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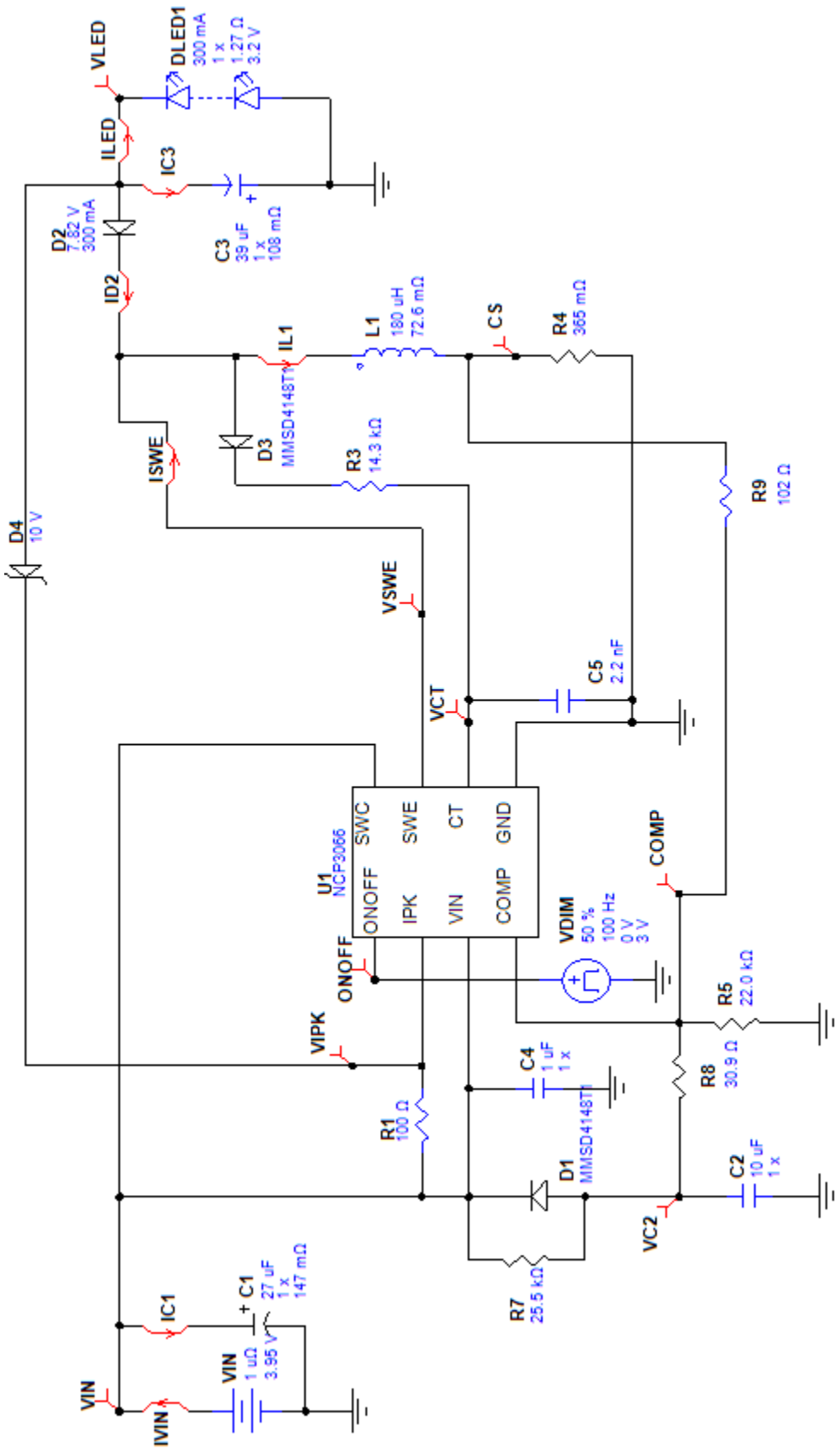
Design Summary - NCP3066

Design Requirements

Vin Minimum	3.7 V
Vin Maximum	4.2 V
LED Forward Voltage	3.2 V
LED Current	0.3 A
LED Peak Current	0.32 A
LED Impedance	1.27 Ω
LED N Series	1

Schematic


VLED
DLED1
300 mA
1 x
1.27 Ω
3.2 V
ILED
IC3
C3
39 uF
1 x
108 mΩ
D2
7.82 V
300 mA
ID2
IL1
L1
180 uH
72.6 mΩ
CS
R4
365 mΩ
D3
MMSD4148T1
R3
14.3 kΩ
ISWE
R9
102 Ω
D4
10 V
VSWE
C5
2.2 nF
VCT
U1
NCP3066
SWC
SWE
CT
GND
ONOFF
IPK
VIN
COMP
COMP
VDIM
50 %
100 Hz
0 V
3 V
ONOFF
R5
22.0 kΩ
VIPK
C4
1 uF
1 x
R8
30.9 Ω
R1
100 Ω
D1
MMSD4148T1
C2
10 uF
1 x
VC2
R7
25.5 kΩ
IC1
C1
27 uF
1 x
147 mΩ
VIN
1 uΩ
3.95 V
VIN
IVIN

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Bill Of Materials

Ref	Qty	Description
ICs		
U1	1	NCP3066MNTXG
Capacitors		
C1	1	Capacitor 27uF, ESR = 147mOhms, Voltage Rating = 5.09V, Tolerance = 20%
C2	1	Capacitor 10uF, Voltage Rating = 4.24V, Tolerance = 20%
C3	1	Capacitor 39uF, ESR = 108mOhms, Voltage Rating = 4.30V, Tolerance = 20%
C4	1	Capacitor 1uF, Voltage Rating = 4.24V, Tolerance = 20%
C5	1	Capacitor 2.2nF, ESR = 340mOhms, Voltage Rating = 4.24V, Tolerance = 20%
Diodes		
D1	1	Diode
D2	1	Diode Voltage Rating = 7.82V, Current Rating = 300mA, SPD =
D3	1	Diode
D4	1	Zener Diode 10V, Zener= 10V
Inductors		
L1	1	Inductor 180uH, DCR = 72.6m, Tolerance = 20%, Current Rating = 320mA
Resistors		
R1	1	Resistor 100Ω, Tolerance = 1%, Power Dissipation = 10mW
R3	1	Resistor 14.3kΩ, Tolerance = 1%, Power Dissipation = 1.26mW
R4	1	Resistor 365mΩ, Tolerance = 1%, Power Dissipation = 18.8mW
R5	1	Resistor 22.0kΩ, Tolerance = 1%, Power Dissipation = 2.51uW
R7	1	Resistor 25.5kΩ, Tolerance = 1%, Power Dissipation = 706uW
R8	1	Resistor 30.9Ω, Tolerance = 1%, Power Dissipation = 582mW
R9	1	Resistor 102Ω, Tolerance = 1%, Power Dissipation = 9.80mW

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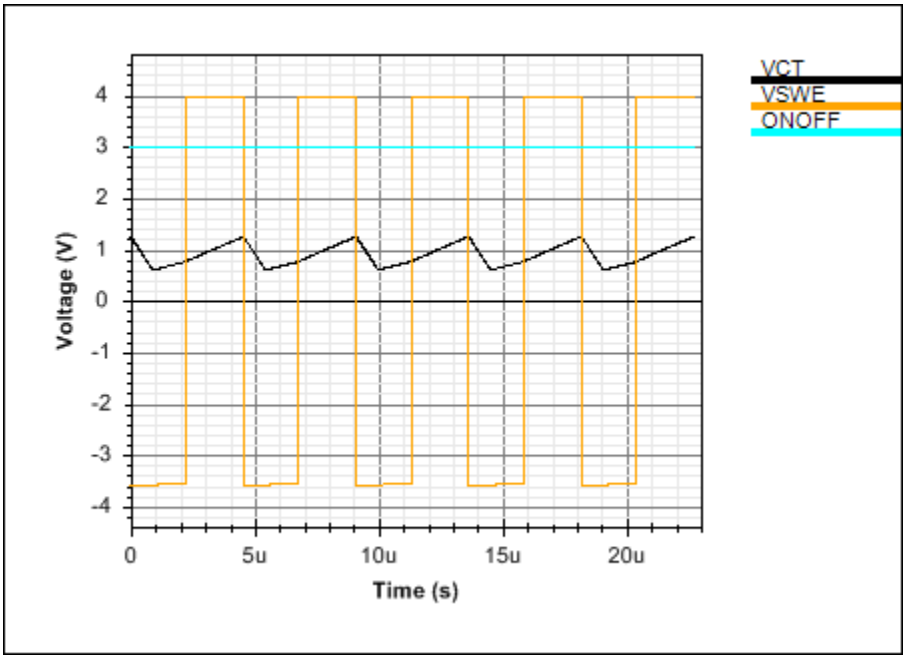
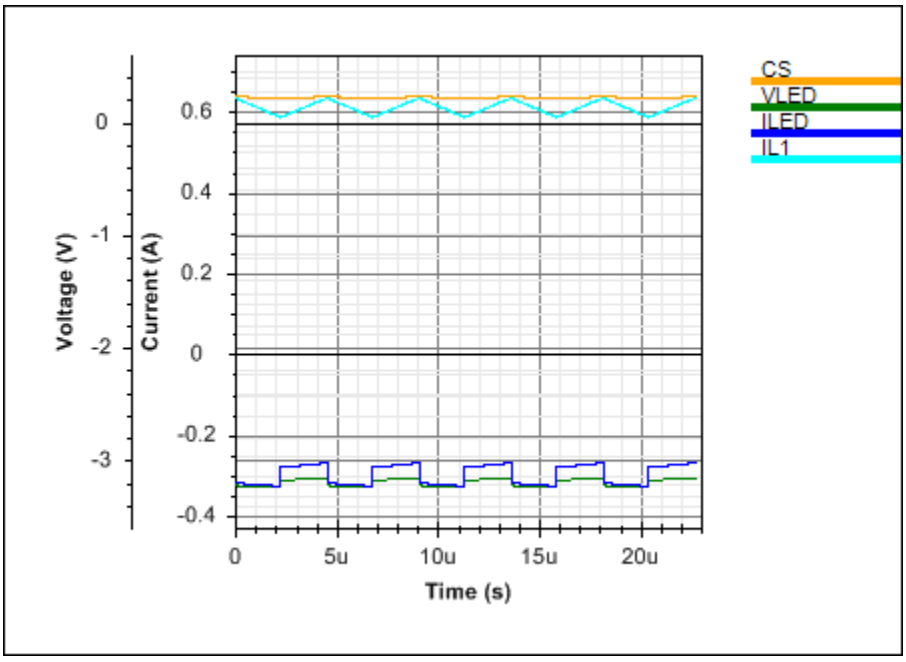
Simulation Results

Steady State Analysis Results

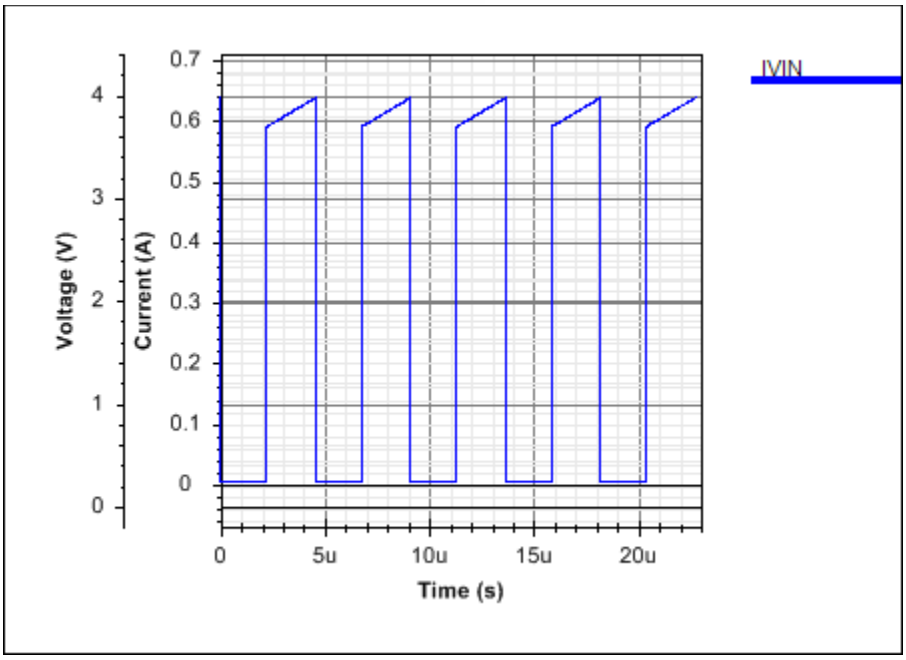
IC



OUTPUT



INPUT


IVIN
Voltage (V)
Current (A)
Time (s)
0
1
2
3
4
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
5u
10u
15u
20u