eDesignSuite

Untitled

DC/DC Converter Specifications

IC: L4976
Topology: BUCK
Input: 16 - 50 V
Output: 15 V (2 % ripple) - 600 mA max

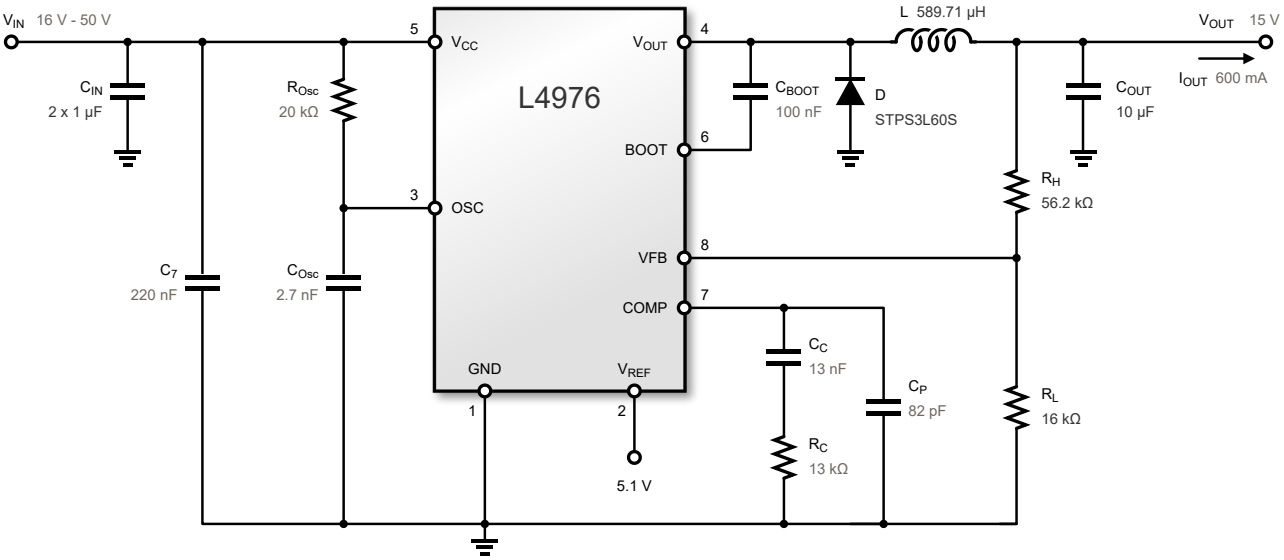
Operating Conditions

@Vin - min 16 V / max 50 V: 50 V
@Iout - min 91 mA / max 600 mA: 600 mA
@Ta - min -40 °C / max 125 °C: 25 °C

Actuals

Vout: 15 V
ripple: 276 mV - 1.84 %
IL ripple: 180 mA - 30.01 % of 600 mA
fsw: 101.54 kHz
Ton: 3.07 µs
Vin ripple: 3.2 %
bandwidth: 17.1 kHz
phase margin: 46.31°
IC Tj: 71.8 °C
ΔTj: 46.8 °C

Circuit - Schematic

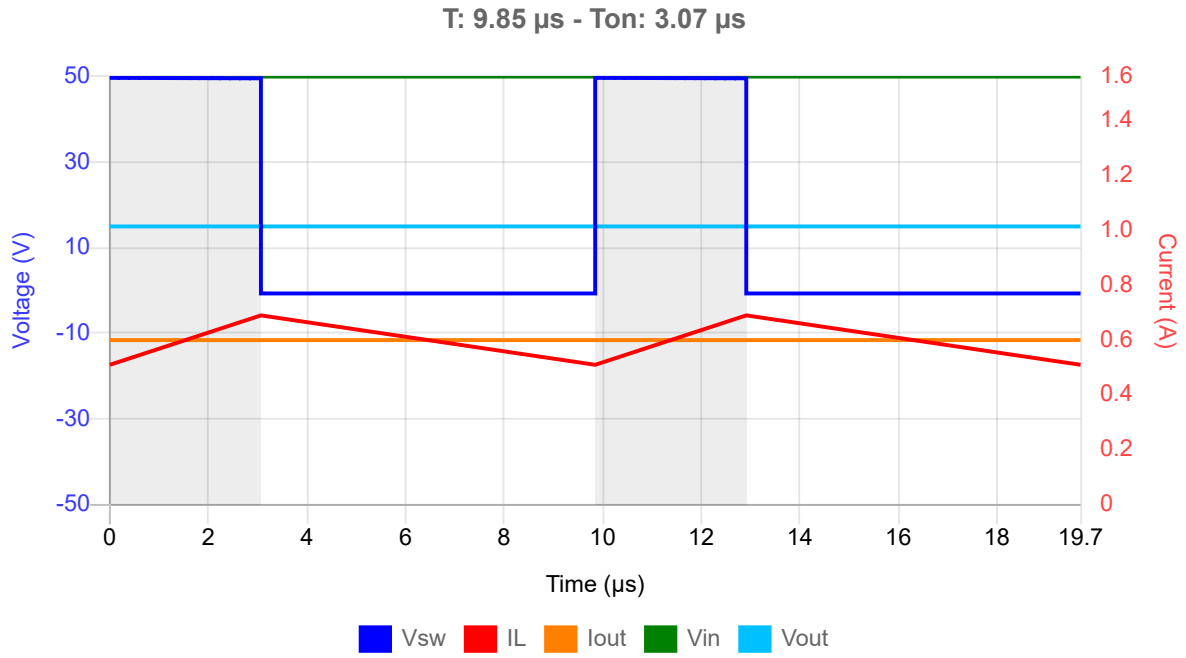


Feedback

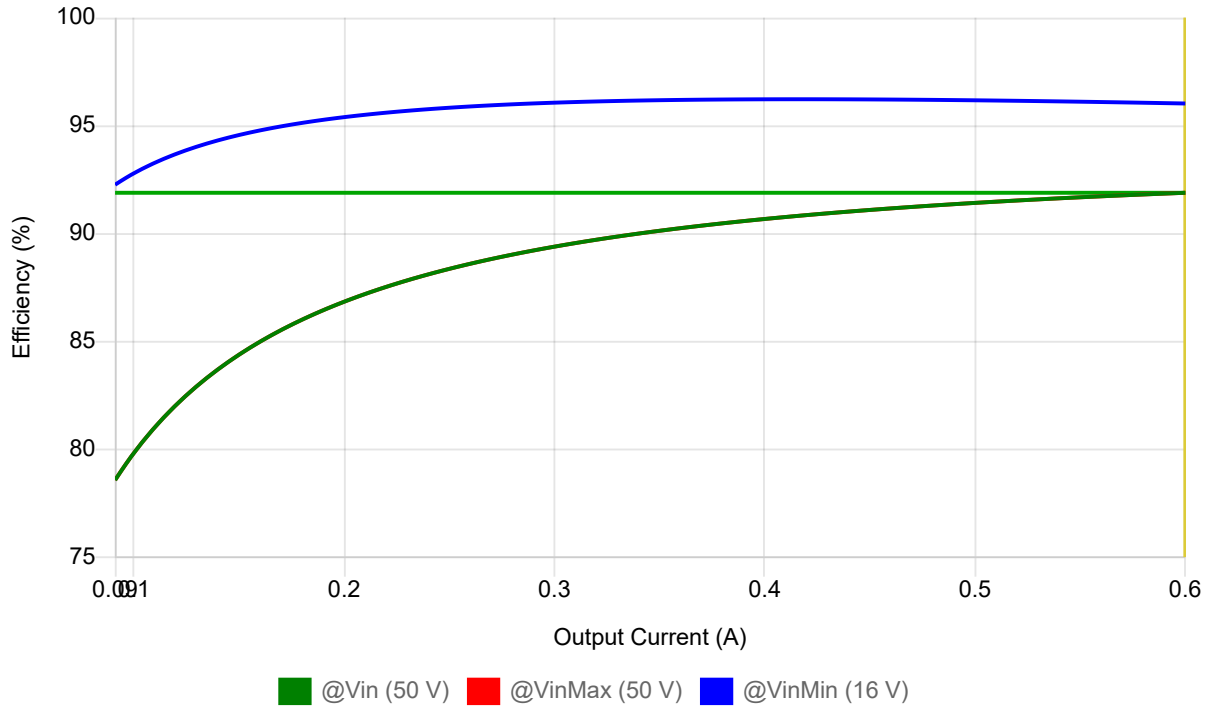
Circuit - BOM

Type	Ref	Value	Description
IC	IC	L4976	L4976 - DIP 8 - STMicroelectronics
Capacitor	Cin	2 x 1 µF	100 V - 10% - muRata - GRM32ER72A105KA01L
Capacitor	Cout	10 µF	25 V - 20% - Würth Elektronik - 860160472001
Inductor	L	589.71 µH	2.51 A - Unknown - $Auto$
Diode	D	STPS3L60S	3 A, 60 V - STMicroelectronics
Capacitor	Cc	13 nF	13 nF
Resistor	Rc	13 kΩ	13 kΩ
Capacitor	Cp	82 pF	82 pF
Resistor	Rh	56.2 kΩ	Resistor value: 56.2 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

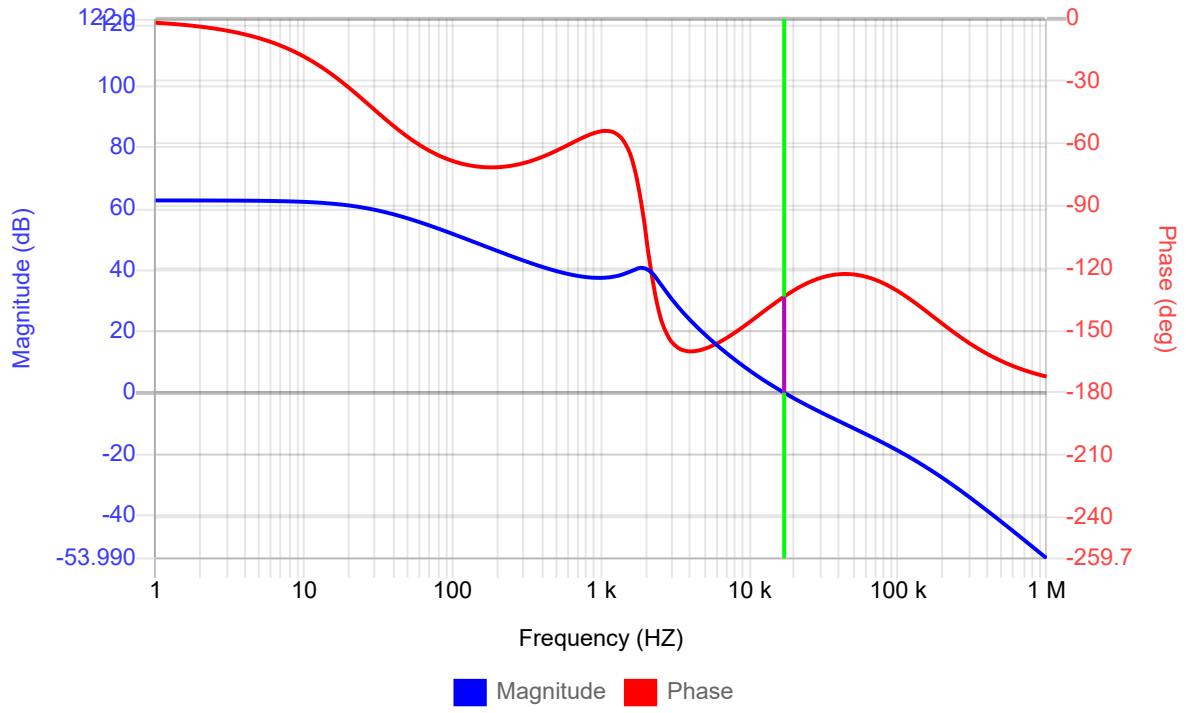
Simulation: duty cycle 31.1 %



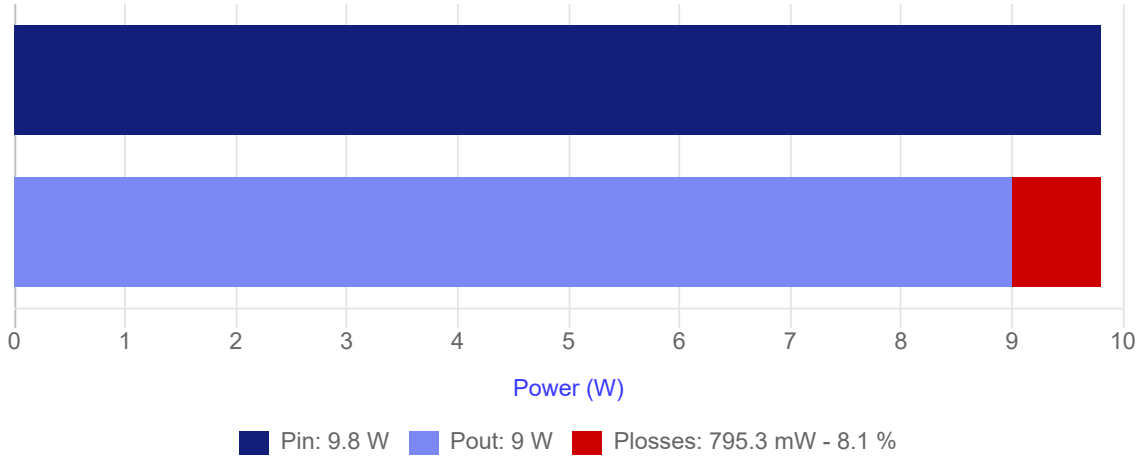
Efficiency: 91.9 %



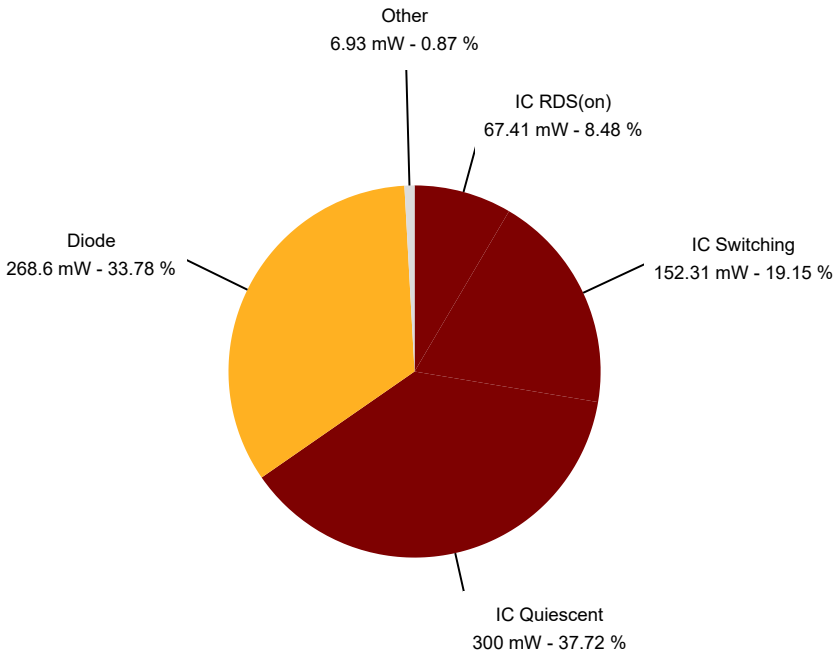
Bode: fc = 17.1 kHz - phase margin = 46.3 °



Efficiency: 91.9 %



Losses details



Feedback