

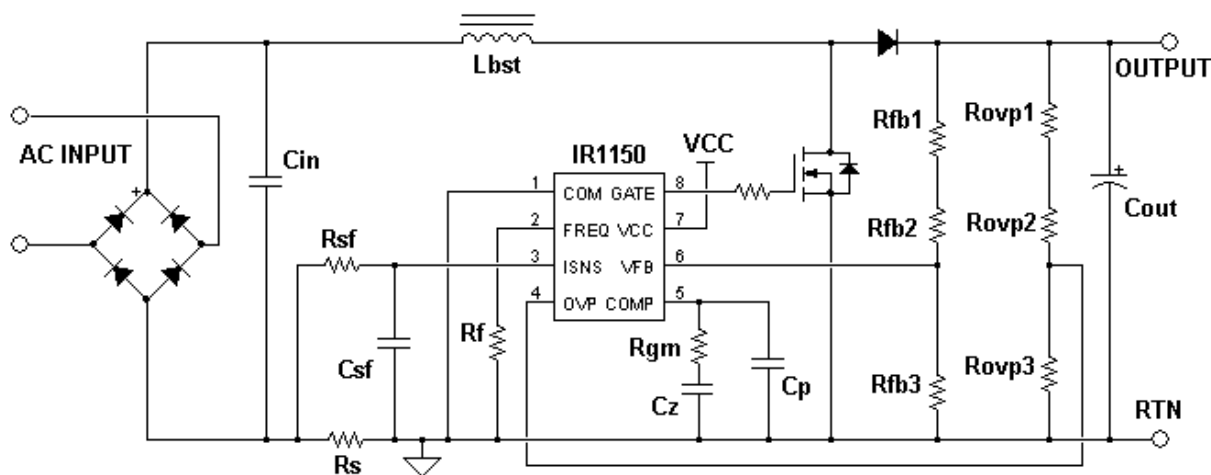
One Cycle Control μ PFC Circuit Featuring the IR1150S IC

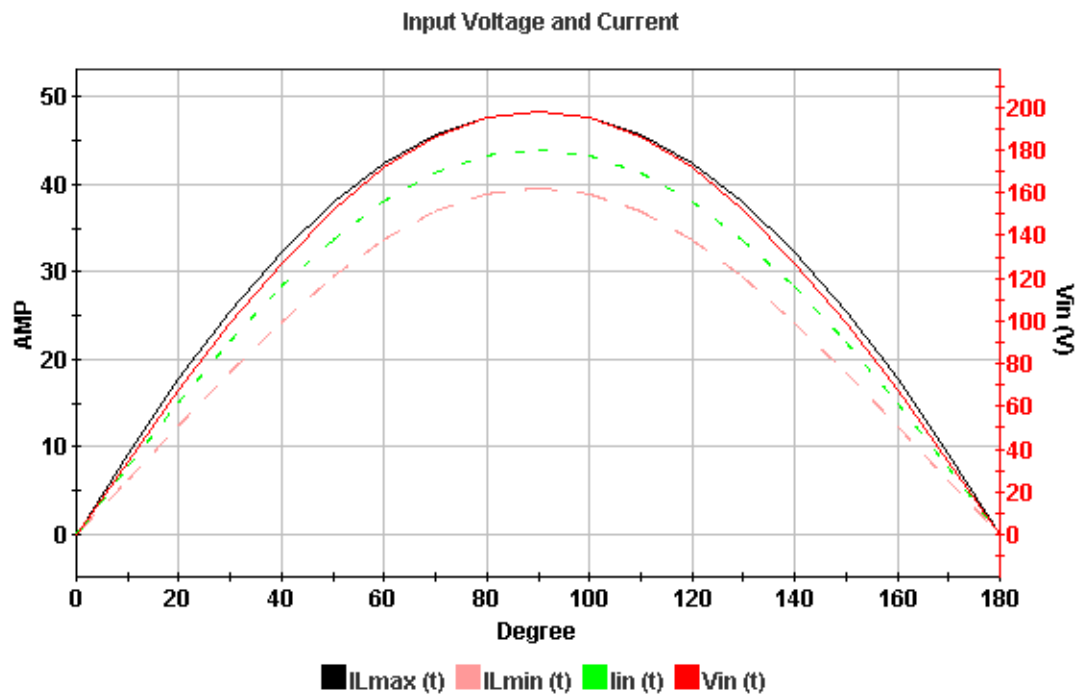
Operating Conditions:

Input		Output	
Min Input Voltage:	140 V	Switching Frequency:	50 kHz
Max Input Voltage:	240 V	Hold-up Time:	20 ms
Input AC Frequency:	50 Hz	Choke Ripple Current:	20 %
Start-up Time:	50 ms	Output Power:	4000 W
Target Efficiency:	92 %	Output Voltage:	360 V
		Output Voltage (min):	286 V
		Output Cap Tolerance:	20 %
		OVP Threshold:	400 V

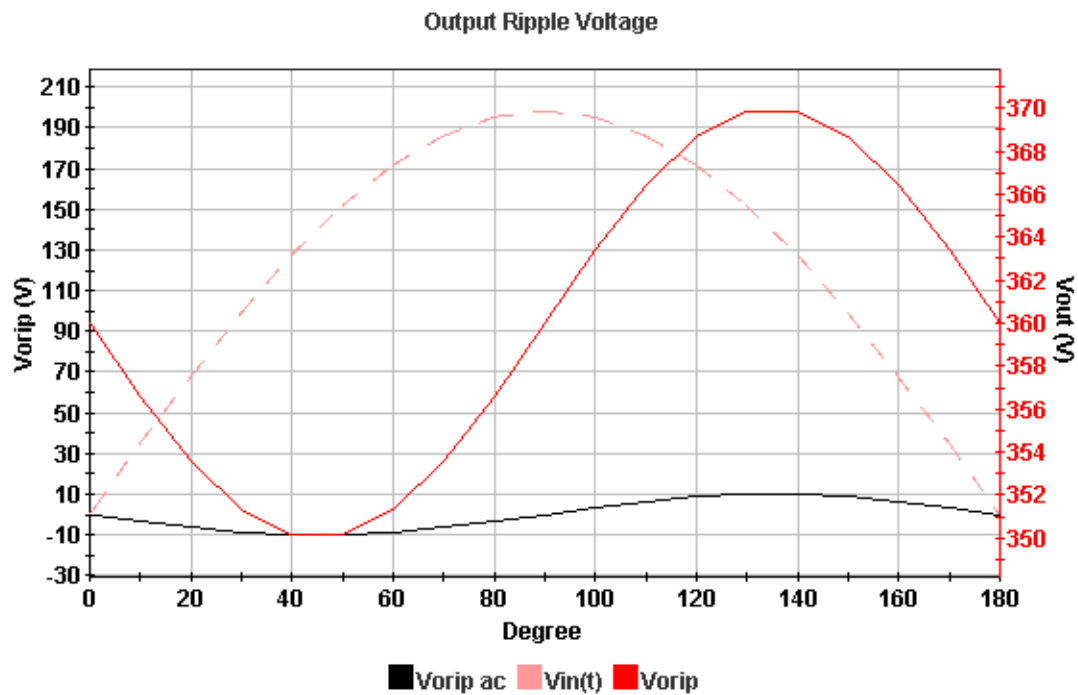
Calculation Result:

Output Conditions			Component Values		
			Component	Ref Des	Std Value
Max Input Power	4,348	W	High Freq Input Cap	Cin	3.3 μ F
Input RMS Current	31.06	A	Boost Choke Value	Lbst	220 μ H
Input Peak Current	43.92	A	Output Capacitor	Cout	4.7 mF
Input Average Current	27.96	A	Output Voltage Rset	Rfb3	20 kOhm
Input Pk Voltage (min)	198	V	Output OVP Rset	Rovp3	19.1 kOhm
Duty Cycle - low line	0.45		Current Sense Res	Rs	0.020 Ohm
Ripple Current	8.78	A	Zero Capacitor	Cz	330 nF
Peak Inductor Current	48.31	A	Gain Resistor	Rgm	4.87 kOhm
V Current Sense	1.00	V	Pole Capacitor	Cp	3.9 nF
Peak Current Limit	50.73	A	Current Sense Filter Capacitor	Csf	1 nF
Input Pk Ovld Current	50.73	A	Current Sense Filter Resistor	Rsf	100 Ohm
Power Distribution			Timing Resistor	Rf	165 kOhm
Power Dissipation Rfb	62.4	mW	Rfb1, Rfb2, Rovp1 and Rovp2 are 499 kOhms each		
Power Diss Rovp	62.3	mW			
Power Rs	19.01	W			

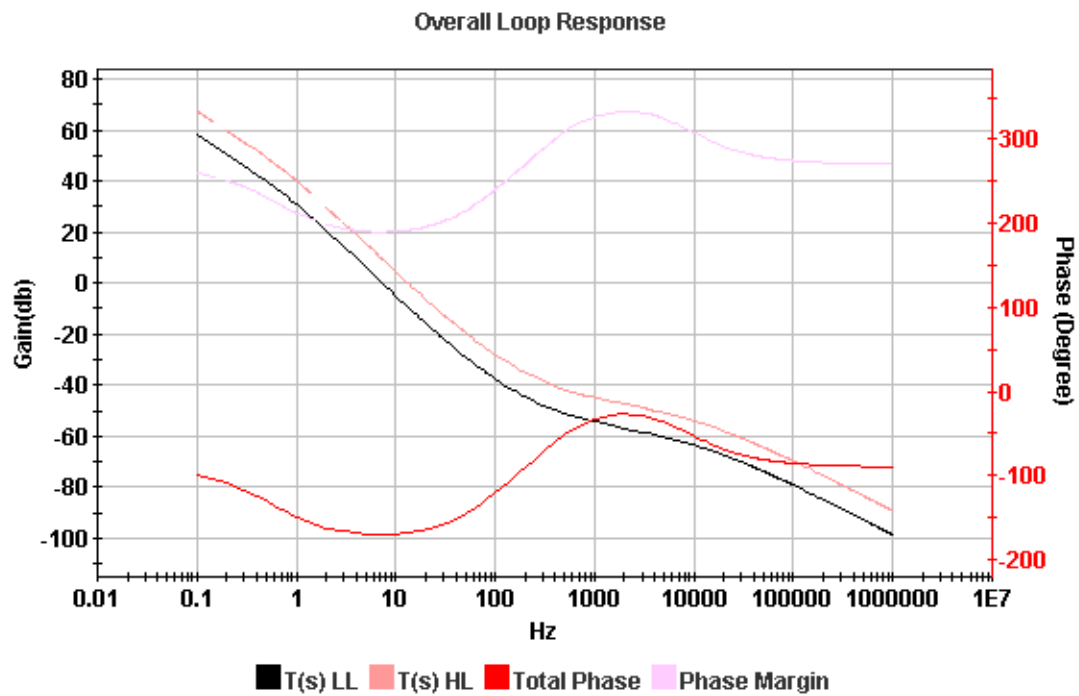




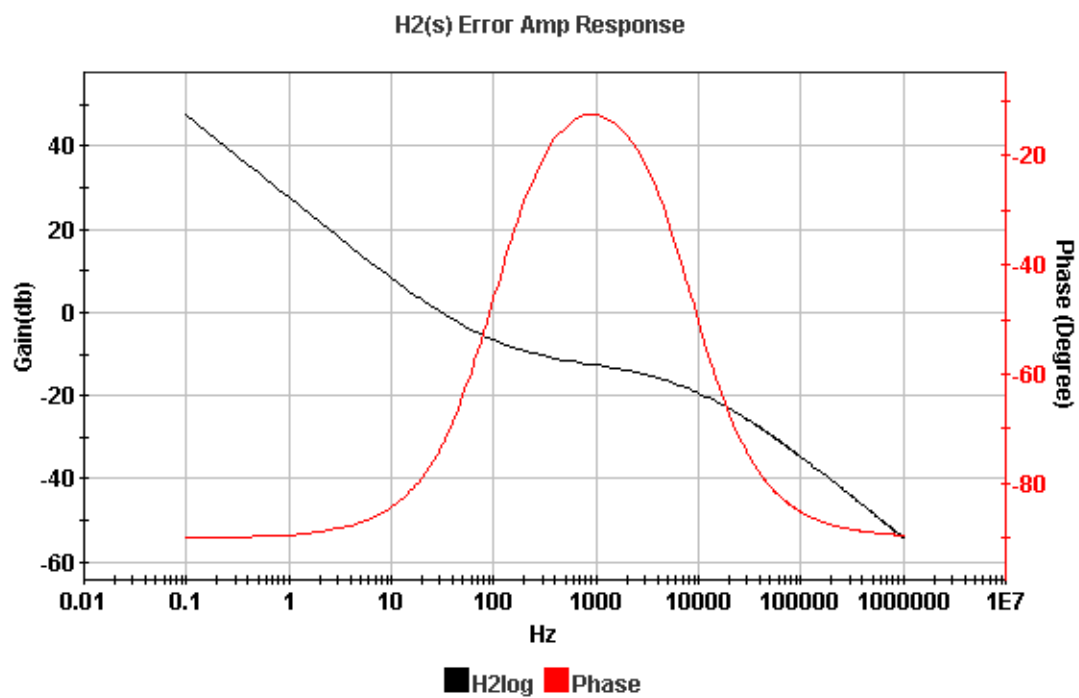
Graph 1: Input voltage and current relationship for this IR1150 power factor correction circuit.



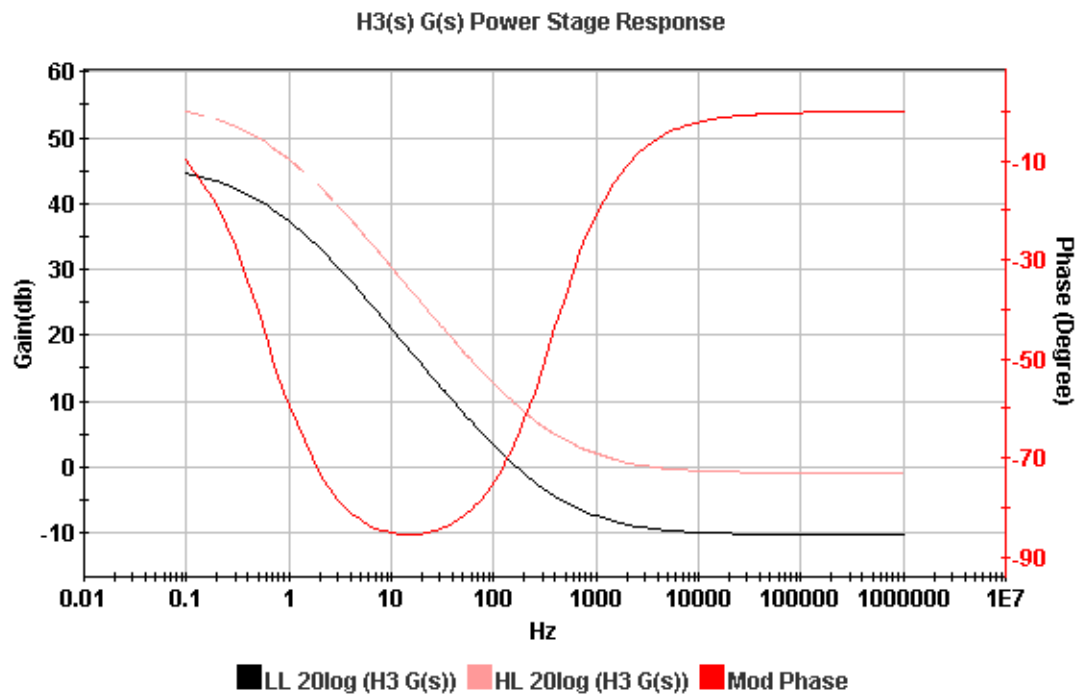
Graph 2: Output voltage ripple amplitude relative to the AC input voltage for this design.



Graph 3: This is the overall feedback loop response of the power factor correction circuit showing phase and gain.



Graph 4: This is the error amplifier response of the power factor correction circuit showing phase and gain.



Graph 5: This is the power stage response of the power factor correction circuit showing phase and gain.

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