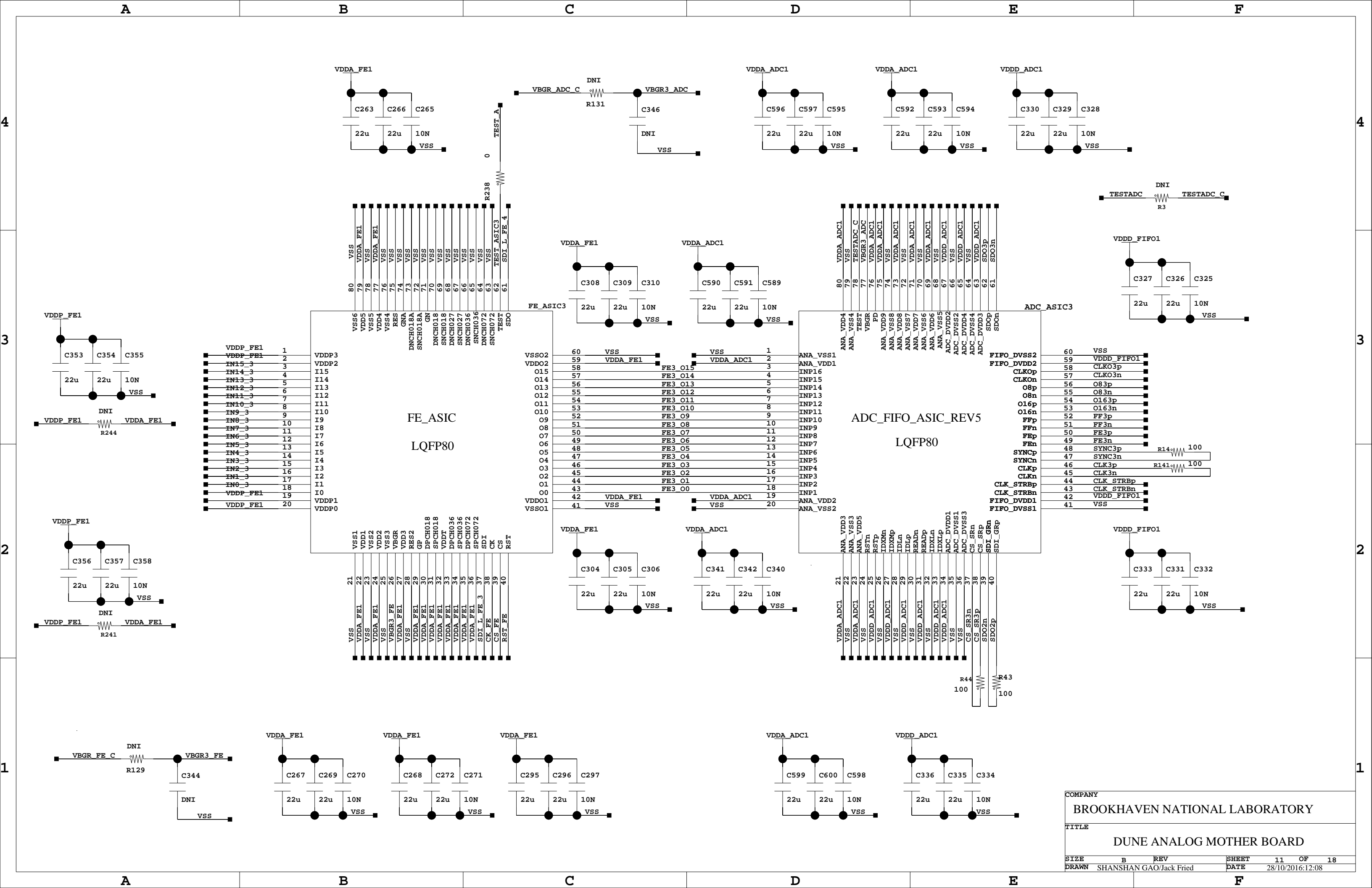




COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	8 OF 18
DRAWN	SHANSHAN GAO/Jack Fried		DATE	21/12/2016:12:13







4

3

2

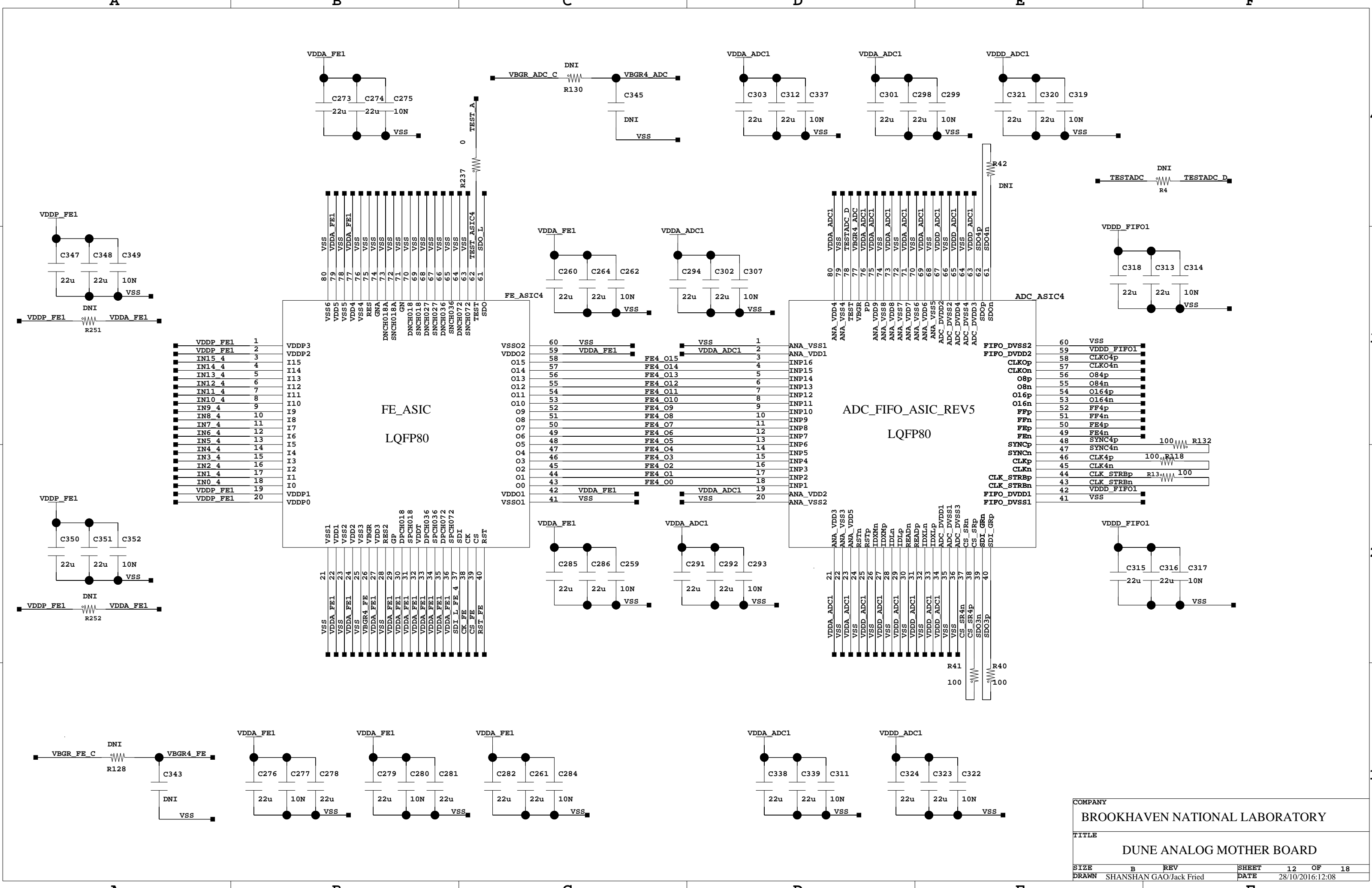
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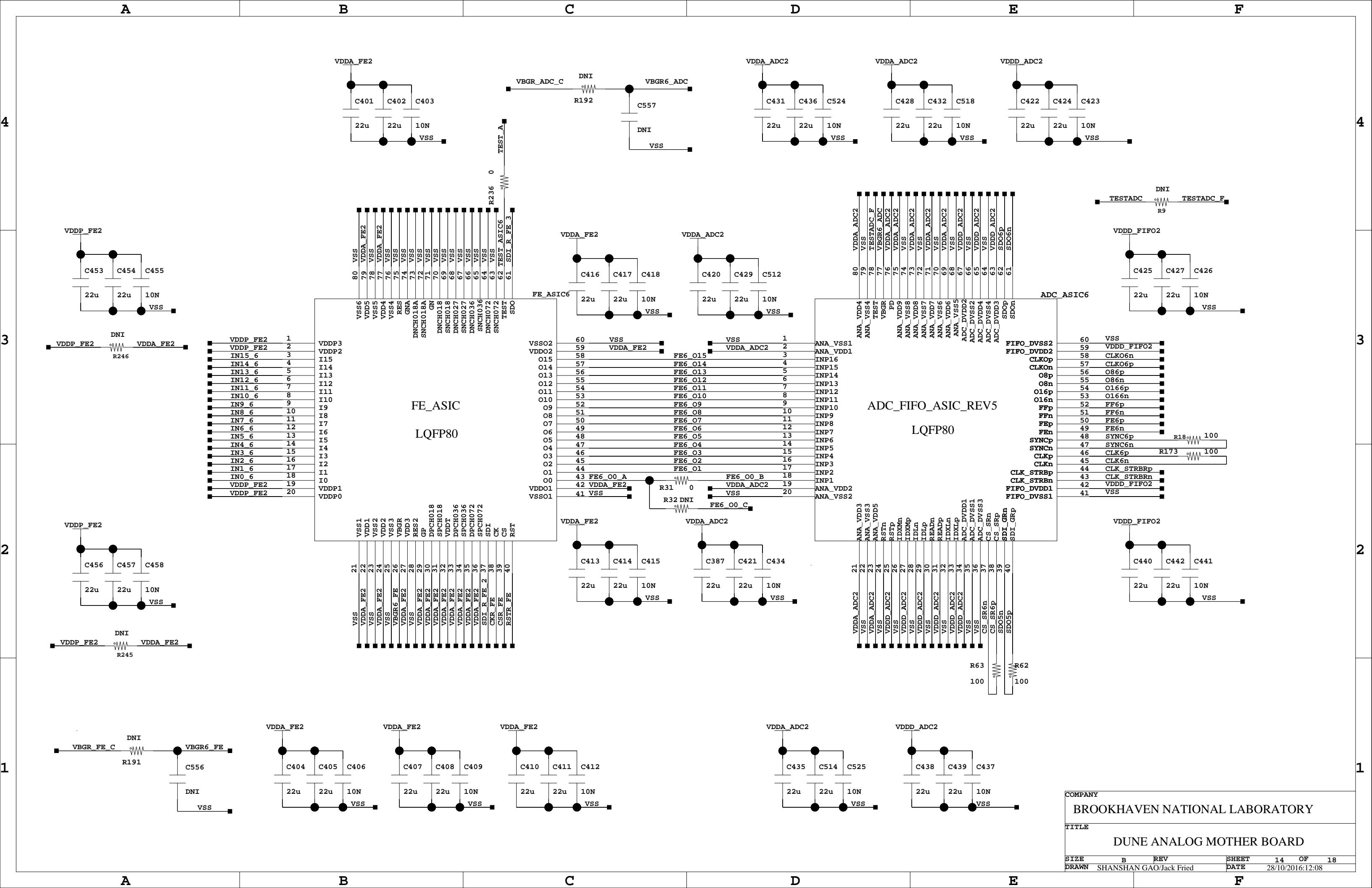
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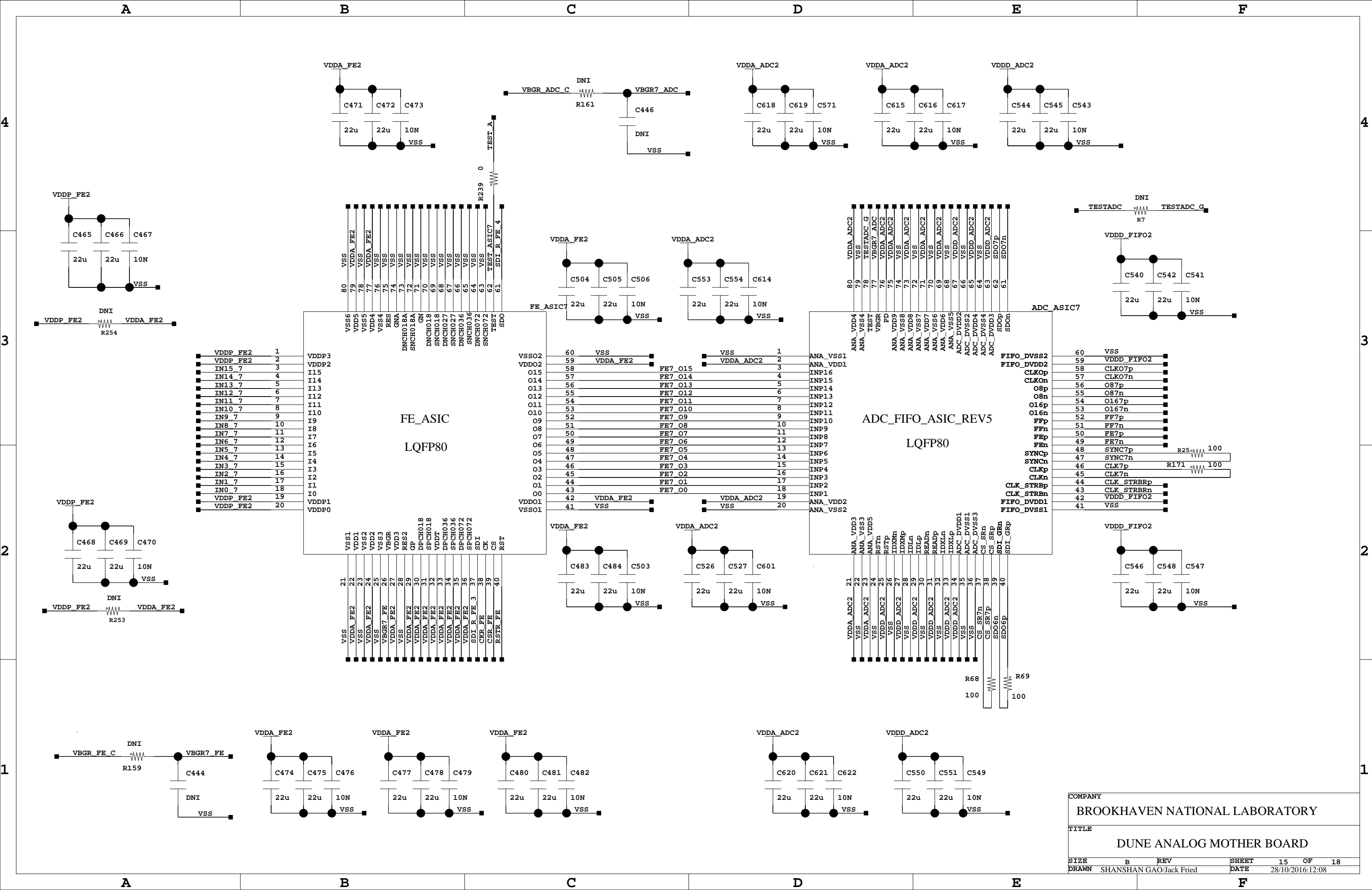
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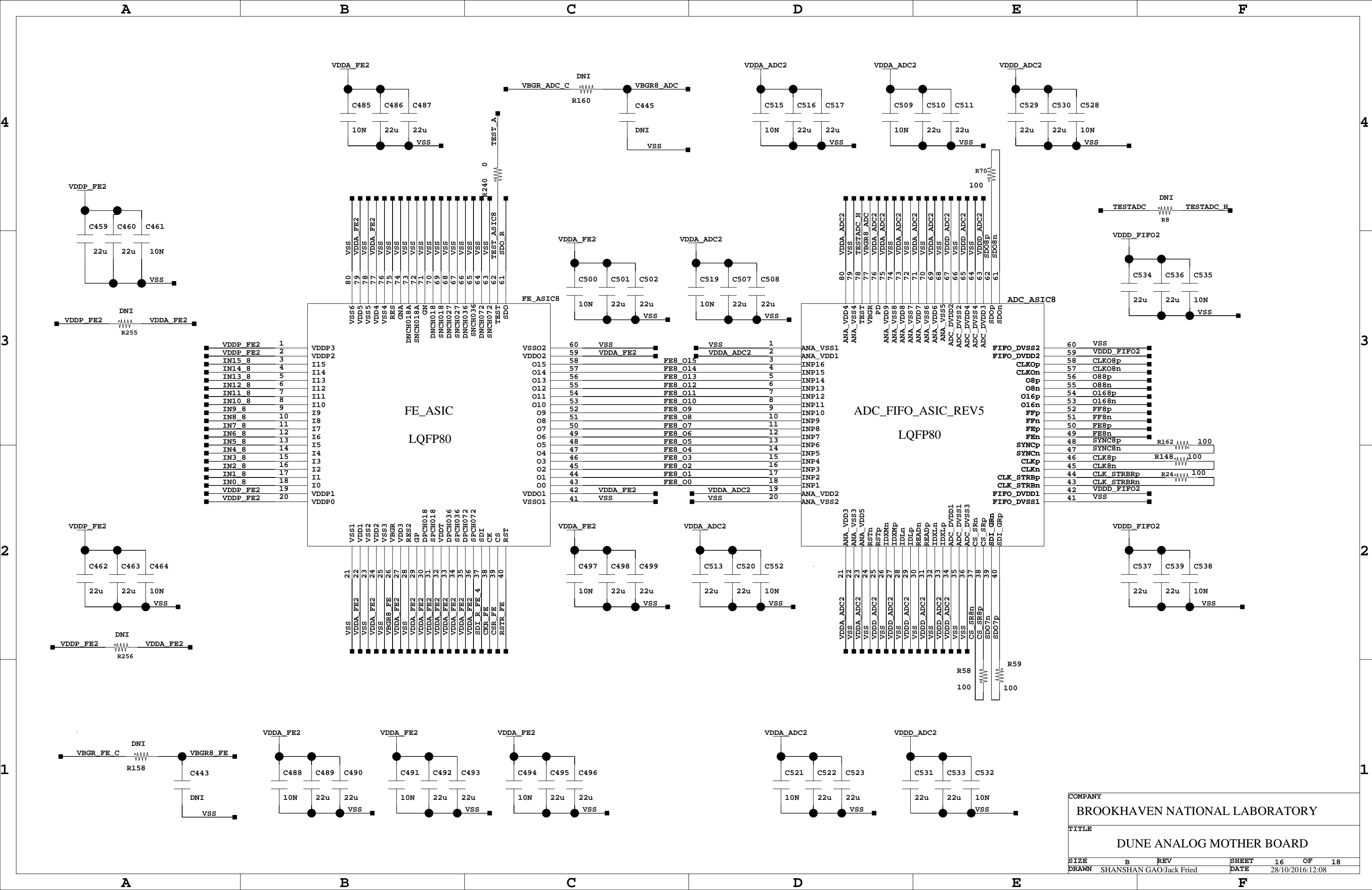
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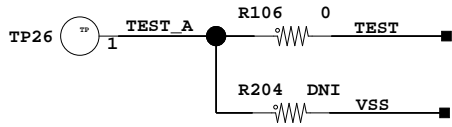






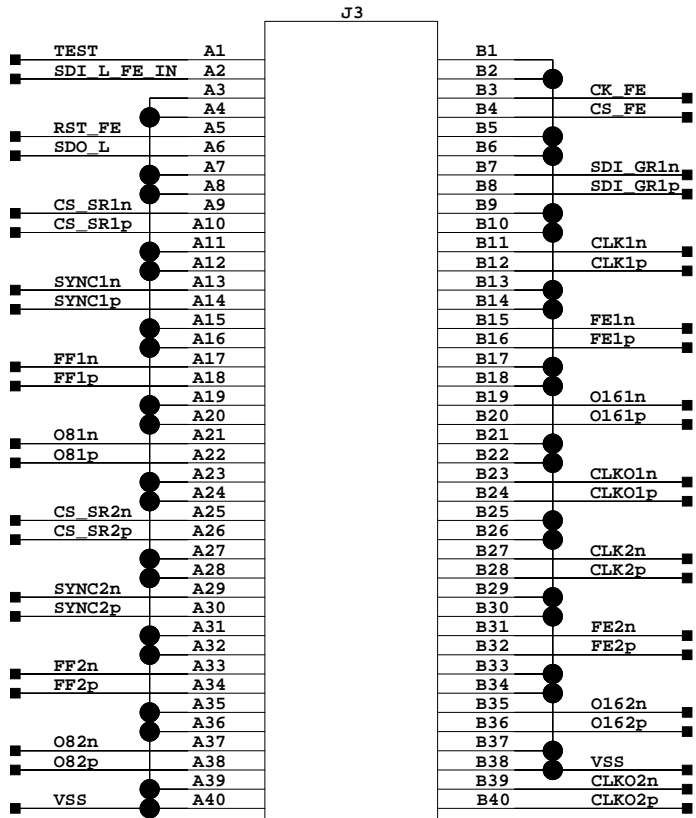
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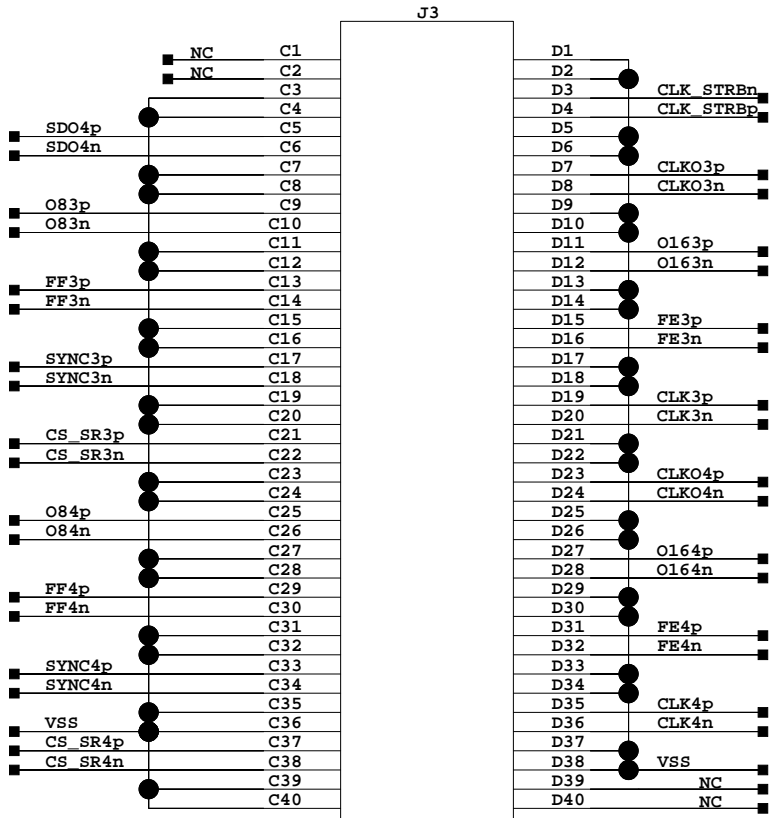


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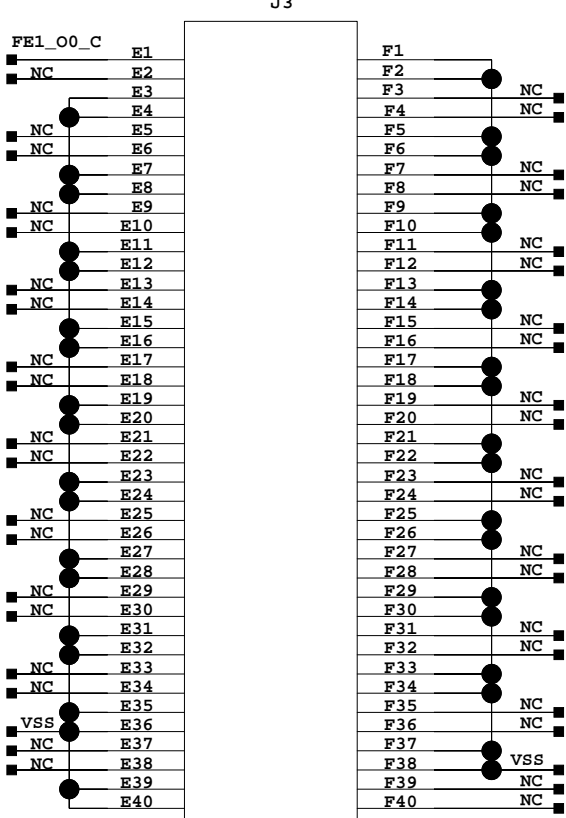
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SEAF-40-050-S-06-1-A-K-TR



SEAF-40-050-S-06-1-A-K-TR



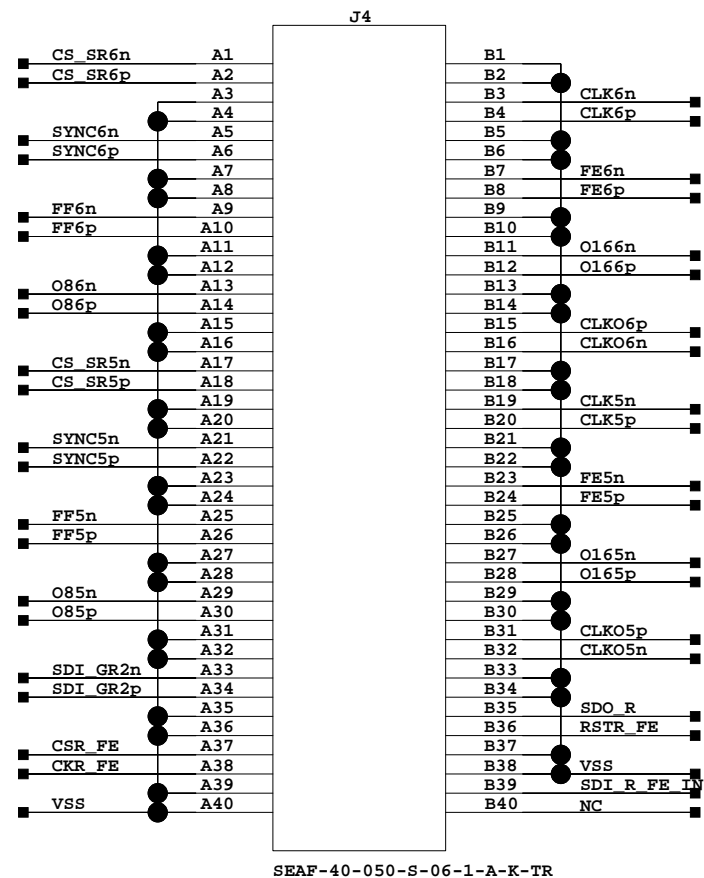
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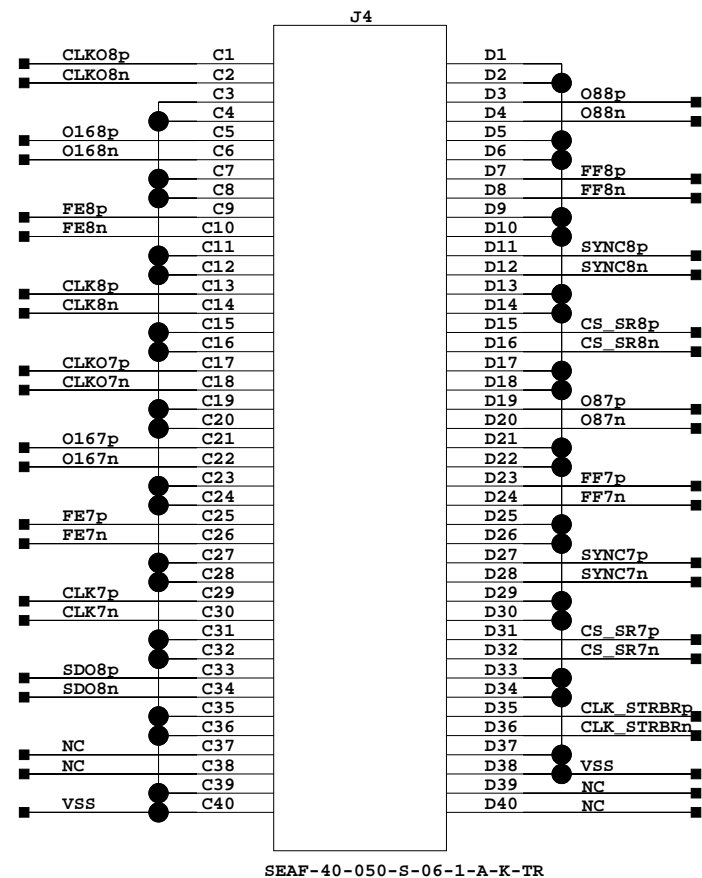
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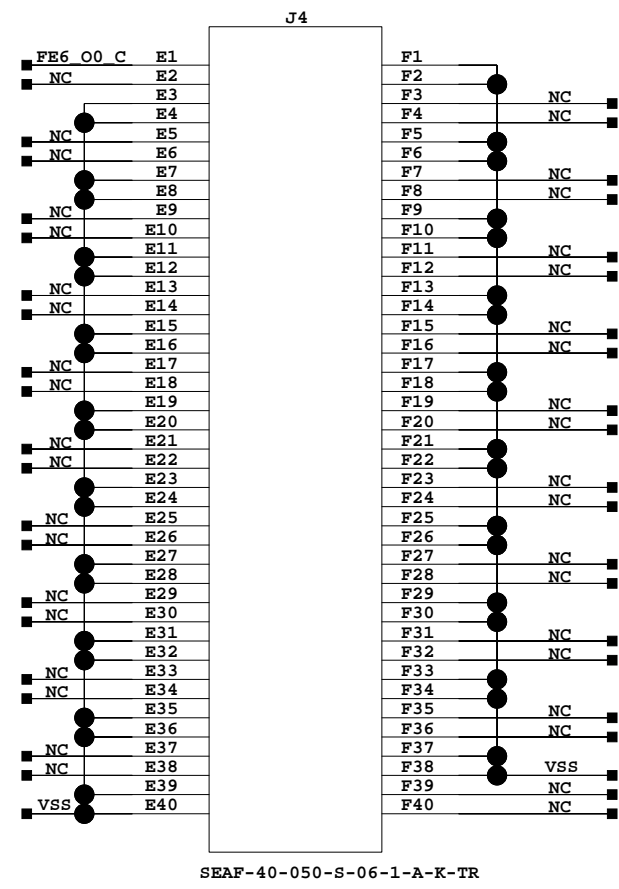
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SEAF-40-050-S-06-1-A-K-TR



SEAF-40-050-S-06-1-A-K-TR



SEAF-40-050-S-06-1-A-K-TR

A	B	C	D	E	F	
4	DUNE ANALOG MOTHER BOARD P1 ADC & AC COUPLING					4
3	TABLE OF CONTENTS					3
2	SHEET 1: Power Left 1					2
	SHEET 2: Power Left 2					
	SHEET 3: Power Right 1					
	SHEET 4: Power Right 2					
	SHEET 5: Signal Inputs					
	SHEET 6: Input Protection Diodes 1					
	SHEET 7: Input Protection Diodes 1					
	SHEET 8: Input Caps and Inductors					
	SHEET 9: FE + ADC TopLeft 1					
	SHEET 10: FE + ADC TopLeft 2					
	SHEET 11: FE + ADC BottomLeft 1					
	SHEET 12: FE + ADC BottomLeft 2					
	SHEET 13: FE + ADC TopRight 1					
	SHEET 14: FE + ADC TopRight 2					
	SHEET 15: FE + ADC BottomRight 1					
	SHEET 16: FE + ADC BottomRight 2					
	SHEET 17: Signal Outputs 1					
	SHEET 18: Signal Outputs 2					
1	COMPANY BROOKHAVEN NATIONAL LABORATORY					1
TITLE DUNE ANALOG MOTHER BOARD						
SIZE B REV SHEET COVER OF DRAWN SHANSHAN GAO/Jack Fried DATE 21/12/2016:13:48						
A	B	C	D	E	F	

4

3

2

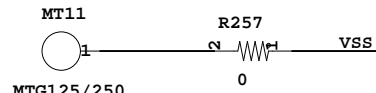
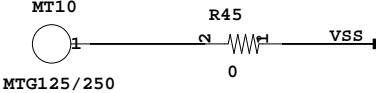
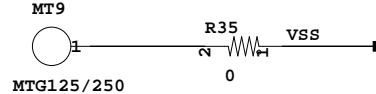
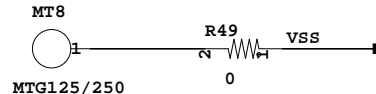
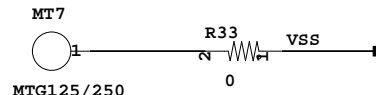
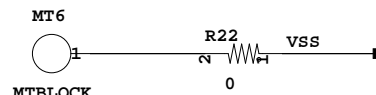
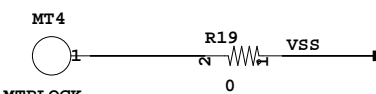
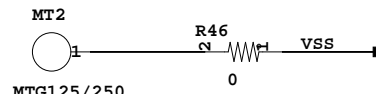
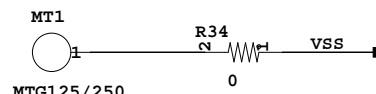
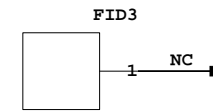
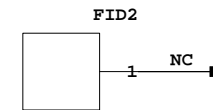
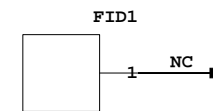
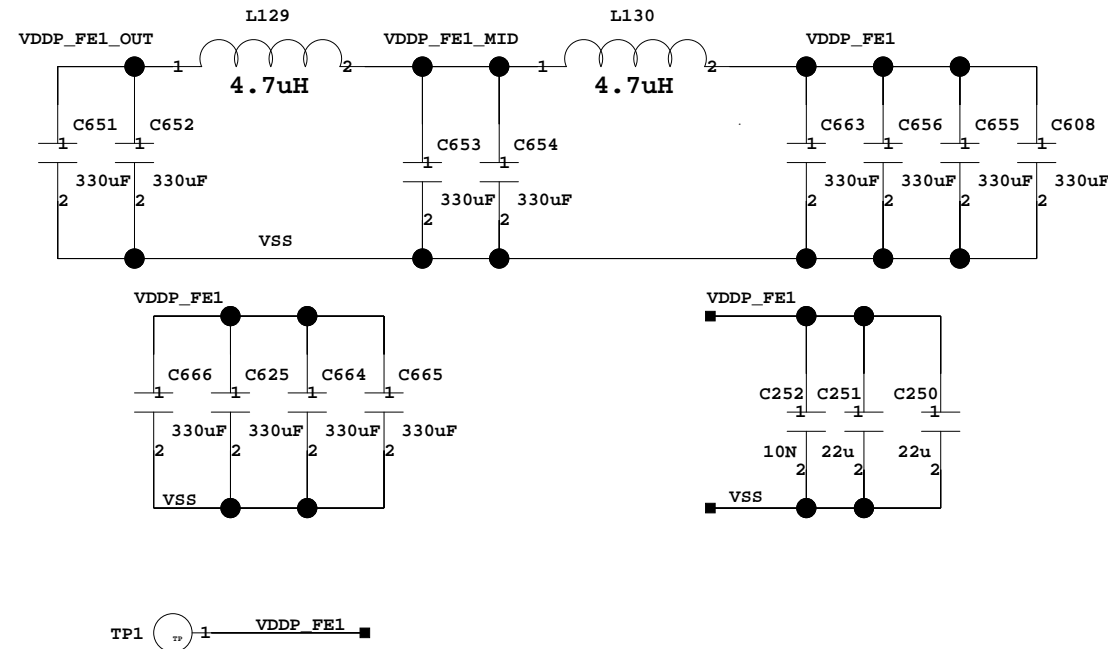
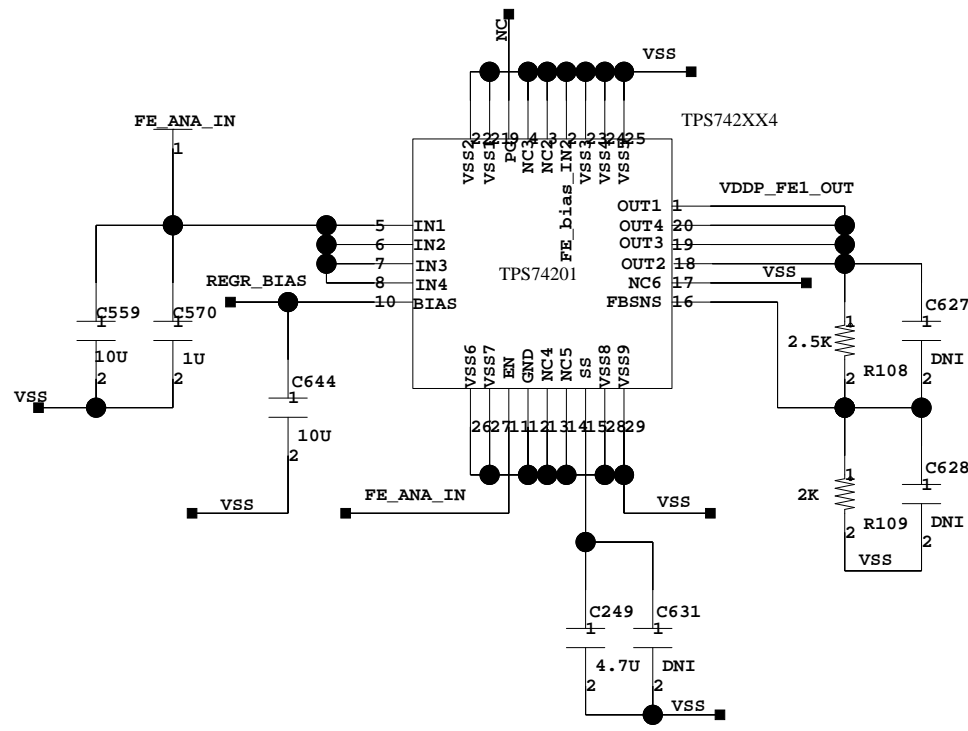
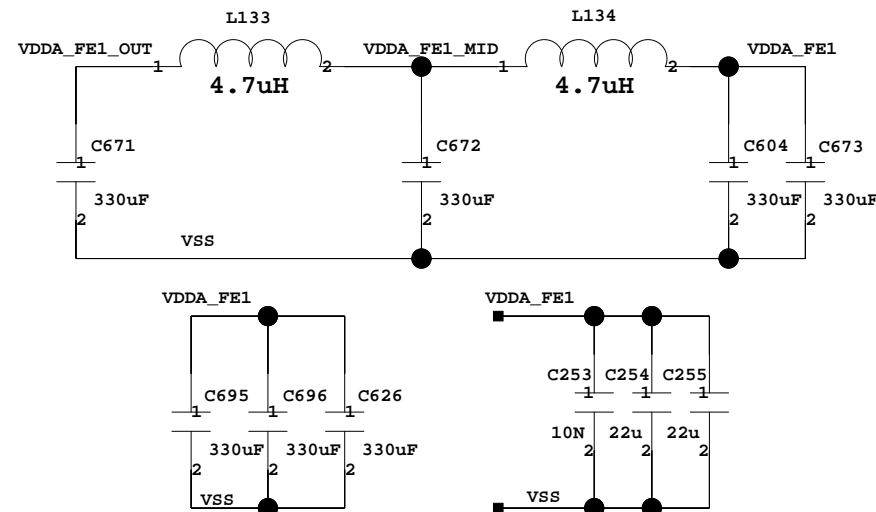
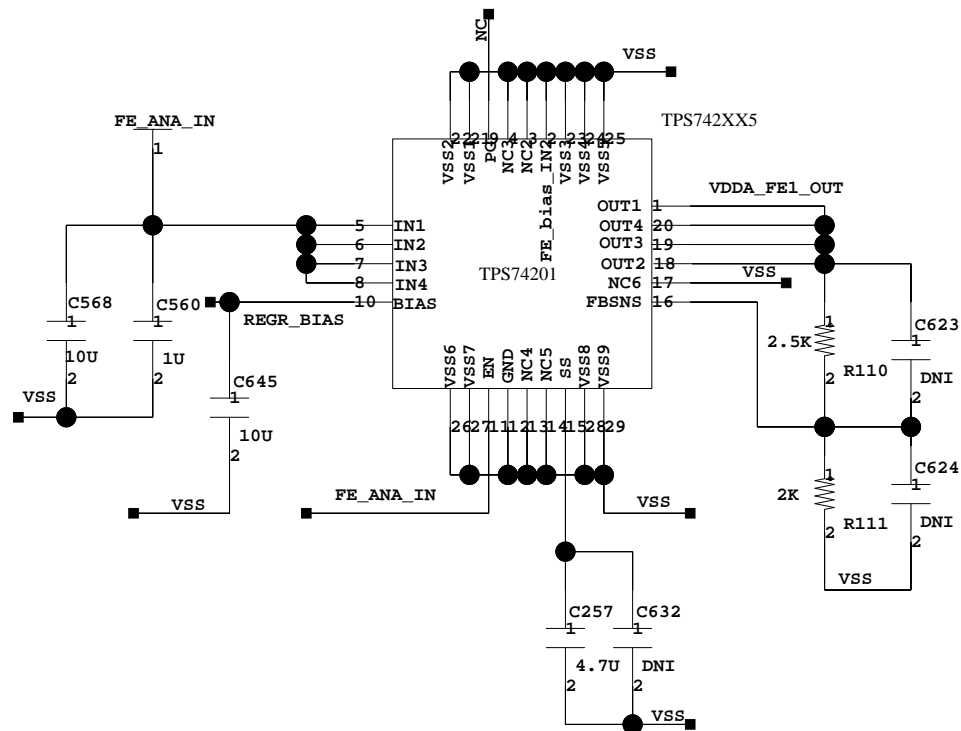
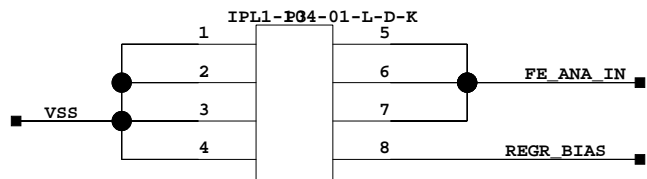
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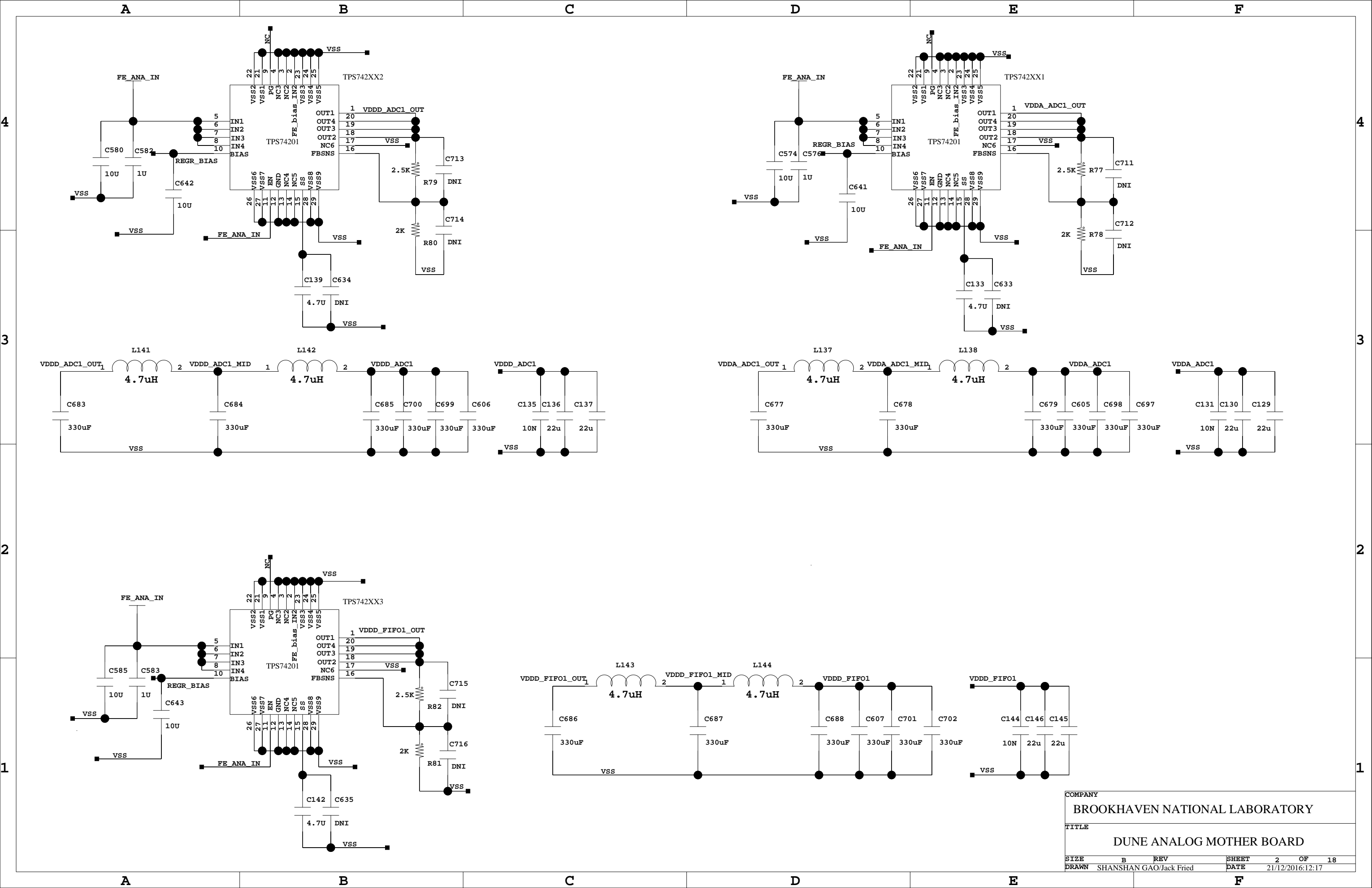
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2

1



COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	1 OF 18
DRAWN	SHANSHAN GAO/Jack Fried	DATE	21/12/2016:12:41	



4

3

2

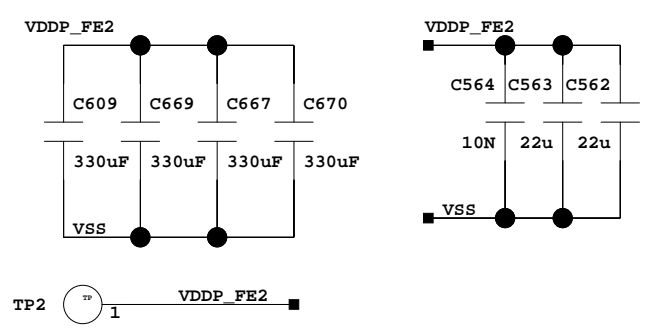
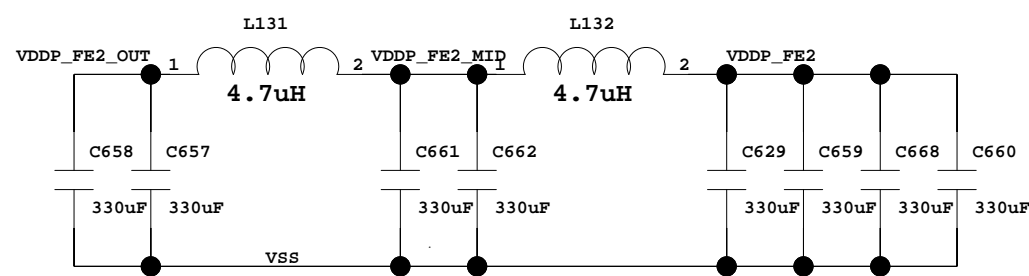
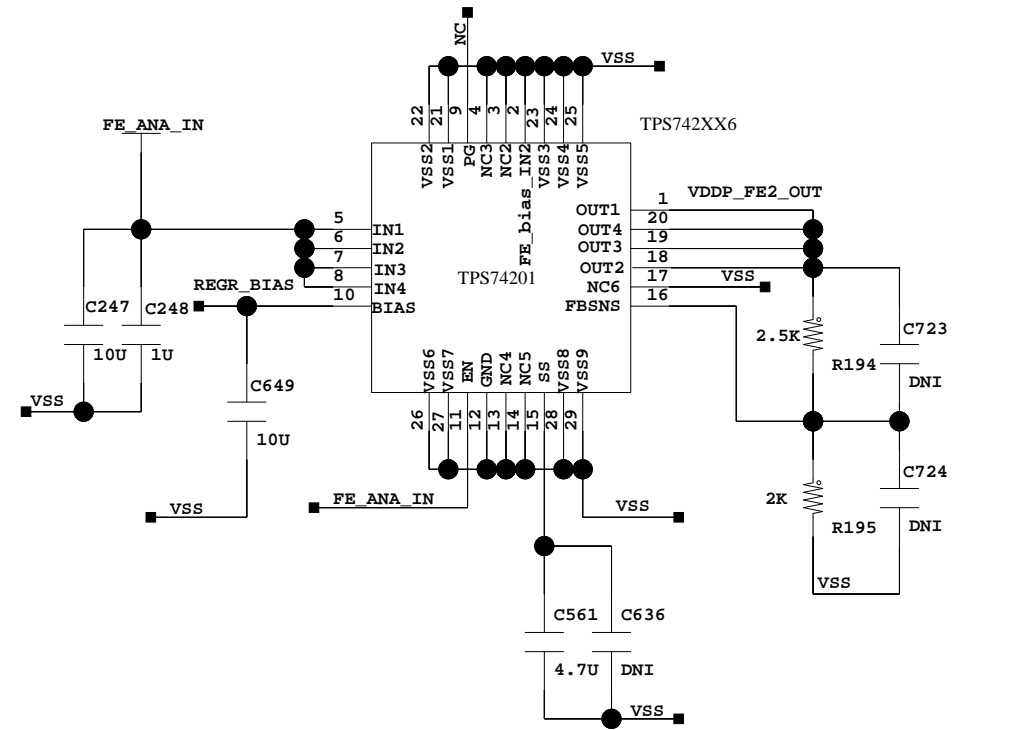
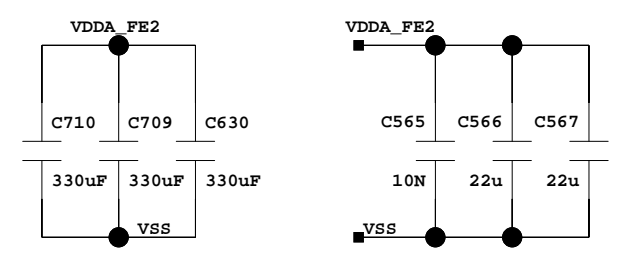
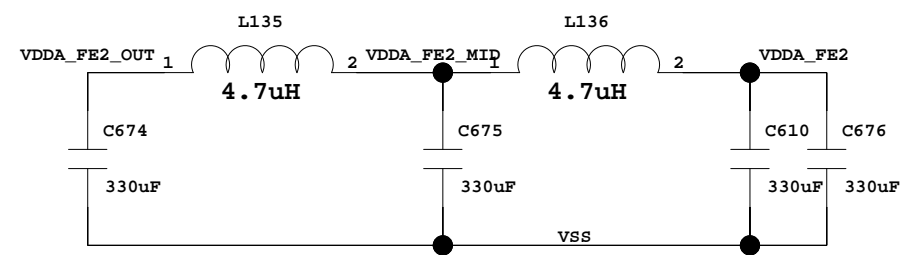
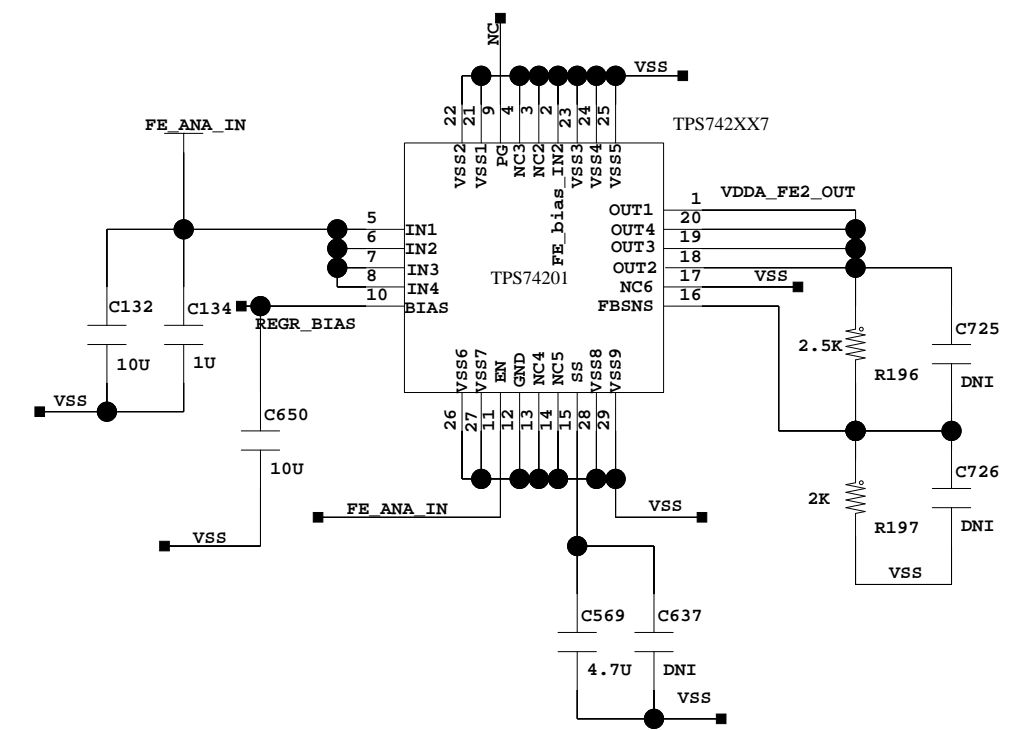
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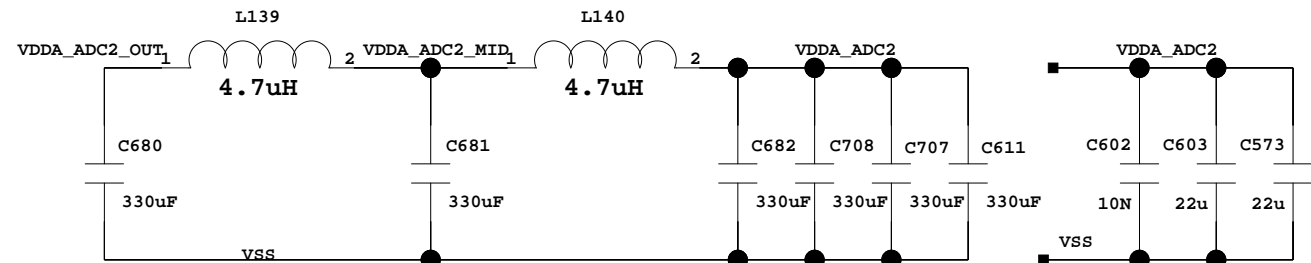
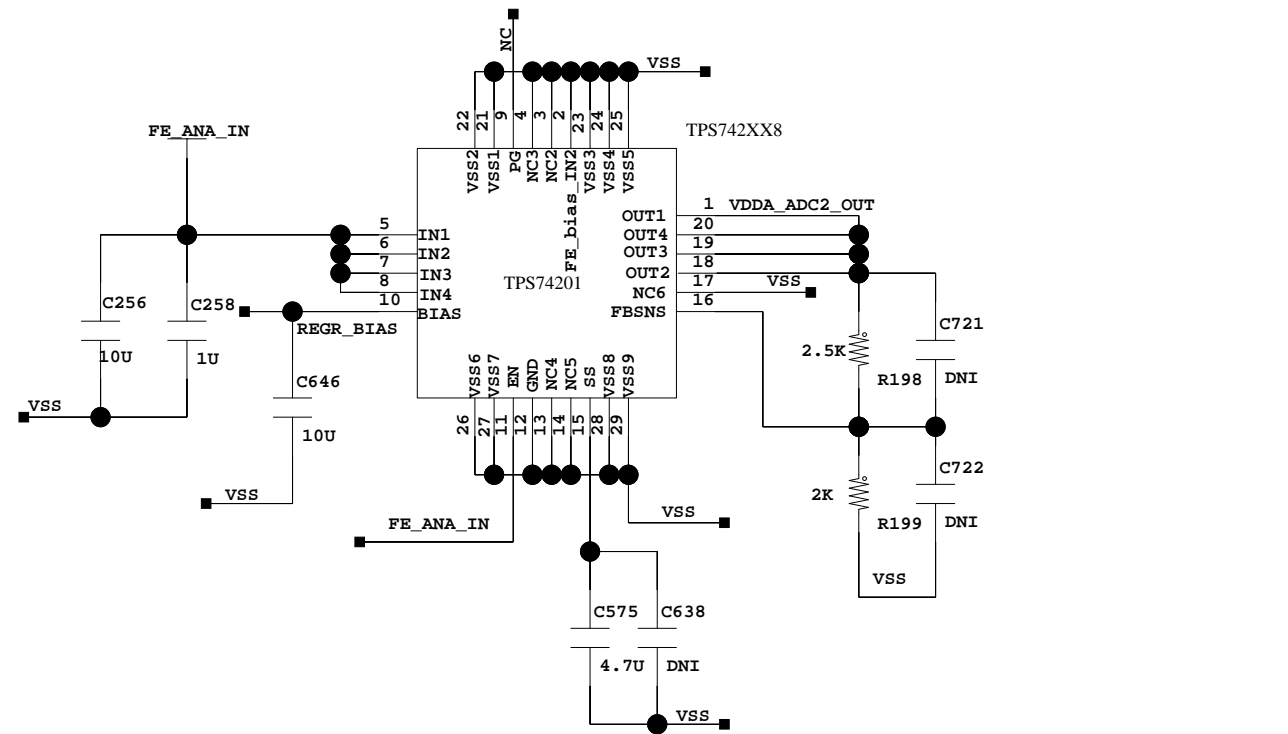
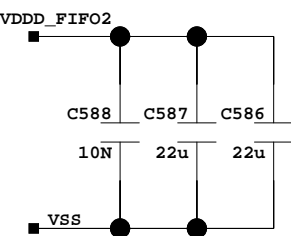
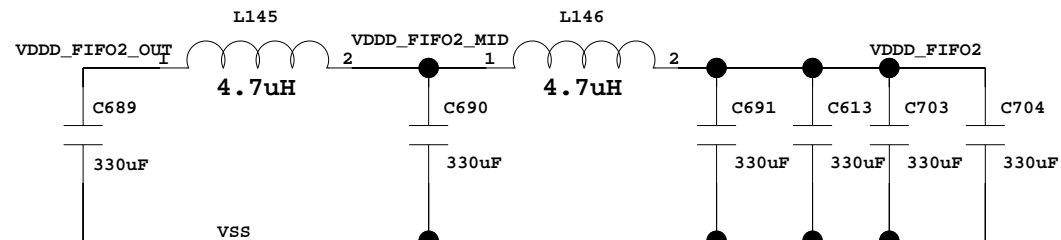
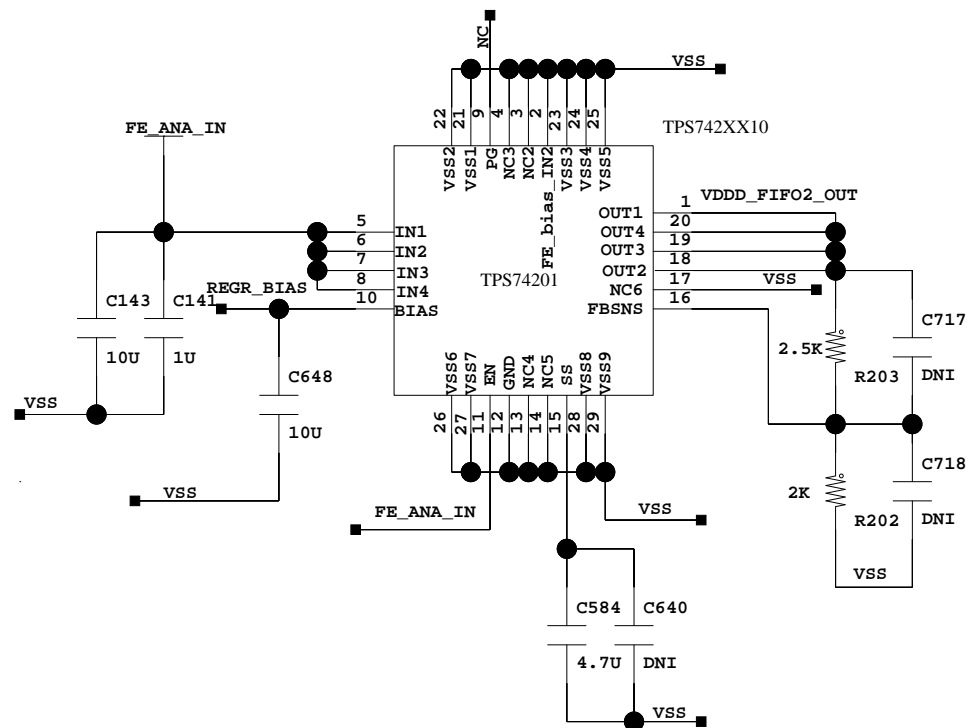
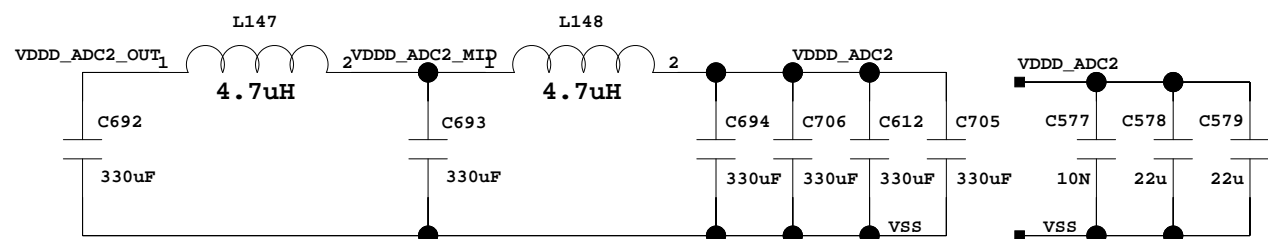
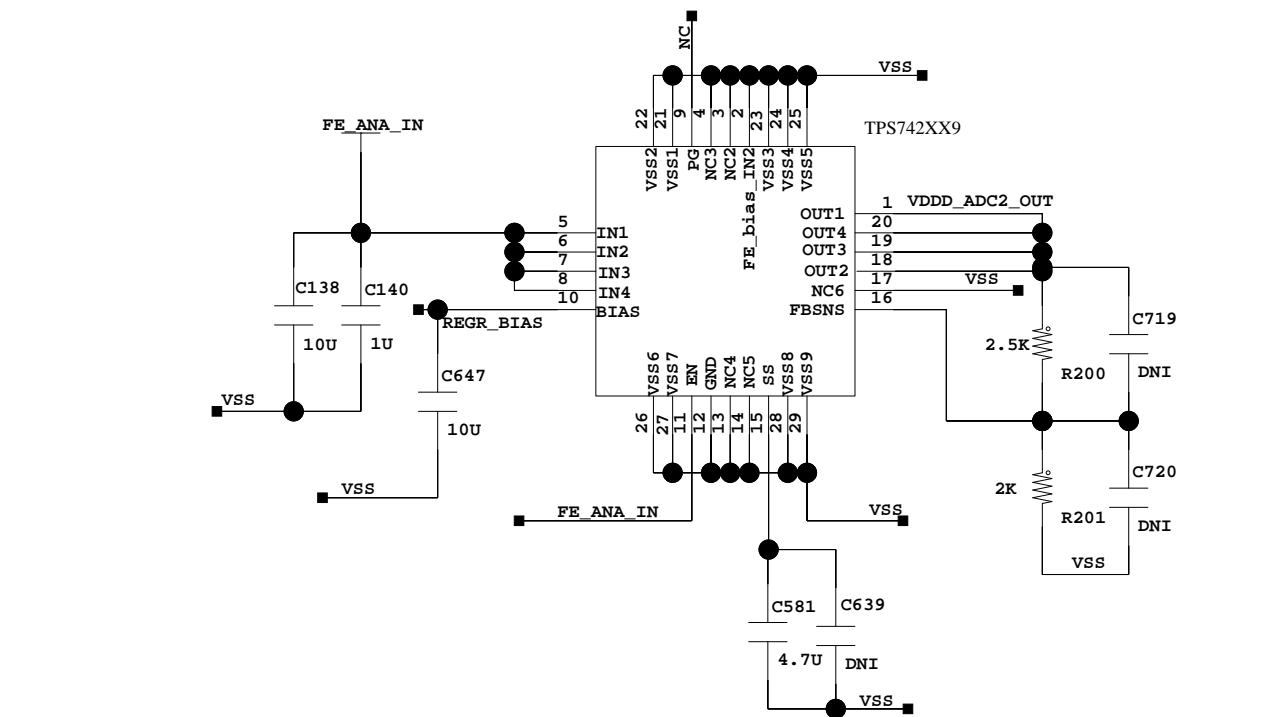
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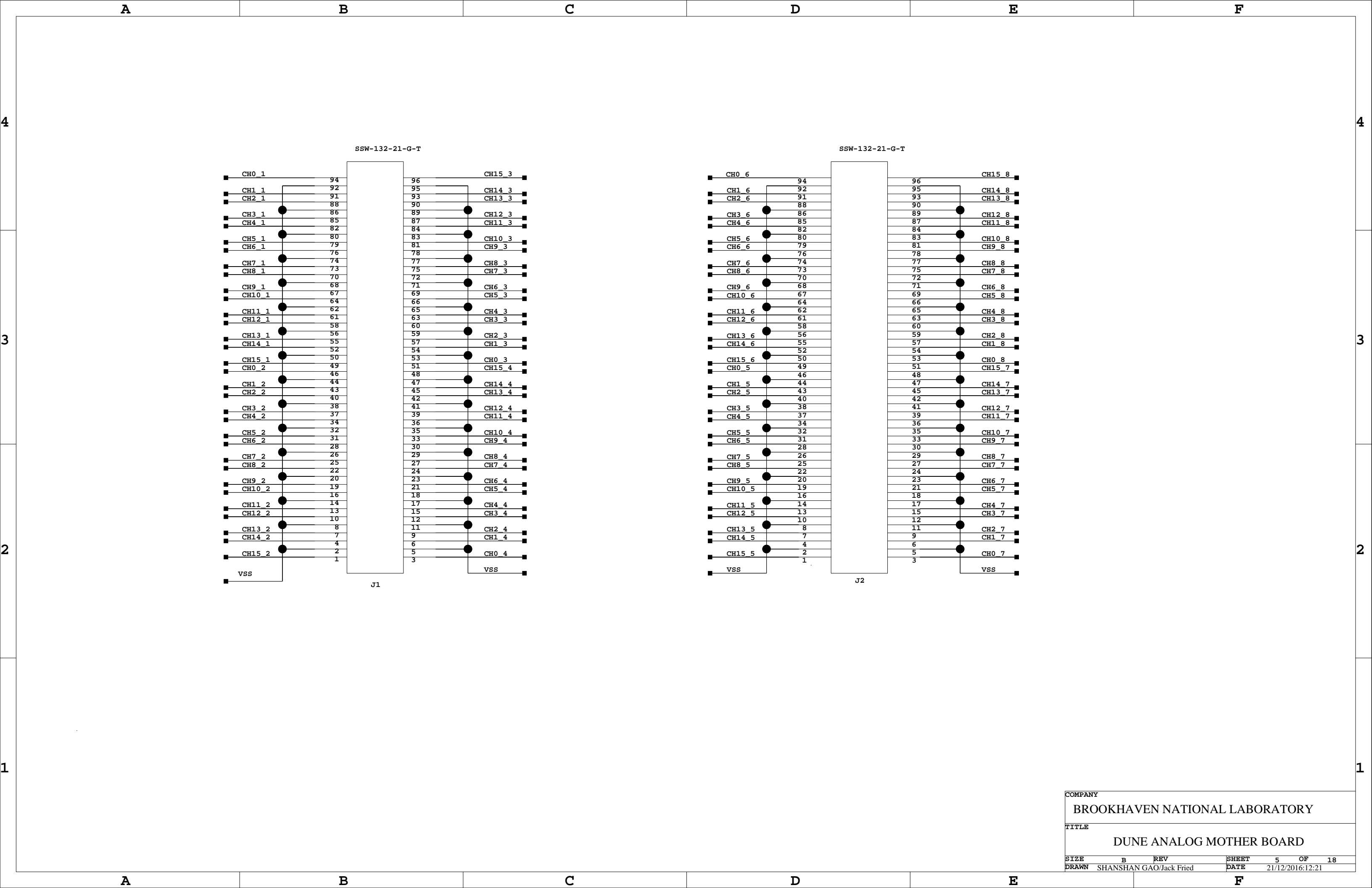
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COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	3 OF 18
DRAWN	SHANSHAN GAO/Jack Fried	DATE	21/12/2016:12:17	



COMPANY			
BROOKHAVEN NATIONAL LABORATORY			
TITLE			
DUNE ANALOG MOTHER BOARD			
SIZE	B	REV	SHEET 4 OF 18
DRAWN	SHANSHAN GAO/Jack Fried	DATE	21/12/2016:12:17



COMPANY

BROOKHAVEN NATIONAL LABORATORY

TITLE

DUNE ANALOG MOTHER BOARD

SIZE

B

REV

SHEET

5

OF

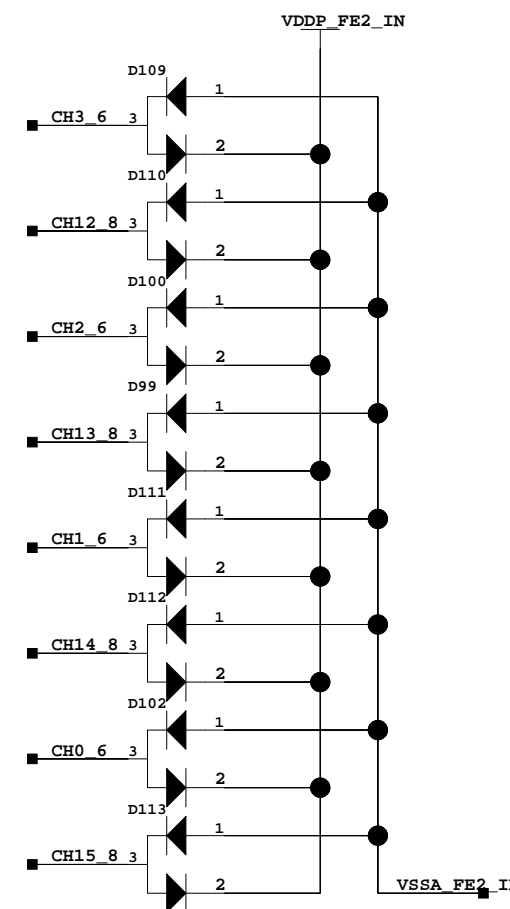
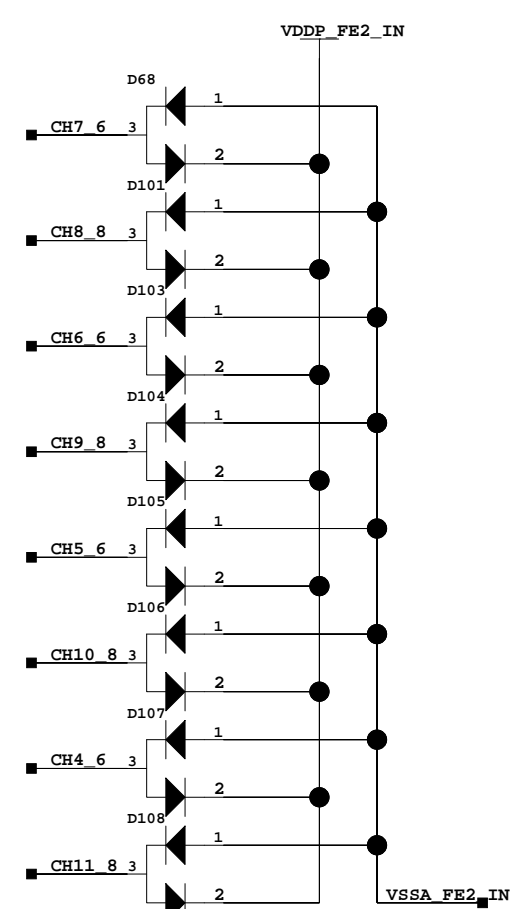
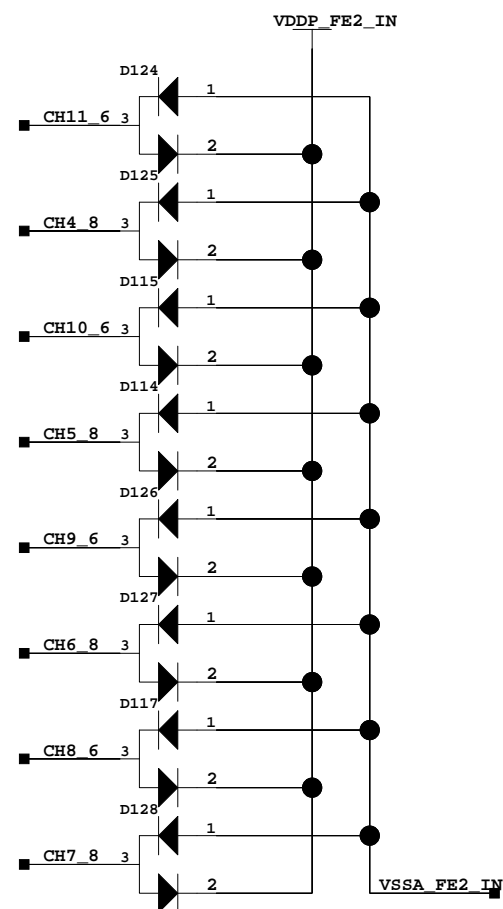
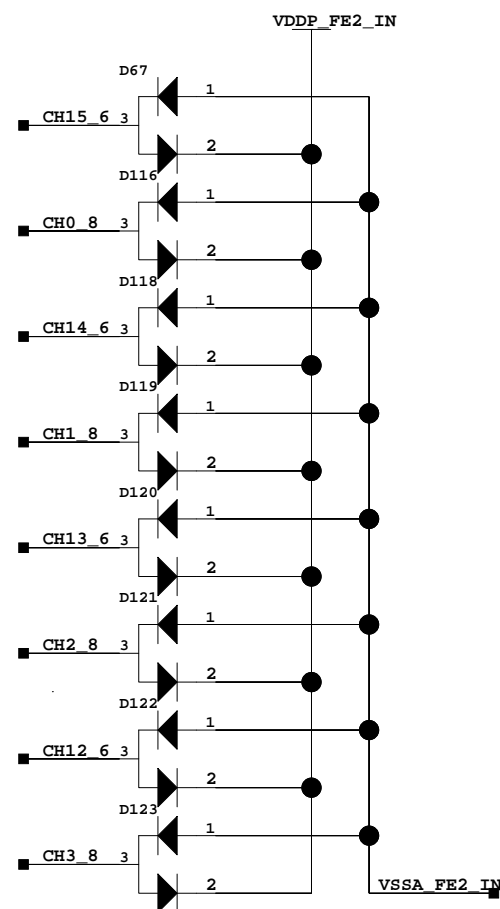
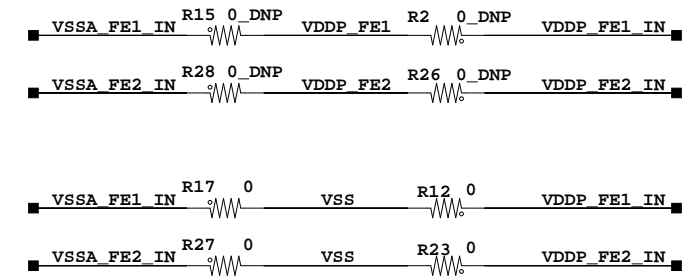
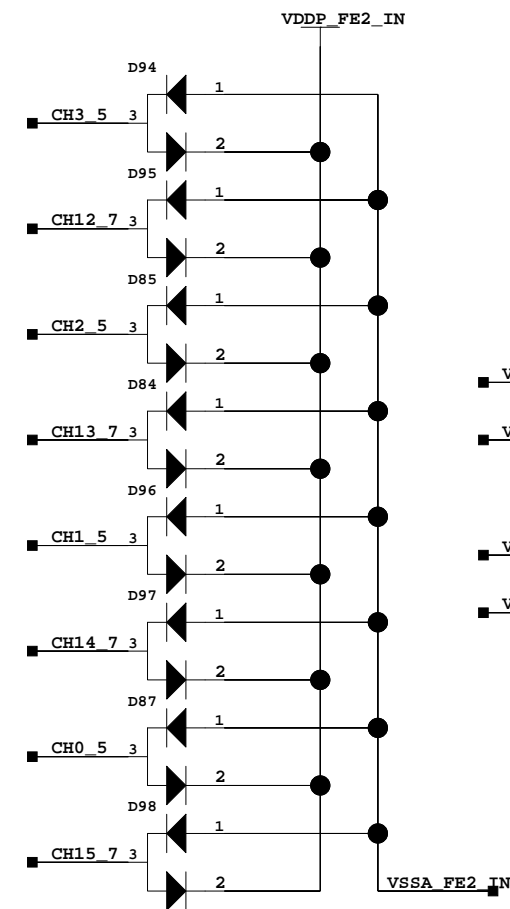
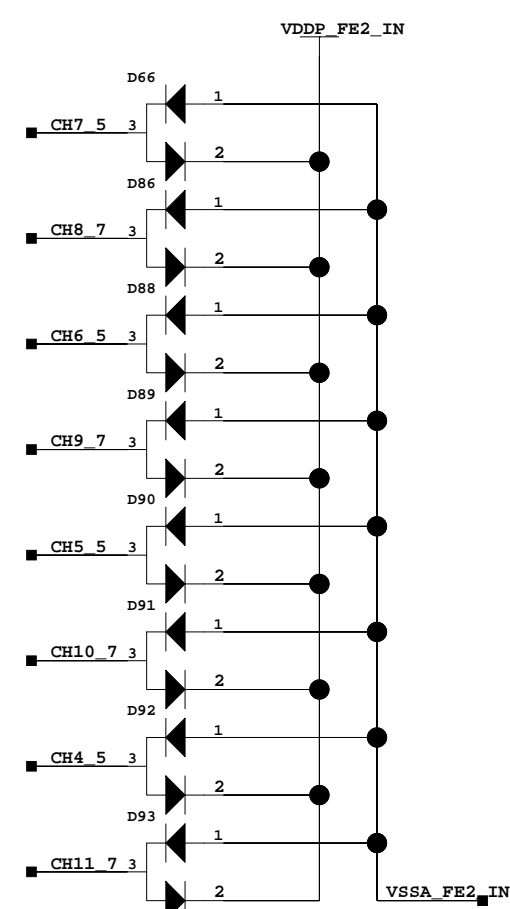
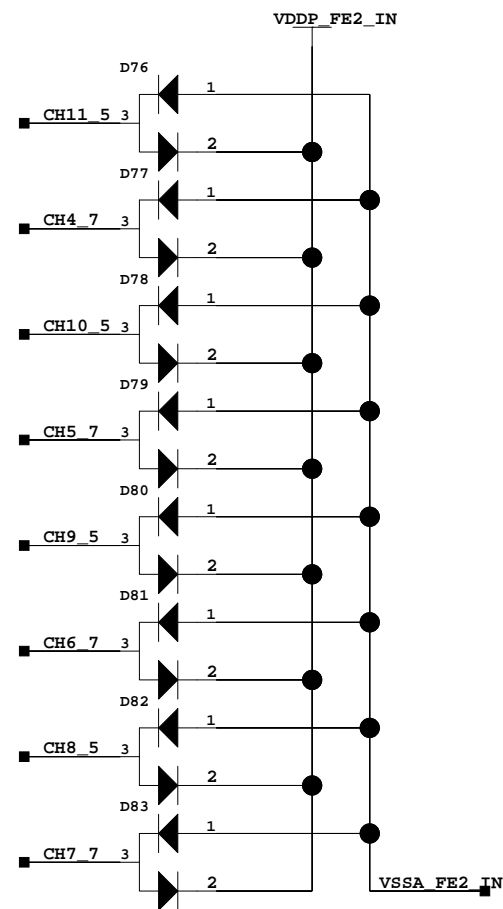
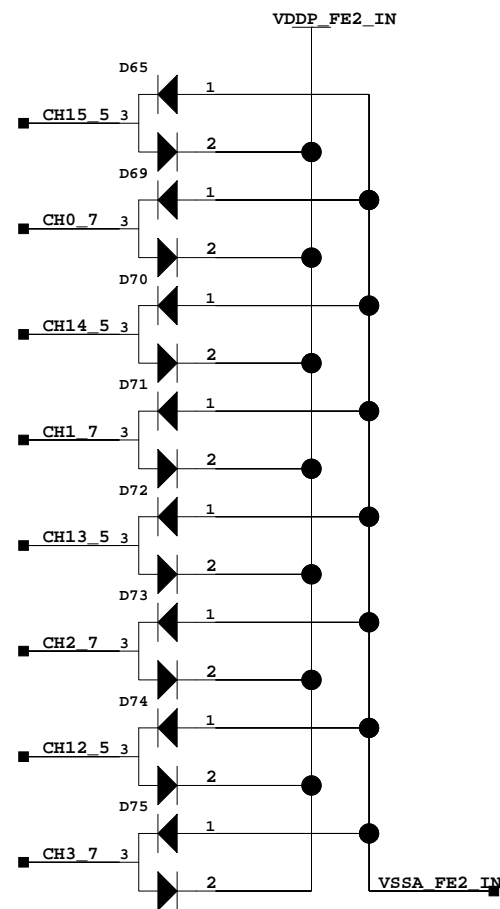
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DRAWN

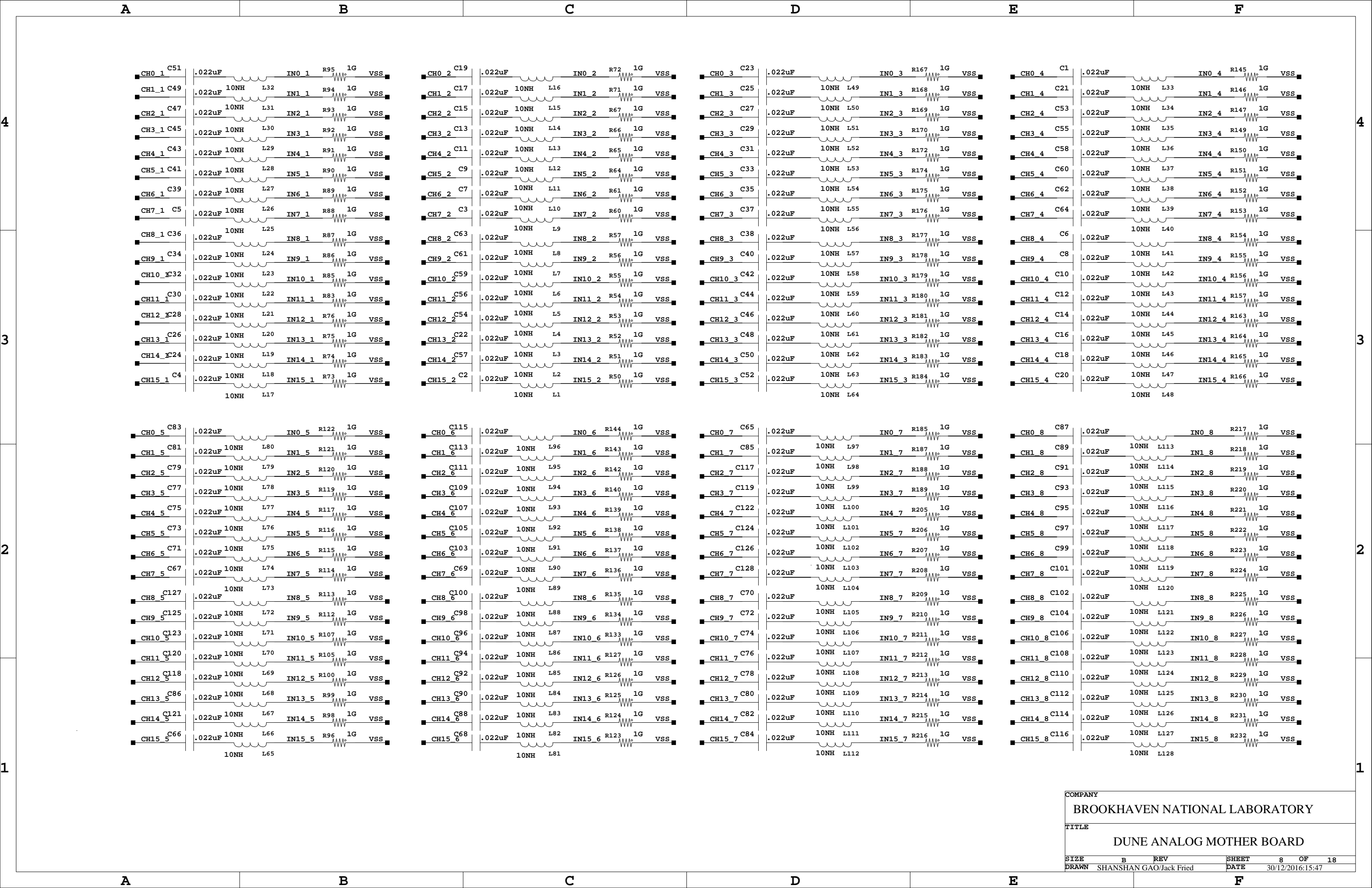
SHANSHAN GAO/Jack Fried

DATE

21/12/2016:12:21



COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	6 OF 18
DRAWN	SHANSHAN GAO/Jack Fried		DATE	21/12/2016:12:17



CH0_5 C83

CH1_5 C81

CH2_5 C79

CH3_5 C77

CH4_5 C75

CH5_5 C73

CH6_5 C71

CH7_5 C67

CH8_5 C127

CH9_5 C125

CH10_5 C123

CH11_5 C120

CH12_5 C118

CH13_5 C86

CH14_5 C121

CH15_5 C66

.022uF

IN0_5

R122

1G

VSS

.022uF

10NH

L80

IN1_5

R121

1G

VSS

.022uF

10NH

L79

IN2_5

R120

1G

VSS

.022uF

10NH

L78

IN3_5

R119

1G

VSS

.022uF

10NH

L77

IN4_5

R117

1G

VSS

.022uF

10NH

L76

IN5_5

R116

1G

VSS

.022uF

10NH

L75

IN6_5

R115

1G

VSS

.022uF

10NH

L74

IN7_5

R114

1G

VSS

.022uF

10NH

L73

IN8_5

R113

1G

VSS

.022uF

10NH

L72

IN9_5

R112

1G

VSS

.022uF

10NH

L71

IN10_5

R107

1G

VSS

.022uF

10NH

L70

IN11_5

R105

1G

VSS

.022uF

10NH

L69

IN12_5

R100

1G

VSS

.022uF

10NH

L68

IN13_5

R99

1G

VSS

.022uF

10NH

L67

IN14_5

R98

1G

VSS

.022uF

10NH

L66

IN15_5

R96

1G

VSS

10NH

L65

CH0_2 C19

CH1_2 C17

CH2_2 C15

CH3_2 C13

CH4_2 C11

CH5_2 C9

CH6_2 C7

CH7_2 C3

CH8_2 C63

CH9_2 C61

CH10_2 C59

CH11_2 C56

CH12_2 C54

CH13_2 C22

CH14_2 C57

CH15_2 C2

.022uF

IN0_2

R72

1G

VSS

.022uF

10NH

L16

IN1_2

R71

1G

VSS

.022uF

10NH

L15

IN2_2

R67

1G

VSS

.022uF

10NH

L14

IN3_2

R66

1G

VSS

.022uF

10NH

L13

IN4_2

R65

1G

VSS

.022uF

10NH

L12

IN5_2

R64

1G

VSS

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L11

IN6_2

R61

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VSS

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L10

IN7_2

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VSS

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IN8_2

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VSS

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10NH

L8

IN9_2

R56

1G

VSS

.022uF

10NH

L7

IN10_2

R55

1G

VSS

.022uF

10NH

L6

IN11_2

R54

1G

VSS

.022uF

10NH

L5

IN12_2

R53

1G

VSS

.022uF

10NH

L4

IN13_2

R52

1G

VSS

.022uF

10NH

L3

IN14_2

R51

1G

VSS

.022uF

10NH

L2

IN15_2

R50

1G

VSS

10NH

L1

CH0_6 C115

CH1_6 C113

CH2_6 C111

CH3_6 C109

CH4_6 C107

CH5_6 C105

CH6_6 C103

CH7_6 C69

CH8_6 C100

CH9_6 C98

CH10_6 C96

CH11_6 C94

CH12_6 C92

CH13_6 C90

CH14_6 C88

CH15_6 C68

.022uF

IN0_6

R144

1G

VSS

.022uF

10NH

L96

IN1_6

R143

1G

VSS

.022uF

10NH

L95

IN2_6

R142

1G

VSS

.022uF

10NH

L94

IN3_6

R140

1G

VSS

.022uF

10NH

L93

IN4_6

R139

1G

VSS

.022uF

10NH

L92

IN5_6

R138

1G

VSS

.022uF

10NH

L91

IN6_6

R137

1G

VSS

.022uF

10NH

L90

IN7_6

R136

1G

VSS

.022uF

10NH

L89

IN8_6

R135

1G

VSS

.022uF

10NH

L88

IN9_6

R134

1G

VSS

.022uF

10NH

L87

IN10_6

R133

1G

VSS

.022uF

10NH

L86

IN11_6

R127

1G

VSS

.022uF

10NH

L85

IN12_6

R126

1G

VSS

.022uF

10NH

L84

IN13_6

R125

1G

VSS

.022uF

10NH

L83

IN14_6

R124

1G

VSS

.022uF

10NH

L82

IN15_6

R123

1G

VSS

10NH

L81

CH0_3 C23

CH1_3 C25

CH2_3 C27

CH3_3 C29

CH4_3 C31

CH5_3 C33

CH6_3 C35

CH7_3 C37

CH8_3 C38

CH9_3 C40

CH10_3 C42

CH11_3 C44

CH12_3 C46

CH13_3 C48

CH14_3 C50

CH15_3 C52

.022uF

IN0_3

R167

1G

VSS

.022uF

10NH

L49

IN1_3

R168

1G

VSS

.022uF

10NH

L50

IN2_3

R169

1G

VSS

.022uF

10NH

L51

IN3_3

R170

1G

VSS

.022uF

10NH

L52

IN4_3

R172

1G

VSS

.022uF

10NH

L53

IN5_3

R174

1G

VSS

.022uF

10NH

L54

IN6_3

R175

1G

VSS

.022uF

10NH

L55

IN7_3

R176

1G

VSS

.022uF

10NH

L56

IN8_3

R177

1G

VSS

.022uF

10NH

L57

IN9_3

R178

1G

VSS

.022uF

10NH

L58

IN10_3

R179

1G

VSS

.022uF

10NH

L59

IN11_3

R180

1G

VSS

.022uF

10NH

L60

IN12_3

R181

1G

VSS

.022uF

10NH

L61

IN13_3

R182

1G

VSS

.022uF

10NH

L62

IN14_3

R183

1G

VSS

.022uF

10NH

L63

IN15_3

R184

1G

VSS

10NH

L64

CH0_7 C65

CH1_7 C85

CH2_7 C117

CH3_7 C119

CH4_7 C122

CH5_7 C124

CH6_7 C126

CH7_7 C128

CH8_7 C70

CH9_7 C72

CH10_7 C74

CH11_7 C76

CH12_7 C78

CH13_7 C80

CH14_7 C82

CH15_7 C84

.022uF

IN0_7

R185

1G

VSS

.022uF

10NH

L97

IN1_7

R187

1G

VSS

.022uF

10NH

L98

IN2_7

R188

1G

VSS

.022uF

10NH

L99

IN3_7

R189

1G

VSS

.022uF

10NH

L100

IN4_7

R205

1G

VSS

.022uF

10NH

L101

IN5_7

R206

1G

VSS

.022uF

10NH

L102

IN6_7

R207

1G

VSS

.022uF

10NH

L103

IN7_7

R208

1G

VSS

.022uF

10NH

L104

IN8_7

R209

1G

VSS

.022uF

10NH

L105

IN9_7

R210

1G

VSS

.022uF

10NH

L106

IN10_7

R211

1G

VSS

.022uF

10NH

L107

IN11_7

R212

1G

VSS

.022uF

10NH

L108

IN12_7

R213

1G

VSS

.022uF

10NH

L109

IN13_7

R214

1G

VSS

.022uF

10NH

L110

IN14_7

R215

1G

VSS

.022uF

10NH

L111

IN15_7

R216

1G

VSS

10NH

L112

CH0_4 C1

CH1_4 C21

CH2_4 C53

CH3_4 C55

CH4_4 C58

CH5_4 C60

CH6_4 C62

CH7_4 C64

CH8_4 C6

CH9_4 C8

CH10_4 C10

CH11_4 C12

CH12_4 C14

CH13_4 C16

CH14_4 C18

CH15_4 C20

.022uF

IN0_4

R145

1G

VSS

.022uF

10NH

L33

IN1_4

R146

1G

VSS

.022uF

10NH

L34

IN2_4

R147

1G

VSS

.022uF

10NH

L35

IN3_4

R149

1G

VSS

.022uF

10NH

L36

IN4_4

R150

1G

VSS

.022uF

10NH

L37

IN5_4

R151

1G

VSS

.022uF

10NH

L38

IN6_4

R152

1G

VSS

.022uF

10NH

L39

IN7_4

R153

1G

VSS

.022uF

10NH

L40

IN8_4

R154

1G

VSS

.022uF

10NH

L41

IN9_4

R155

1G

VSS

.022uF

10NH

L42

IN10_4

R156

1G

VSS

.022uF

10NH

L43

IN11_4

R157

1G

VSS

.022uF

10NH

L44

IN12_4

R163

1G

VSS

.022uF

10NH

L45

IN13_4

R164

1G

VSS

.022uF

10NH

L46

IN14_4

R165

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VSS

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10NH

L47

IN15_4

R166

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VSS

10NH

L48

COMPANY

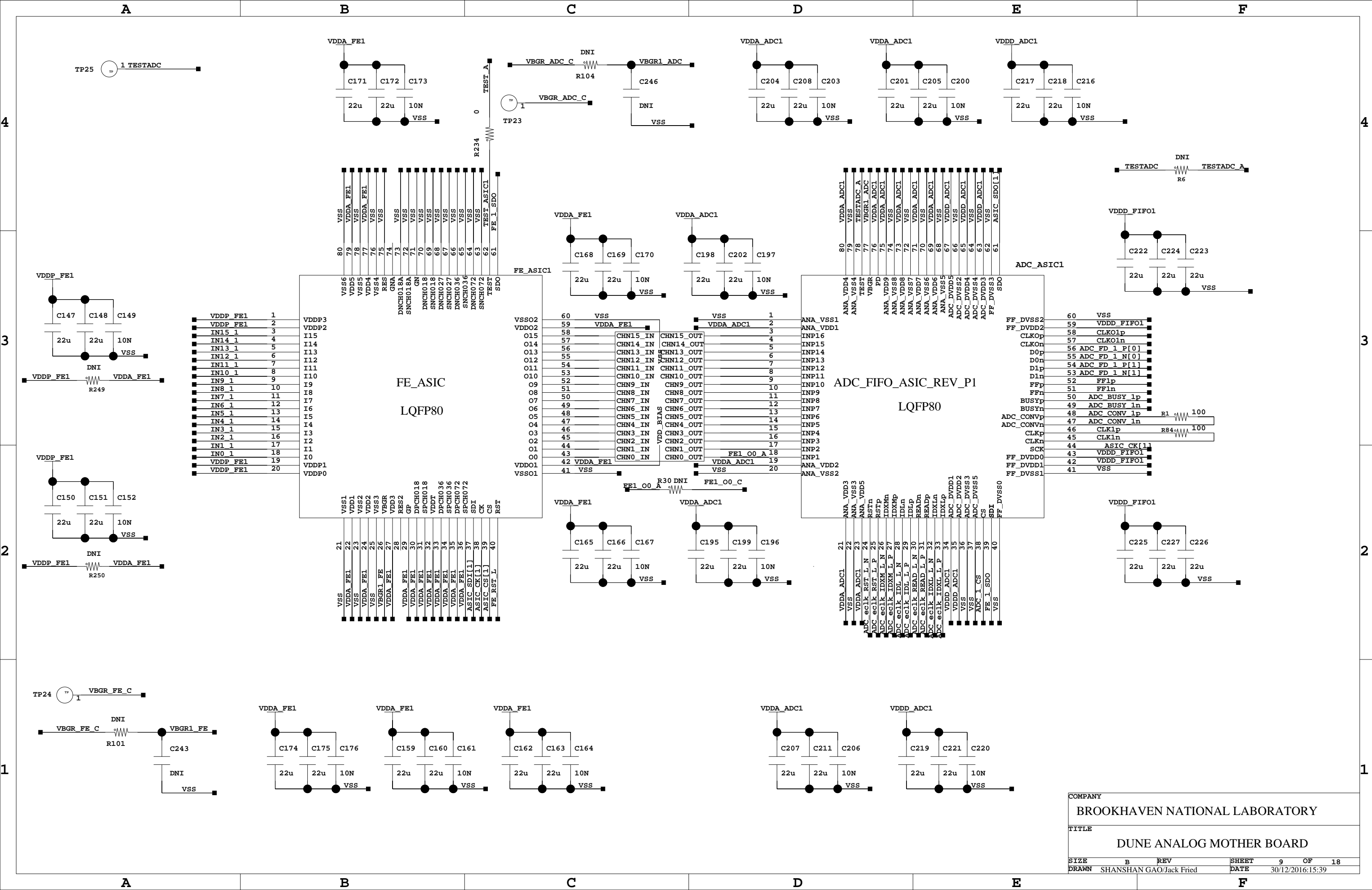
BROOKHAVEN NATIONAL LABORATORY

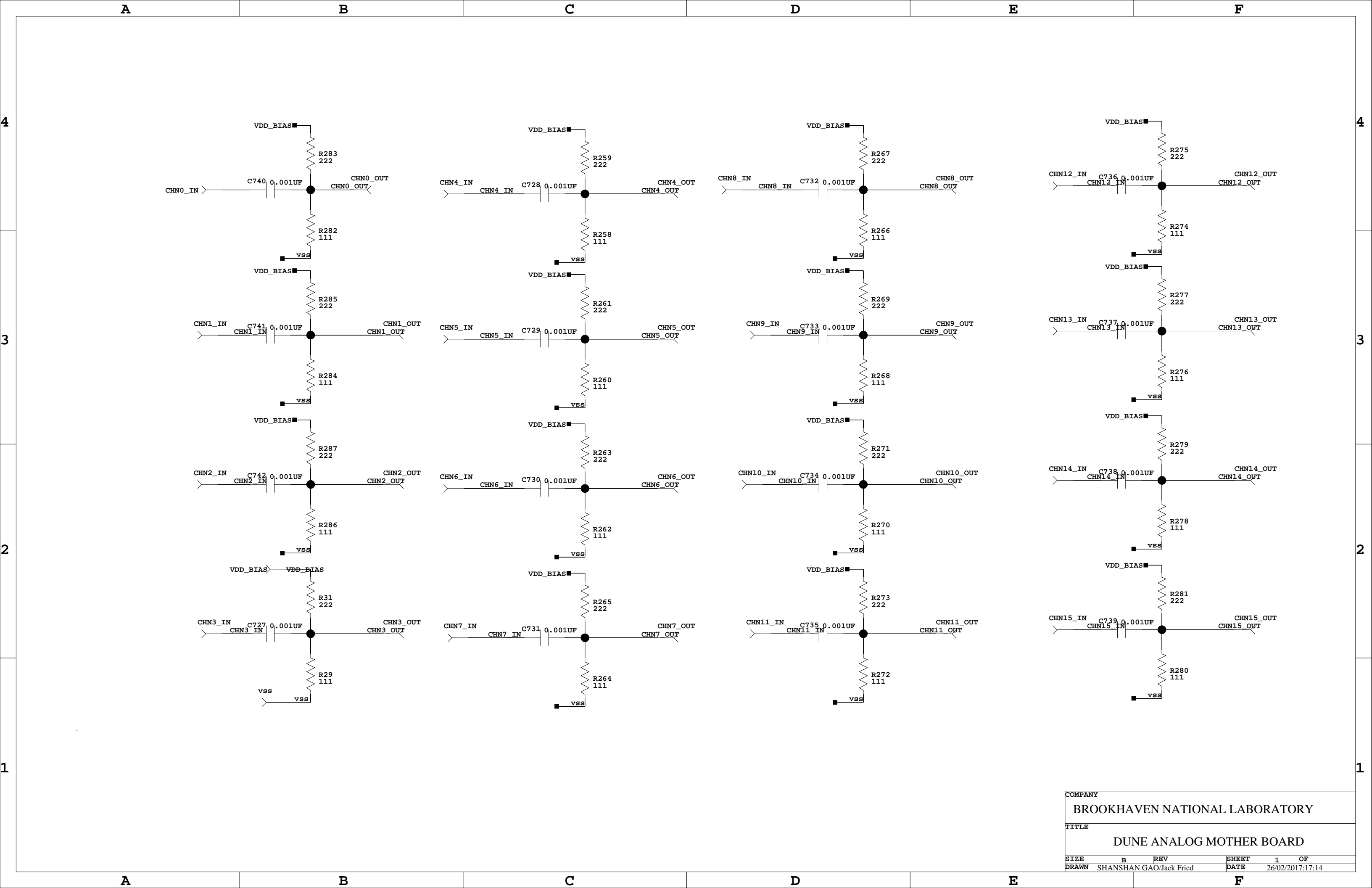
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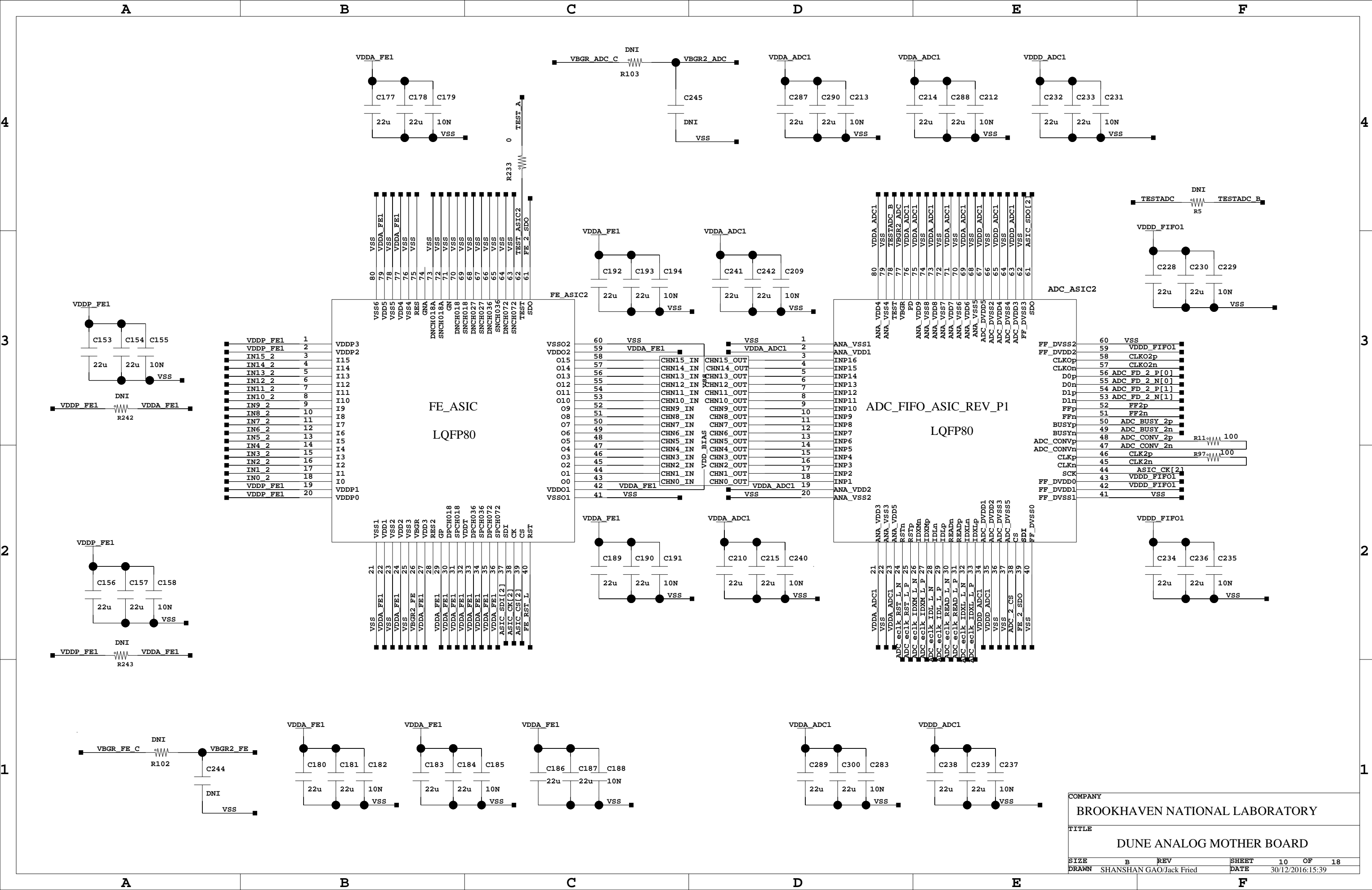
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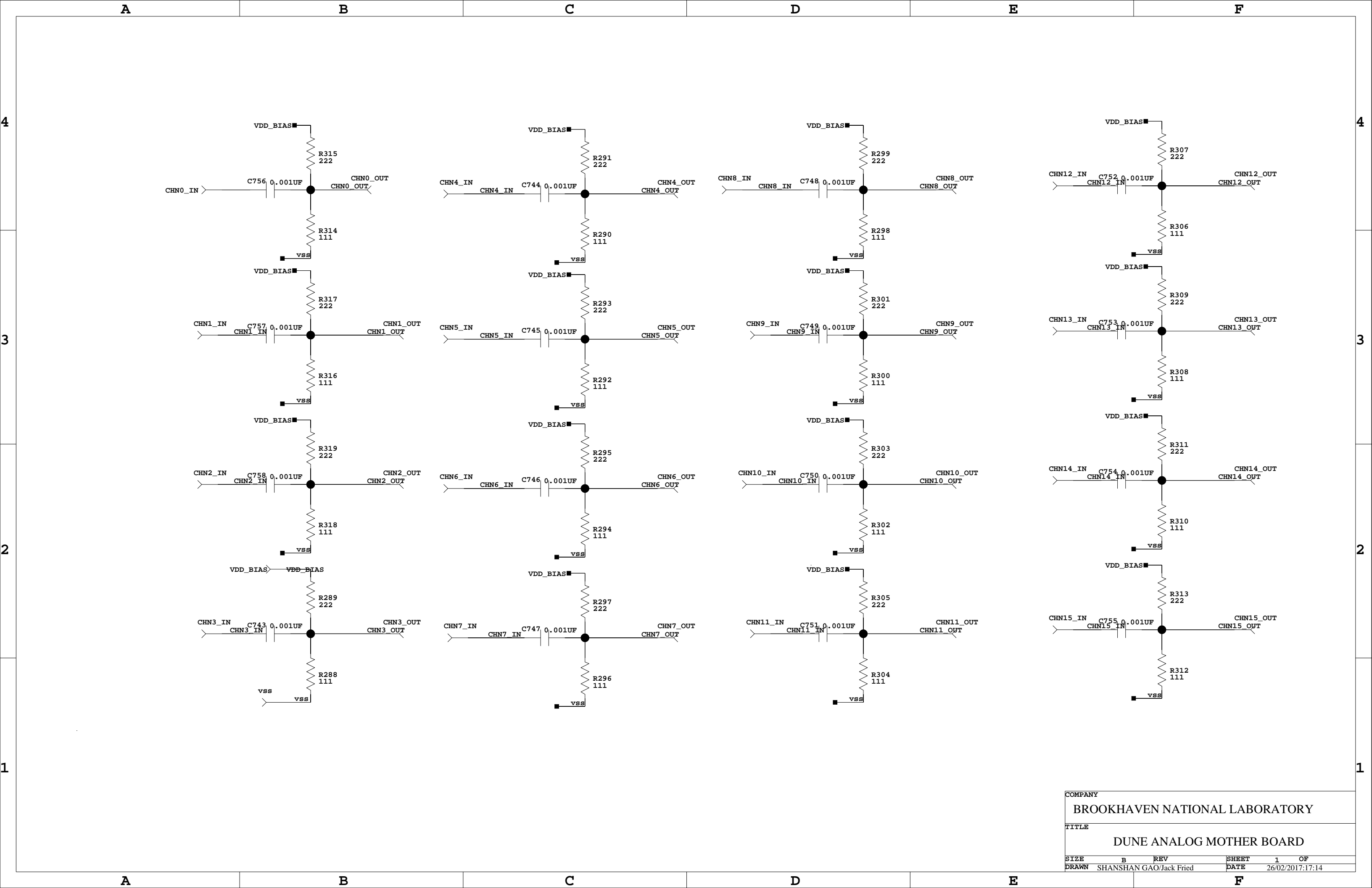
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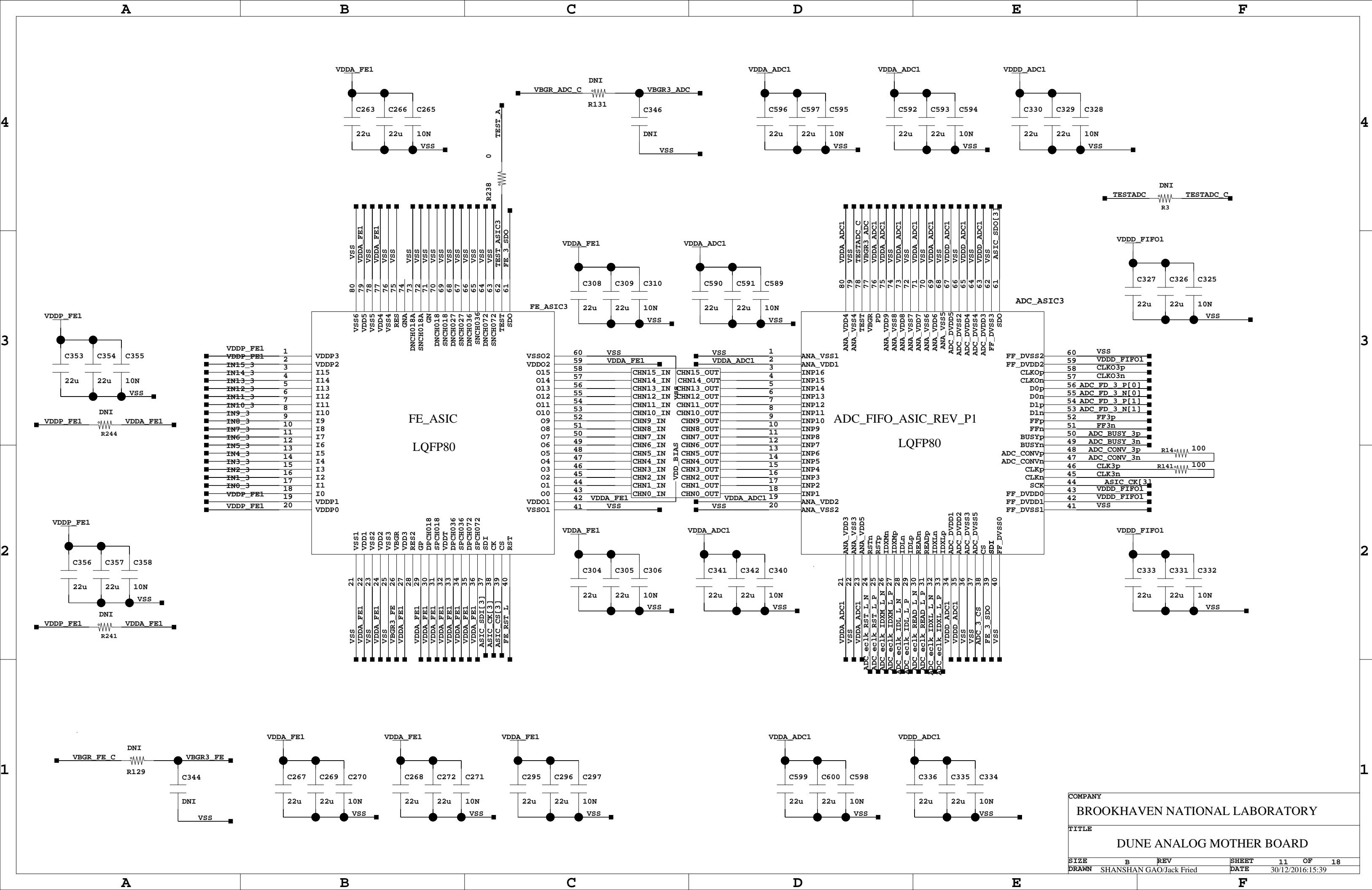
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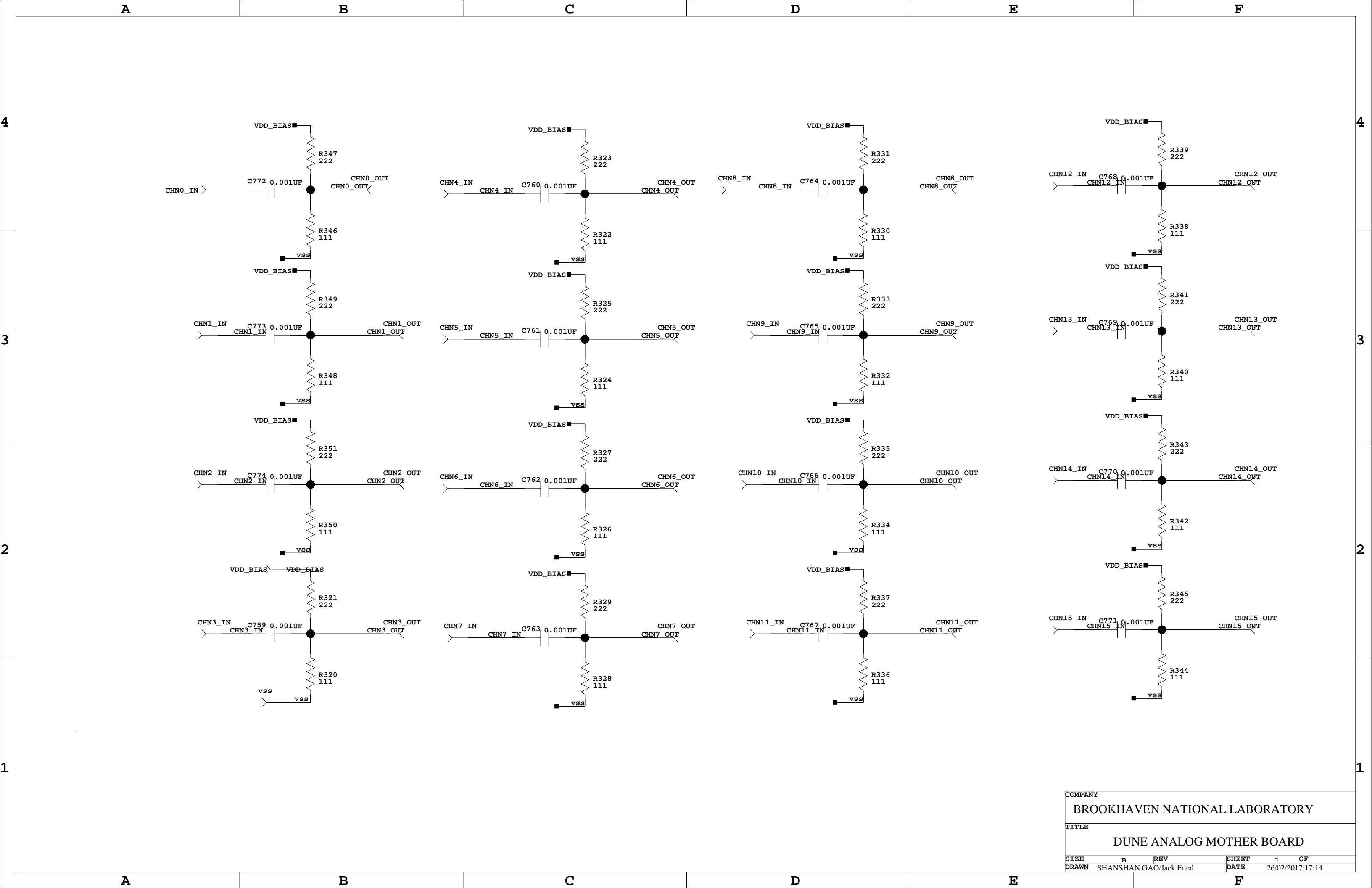












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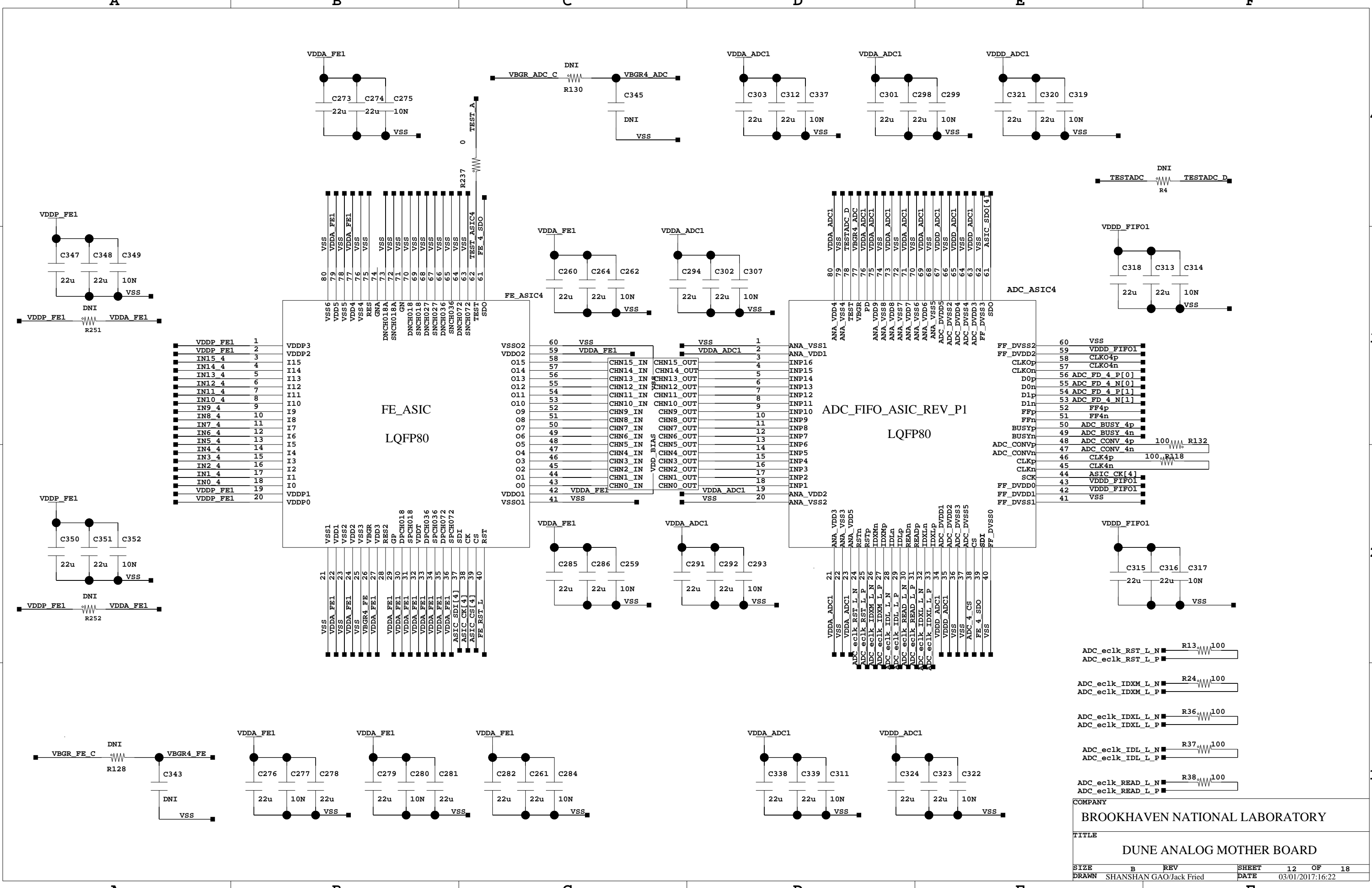
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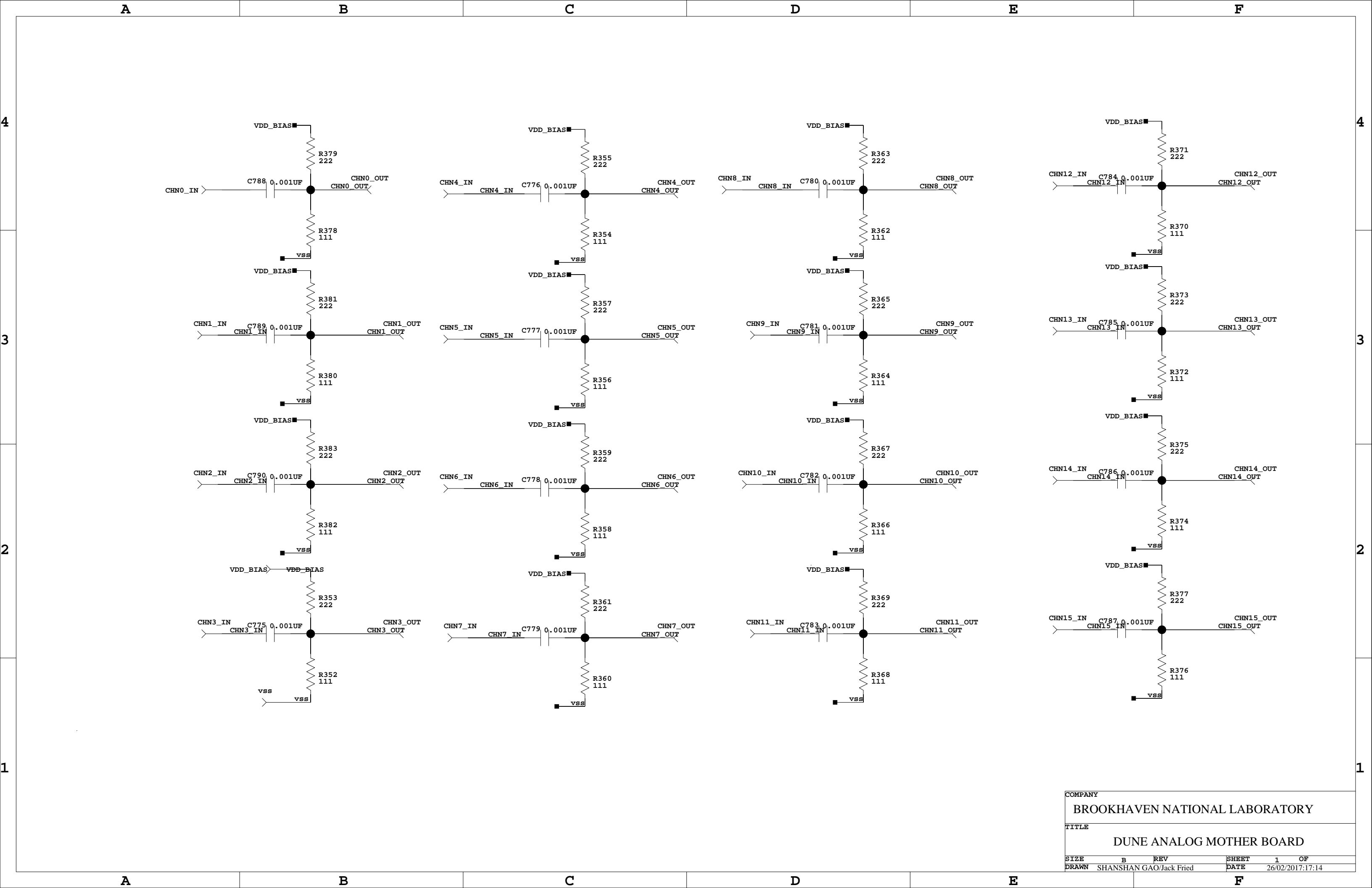
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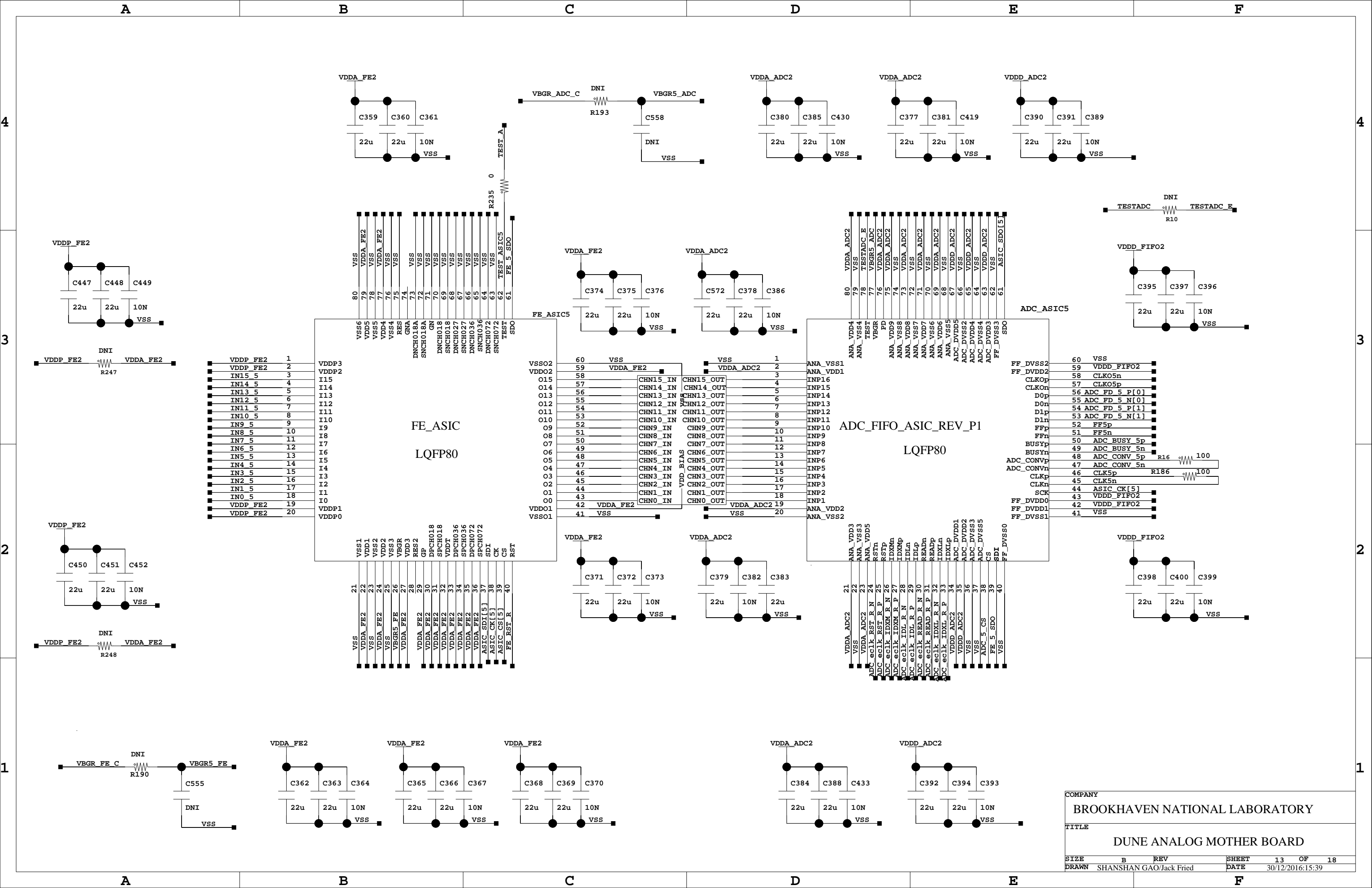
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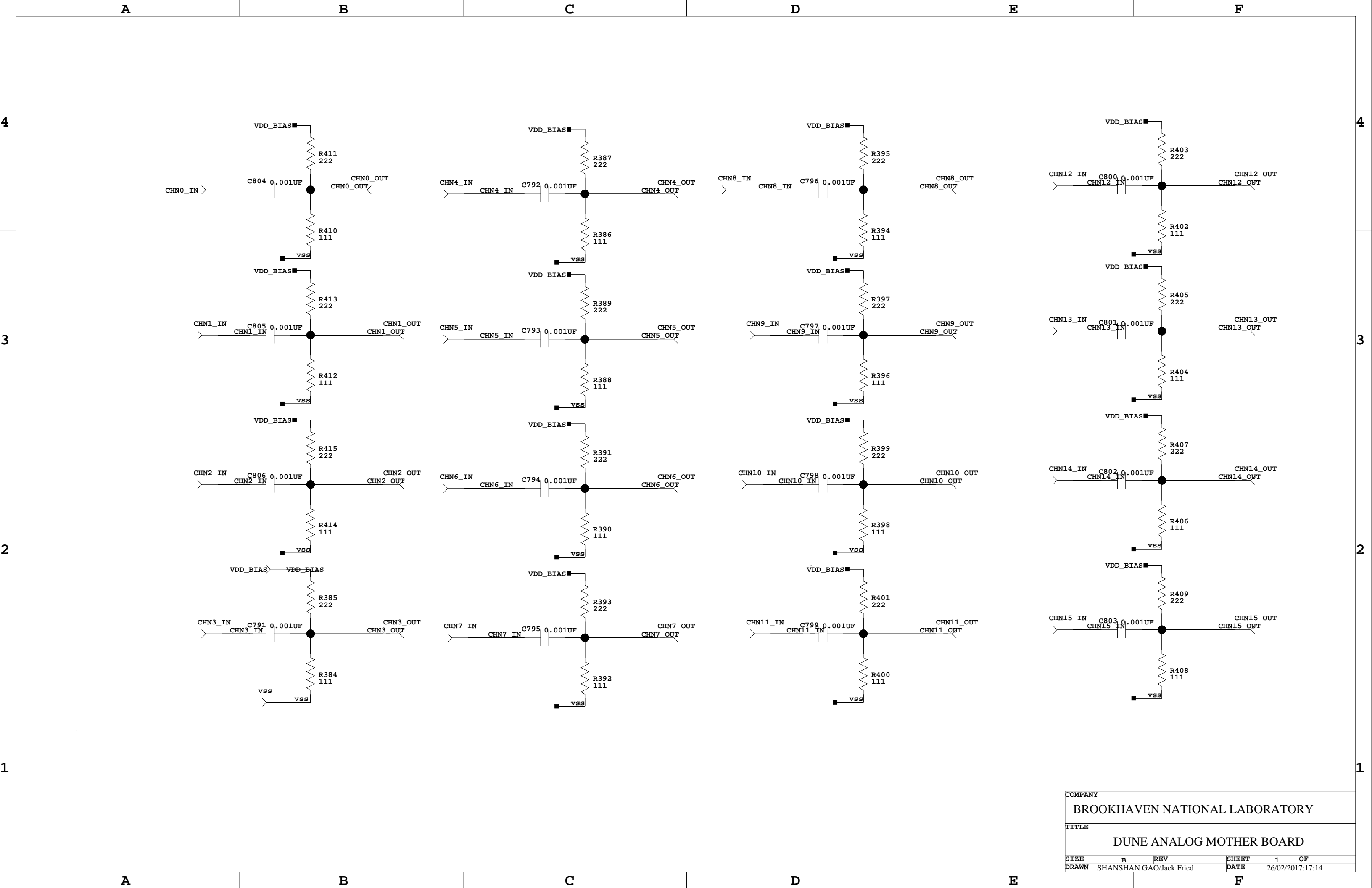
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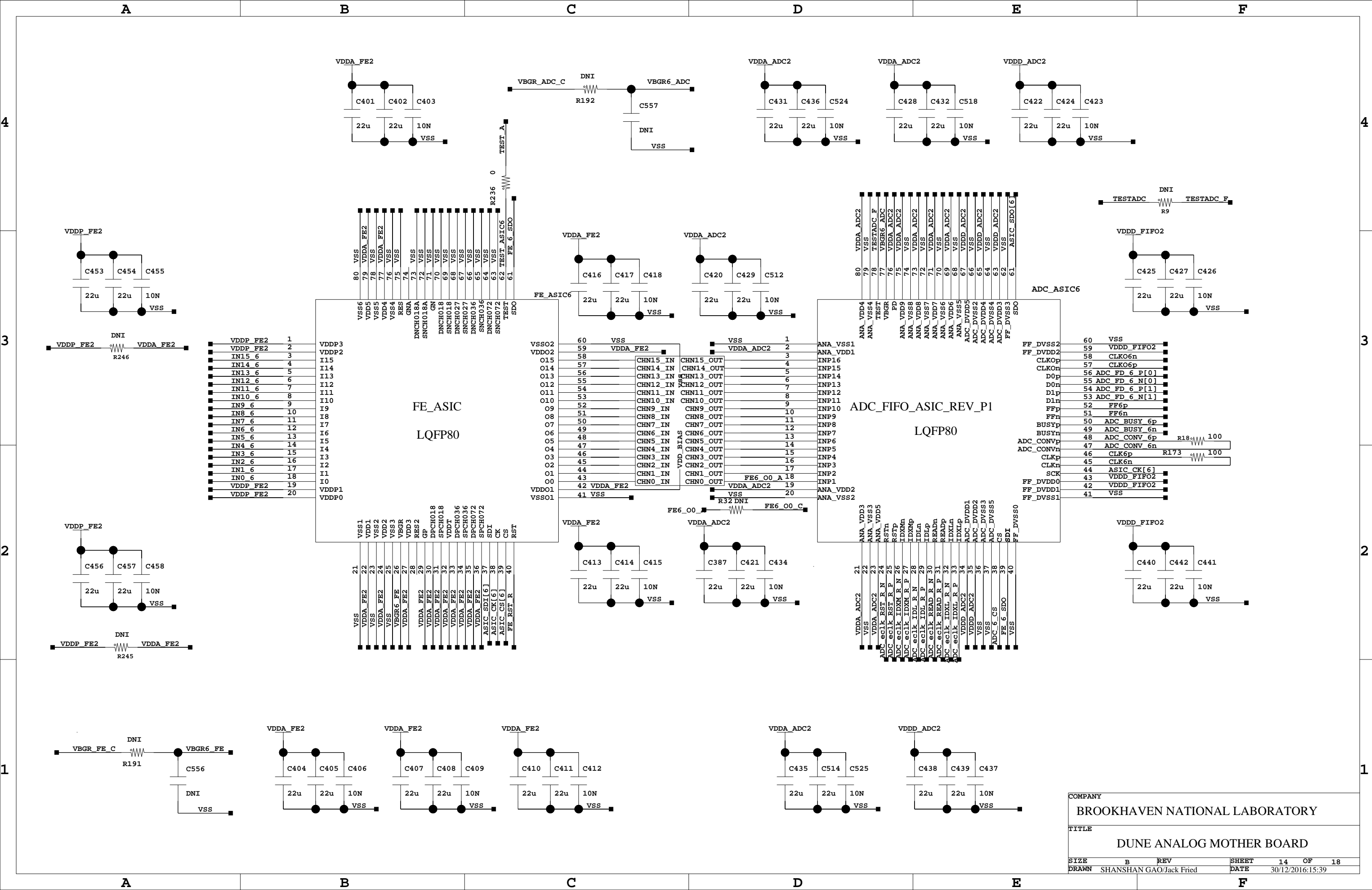


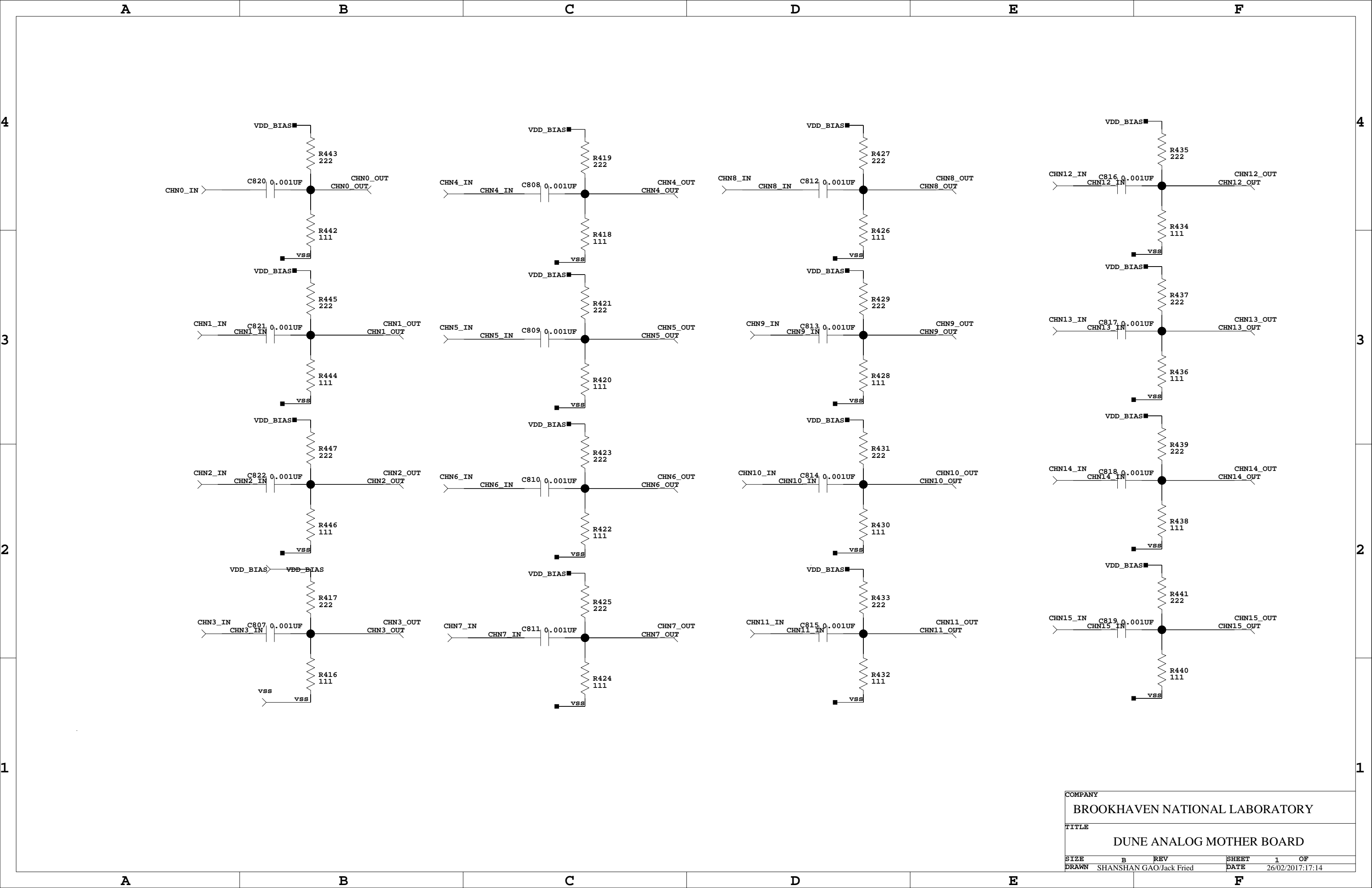
COMPANY				
BROOKHAVEN NATIONAL LABORATORY				
TITLE				
DUNE ANALOG MOTHER BOARD				
SIZE	B	REV	SHEET	12 OF 18
DRAWN	SHANSHAN GAO/Jack Fried	DATE	03/01/2017:16:22	

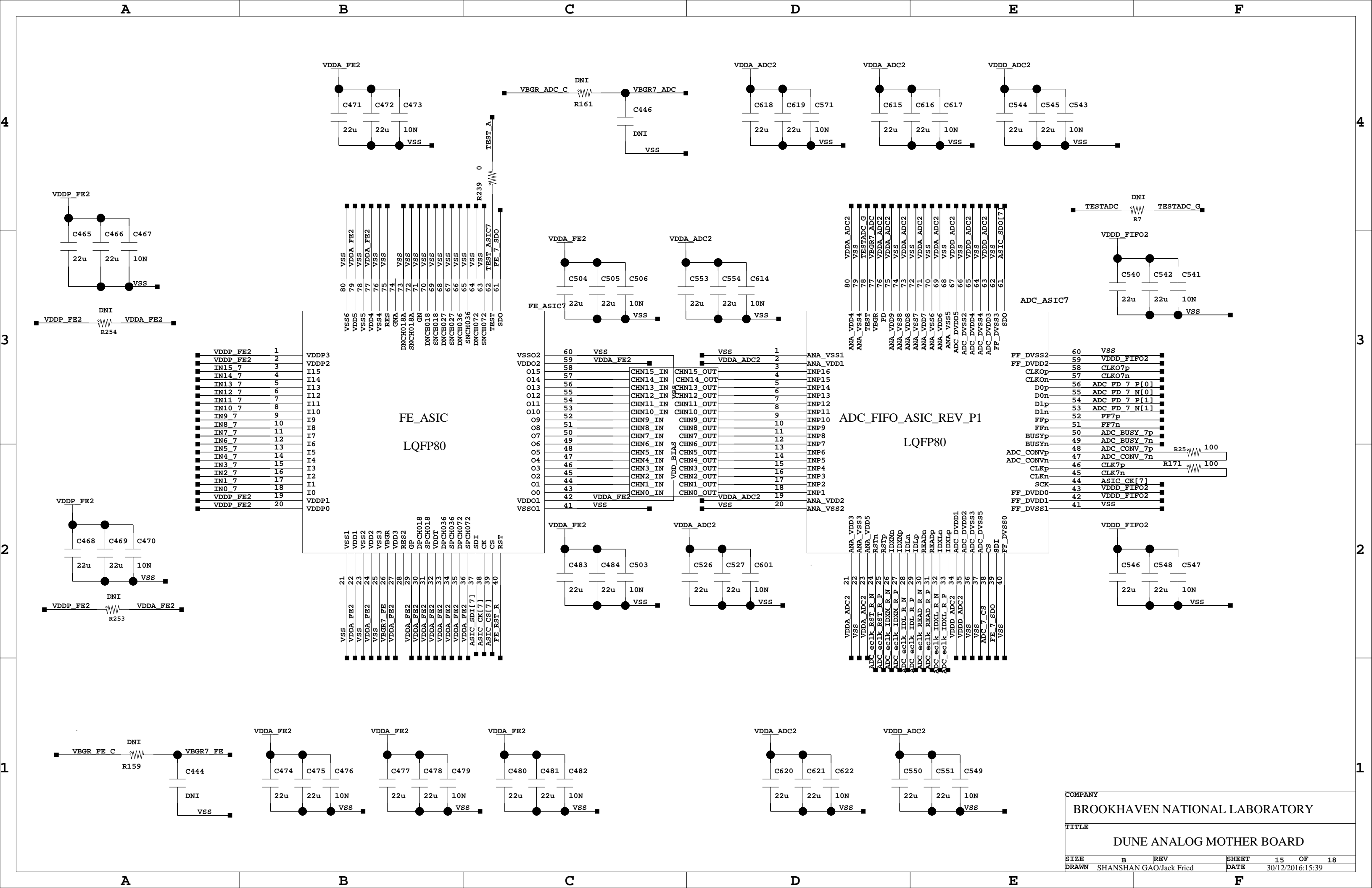


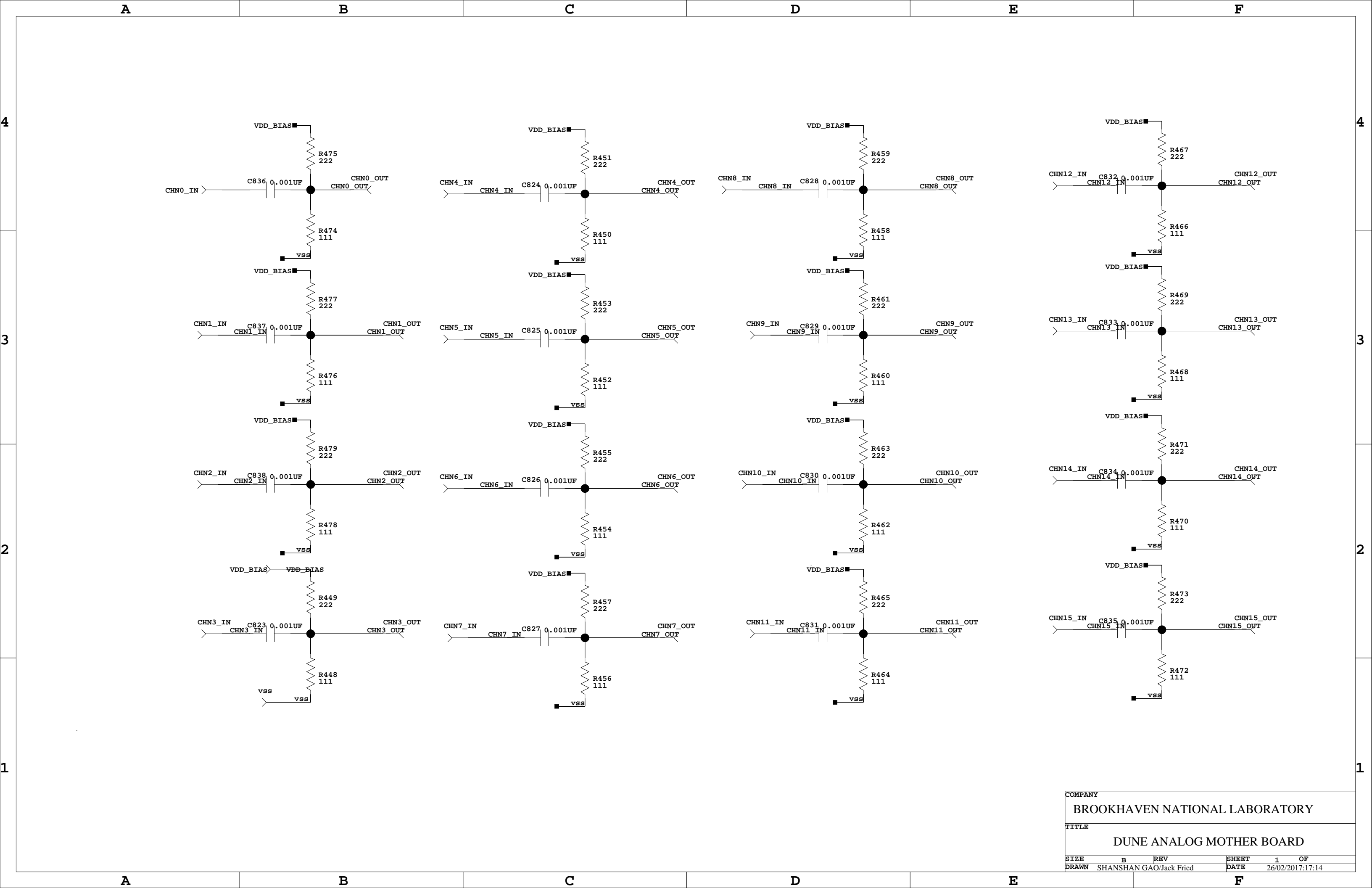


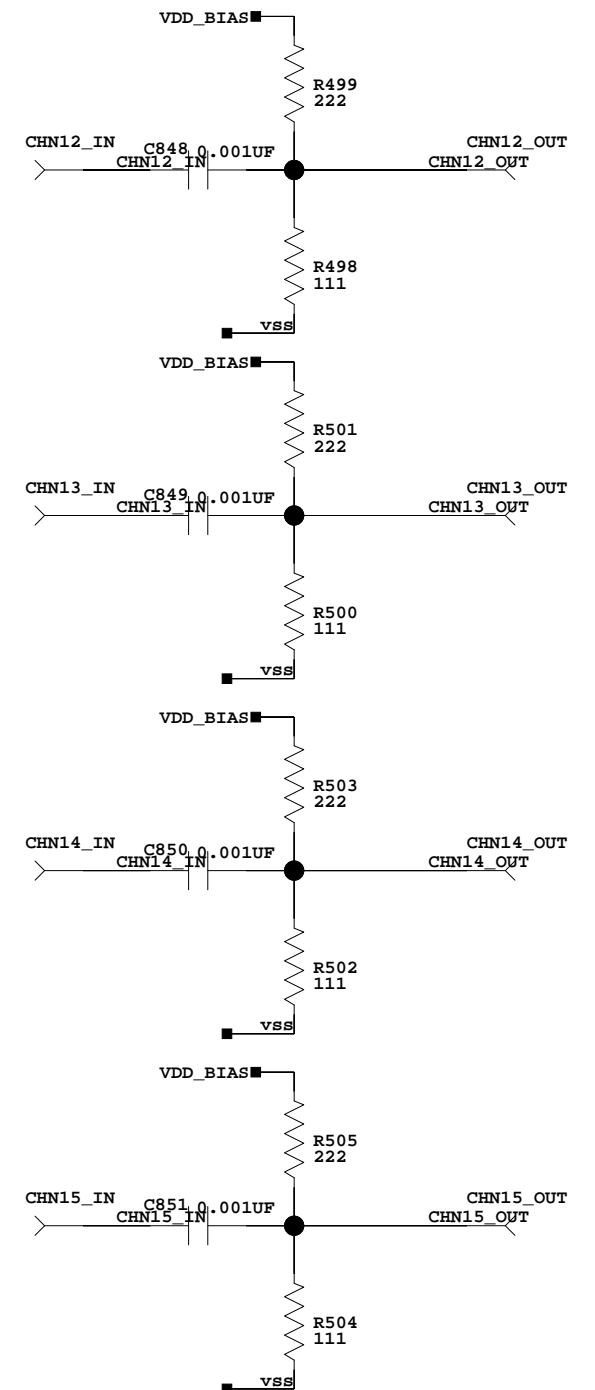
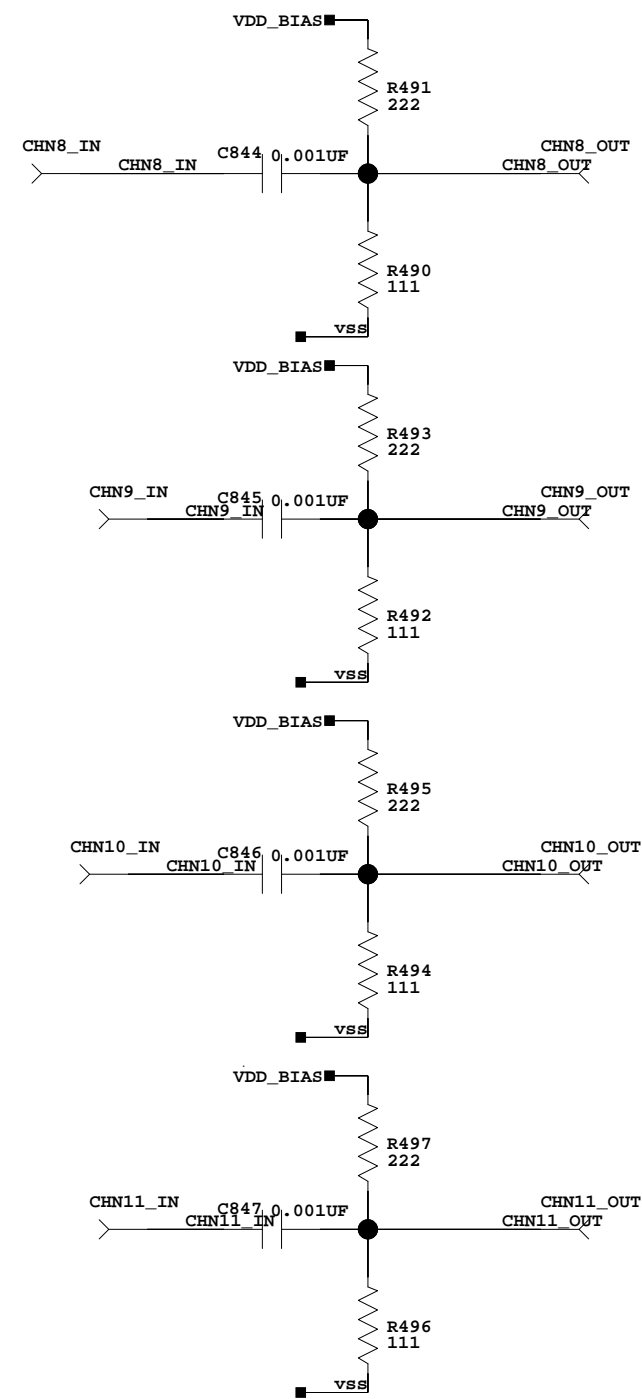
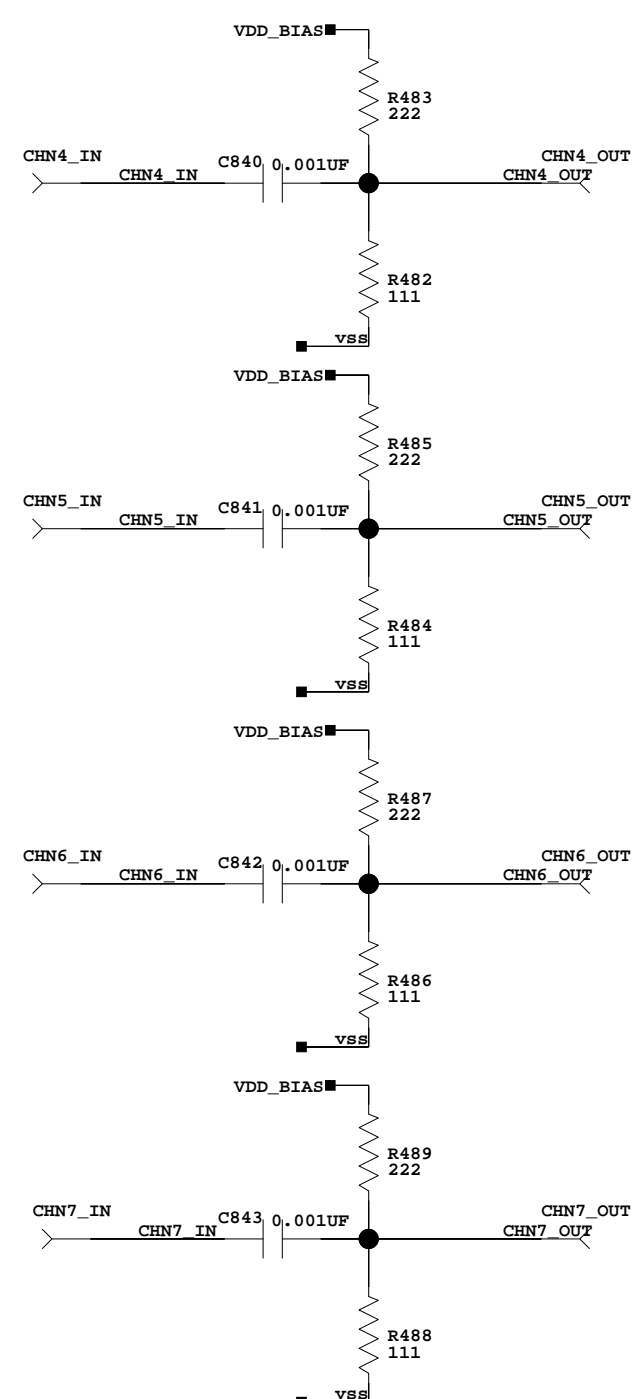
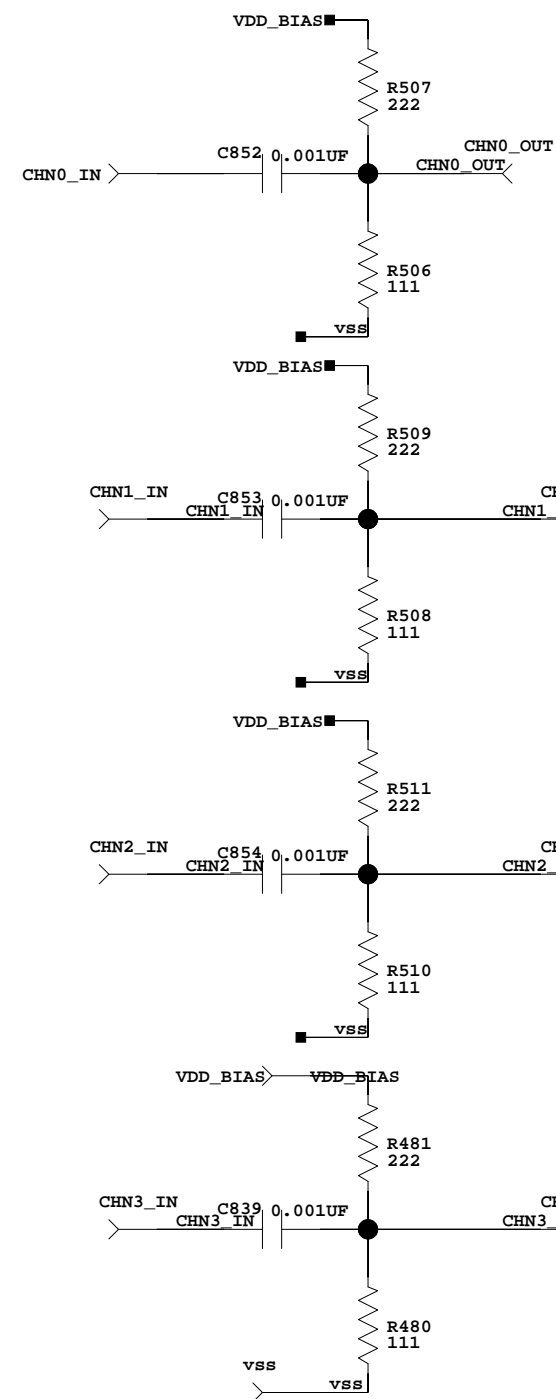












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DUNE ANALOG MOTHER BOARD			
SIZE	B	REV	SHEET 1 OF
DRAWN	SHANSHAN GAO/Jack Fried	DATE	26/02/2017:17:14

