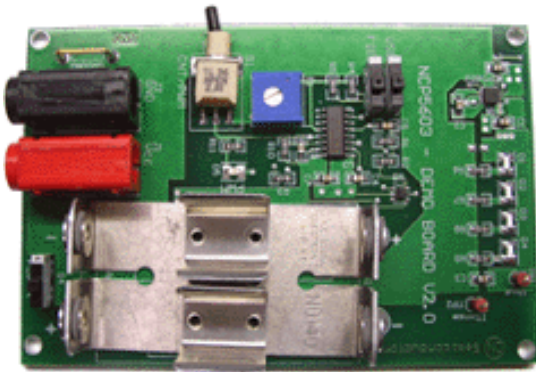


High Efficiency Charge Pump Converter / White LED Driver Evaluation Board



ON Semiconductor

Part Number: NCP5603GEVB



Evaluation/Development Tool Description

The NCP5603 is an integrated circuit dedicated to the medium power White LED applications. The power conversion is achieved by means of a charge pump structure, using two external ceramic capacitors, making the system extremely tiny. The device supplies a constant voltage to the load from a low battery voltage source. It is particularly suited for the High Efficiency LED used in low cost, low power applications, with high extended battery life.

Bill of Materials for the NCP5603 Evaluation Board

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2.16.2007

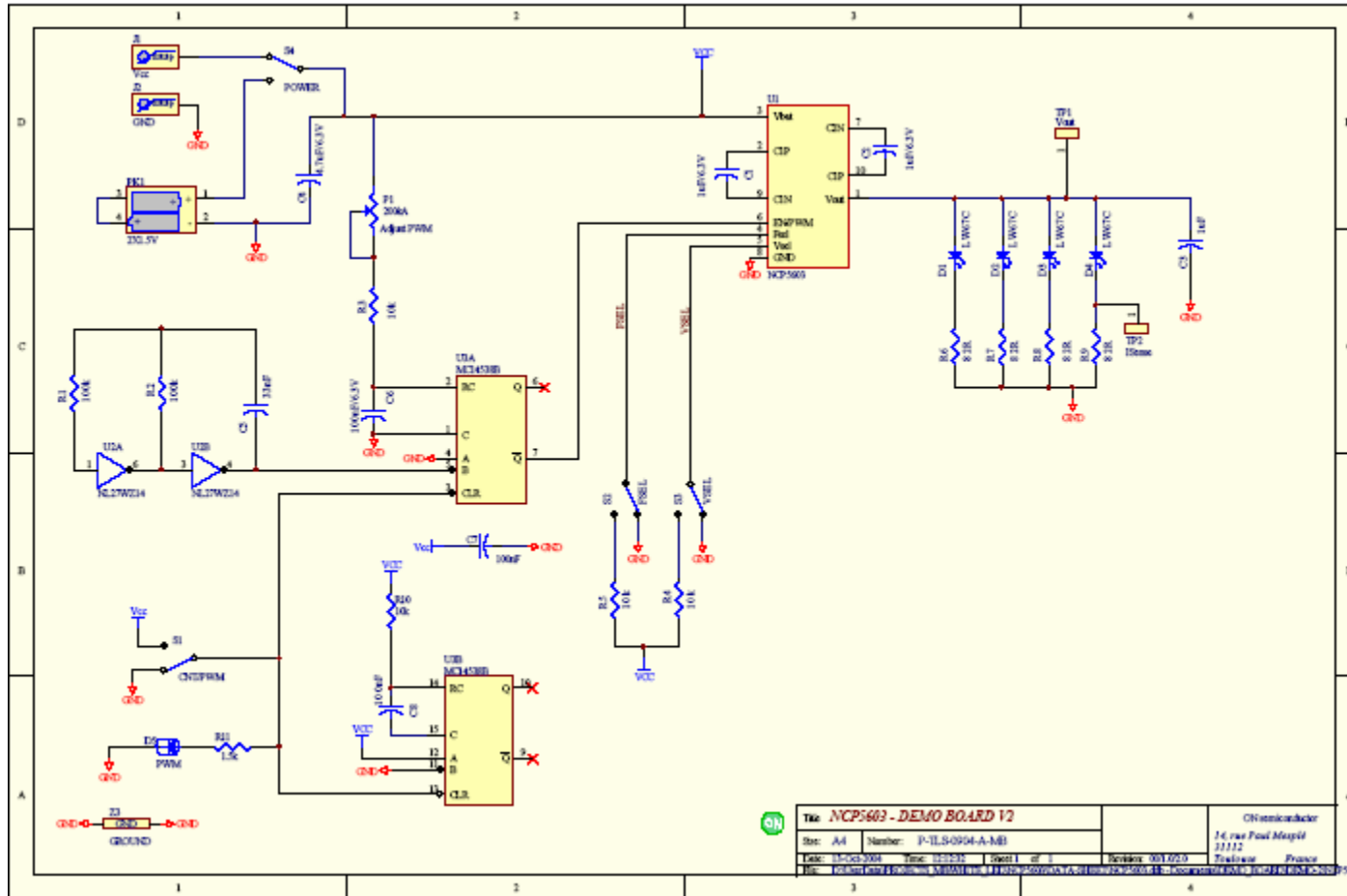
Designator	Quantity	Description	Value	Tolerance	Footprint	Manufacturer	Manufacturer Part Number	Substitution Allowed	RoHS Compliant
U1	1	NCP5603 Charge pump	NA	NA	QFN10	ON Semiconductor	NCP5603MNR2G	No	Yes
U2	1	Dual Schmitt trigger inverter	NA	NA	TSOP-6	ON Semiconductor	NL27WZ14DTT1G	No	Yes
U3	1	Dual Retriggerable One Shot	NA	NA	SOIC-16	ON Semiconductor	MC14538BDG	No	Yes
R1, R2	2	Resistor	100 k Ω	5%	0805	Vishay	CRCW08051040JNEA	Yes	Yes
R3, R4, R5, R10,	6	Resistor	10 k Ω	5%	0805	Vishay	CRCW08051030JNEA	Yes	Yes
R6, R7, R8, R9	4	Resistor	82 Ω	5%	0805	Vishay	CRCW080582R0JNEA	Yes	Yes
R11	1	Resistor	1.5 k Ω	5%	0805	Vishay	CRCW08051530JNEA	Yes	Yes
C1, C2, C3	3	Ceramic Capacitor	1 μ F, 10 V	10%	0805	Murata	GRM219R61A105KC01D	Yes	Yes
C4	1	Ceramic Capacitor	4.7 μ F, 10 V	10%	0805	Murata	GRM219R61A475KE19D	Yes	Yes
C5	1	Ceramic Cpacitor	33 nF, 50 V	10%	0805	Kemet	C0805C333K5RACTU	Yes	Yes
C6, C7, C8	3	Ceramic Cpacitor	100 nF, 50 V	10%	0805	Kemet	C0805C104K5RACTU	Yes	Yes
J1	1	Banana socket	NA		PLUG_4MM	Deltron Components	571-0500	Yes	Yes
J2	1	Banana socket	NA		PLUG_4MM	Deltron Components	571-0100	Yes	Yes
D1, D2, D3 D4	4	LW Y87S White LED	NA	NA	OSRAM_LED	Osram	Q65110A1709	Yes	Yes
D5	1	HYPER MINI TOPLED	NA	NA	OSRAM_LED	Osram	Q65110A2364	Yes	Yes
TP1, TP2	2	Test point	NA	NA	TEST_POINT	Keystone	5005	Yes	Yes
P1	1	ADJ. Potentiometer	200 k Ω	NA	VR-4	Bourns	3386F-1-204LF	Yes	Yes
PK2	1	AA battery pack	NA	NA	BPACK2	Keystone	2223	Yes	Yes
S1	1	Manual Switch	NA	NA	APEM_CMS	APEM	TL36WS84000	Yes	Yes
S2, S3, S4	3	Manual Switch	NA	NA	SIP3	EAO	09.03290.01	Yes	Yes
Z3	1	Ground	NA	NA	GND_TEST	Harwin	D3082-05	Yes	Yes

Schematic for the NCP5603 Evaluation Board

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10/5/2004



Test Procedure for the NCP5603 Evaluation Board

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10.5.2004

TEST CONDITIONS

Note: the demo board can operate with either an external power supply, or with two dry cell 1.5V, AA type, and battery. The mechanical switch S4 is used to select one of the two power sources. The system is not designed to run the two power sources simultaneously and such connection must be avoided.

Using an external power supply:

- 1- Select a DC power supply with 500mA output current capability (minimum), adjust the output voltage to 3.60V
- 2- Connect the positive wire to the RED socket, connect the negative wire to the BLACK socket
- 3- Toggle switch S4 to turn on the system

Using dry cell battery:

- 1 – Make sure no external power supply is attached to the RED and BLACK sockets
- 2 - Insert two 1.5V, AA type cell in the holder. Make sure the polarity is properly respected
- 3 – Toggle switch S4 to turn on the system

System operation :

- 4- Select the Output Voltage (4.5V or 5.0V) by toggling the switch S3, B1
- 5- Select the operating frequency (260kHz or 630kHz) by toggling the switch S2, FSEL. Note: turn system off before switching frequency.
- 6- Select the Normal or PWM mode by toggling the switch S1. A RED LED turns On when the PWM mode is activated. The brightness of the LED (if necessary) can be adjusted (when the PWM mode is activated) by means of the potentiometer P1.