

NEM



NE1102 12V/1A

NO-Y

COC V5.0 Tier2 &DOE V6.0

Design

NE1102 Product Function

Feature

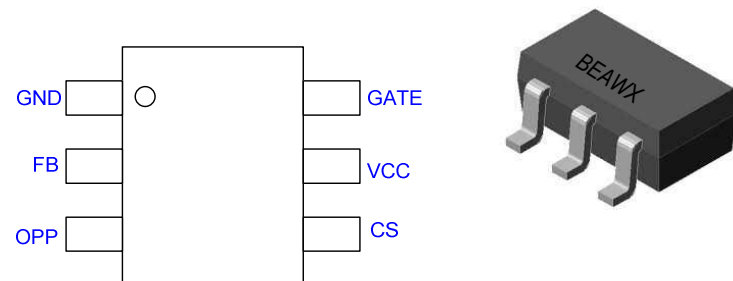
- Excellent gate drive capability
- Low startup current 8 μ A
- Low Operating current 1mA
- Low power consumption at burst mode
- Current mode control with Internal slope compensation
- Multiple protection functions (OTP, OVP, OLP)
- Internal Leading Edge Blanking
- Min. frequency limited to avoid audible noise
- Current hysteresis of external OTP for auto-recovery version
- Internal 5mS softstart time
- Cycle-by-Cycle current limitation
- Frequency Jittering for EMI noise reduction
- Frequency fold back under light load condition

引腳分配及封裝

Pin Assignment

Pin Name	Pin no.	Function Description
GND	1	接地腳
FB	2	電壓回饋腳，連接一個光耦控制輸出電壓
Protection	3	保護腳，實現OVP/OTP功能
CS	4	電流檢測
VCC	5	供電腳
GATE	6	驅動腳

Package : SOT-26



PSU Specifications

Input Characteristics

- Rated Input Voltage: 90~264Vac
- Frequency Range: 47~63Hz:
- Efficiency: Eff.> 83.26% (22#1.8米线端) @115V/230Vac, Po=12W
- **NO Y**

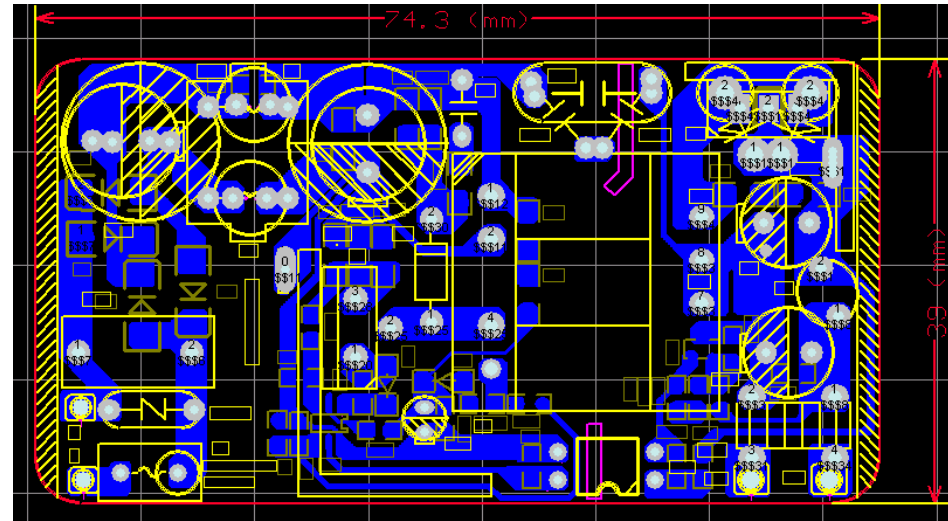
Output Characteristics

- Operating Voltage : 12V
- Normal Current: 1A
- Rated Power: 12W
- Minimum Output Voltage: 11.75V@ Io=1A, Vin=264Vac/47Hz(22#线端)
- Condition:
Transformer=EF20

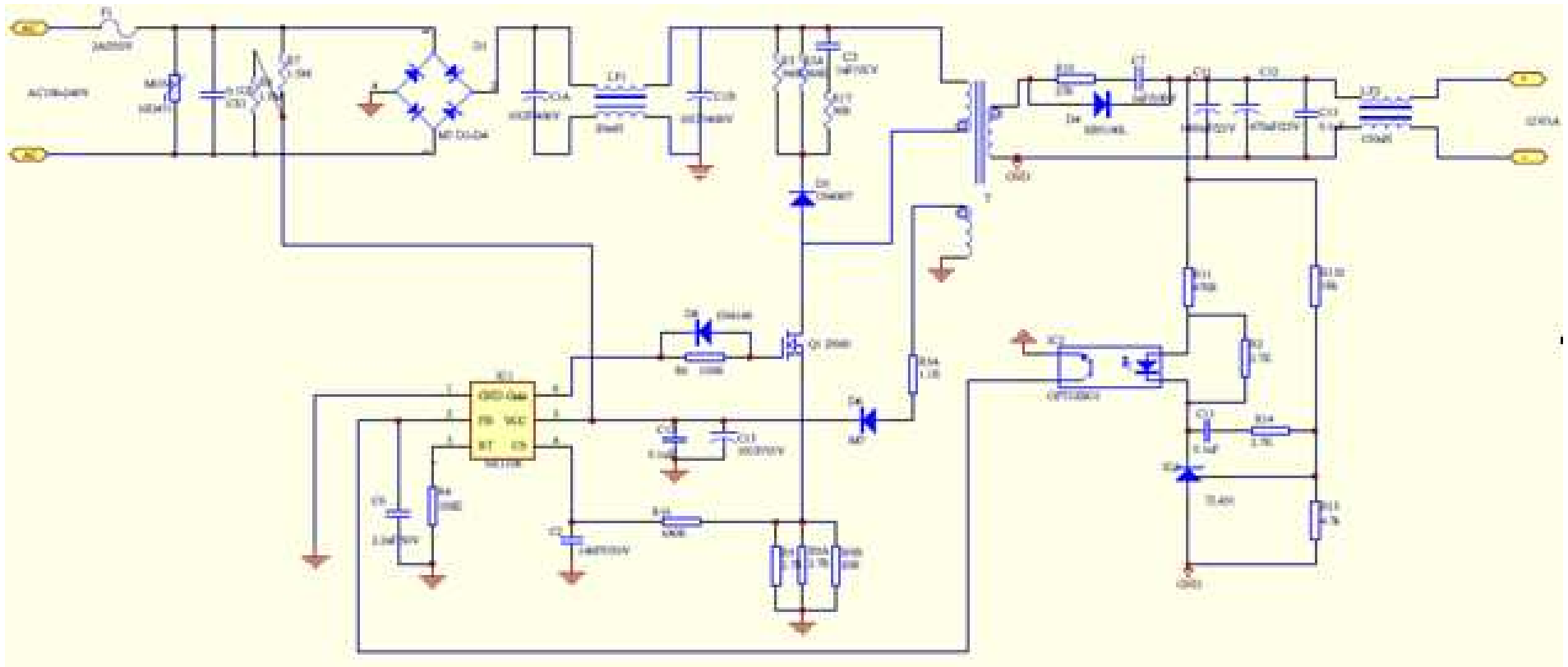
CoC V5.0 tier 2 and DOE V6

- COC V5.0 tier 2 : Standby <75mW, Eff>83.26%;
- DOE V6.0: Standby<100mW, Eff>82.96%;

12V1A NO Y Demo Board Picture



12V1A NOY Demo Board Schematic



12V1A NO Y Demo Board Performance

Efficiency:

Output voltage is measured at the end of **22# 1.8m Wire** (Burn-in 10 Minutes);

Test at **115Vac/60HZ** input condition

I_{OUT} (A)	V_{OUT} (V)	Efficiency (%)
0.251	12.21	85.02%
0.508	12.16	85.61%
0.748	12.11	86.05%
1.003	12.06	83.96%

85.16%

Test at **230Vac/50HZ** input condition

I_{OUT} (A)	V_{OUT} (V)	Efficiency (%)
0.251	12.21	81.05%
0.508	12.16	83.71%
0.748	12.11	85.35%
1.003	12.06	85.56%

83.94%

Pin=62mW at Vin=230Vac/50HZ, no load

Pin=38mW at Vin=115Vac/60HZ, no load

12V1A NO Y Demo Board Regulation

Output Voltage Regulation:

Vin (Vac)	Freq (Hz)	Loading (A)	Vout (V)
90	47	0	12.06
90	47	0.5	11.98
90	47	1	11.85
265	63	0	12.06
265	63	0.5	11.98
265	63	1	11.85

Over Current protection:

Vin (Vac)	Fin (Hz)	OCP Reading (A)
115	60	1.5
230	50	1.66

NE1102 12V 1A NO Y Bom List

C3	CAP 630V 1000pF	Snubber
R3 R3A	RES SMD 1/4W 360Kohm J 1206	
R17	RES SMD 1/4W 36Rohm J 1206	
C15	CAP AL LD 50V 10uF M 5*11 TP KI5	AUX
D6	DIO M7 SMA	
R5A	RES SMD 1/10W 1.1Rohm J 0805	
LF1	LINE FILTER UU9.8 20mH MIN	EMI
CX1	CAP X2 MP PC 275VAC 0.1uF K S12.5	
Q1	FET 600V 2A TO-220F	Gate driver
D8	DIO SW 250mA 75V LL4148 SMD	
R6	RES SMD 1/10W 1 50ohm J 0805	

NE1102E Bom List

IC3	IC VOL REF ADJ 2.495V 200mA TL4310.5%	Feedback & compensation
R11	RES SMD 1/10W 470ohm J 0805	
R2	RES SMD 1/10W 2.7Kohm J 0805	
R14	RES SMD 1/10W 2.7ohm F 0805	
R13	RES SMD 1/10W 4.7Kohm J 0805	
R15	RES SMD 1/10W 18Kohm J 0805	
C11	CAP MC SMD 50V 0.1uF K X7R 0805	
IC2	PHOTO TR 50mA 80V SOP-4P 100%-200% SMD	Feedback
C6	CAP MC SMD 50V 2.2nF K X7R 0805	
R16	RES SMD 1/10W 1Kohm F 0805	OPP adjustment
R9B	RES CF 1/4W 20ohm J 1206	
R9 R9A	RES CF 1/4W 2.7ohm J 1206	
C2	CAP MC SMD 50V 100pF K X7R 0805	T.R
T1	EF20	

NE1102E Bom List

D1 D2 D3 D4	DIO BRD 1A M7
C1A C1B	CAP AL 400V 10uF M
R4	RES SMD 100Kohm 0805
R10	RES SMD 27Rohm 1206
C12	CAP MC SMD 50V 0.1uF K X7R 0805
C11	CAP AL LD 25V 470uF M TP P5
C12	CAP AL LD 25V 470uF M TP P5
C13	CAP MC SMD 50V 0.1uF K X7R 0805
C7	CAP MC SMD 100V 1000pF J C0G 1206
IC1	NE1102E-H2
CY1	NA
D4	DIO TO220 PTR10V100
FL2	LINE FILTER 150uH MIN * 改善輻射
F1	FUSE T S 2A 250V L

Transformer Design

Transformer Winding data

TEST TERMINAL	TEST CONDITION	L (uH)	TURNS	WIRE GAUGE
3-2-5	40kHz, 1V	2.2mH 2.4mH	89+41	
3-2			89	Φ0.25 2UEWN Φ0.23
SHIELD1 TO PIN 4			1	T10X0.025"Cu
7-6			17	Φ0.45 TIW-2 OR TEX-E
SHIELD2 TO PIN 4			1	T7X0.025"Cu
2-5			41	Φ0.25 2UEWN Φ0.23
1-4			24	Φ0.2X2 2UEW



Sales and Technical supports

● Design-in documents:

- Reference design schematics
- PCB layout Gerber files
- BOM
- Transformer Design
- Mathcad external component calculation tool

● Sales contact: Sales@nem.com.tw

● FAE contacts: FAE@nem.com.tw

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THANK YOU