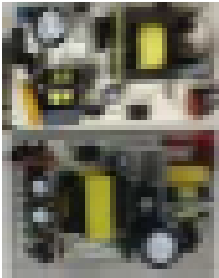


<p>Subject NE1102 Demo Board Manual</p>	<p>Board Model: ADP5V10W1102.1</p>
	<p>Key Features</p> <ul style="list-style-type: none"> ➤ Meet DOE Level VI & CoC Version 5.0 Tier 2 ➤ No Y-Cap ➤ Various Protection Functions ➤ Operation Frequency Down to 25KHz in No/Light Load Condition ➤ System Open Loop / Short Circuit Protection ➤ Internal Soft Start Time Period ➤ Internal Leading Edge Blanking ➤ +300mA/-500mA Gate Drive Capability ➤ Frequency Jittering ➤ Current Mode Control with Internal Slope Compensation ➤ Cycle-by-Cycle Maximum Current Limit Protection ➤ Meet Pb-Free, Halogen Free and RoHS compliant

Revision History

Revise Date	Version	Reason/Issue
2013.05.28	00	First Issue

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1. Adapter Module Specification

1.1 Input Characteristics

- Input Current/Power/
 Efficiency/Power Factor
 Eff.> 78.7%@115~230Vac
DOE VI &CoC Version 5.0 Tier 2
- Power Consumption (Minimum
 Load Input Power)
 Pin<0.075W@ No Load /230Vac
 Eff.>68.7%@ 1W Load(**CoC 5.0 Tier 2**)

1.2 Output Characteristics

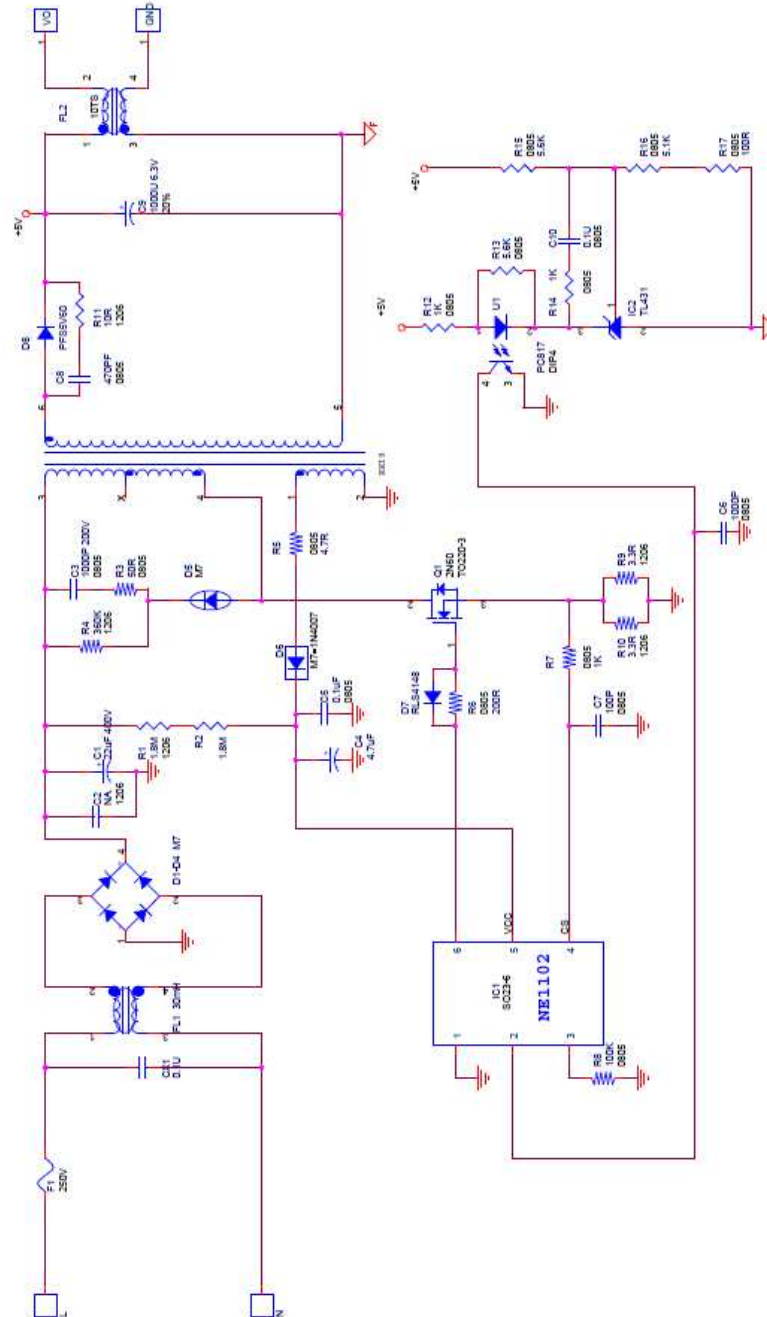
- Load, Line Cross Regulation
 Vout=5.0V±5%
- Ripple and Noise
 <100mVp-p
- Dynamic Loading Response
 4.75V<Vout < 5.25V
- Output Over / Under Shoot
 < 5% Vo.
- Turn On Delay/ Hold up / DC
 Rise/Fall Time
 Hold up time(>5ms) @115Vac/230Vac
 Rise time(<20ms)

1.3 PROTECTION

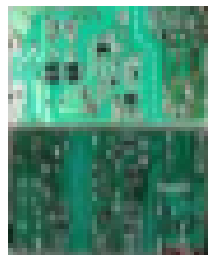
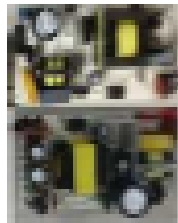
- Short Circuit Protection
 No damage
- Over Current Protection
 <3.5A

2. Adapter Module Information

2.1 Schematic



2.2 PCB Picture View



2.3 Bill of Material

Position	Description	Qty
F1	FUSE T S 2.5A 250V L	1
C9	CAP AL LD 6.3V 1000uF M 10*16 TP P5	1
C4	CAP AL LD 50V 4.7uF M 5*11 TP K15	1
C1	CAP AL 400V 22uF M	1
CX1	CAP X2 MP PC 305VAC 0.1uF K S12.5	1
D1 D2 D3 D4 D5 D6	DIO M7	6
D7	DIO RLS4148	1
Q1	FET 600V 2A TO-220	1

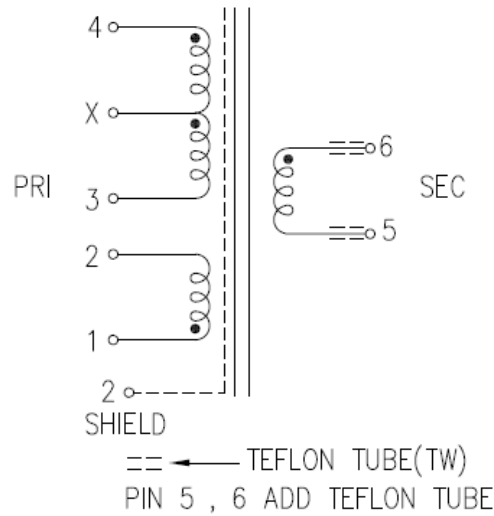
T1	TRANSFORMER EE19(Add wide Ae 44) 3.1 +/-5%	1
FL1	LINE FILTER UU9.8 40mH MIN	1
FL2	LINE FILTER Core 100uH MIN	1
D8	PFS5V60 DO-201	1
R1 R2	RES SMD 1/4W 1.8Mohm J1206	2
R3	RES SMD 1/4W 10ohm J1206	1
R4	RES SMD 1/4W 360Kohm J1206	1
R5	RES SMD 1/4W 4.7ohm J 0805	1
R6	RES SMD 1/4W 200ohm J 0805	1
R7	RES SMD 1/4W 1Kohm J 0805	1
R8	RES SMD 1/10W 100Kohm F 0805	1
R9 R10	RES SMD 1/4W 3.3ohm J 1206	2
R11	RES SMD 1/4W 10ohm F 1206	1
R12 R14	RES SMD 1/8W 1Kohm F 0805	2
R13 R16	RES SMD 1/8W 5.6Kohm J 0805	2
R17	RES SMD 1/8W 100ohm J 0805	1
C2	CAP MC SMD 630V 103 J 1206	NA
C3	CAP MC SMD 200V 1000pF J 0805	1
C5 C10	CAP MC SMD 50V 0.1uF K X7R 0805	2
C6	CAP MC SMD 50V 1000pF K X7R 0805	1
C7	CAP MC SMD 50V 100pF K X7R 0805	1
C8	CAP MC SMD 100V 470pF K X7R 0805	1
U1	PHOTO TR 50mA 70V SOP-4P 100%-200% SMD	1
IC2	IC VOL REF ADJ 2.495V 200mA 0.5%	1
IC1	NE11102E	1
Wire &Case	22# 1.5M	1

2.4 Transformer Design

2.4.1 Mechanical View(EE19 add wide Ae 44):



2.4.2 Schematic:



2.4.3 Transformer Winding data

TEST TERMINAL	TEST CONDITION	L (uH)	TURNS	WIRE GAUGE	HI-POT TEST 60Hz, 1s
4-X-3	40kHz, 1V	3.1mH±5%(EE19)	70+30		(PRI SHORT CORE) TO SEC 3000VAC
4-X			70	Φ0.2 2UEWN	PRI TO PRI 500VAC
SHIELD1 TO PIN 2			1	T7X0.001"Cu	PRI TO CORE 500VAC
6-5			6	Φ0.45X2 TIW-2 OR TEX-E	
SHIELD2 TO PIN 2			1	T5.5X0.001"Cu	INDUCED VOLTAGE
X-3			30	Φ0.2 2UEWN	L(4-3) :1.0KVo-p MAX/1s
1-2			18	Φ0.25 2UEW	ARCING CURRENT <=10.0Ma
					LEAKAGE CURRENT <=1.0mA

3. Performance Evaluation

3.1 INPUT CHARACTERIZATION

3.1.1 INPUT CURRENT/POWER/EFFICIENCY/POWER FACTOR

■ **Test conditions:**

The unit is set at maximum load and the input voltage is varied from the minimum to the maximum value. Efficiency is computed and Power Factor is either computed or measured after 5 minutes warm up at least. Output voltage is measured at the end of 20AWG cable with 1.5M Long.

Table 01 Active Load Efficiency vs. Load

Vin (Vac)	Fin (Hz)	Iin (mA)	Pin (W)	Iout (A)	Vout (V)	Pout (W)	Pd(W)	P.F	Eff	Avg. Eff(%)	Result
115	60	203.7	12.46	2.01	4.935	9.919	2.541	0.532	79.6%	81.14%	PASS DOE VI >78.7%
		159.8	9.262	1.5	4.997	7.495	1.767	0.504	80.92%		
		115.7	6.227	1.006	5.059	5.089	1.138	0.468	81.72%		
		66.8	3.17	0.51	5.123	2.61	0.56	0.413	82.33%		
230	50	131.3	12.44	2.01	4.929	9.90	2.54	0.412	79.58%	80.5%	PASS CoC 5.0 Tier 2 >78.7%
		104.2	9.32	1.5	4.992	7.488	1.832	0.389	80.34%		
		75.5	6.269	1.006	5.055	5.085	1.184	0.361	81.11%		
		43.9	3.22	0.51	5.12	2.61	0.61	0.319	81%		

3.1.2 Power Consumption

■ **Test conditions:**

The unit is set at no load and light load and the rated input voltage for at least 15 minutes.
The ambient temperature is set between 15 Deg C to 35 Deg C

Table 02 Power Consumption @ 0 W Load

Vin (Vac)	Fin (Hz)	Iin (mA)	Pin (mW)	Vout (V)	Result
90	47	2.77	26	5.189	PASS
115	60	4.23	30.1	5.189	PASS (DoE level 6 . <100mW)
230	50	6.91	50.8	5.189	PASS (CoC 5.0 Tier 2 . <75mW)
264	63	9.52	78	5.189	PASS

Table 03 Power Consumption @ 1 W Load (10% Full Load)

Vin (Vac)	Fin (Hz)	Iin (mA)	Pin (W)	P.F	Vout (V)	Efficiency (%)	Result
90	47	36.47	1.29	0.396	5.162	77%	Pass
115	60	31.74	1.3	0.356	5.162	76.92%	Pass
230	50	21.54	1.353	0.273	5.162	73.9%	Pass(CoC 5.0 Tier 2 . >68.7%)
264	63	20.82	1.41	0.255	5.162	70.92%	Pass

有兴趣的请找NEM一级代理商, 135607 46382 郭先生 可全程FAE支持!