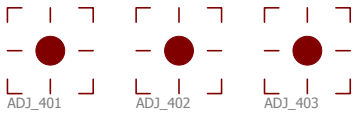
3phase Power Inverter 750W V1.2

[1] Contents
[2] Line Filter, PFC, DC-Link 400V, Power Supply 15V/5V
[3] Gate Drive, Power Bridge (IGBT), Phase Current Shunt Amplifier
[4] Single Shunt Amplifier, PFC Amplifier, PFC Overload Protection
DriveCard Connector, Auxiliary Power Connector

Fiducials

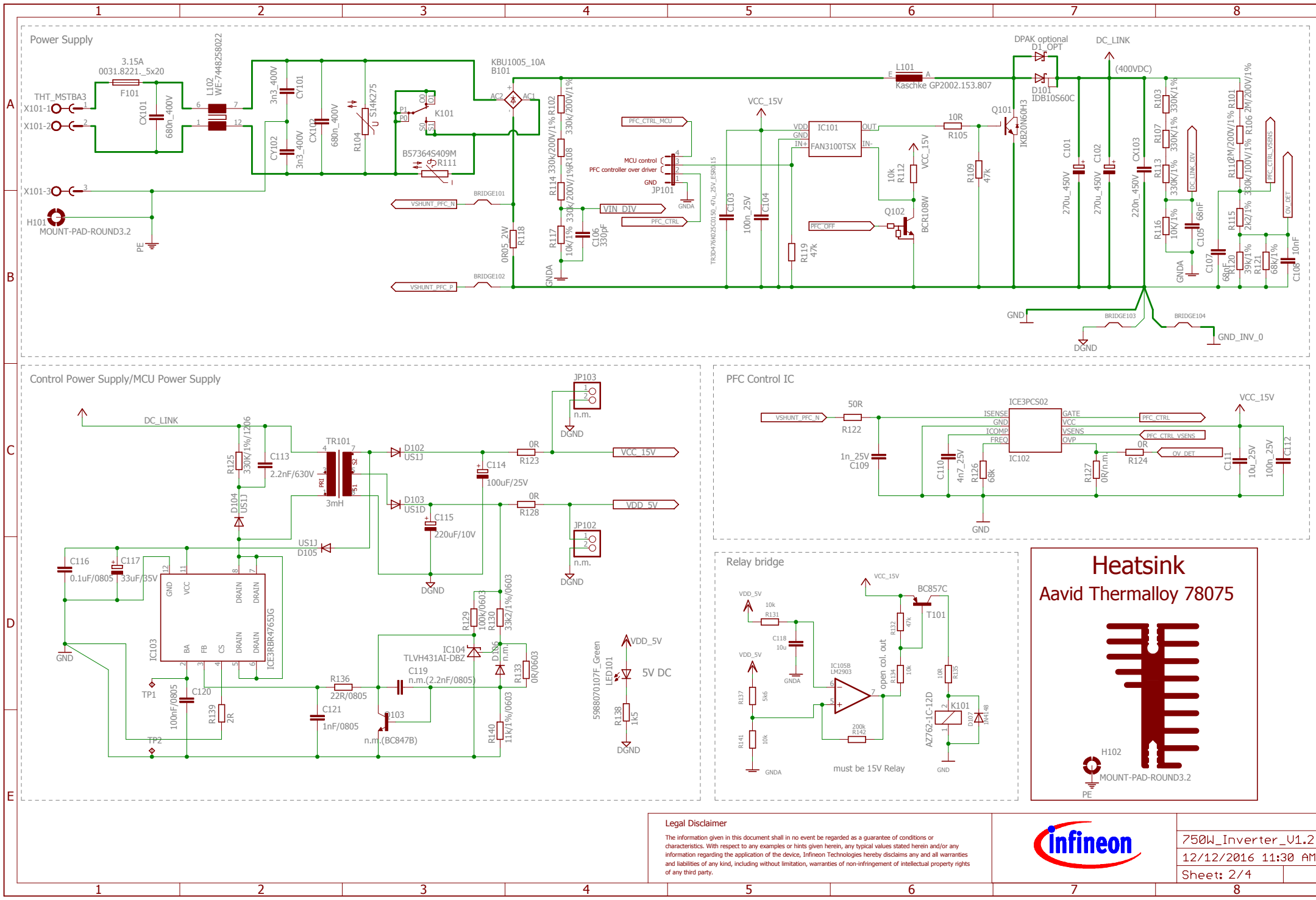


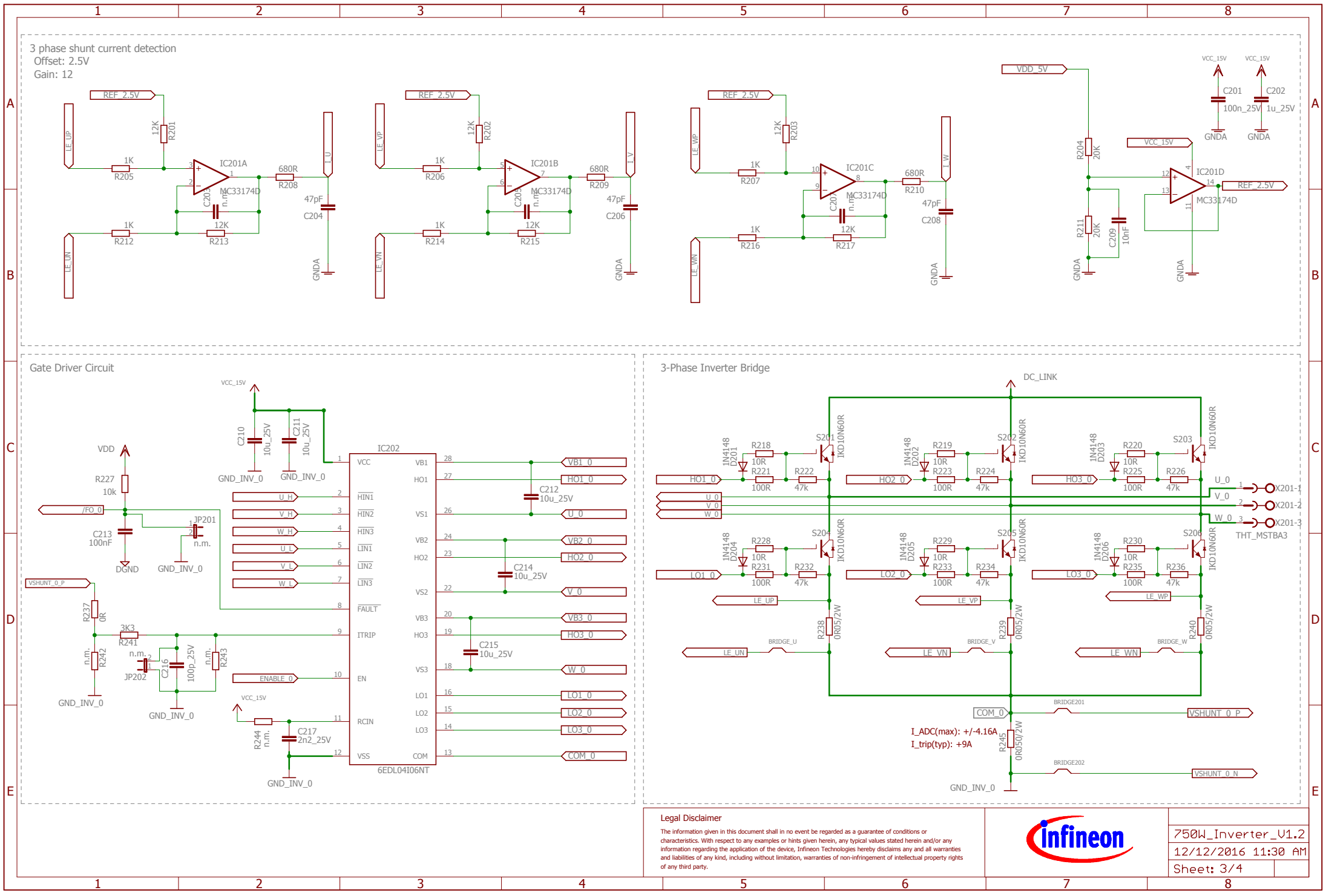
V1 / 05.09.2013 / AR
V1.1 / 08.11.2013 / AR
V1.2 / 12.12.2016 / YS

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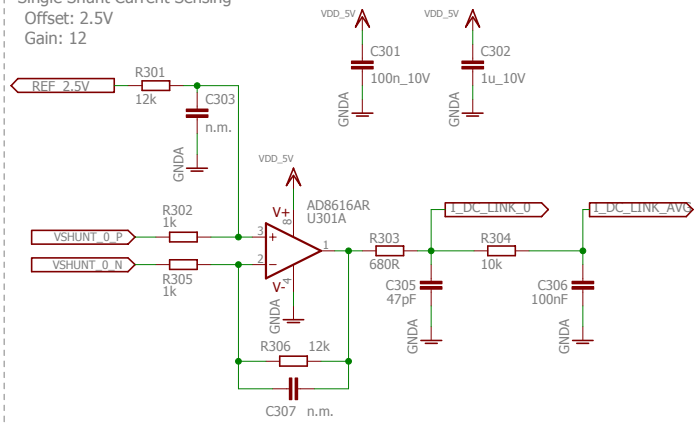
2013/45	
750W_Inverter_V1.2	
12/12/2016 11:30 AM	
Sheet: 1/4	


Power Supply
3.15A
0031.8221._5x20
F101
THT_MSTBA3
X101-1
X101-2
X101-3
H101
MOUNT-PAD-ROUND3.2
PE
L102
WE-7448258022
CX101
680n_400V
CY101
3n3_400V
CY102
CX102
R104
S14K275
K101
B57364S409M
R111
KBU1005_10A
B101
BRIDGE101
BRIDGE102
VSHUNT_PFC_N
VSHUNT_PFC_P
0R05_2W
R118
R102
330k/200V/1%
R114
R108
R117
10K/1%
C106
330pF
GNDA
VIN_DIV
PFC_CTRL_MCU
PFC_CTRL
MCU control
PFC controller over driver
GND
JP101
VCC_15V
IC101
FAN3100TSX
VDD
GND
IN+
OUT
IN-
C103
100n_25V
C104
R119
47k
10k
R112
Q102
BCR108W
PFC_OFF
10R
R105
Q101
IKB20N60H3
R109
47k
L101
Kaschke GP2002.153.807
DPAK optional
D1_OPT
D101
IDB10S60C
DC_LINK
(400VDC)
C101
270u_450V
C102
270u_450V
CX103
220n_450V
R103
330K/1%
R107
330K/1%
R113
330K/1%
R116
10K/1%
DC_LINK_OV
C105
68nF
R110
2M/200V/1%
R101
R106
2M/200V/1%
R115
330k/100V/1%
R120
2k2/1%
R121
39K/1%
R122
68k/1%
PFC_CTRL_VSENS
OV_DET
C107
68nF
C108
10nF
GND
BRIDGE103
BRIDGE104
GND_INV_0
DGND
Control Power Supply/MCU Power Supply
DC_LINK
R125
330K/1%/1206
C113
2.2nF/630V
TR101
3mH
D104
US1J
D102
US1J
D103
US1D
D105
US1J
C114
100uF/25V
C115
220uF/10V
0R
R123
0R
R128
JP103
n.m.
JP102
n.m.
VCC_15V
VDD_5V
DGND
C116
0.1uF/0805
C117
33uF/35V
IC103
ICE3RBR4765JG
GND
VCC
DRAIN
DRAIN
DRAIN
DRAIN
BA
FB
CS
TP1
TP2
C120
100nF/0805
R139
2R
R136
22R/0805
C121
1nF/0805
C119
n.m.(2.2nF/0805)
Q103
n.m.(BC847B)
R129
100k/0603
R130
33k2/1%/0603
IC104
TLVH431AI-DBZ
D106
n.m.
R133
0R/0603
R140
11k/1%/0603
LED101
5988070107F_Green
R138
1k5
5V DC
PFC Control IC
VSHUNT_PFC_N
50R
R122
1n_25V
C109
ICE3PCS02
ISENSE
GND
ICOMP
FREQ
GATE
VCC
VSENS
OVP
IC102
PFC_CTRL
PFC_CTRL_VSENS
OV_DET
C110
4n7_25V
R126
68k
R127
0R/n.m.
0R
R124
C111
10u_25V
100n_25V
C112
GND
Relay bridge
VDD_5V
10k
R131
C118
10u
GNDA
5k6
R137
10k
R141
IC105B
LM2903
open col. out
R132
47k
R134
10k
200k
R142
VCC_15V
BC857C
T101
10R
R135
K101
AZ762-1C-12D
D107
1N4148
must be 15V Relay
Heatsink
Aavid Thermalloy 78075
H102
MOUNT-PAD-ROUND3.2
PE
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Infineon
750W_Inverter_V1.2
12/12/2016 11:30 AM
Sheet: 2/4


3 phase shunt current detection
Offset: 2.5V
Gain: 12
REF_2.5V
IC201A
IC201B
IC201C
IC201D
MC33174D
VDD_5V
VCC_15V
C201
100n_25V
C202
1u_25V
GNDA
LE_UP
LE_UN
LE_VP
LE_VN
LE_WP
LE_WN
I_U
I_V
I_W
Gate Driver Circuit
IC202
6EDL04I06NT
VCC
VB1
HO1
VS1
VB2
HO2
VS2
VB3
HO3
VS3
LO1
LO2
LO3
COM
VSS
RCIN
EN
ITRIP
FAULT
HIN1
HIN2
HIN3
LIN1
LIN2
LIN3
GND_INV_0
DGND
VDD
/FO_0
VSHUNT_0_P
ENABLE_0
3-Phase Inverter Bridge
DC_LINK
IKD10N60R
1N4148
HO1_0
HO2_0
HO3_0
LO1_0
LO2_0
LO3_0
U_0
V_0
W_0
BRIDGE_U
BRIDGE_V
BRIDGE_W
COM_0
VSHUNT_0_N
I_ADC(max): +/-4.16A
I_trip(typ): +9A
THT_MSTBA3
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750W_Inverter_V1.2
12/12/2016 11:30 AM
Sheet: 3/4

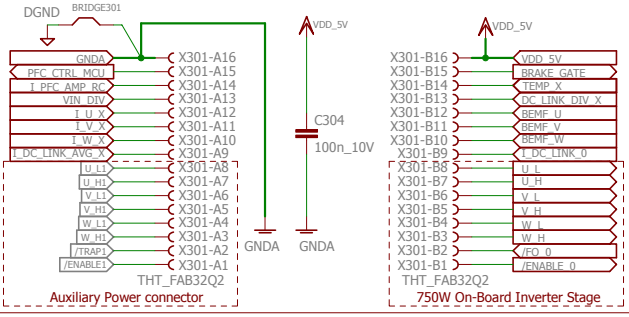
Single Shunt Current Sensing

Offset: 2.5V
Gain: 12



Drive Card Connector

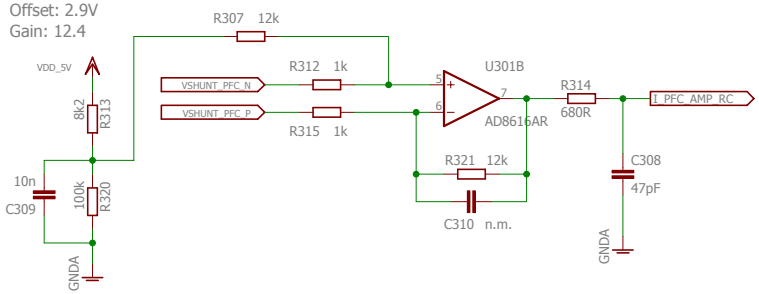
Drive Card DC_XMC4400_V1	Drive Card DC_XMC1300_V1
A1 GND	GND
A2 HR.10	C40.0 / CMP2.O
A3 HR.C1IN / G3CH0	G0CH7 / CMP2.IN-
A4 G3CH1	G1CH6
A5 G0CH1	G0CH2 / G1CH4
A6 G0CH3 / G1CH3	G0CH3 / G1CH2
A7 G0CH5 / G2CH1	G0CH4 / G1CH3
A8 G1CH0 / G3CH2	G0CH6
A9 C81.01 / C80.02	-
A10 C81.00 / C80.03	-
A11 C81.11 / C80.22	-
A12 C81.10 / C80.23	-
A13 C81.21 / C80.32	-
A14 C81.20 / C80.33	-
A15 ERU1.2B0 (PD1)	-
A16 P4.1	-



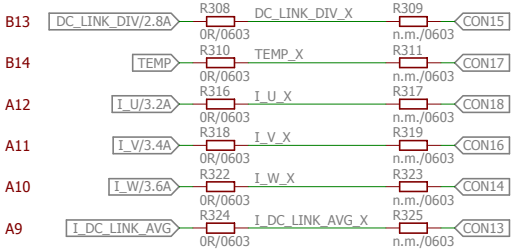
Drive Card DC_XMC1300_V1	Drive Card DC_XMC4400_V1	
VDD	VDD	B1
-	C42.0	B2
-	G2CH3	B3
G1CH5	G1CH1 / G3CH3	B4
G0CH0	G0CH0	B5
G0CH1 / G1CH0	G0CH2 / G1CH2	B6
G0CH5	G0CH4 / G2CH0	B7
G1CH1	G1CH6 / G1.ORC6	B8
C80.01	C80.01 / HR.01	B9
C80.00	C80.00 / HR.00	B10
C80.11	C80.20 / C80.11 / HR.20	B11
C80.10	C80.21 / C80.10 / HR.21	B12
C80.21 / C80.03	C80.12 / C80.21 / HR.31	B13
C80.20 / C80.02	C80.13 / C80.20 / HR.30	B14
C80.IN0,1,2,3	C80.IN0,1,2,3	B15
P0.11	P0.12	B16

Current Sensing PFC

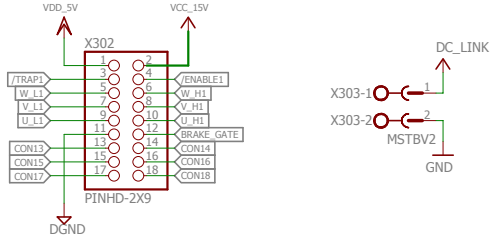
Offset: 2.9V
Gain: 12.4



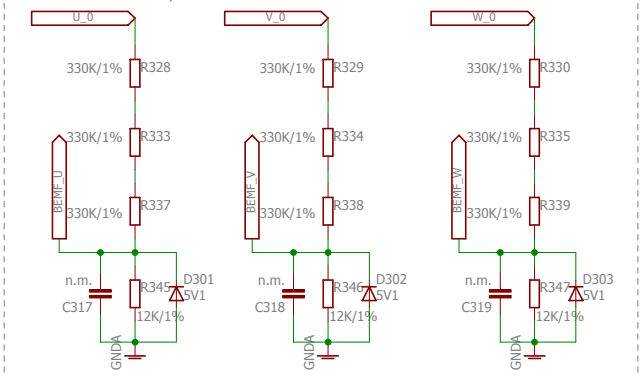
Analog Signal Selector



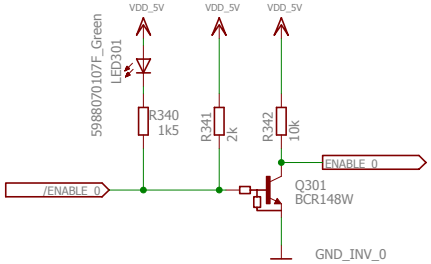
Auxiliary Power Connector



BEMF detection at 3 phase

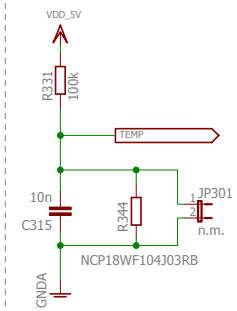


Enable Circuitry 1

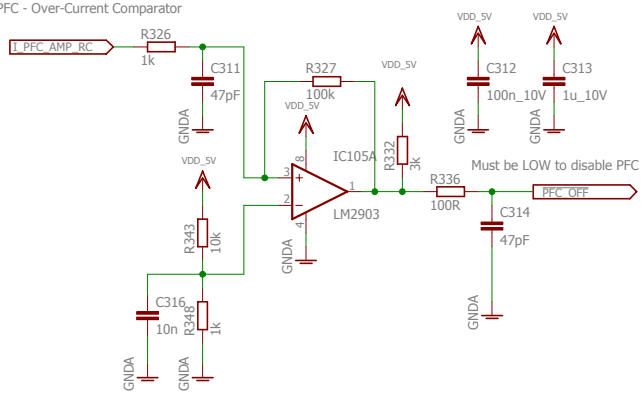


Temperatur sense

Beta: 4250
R25: 100k



PFC - Over-Current Comparator



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Sheet: 4/4	