

DC|DC performance testing bPOL48V @ bPOL12V (BUCK POINT OF LOAD CONVERTERS)



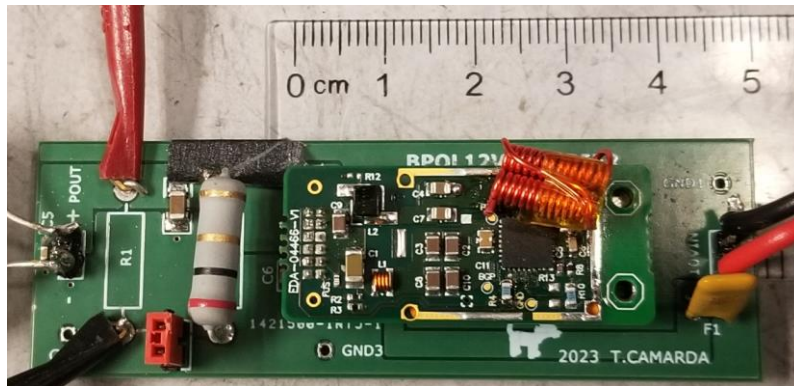
bPOL48V w/ bottom mount heat-sink, 300nH @ 1.5MHz
Inductor dimensions: 10 x 12.0 x 7.5mm (LxWxH)



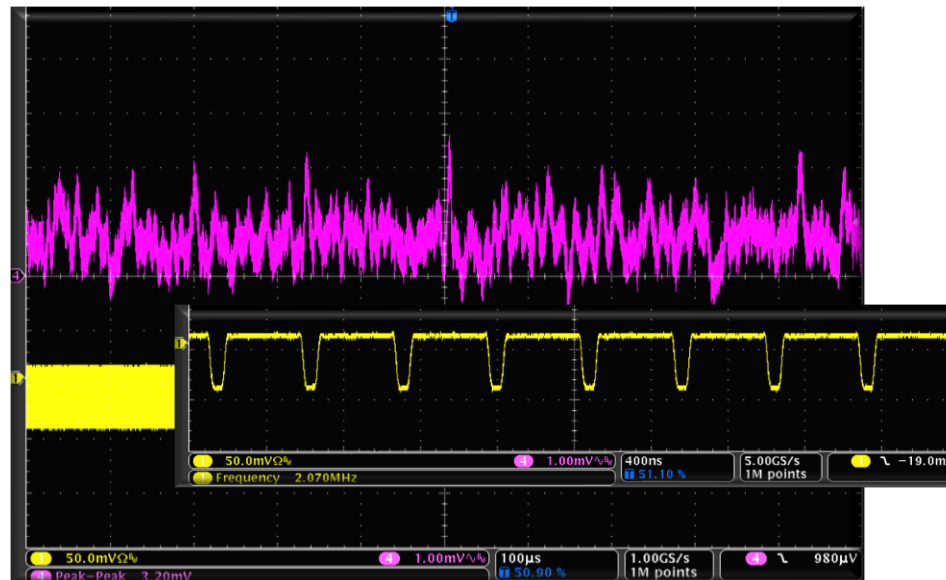
Vout Noise/ ripple ~3mV (1mV/div) h. 100us

V_{OUT}	1.2V
I_{OUT}	8.2A *MAX 10A
I_{IN}	870mA
V_{IN}	15V
P_{IN}	13.0W
P_{OUT}	9.84W
P_{EFF}	> 75%
Noise 1GHz	< 0.3%
Ripple 25MHz	< 0.3%
On-time	~60ns
Fsw	1.5MHz

EMI (near field) 82.0mV p-p
Measured from bottom of the PCB
50mv/div h.400ns



bPOL12V NO heat-sink, 220nH @ 2.0 MHz
Inductor dimensions: 10.3 x 6.5 x 3.5mm



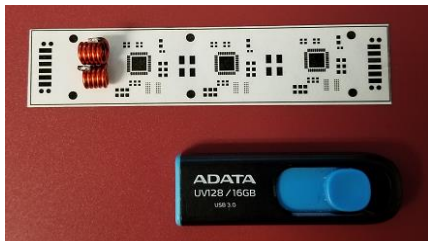
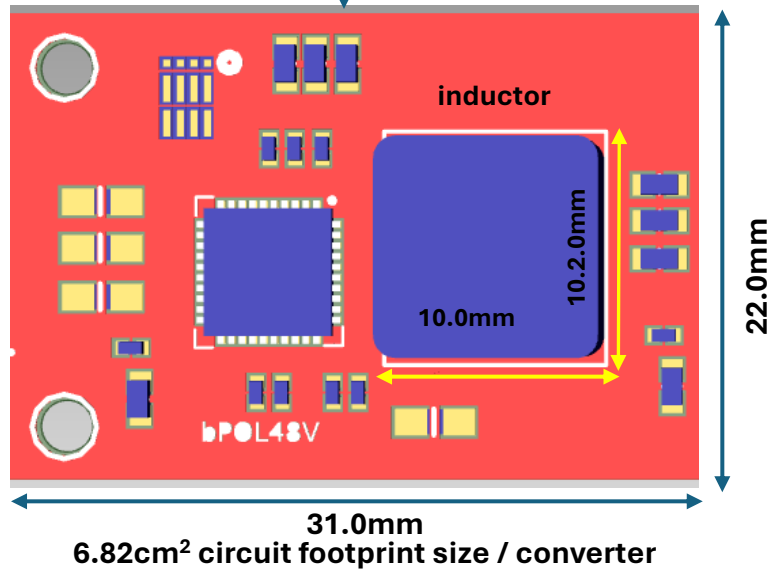
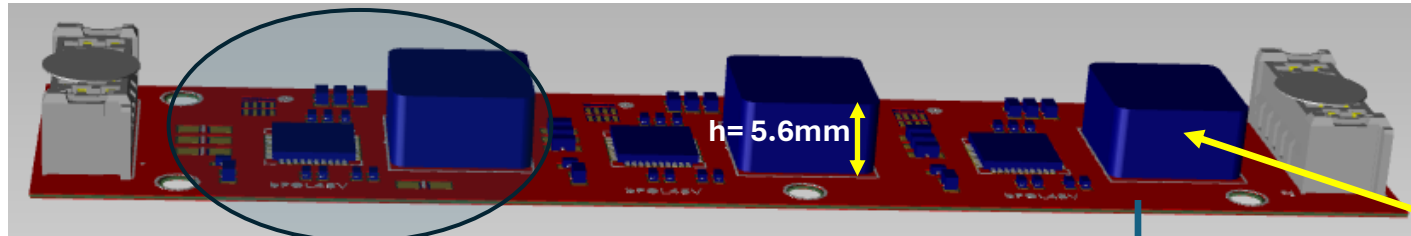
Vout Noise/ ripple ~3.2mV (1mV/div) h. 100us

V_{OUT}	1.2V
I_{OUT}	2.4A *MAX 4A
I_{IN}	410mA
V_{IN}	10V
P_{IN}	4.1W
P_{OUT}	2.9W
P_{EFF}	70.0%
Noise 1GHz	< 0.3%
Ripple 25MHz	< 0.3%
On-time	~70ns
Fsw	2.0 MHz

EMI (near field) 82.0mV p-p
Measured from bottom of the PCB
50mv/div h.400ns

*Manufacturers maximum rating

bPOL48V power regulator board: 25W total (10W/ ch) 1.2V_{OUT} @ 8A

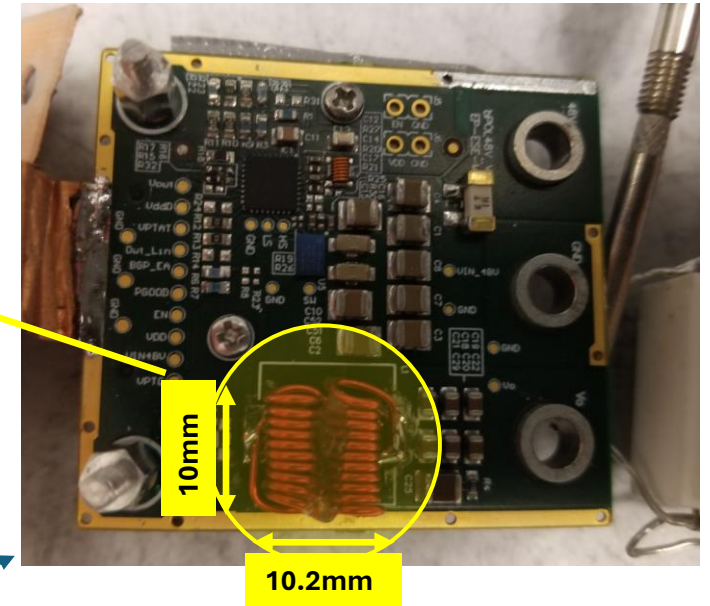


Proposed fTOF Power Board shown as example
PCB dimensions: 100mm x 22mm x 2.3mm

Cooling:

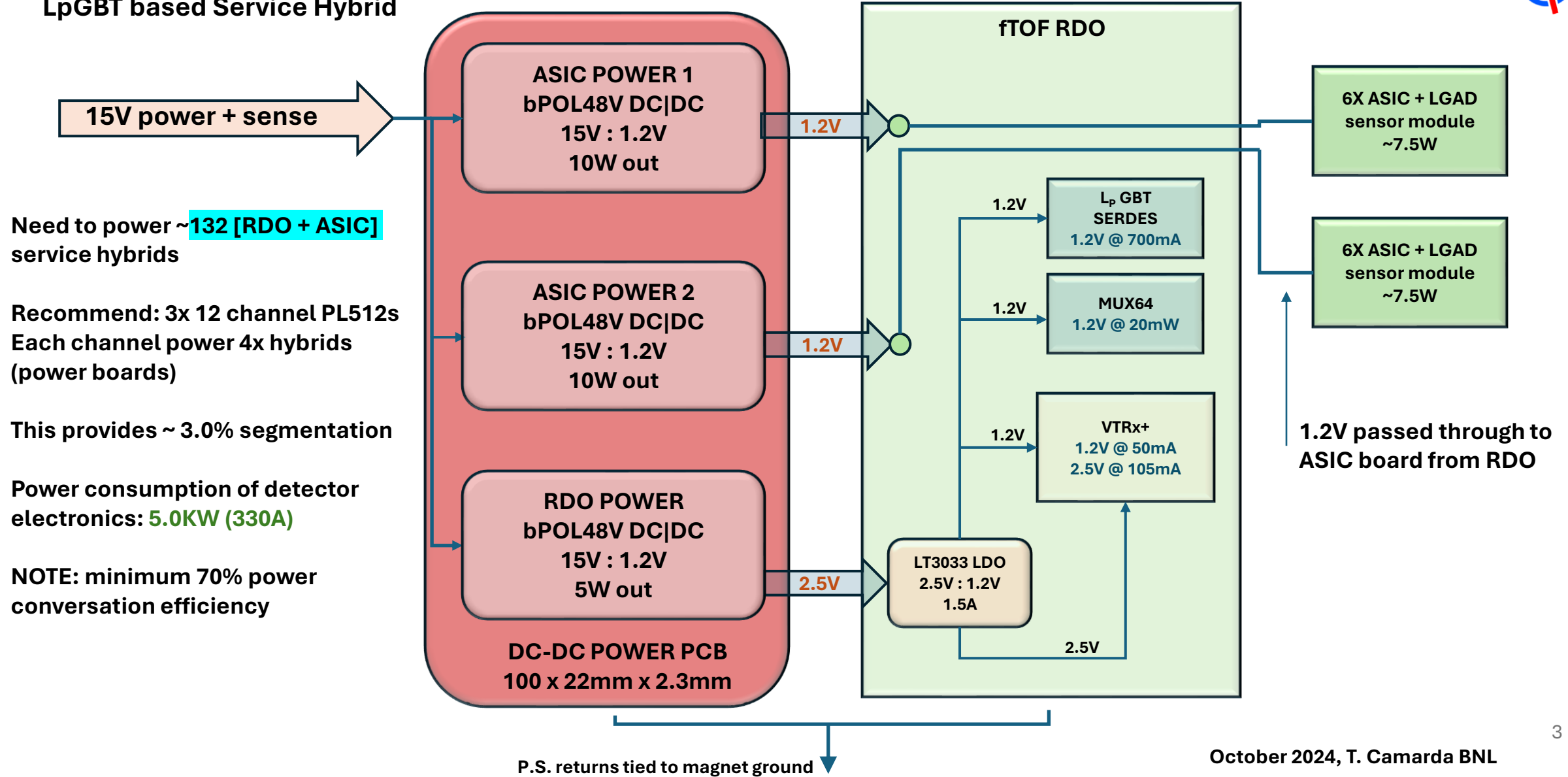
PCB is requires mounting to cooling plate w/ thermal grease

CERN bPOL48V evaluation board
Modified for 1.2V_{OUT} 8A, ~10W
Heat-sink attached w/ thermal pad at bottom



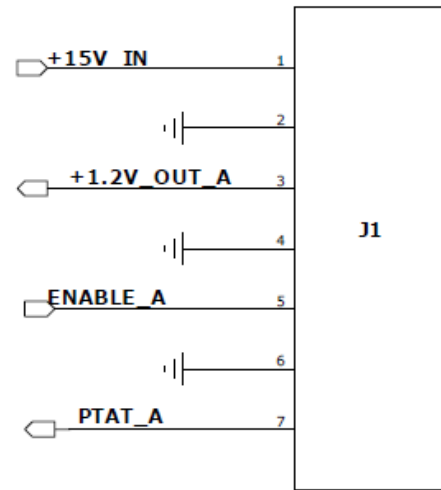
- Custom switching inductor: 300nH, 8A air-core, solenoid wound in anti-parallel
- DC loss: 66.0mW
- Input LC filter (need for LC output filter will be evaluated)
- Inductor dimensions (mm) l x W x H => 10 x 10.2 x 5.6 => allow ~ 8mm clearance height
- PCB board stack-up height: 2.4mm (93mil)
- 2.0oz outer copper, 4-6 layers
- Possibility to add shield...but bottom ground plane of RDO may act as shield

fTOF POWER BOARD POWER DISTRIBUTION BLOCK LpGBT based Service Hybrid

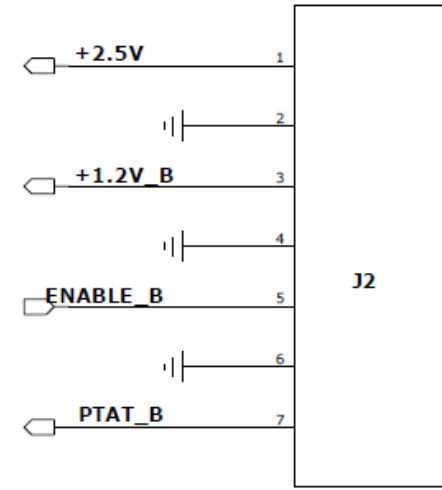


PROPOSED POWER BOARD TO RDO PINOUT

PIN	Function	Comment
J1-1	15V in from RDO From the rackmount PS	12 channel PL512
J1-2	Ground	Common ground tied to magnet "clean ground"
J1-3	+1.2V OUT_A	ASIC MODULE (A)
J1-4	Ground	
J1-5	ENABLE_A	Active high (0.9 to 3.3V)
J1-6	Ground	
J1-7	PTAT	voltage out proportional to internal die temperature
J2-1	+2.5V OUT	RDO power
J2-2	Ground	
J2-3	1.2V OUT_B	ASIC MODULE (B)
J2-4	Ground	
J2-5	ENABLE_B	Active high (0.9 to 3.3V)
J2-6	Ground	
J2-7	PTAT_B	voltage out proportional to internal die temperature



UMPS-07-055-G-V-S-W-TR



UMPS-07-055-G-V-S-W-TR

Do we require other pin functions from the bPOL ASIC?