

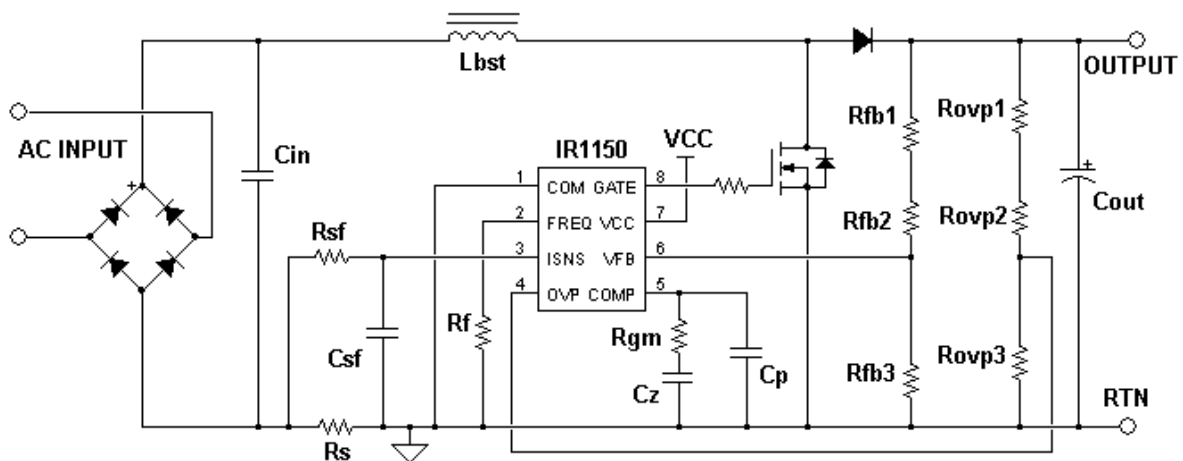
One Cycle Control μ PFC Circuit Featuring the IR1150S IC

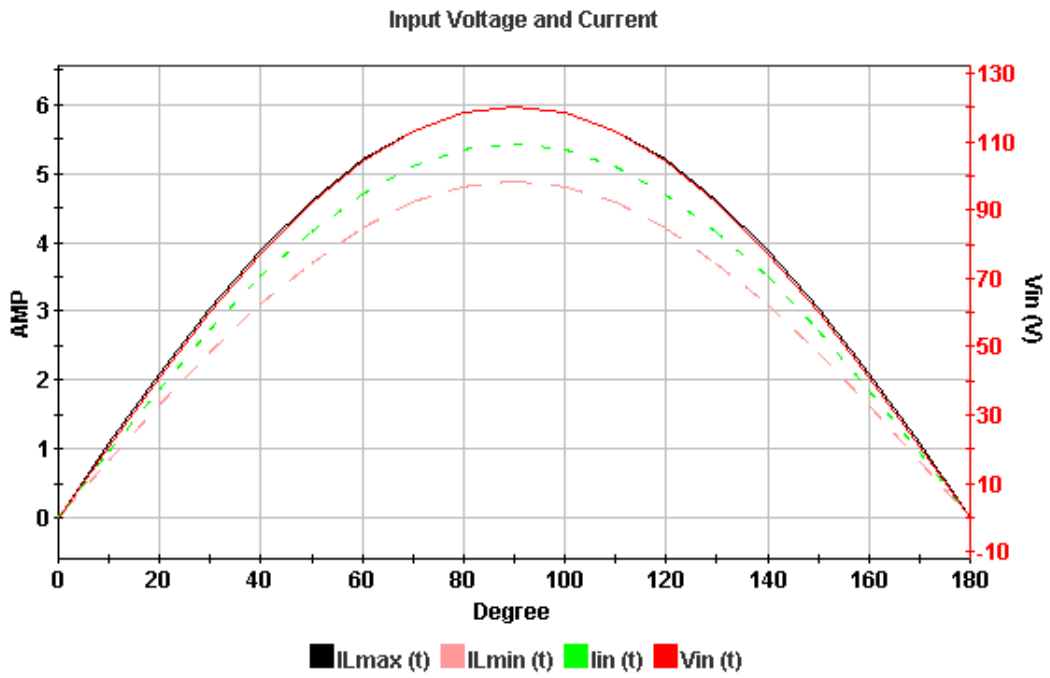
Operating Conditions:

Input				Output	
Min Input Voltage:	85 V	Switching Frequency:	100 kHz	Output Power:	300 W
Max Input Voltage:	264 V	Hold-up Time:	20 ms	Output Voltage:	385 V
Input AC Frequency:	60 Hz	Choke Ripple Current:	20 %	Output Voltage (min):	286 V
Start-up Time:	50 ms			Output Cap Tolerance:	20 %
Target Efficiency:	92 %			OVP Threshold:	425 V

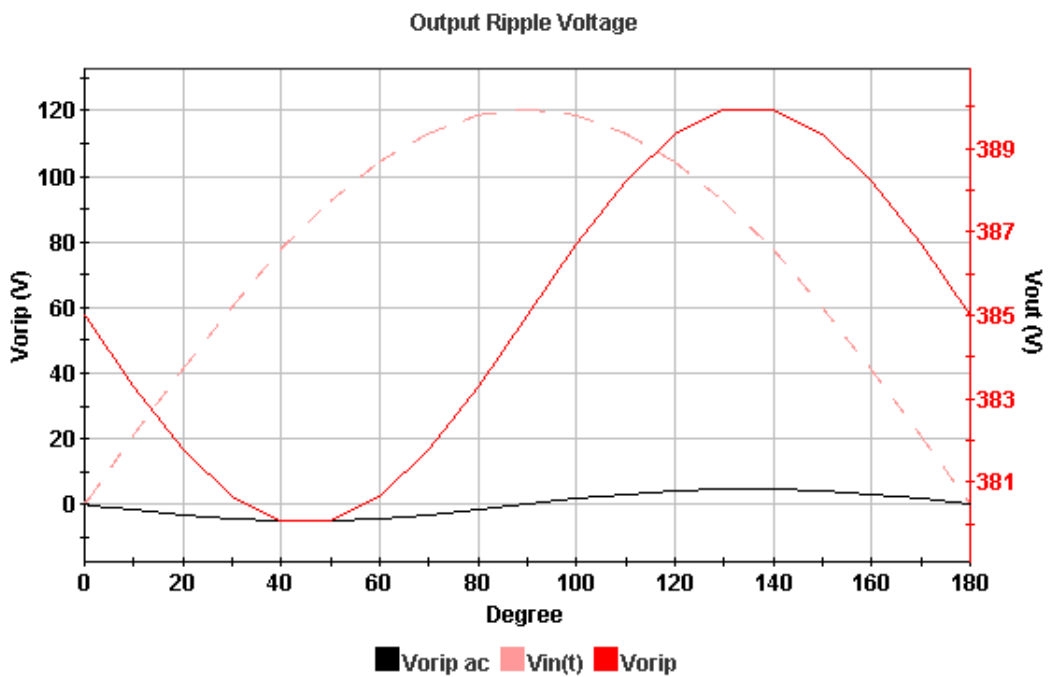
Calculation Result:

Output Conditions			Component Values			
			Component	Ref Des	Std Value	Calc Value
Max Input Power	326	W	High Freq Input Cap	Cin	330 nF	0.24 μ F
Input RMS Current	3.84	A	Boost Choke Value	Lbst	820 μ H	762 μ H
Input Peak Current	5.43	A	Output Capacitor	Cout	330 μ F	226 μ F
Input Average Current	3.45	A	Output Voltage Rset	Rfb3	18.7 kOhm	18.5 kOhm
Input Pk Voltage (min)	120	V	Output OVP Rset	Rovp3	18.2 kOhm	17.9 kOhm
Duty Cycle - low line	0.69		Current Sense Res	Rs		0.121 Ohm
Ripple Current	1.09	A	Zero Capacitor	Cz	330 nF	331 nF
Peak Inductor Current	5.97	A	Gain Resistor	Rgm	5.36 kOhm	5.35 kOhm
V Current Sense	0.76	V	Pole Capacitor	Cp	1.8 nF	1.78 nF
Peak Current Limit	8.29	A	Current Sense Filter Capacitor	Csf	1 nF	1.00 nF
Input Pk Ovld Current	6.27	A	Current Sense Filter Resistor	Rsf	100 Ohm	100 Ohm
Power Distribution			Timing Resistor	Rf	80.6 kOhm	80.1 kOhm
Power Dissipation Rfb	71.6	mW	Rfb1, Rfb2, Rovp1 and Rovp2 are 499 kOhms each			
Power Diss Rovp	71.4	mW				
Power Rs	1.77	W				

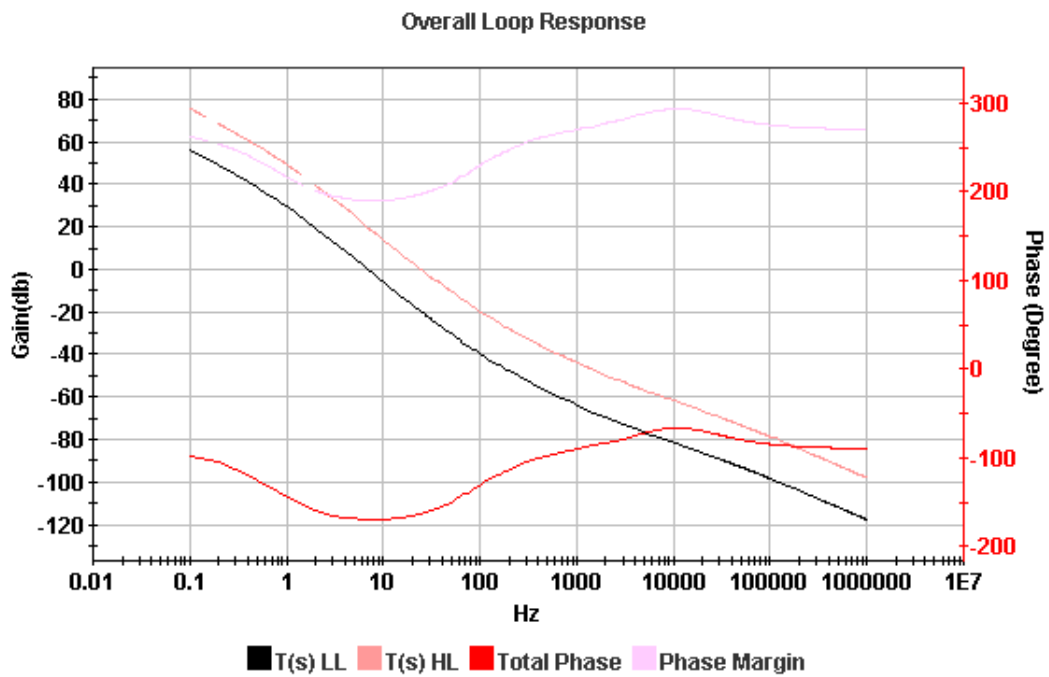




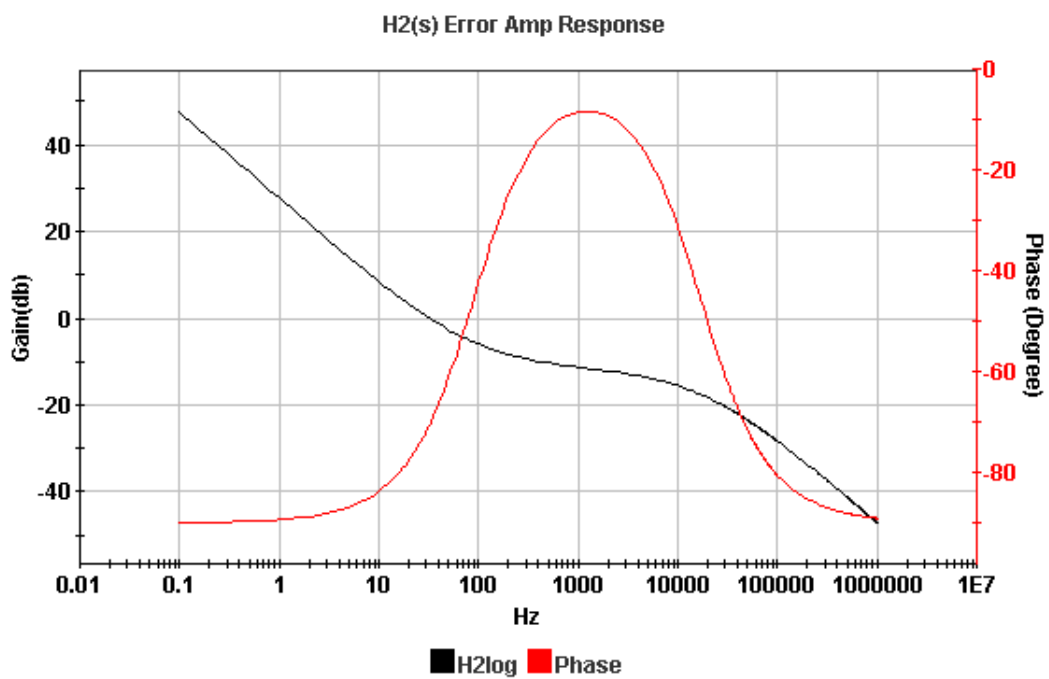
Graph 1: Input voltage and current relationship for this IR1150 power factor correction circuit.



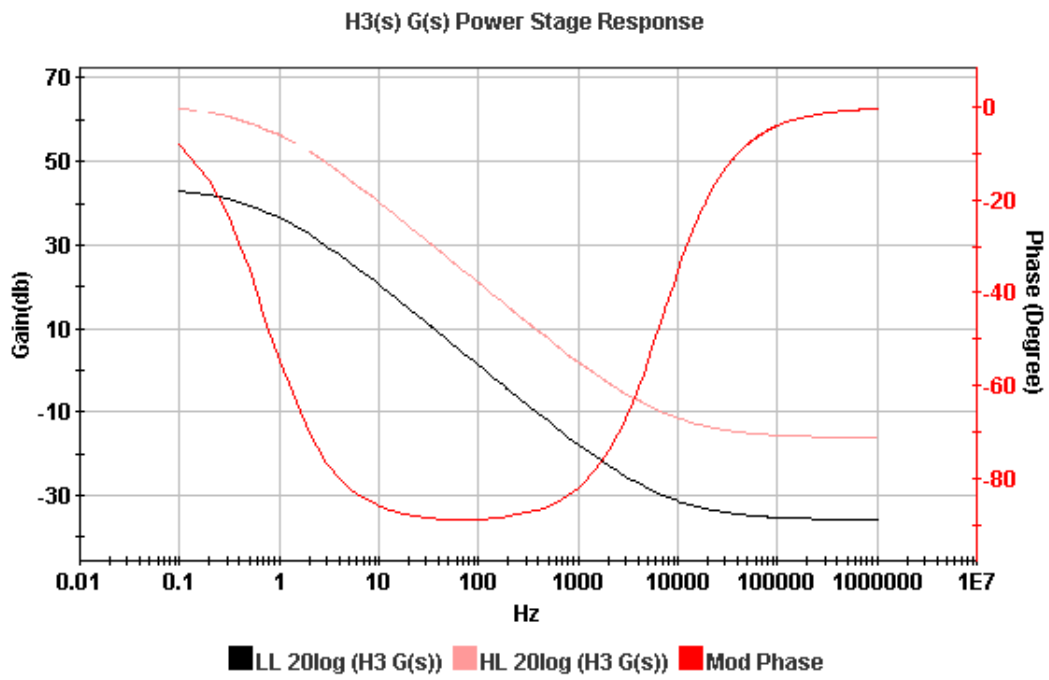
Graph 2: Output voltage ripple amplitude relative to the AC input voltage for this design.



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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