

SMPS Switcher Evaluation Board

Part Number: NCP1012GEVB



ON Semiconductor



Evaluation/Development Tool Description

The NCP101X series integrates a fixed-frequency current-mode controller and a 700 V voltage MOSFET. Housed in a PDIP7 package, the NCP101X offers everything needed to build a rugged and low-cost power supply, including soft-start, frequency jittering, short-circuit protection, skip-cycle, a maximum peak current setpoint and a Dynamic Self-Supply (no need for an auxiliary winding).

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Bill of Materials for the NCP1012 Evaluation Board

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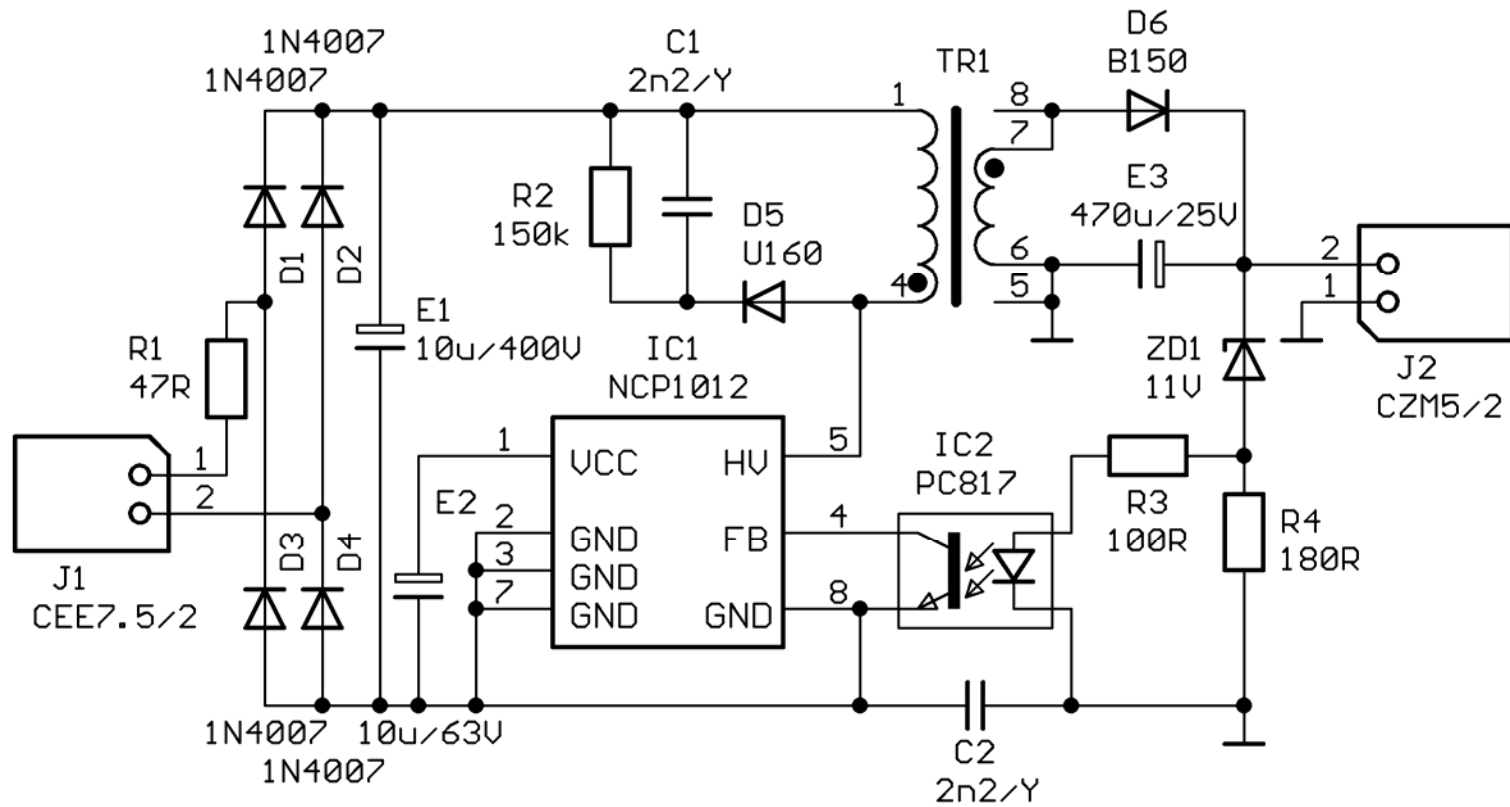
Designator	Quantity	Description	Value	Tolerance	Footprint	Manufacturer	Manufacturer Part Number	Substitution Allowed	Lead Free
C1,C2	2	Polypropylene Film Capacitor	2.2 nF, 300 V	20%	0.39 pitch	Arcotronics	R413F1220DQ00M	Yes	Yes
D1,D2, D3, D4	4	Standard Rectifier	1 A, 1000 V	NA	DO41	ON Semiconductor	1N4007	No	Yes
D5	1	Ultrafast Rectifier	1 A, 600 V	NA	59-10	ON Semiconductor	MUR160	No	Yes
D6	1	Schottky Rectifier	1 A, 50 V	NA	59-10	ON Semiconductor	MBR150	No	Yes
E1	1	Aluminum Electrolytic Capacitor	10µF, 400 V	20%	Radial	Panasonic - ECG	ECA2GHG100	Yes	Yes
E2	1	Aluminum Electrolytic Capacitor	10µF, 63 V	20%	D=5mm	Nippon Chemi-Con	KMG63VB10RM5X11LL	Yes	Yes
E3	1	Aluminum Electrolytic Capacitor	470µF, 25 V	20%	D=10mm	Nippon Chemi-Con	EKMF250ESS471MJ16S	Yes	Yes
IC1	1	Self-Supplied Monolithic Switcher	NA	NA	PDIP-7	ON Semiconductor	NCP1012AP100G	No	Yes
IC2	1	Photocoupler	1.2 V, 5kVrms	NA	DIP4	Sharp	PC817XJ0000F	Yes	Yes
J1	1	PCB Terminal	300V, 10A	NA	Pitch 7.5mm	Weidmuller	1594440000	Yes	Yes
J2	1	PCB Terminal	300V, 10A	NA	Pitch 5mm	Weidmuller	1716020000	Yes	Yes
R1	1	Metal Film Resistor	47Ω, 1/4W	1%	Axial	TT Electronics	MFR4 47R 1%	Yes	Yes
R2	1	Metal Film Resistor	150kΩ, 1/2W	1%	Axial	Vishay	SFR16S0001503FA500	Yes	Yes
R3	1	Metal Film Resistor	100Ω, 0.4W	1%	Axial	Vishay	MRS16000C1800FCT	Yes	Yes
R4	1	Metal Film Resistor	180Ω, 0.4W	1%	Axial	Vishay	MRS16000C1000FCT	Yes	Yes
TR1	1	Custom Transformer	-	NA	EF16 Hor.	P&V Elektronik*	TR-NCP1012	Yes	Yes
ZD1	1	Zener Diode	11v, 1/2W	NA	DO-35	Fairchild	BZX55-C11	Yes	Yes

Schematic for the NCP1012 Evaluation Board

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Test Procedure for the NCP1012 Evaluation Board

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Plug NCP1012AP133 into socket of the board

Use **isolated** regulated DC source 300V and AC 230V for the test as follows:

- 1) Set DC source to 100V, current limit 0.05A
- 2) Connect NCP1012 input to DC source
- 3) You may measure current consumption of around 3.5mA
- 4) Measure output voltage – $12V \pm 5\%$
- 5) Set DC voltage to 300V
- 6) You may measure consumption of around 2mA
- 7) Switch OFF the power source
- 8) Connect 47R 5W resistor to the output
- 9) Switch ON the power
- 10) Current consumption may increase to approximately 15mA
- 11) Measure output voltage – remain 12V
- 12) Switch OFF the DC power.
- 13) Connect to 230V AC power and switch ON
- 14) Measure output voltage – remain 12V

WARNING! All connection and disconnections of the input voltage do ONLY with power source switched OFF. The voltage is dangerous for health.