eDesignSuite

Untitled

DC/DC Converter Specifications

IC: L4971
Topology: BUCK
Input: 16 - 50 V
Output: 15 V (2 % ripple) - 800 mA max

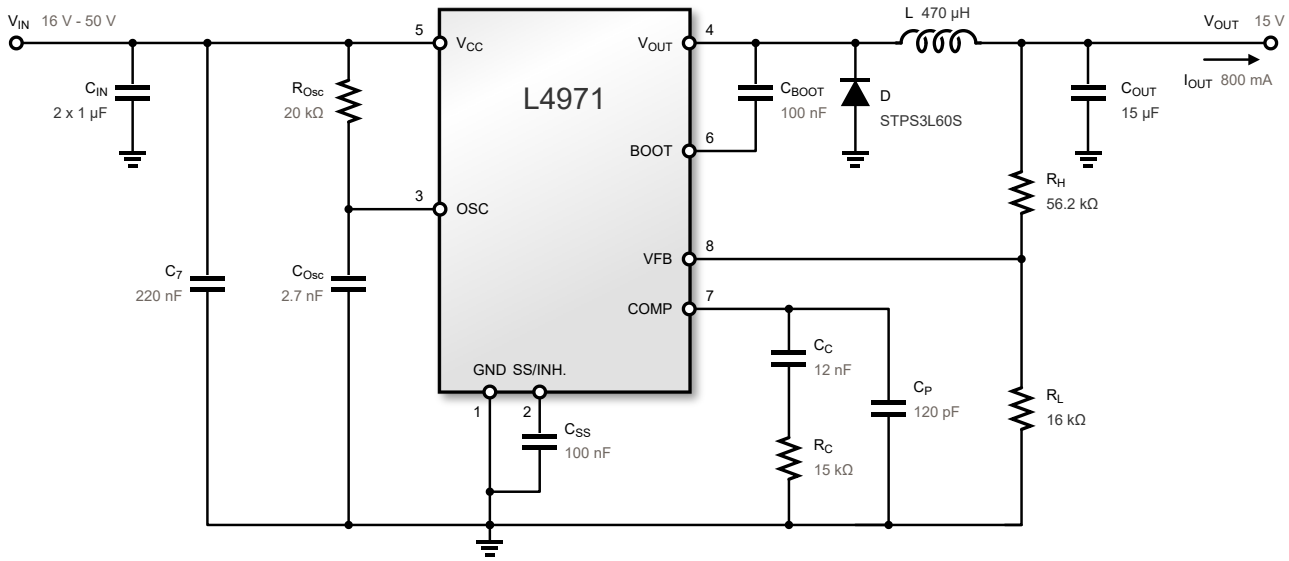
Operating Conditions

@Vin - min 16 V / max 50 V: 50 V
@Iout - min 113 mA / max 800 mA: 800 mA
@Ta - min -40 °C / max 125 °C: 25 °C

Actuals

Vout: 15 V
ripple: 287 mV - 1.91 %
IL ripple: 226 mA - 28.22 % of 800 mA
fsw: 101.54 kHz
Ton: 3.07 µs
Vin ripple: 4.26 %
bandwidth: 17.9 kHz
phase margin: 47.62°
IC Tj: 81.1 °C
ΔTj: 56.1 °C

Circuit - Schematic

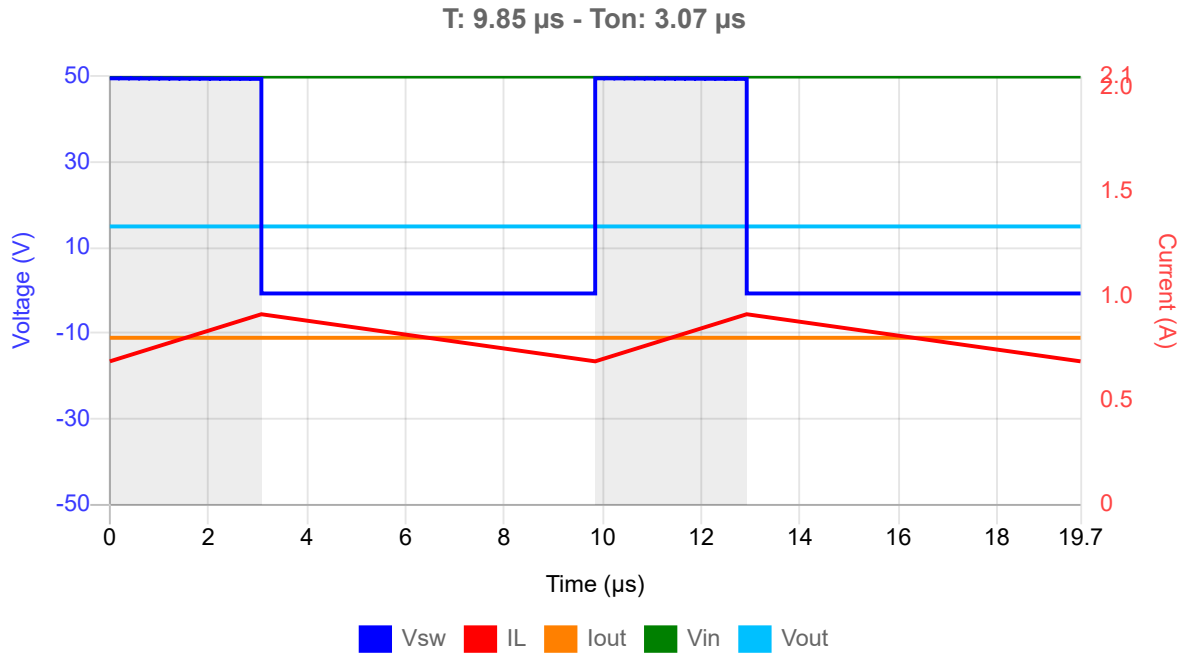


Feedback

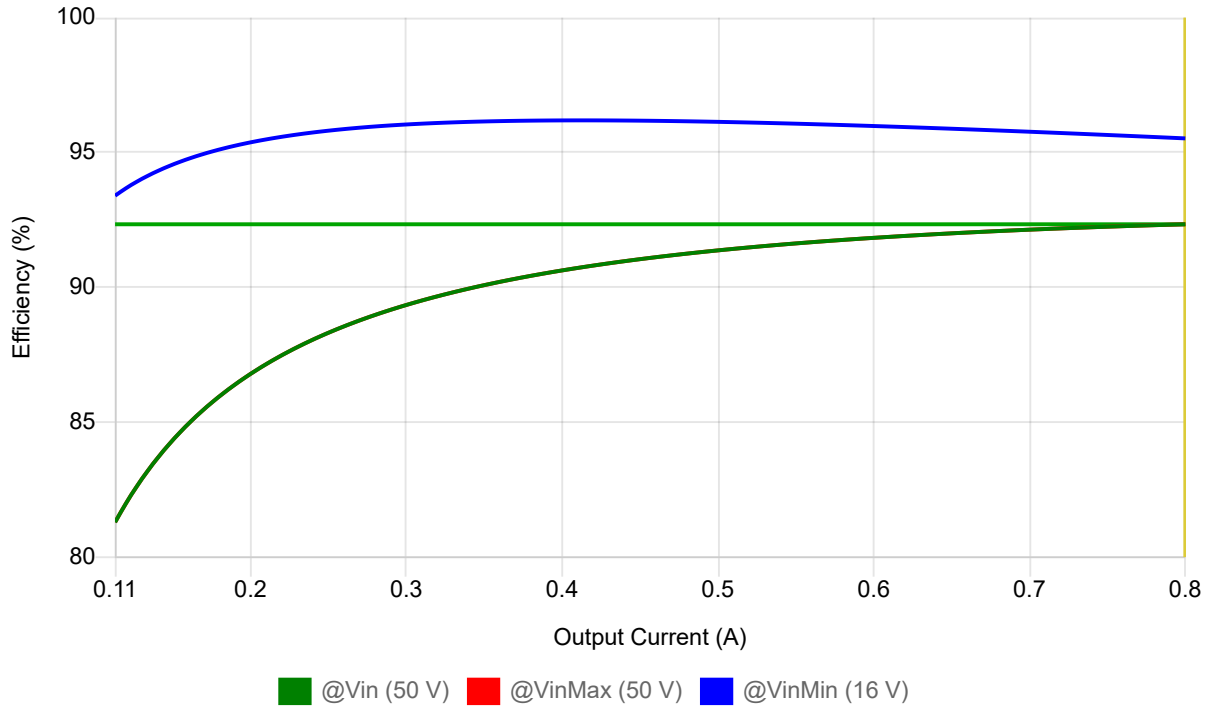
Circuit - BOM

Type	Ref	Value	Description
IC	IC	L4971	L4971 - DIP 8 - STMicroelectronics
Capacitor	Cin	2 x 1 µF	100 V - 10% - muRata - GRM32ER72A105KA01L
Capacitor	Cout	15 µF	25 V - 20% - Würth Elektronik - 860160472002
Inductor	L	470 µH	3.8 A - Coilcraft - AGP4233-474ME
Diode	D	STPS3L60S	3 A, 60 V - STMicroelectronics
Capacitor	Cc	12 nF	12 nF
Resistor	Rc	15 kΩ	15 kΩ
Capacitor	Cp	120 pF	120 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
Capacitor	Css	100 nF	100 nF

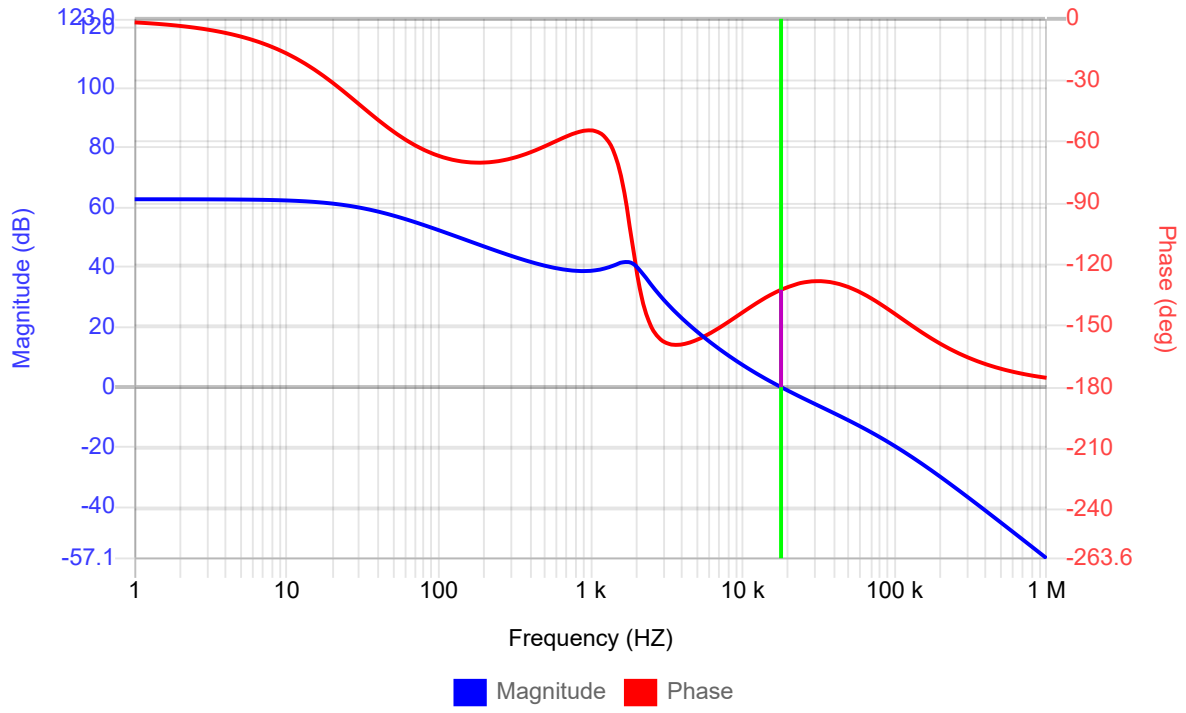
Simulation: duty cycle 31.2 %



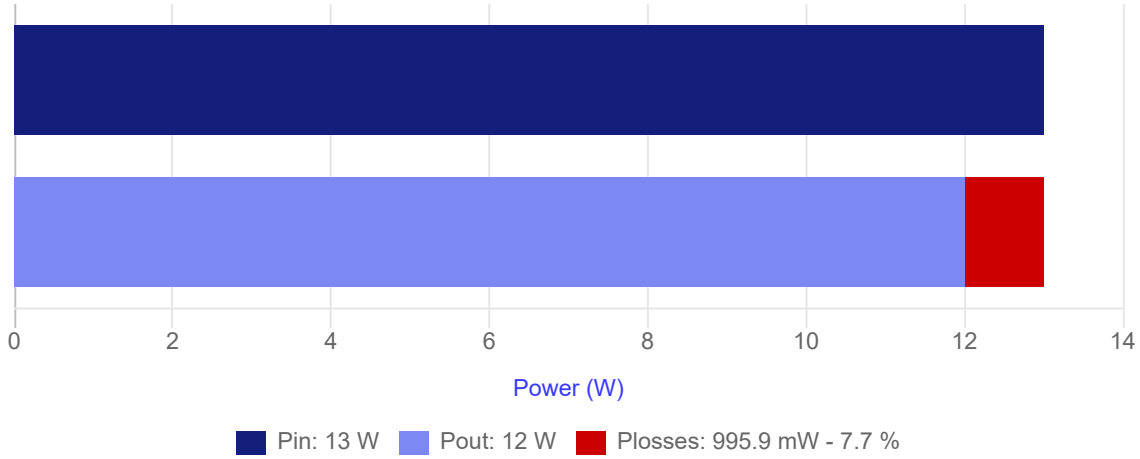
Efficiency: 92.3 %



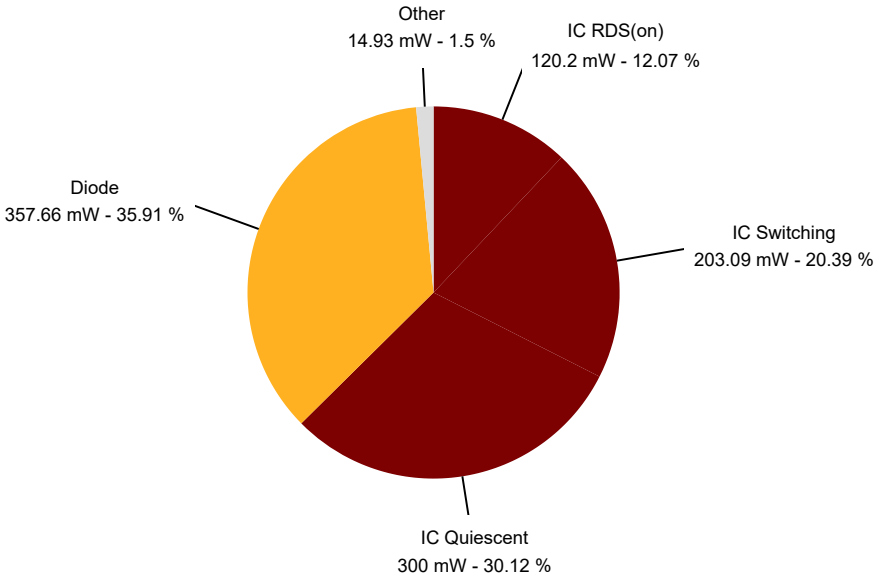
Bode: fc = 17.9 kHz - phase margin = 47.6 °



Efficiency: 92.3 %



Losses details



Feedback