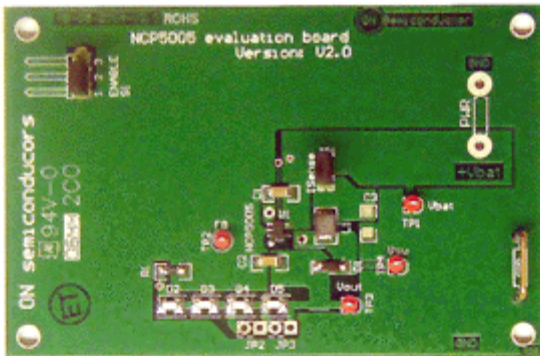


# 22 V Low EMI White LED Boost Driver Evaluation Board



ON Semiconductor

Part Number: NCP5005GEVB



## Evaluation/Development Tool Description

The NCP5005 is high efficiency boost converter operating in current loop, based on a PFM mode, to drive White LED. The current mode regulation allows a uniform brightness of the LEDs. The chip has been optimized for small ceramic capacitors, capable to supply up to 1.0 W output power.

## Features

- 2.7 to 5.5V Input Voltage Range
- Full EMI Immunity
- Constant Output Current regulation
- 0.3uA Stand By Quiescent Current
- Includes Dimming Function (PWM)
- Enable Function Driven Directly from Low Battery Voltage Source
- Thermal Shutdown Protection

## Bill of Materials for the NCP5005 Evaluation Board

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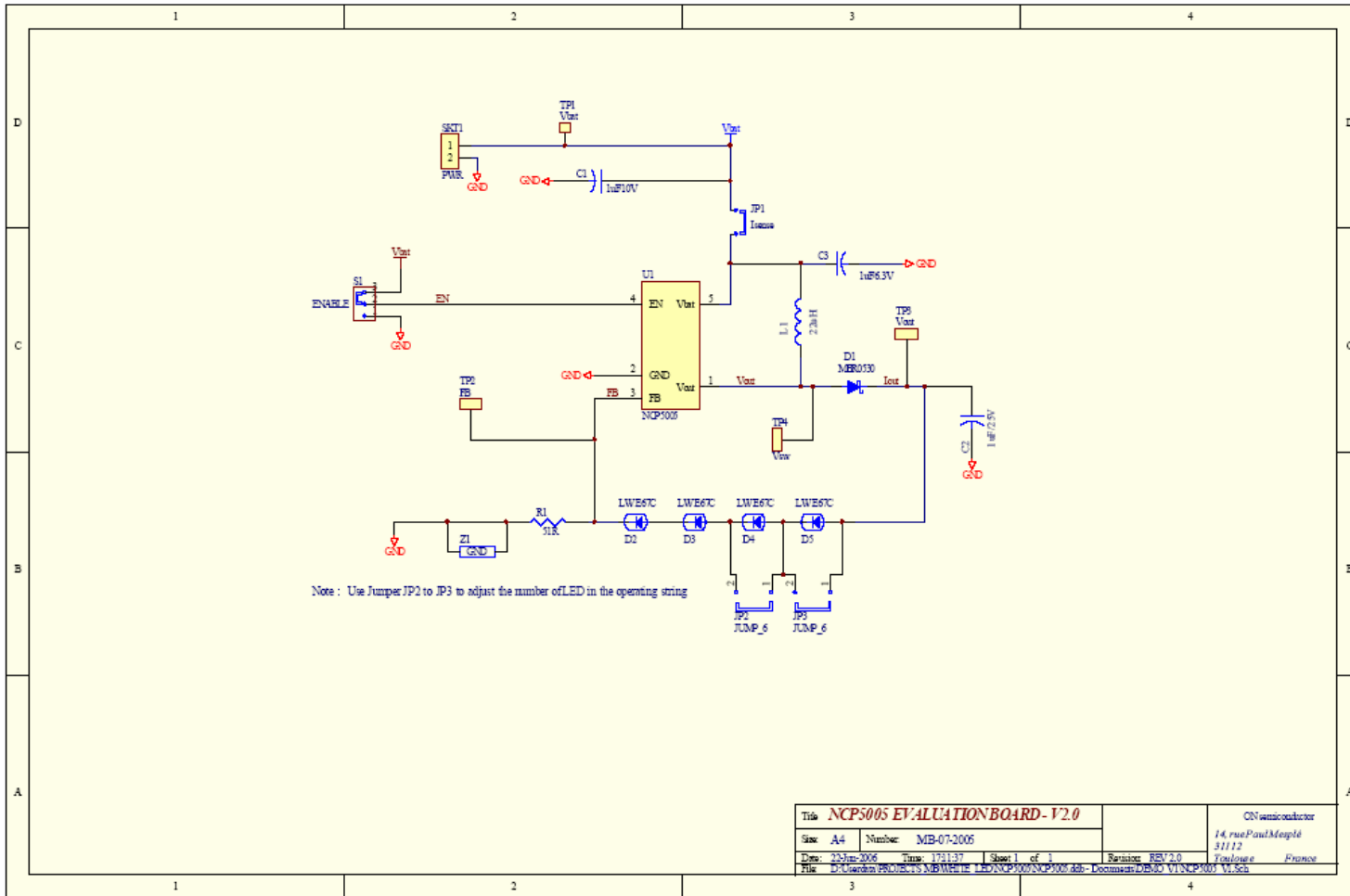
Designator	Quantity	Description	Value	Tolerance	Footprint	Manufacturer	Manufacturer Part Number	Substitution Allowed	RoHS Compliant
C1	1	X5R Ceramic Capacitor	4.7 uF, 16 V	10%	1206	Murata	GRM31CR61C475KA01L	See Note 1	Yes
C2	1	X5R Ceramic Capacitor	1 uF, 25 V	10%	1206	Murata	GRM319R61E105KC36D	See Note 1	Yes
D1	1	Schottky Diode	NA	NA	SOD123-P	ON Semiconductor	MBR0530T1G	No	Yes
D2,D3,D4, D5	4	LED diode	NA	NA	SMD	Osram	LW-T67C		Yes
SKT1	2	Connector	Connector	NA	RAD0.4	Kontek Comatel	3110014000500	Yes	Yes
JP1	1	Connector	ISense	NA	SIP2	Tyco	5-826629-0	Yes	Yes
L1	1	INDUCTOR	22 uH	10%	1210	Coilcraft	1008PS-223KLB		Yes
R1	1	Resistor	51 $\Omega$	1%	0805	Vishay-Draloric	TNPW080551R0FHEA	Yes	Yes
S1	1	Connector	ENABLE	NA	SIP3-H	Tyco Harwin	5-826629-0	Yes	Yes
TP1,TP2, TP3, TP4	4	Test Point	Vbat, FB, Vout, Vsw	NA	NA	Keystone	5005 ( THM )	Yes	Yes
U1	1	White LED driver	NCP5005	NA	TSOP5	ON Semiconductor	NCP5005SNT1G	No	Yes
Z1	1	GND TestPoint	GND_TEST	NA	NA	Harwin	D3082-01 (tin ) D3082-05 (gold )	Yes	Yes
		Jumper	NA	NA	pitch 2.54 mm	Any	Any	Yes	Yes

Note 1 : using X7R type ceramic capacitor is possible, but the system will have downgraded performances when operating over the temperature range.

# Schematic for the NCP5005 Evaluation Board



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## Test Procedure for the NCP5005 Evaluation Board

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#### Equipment:

- 1 – DC power supply, 3.60V / 500mA is a minimum. Preferred: TEKTRONIX = PS2520G
- 2 – Oscilloscope, 100MHz bandwidth, two channels minimum. Preferred: TEKTRONIX = TDS784
- 3 – Analog probes 100MHz bandwidth minimum. Preferred: TEKTRONIX = P6139A
- 4 – Current probe TEKTRONIX = TCP202
- 5 – Digital voltmeter, FLUKE

#### Procedure:

1. Make sure the power supply is OFF.
2. Make sure the power supply is preset to 3.60V.
3. Make sure the power supply is current limited to 500mA.
4. Connect the power supply to the banana plugs, positive supply to Vbat, negative supply to GND.
5. If current monitor is necessary, connect a short jumper (5 cm) across JP1 to read current and connect the current sense.
6. Connect one analogue probe to pin Vout to read the output voltage.
7. Connect a short DVM cable to pin FB to read the feedback voltage.

*Note: since this pin is internally connected to a very high impedance circuit, care must be taken to minimize noise pick - up as such noise will downgrade the operating performances. In case there is doubt with the waveforms captured with the current probe, remove the DVM probe from the FB pin and double check the operation.*

8. Turn ON the power supply: LED should turn on and you can observe the waveforms as depicted in the NCP5005 data sheet.