

AC/DC Converter Specifications

IC: L6566B

Topology: QR FLYBACK

Input: 197 Vac - 254 Vac (≥ 47 Hz)

Output: 24 V (2 %) - 240 W

Exp. Average Efficiency: 87 %

Max. Ambient Temperature: 60 °C

Operating Conditions

@VinAC - from 197 to 254 Vac: 230 Vac

@Pout - from 0 to 240 W: 240 W

Actual

Efficiency: 89.26 %

Transformer Specifications

Isat: ≥ 6.2 A **Lp:** 478 μ H $\pm 10\%$ **Leakage:** ≤ 4.78 μ H

Primary:

Irms: ≥ 2.18 A

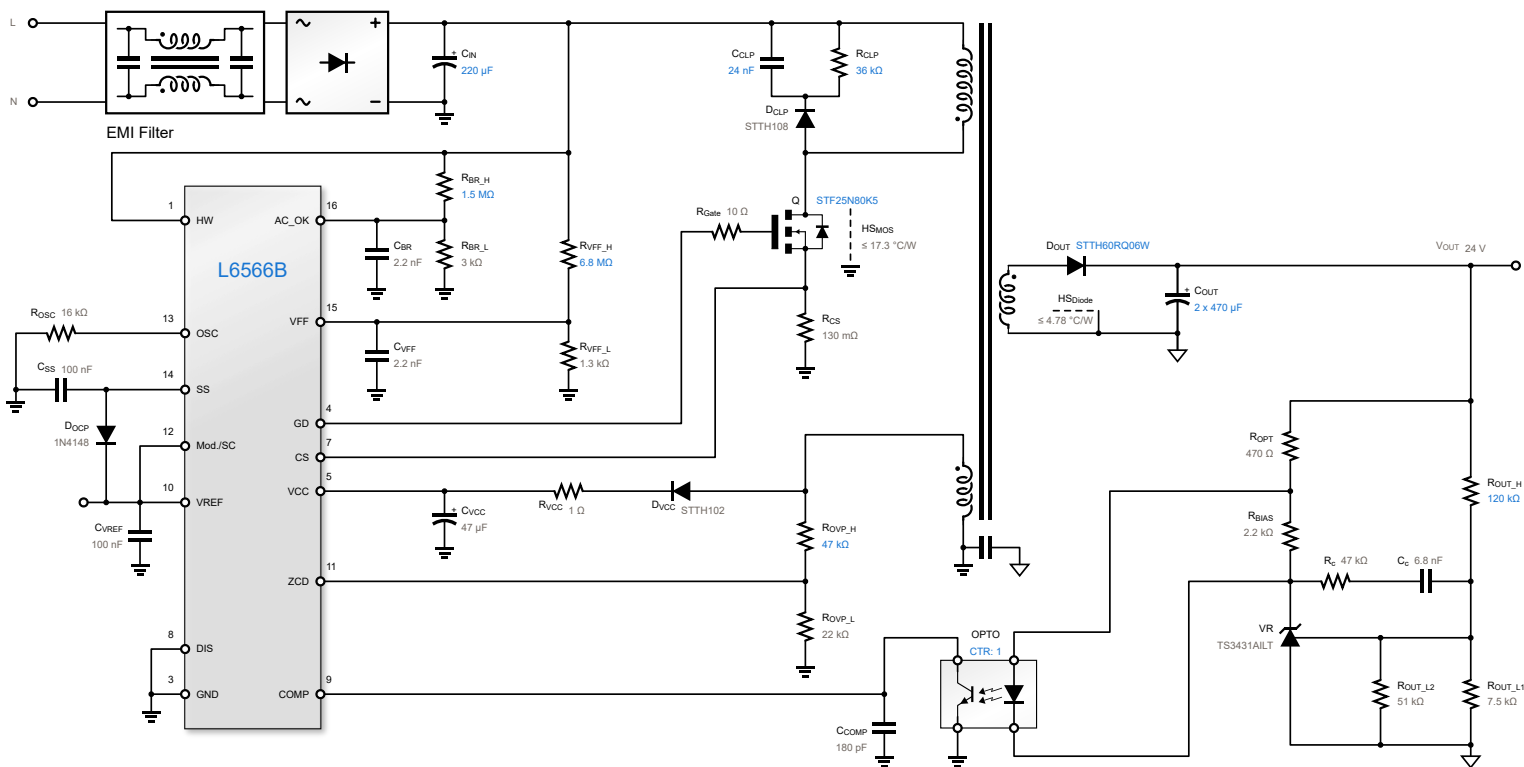
Out1:

Irms: ≥ 14.58 A **Pri/Out1 turn ratio:** 6.048





Aux:

Irms: ≥ 29 mA **Pri/Aux turn ratio:** 12

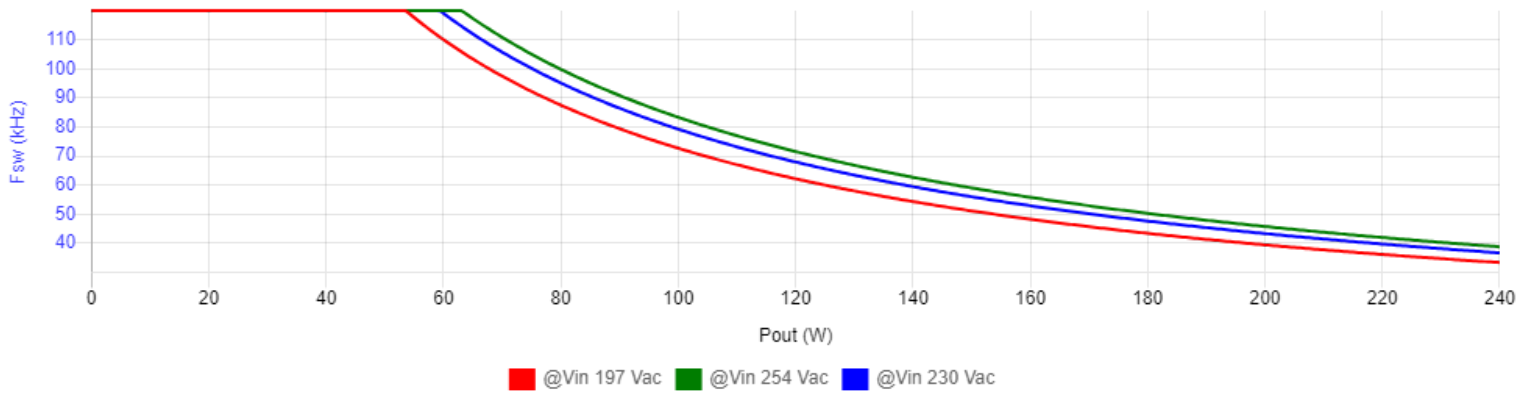
Circuit - Schematic



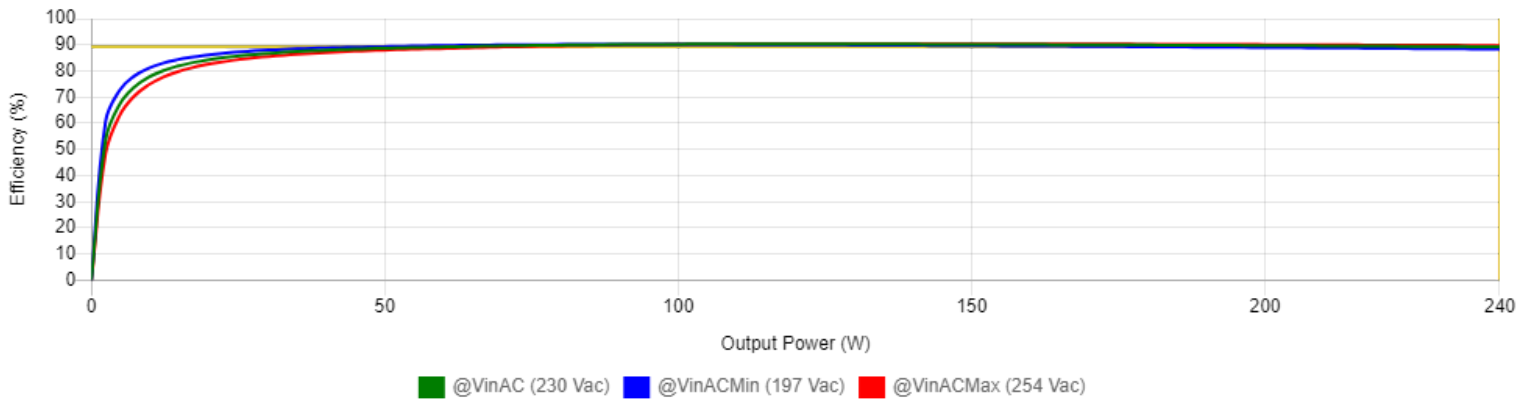
Circuit - BOM

Type	Ref	Value	Description
IC 	IC	L6566B	L6566B - SO 16-N - STMicroelectronics
Diode 	Dout	STTH60RQ06W	1.85 A, 600 V - STMicroelectronics
MOSFET 	Q	STF25N80K5	260 mΩ, 800 V - STMicroelectronics
Voltage Reference 	VR	TS3431AILT	1.24 V - STMicroelectronics
Transformer	T		Ideal Transformer
Capacitor	Cclp	24 nF	400 V Capacitor
Capacitor	Cin	220 μF	220 μF
Capacitor	Cout	2 x 470 μF	35 V - 20% - Panasonic - EEHZU1V471P
Resistor	Rbr_h	1.5 MΩ	- 500 V High Voltage Resistor - 1% 100 ppm/°C
Resistor	Rclp	36 kΩ	5 W Resistor
Resistor	Rout_h	120 kΩ	120 kΩ
Resistor	Rovp_h	47 kΩ	Standard Resistor - 5% 250 ppm/°C
Resistor	Rvff_h	6.8 MΩ	- 500 V High Voltage Resistor - 1% 100 ppm/°C
Diode	BD	generic	6.4 A, 600 V -
Capacitor	Cbr	2.2 nF	50 V Standard ceramic capacitor
Capacitor	Cc	6.8 nF	6.8 nF
Capacitor	Ccomp	180 pF	180 pF
Capacitor	Css	100 nF	50 V Standard ceramic capacitor
Capacitor	Cvcc	47 μF	35 V Electrolytic capacitor
Capacitor	Cvff	2.2 nF	50 V Standard ceramic capacitor
Capacitor	Cvref	100 nF	50 V Standard ceramic capacitor
Diode	Dclp	STTH108	800 V Diode
Diode	Docp	1N4148	Fast signal diode
Diode	Dvcc	STTH102	0 A, 200 V - STMicroelectronics
Heatsink	HSdiode	≤ 4.78 °C/W	Heatsink: Rth ≤ 4.78 °C/W
Heatsink	HSmos	≤ 17.3 °C/W	Heatsink: Rth ≤ 17.3 °C/W
OptoCoupler	Opto	CTR: 1	Optocoupler - CTR: 1
Resistor	Rbias	2.2 kΩ	2.2 kΩ
Resistor	Rbr_l	3 kΩ	High Voltage Resistor - 1% 100 ppm/°C
Resistor	Rc	47 kΩ	47 kΩ
Resistor	Rcs	130 mΩ	1W Resistor - 5% 250 ppm/°C
Resistor	Rgate	10 Ω	Standard Resistor - 5% 250 ppm/°C
Resistor	Ropt	470 Ω	470 Ω
Resistor	Rosc	16 kΩ	Standard Resistor - 1% 100 ppm/°C
Resistor	Rout_l1	7.5 kΩ	7.5 kΩ
Resistor	Rout_l2	51 kΩ	51 kΩ
Resistor	Rovp_l	22 kΩ	Standard Resistor - 5% 250 ppm/°C
Resistor	Rvcc	1 Ω	1 Ω
Resistor	Rvff_l	1.3 kΩ	High Voltage Resistor - 1% 100 ppm/°C

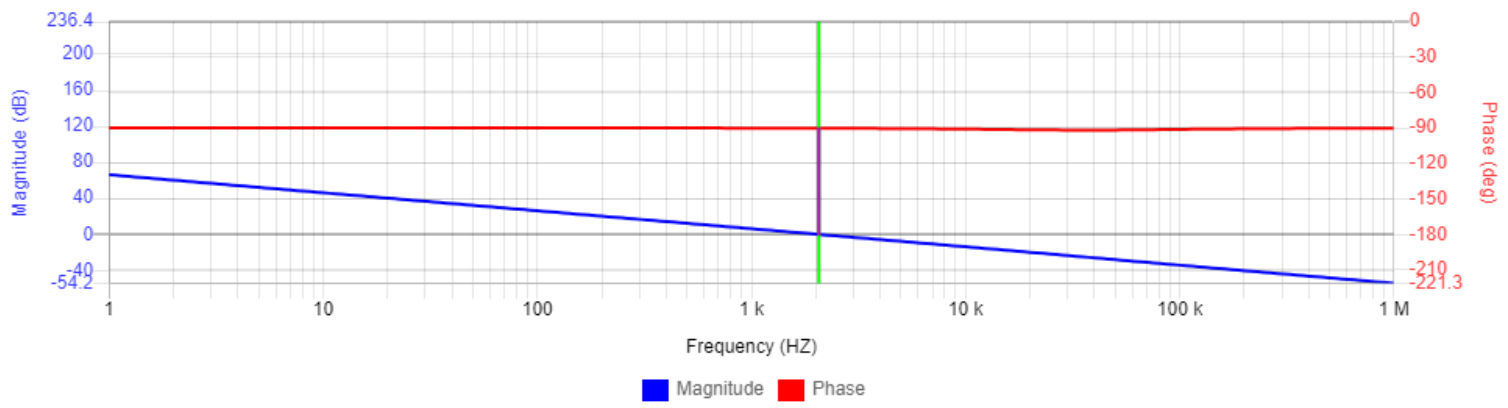
Switching Freq



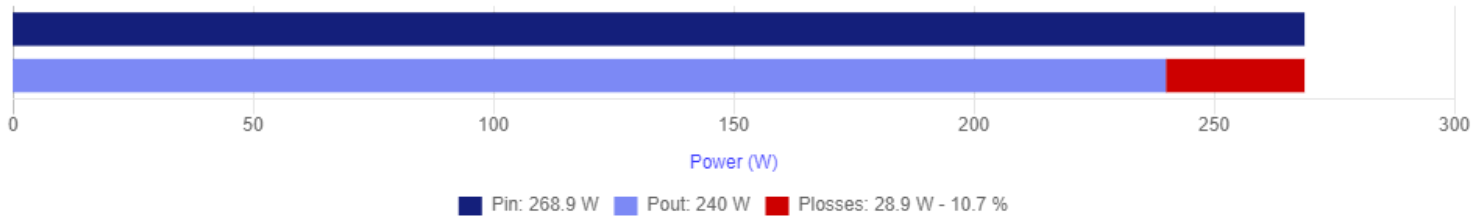
Efficiency: 89.26 %



Bode: $f_c = 2.07 \text{ kHz}$ - phase margin = 89.8°



Efficiency: 89.3 %



Losses details

