eDesignSuite

Untitled

DC/DC Converter Specifications

IC: L4976
Topology: BUCK
Input: 16 - 50 V
Output: 5 V (2 % ripple) - 600 mA max

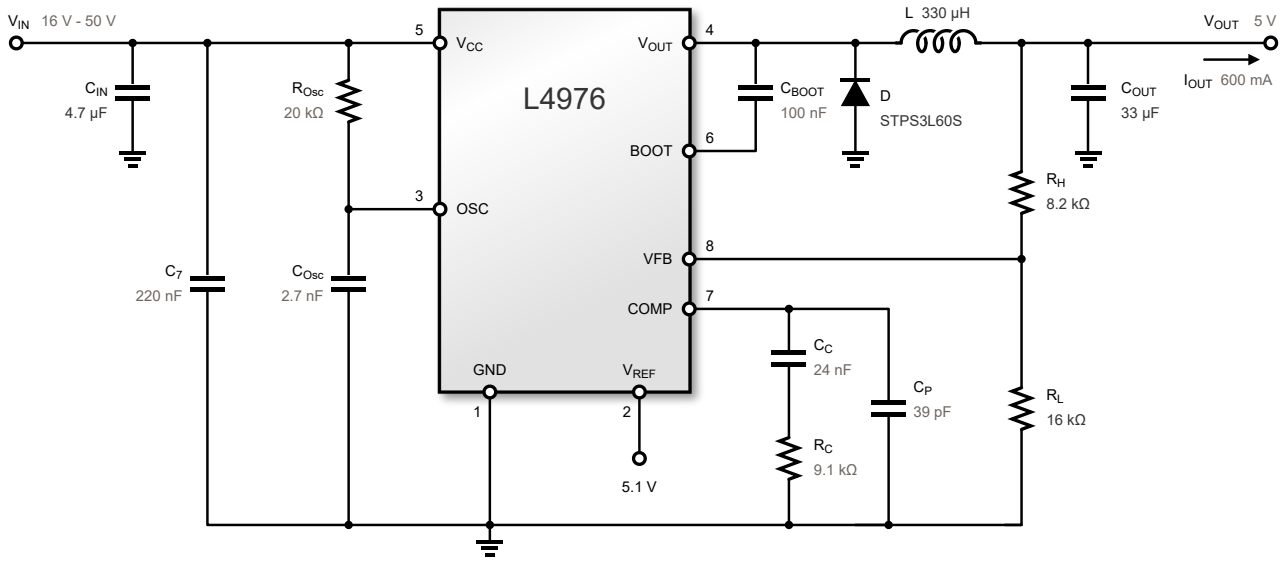
Operating Conditions

@Vin - min 16 V / max 50 V: 50 V
@Iout - min 76 mA / max 600 mA: 600 mA
@Ta - min -40 °C / max 125 °C: 25 °C

Actuals

Vout: 5.01 V
ripple: 97 mV - 1.93 %
IL ripple: 152 mA - 25.27 % of 600 mA
fsw: 101.54 kHz
Ton: 1.12 µs
Vin ripple: 0.71 %
bandwidth: 17.39 kHz
phase margin: 45.08°
IC Tj: 67.9 °C
ΔTj: 42.9 °C

Circuit - Schematic

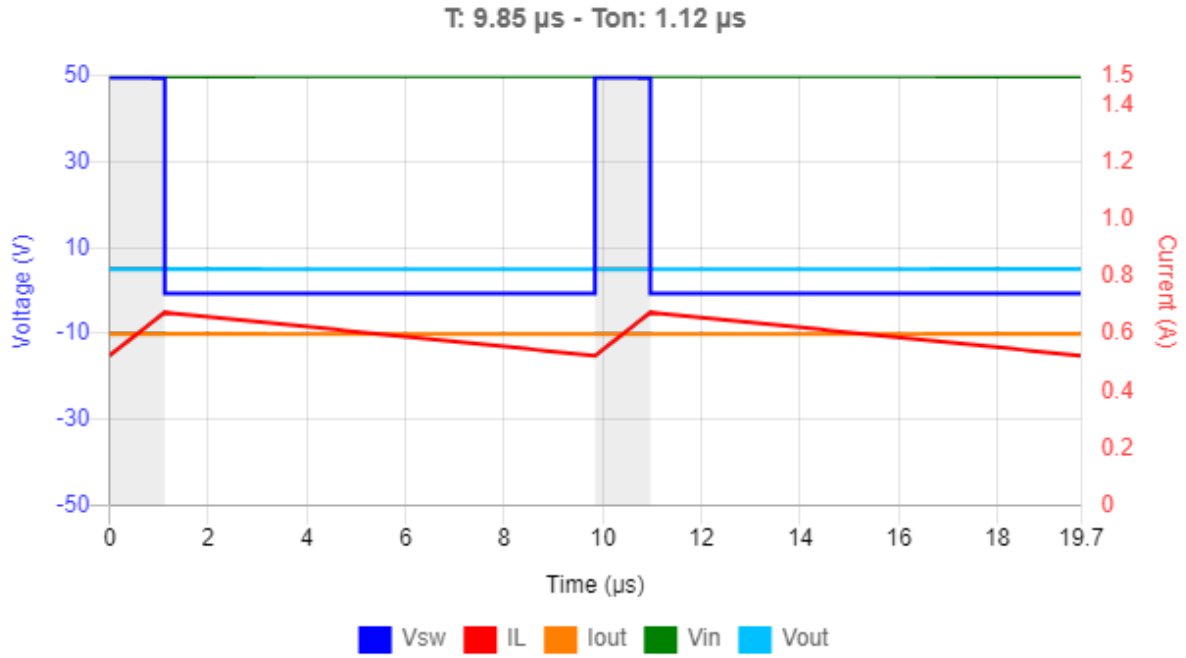


Feedback

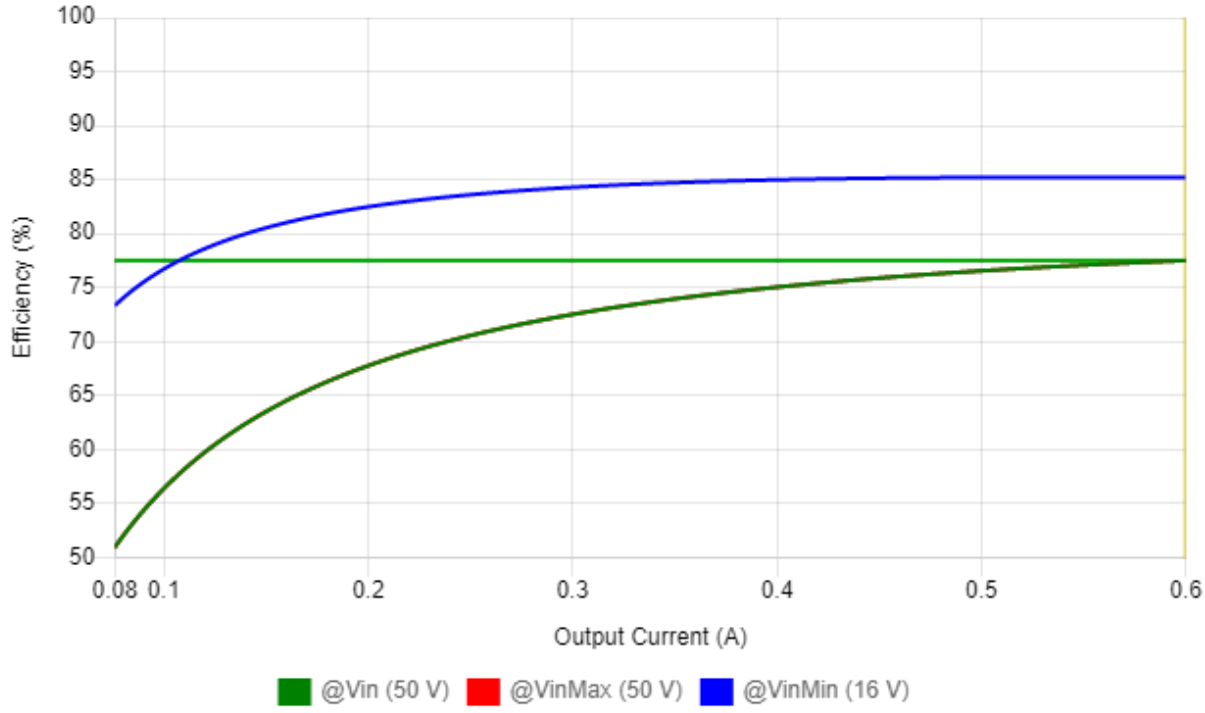
Circuit - BOM

Type	Ref	Value	Description
IC	IC	L4976	L4976 - DIP 8 - STMicroelectronics
Capacitor	Cin	4.7 µF	100 V - 15% - muRata - GRM55ER72A475KA01L
Capacitor	Cout	33 µF	6.3 V - 20% - AVX - TPSA3360060600
Inductor	L	330 µH	3.13 A - Coilcraft - MSS1812T-334MED
Diode	D	STPS3L60S	3 A, 60 V - STMicroelectronics
Capacitor	Cc	24 nF	24 nF
Resistor	Rc	9.1 kΩ	9.1 kΩ
Capacitor	Cp	39 pF	39 pF
Resistor	Rh	8.2 kΩ	Resistor value: 8.2 kΩ - tolerance: 1 %
Resistor	Rl	16 kΩ	Resistor value: 16 kΩ - tolerance: 1 %
Capacitor	Cosc	2.7 nF	2.7 nF
Resistor	Rosc	20 kΩ	20 kΩ
Capacitor	Cboot	100 nF	100 nF
Capacitor	C7	220 nF	220 nF

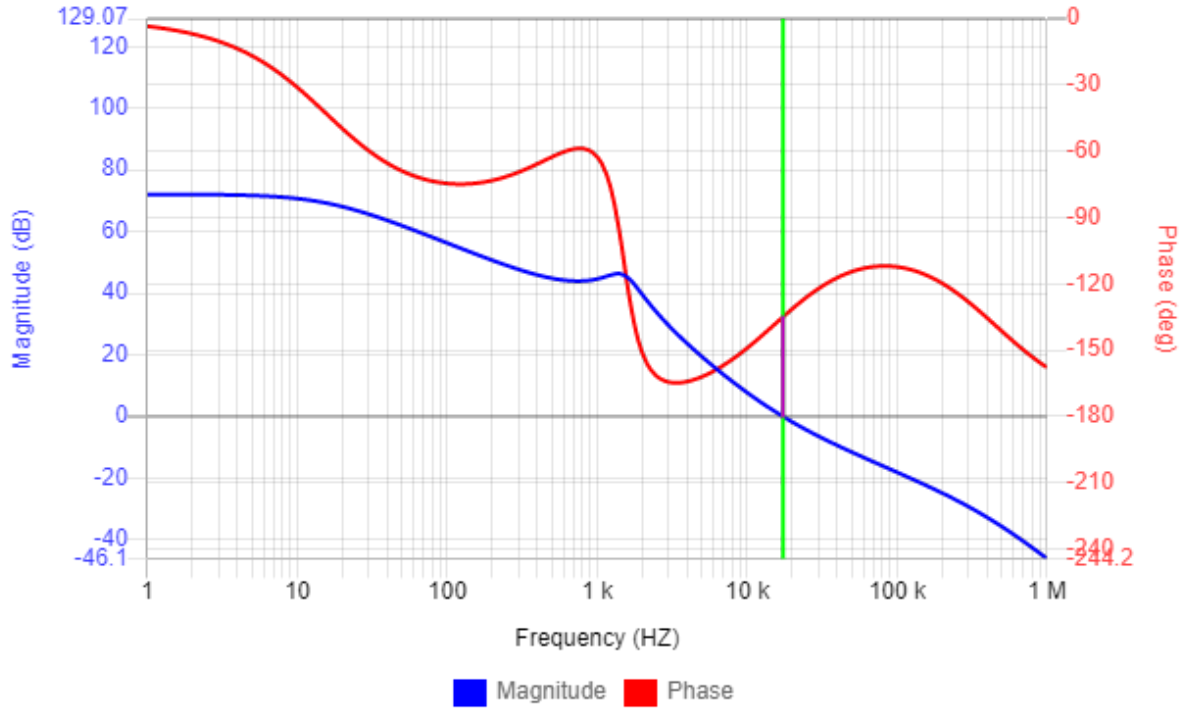
Simulation: duty cycle 11.4 %



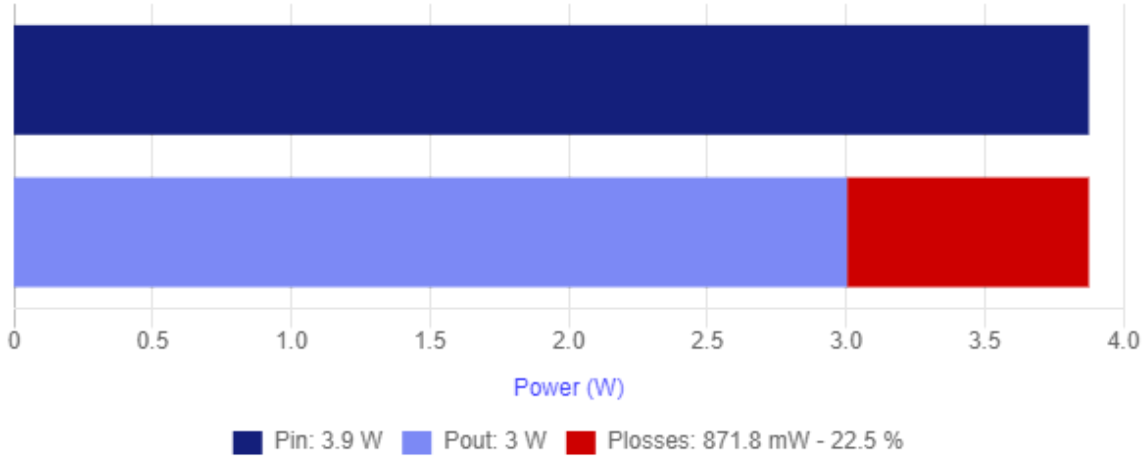
Efficiency: 77.5 %



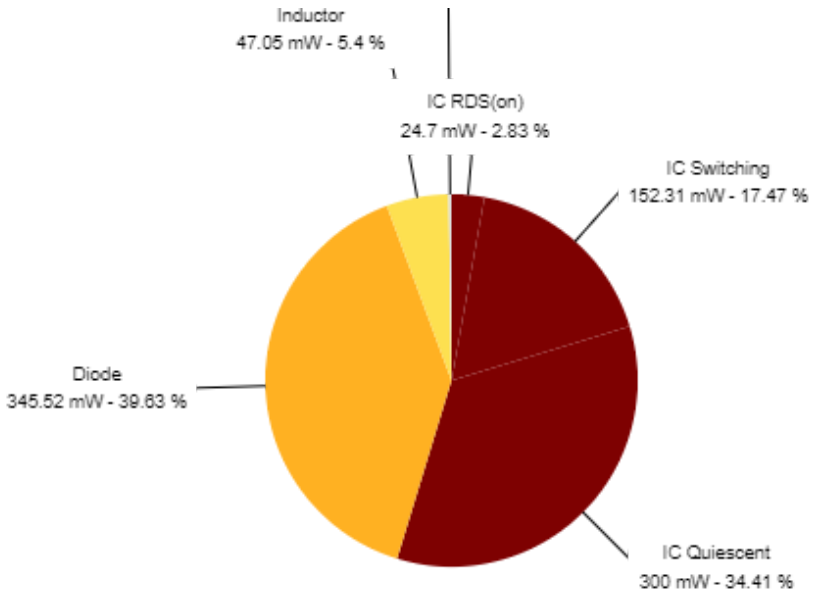
Bode: fc = 17.39 kHz - phase margin = 45.1 °



Efficiency: 77.5 %



Losses details



Feedback