

FEATURES

Out of at least 0.5 amps (will do more)

Fully costed BOM

Simulation results showing stability and transient response

DESCRIPTION

Table 1. User Target Specs, Vout

<i>Spec</i>	<i>Target Value</i>	<i>Units</i>
Vout	28 V	Volts
Iout	0.5	Amps
Tamb	55	degC
Vinmin	4.5	Volts
Vinmax	5.5	Volts

Table 2. Default Design Target Specs, Vout1

<i>Spec</i>	<i>Target Value</i>	<i>Units</i>
Switching Frequency	400	kHz
Vout ripple max	0.300	Volts
Ioutstep	0.2	Apk
Vout step error	0.6	Volts
MaxHeight	5	mm

Rev. 3

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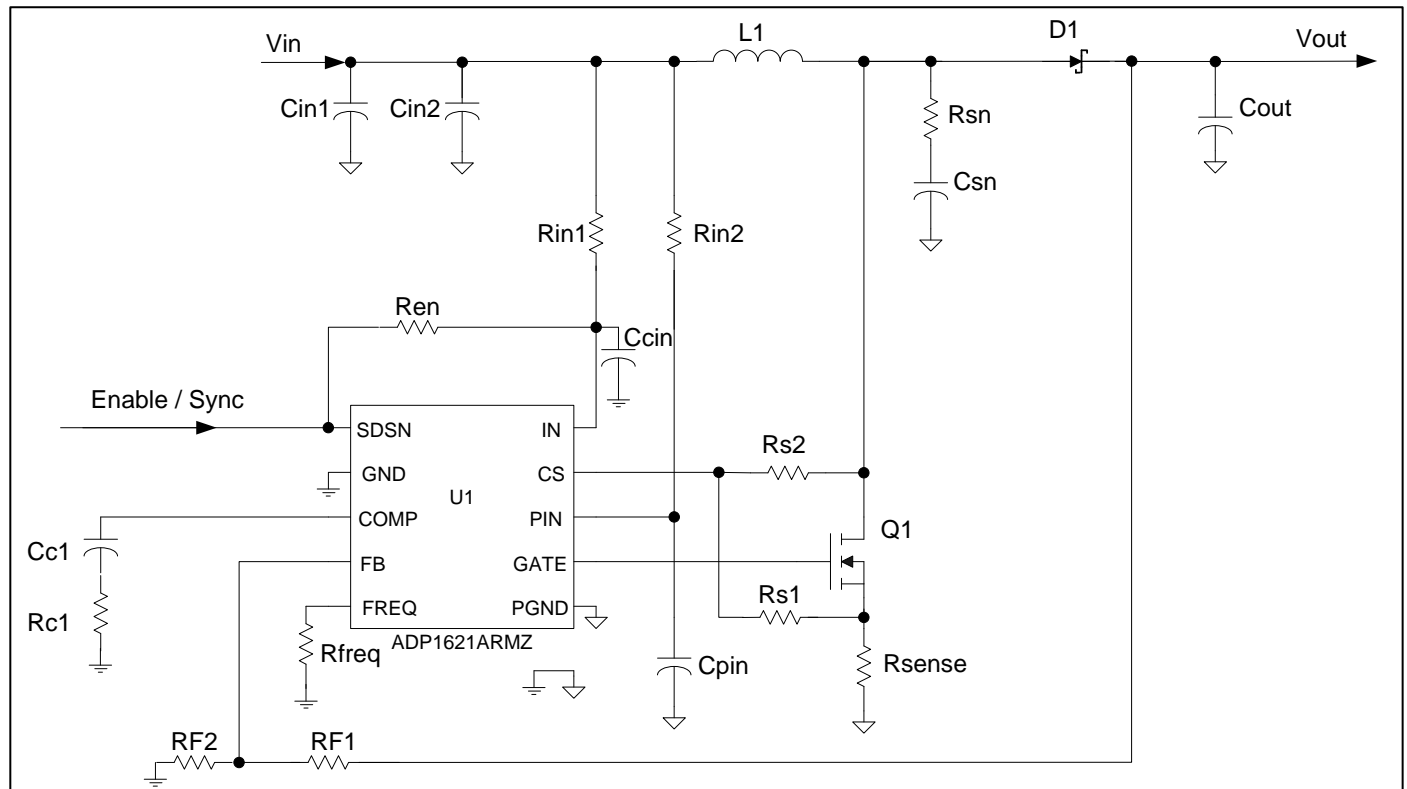
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REVISION HISTORY

5/13/2009—Revision 1: Initial Version

SCHEMATIC

Figure 1. 4.5 – 5.5 V in, 28 V out at 0.5 A



BILL OF MATERIALS

Table 3. Bill of Materials

Des	MFG	Part Number	Component Specs	Pkg	Qty	Area (mm ²)	Cost	
1	U1	ADI	ADP1621ARMZ	Integrated Switching Regulator	MSOP-10	1	14.7	1.32
2	L1	Coilcraft	MSS1048-472NL_	4.7uH, 12.3mOhms, 5.6 Apk	10.2mm x 10mm x 4.8mm	1		0.44
3	D1	ON Semi	MBRS540T3G	5A ,40V	SMC	1	50.02	0.12
4	Cin	TDK	C3225X7R1C226M	22uF, 16V, 1210, X7R	1210	1	8	0.18

<i>Des</i>	<i>MFG</i>	<i>Part Number</i>	<i>Component Specs</i>	<i>Pkg</i>	<i>Qty</i>	<i>Area (mm^2)</i>	<i>Cost</i>
5	Cin2		Electrolytic for stability during testing				
6	Cout	Murata	GRM31CR71H225K	2.2uF, 50V, 1206, X7R	1206	3	15.4 0.165
7	Q1	Vishay	Si4850EY	60 VDS, 48 mOhms	SO8	2	62 0.32
8	Rsense	Susumu	RL1220T-R010-J	10 mOhms	0805	2	3.2 0.088
9	Rs1	Vishay	5% tolerance	1 kOhms	0805	1	2.5 0.005
10	Rs2	Vishay	5% tolerance	10 kOhms	0805	1	2.5 0.005
11	Rfreq	Vishay	1% tolerance	54.9 kOhms	0805	1	2.5 0.005
12	Rc1	Vishay	5% tolerance	10 kOhms	0805	1	2.5 0.005
13	Cc1	Vishay	10% tolerance	3.6 nF	0805	1	2.5 0.005
14	Rf1	Vishay	1% tolerance	110 kohm	0805	1	2.5 0.005
15	Rf2	Vishay	1% tolerance	4.99 kohm	0805	1	2.5 0.005
16	Rsn		No Pop				
17	Csn		No Pop				
18	Ccin	Murata	GRM188R61A105K	1uF,10V,X5R	0603	1	1.3 0.01
19	Cpin	Murata	GRM188R61A105K	1uF,10V,X5R	0603	1	1.3 0.01
20	Rin1	Vishay	5% tolerance	154 Ohms	0805	1	2.5 0.005
21	Rin2	Vishay	5% tolerance	154 Ohms	0805	1	2.5 0.005
22	REN	Vishay	5% tolerance	50 kOhms	0805	1	2.5 0.005
Totals						23	178.4 2.698

GRAPHS

Figure 2. Full Load Bode Plot

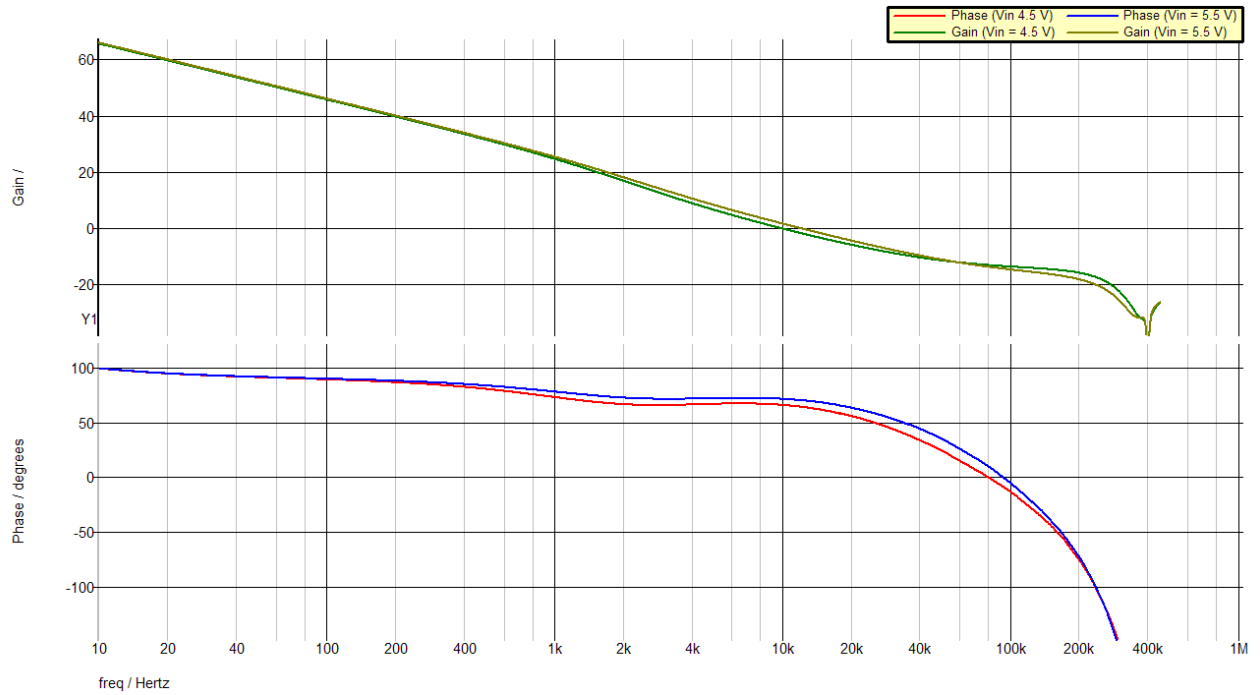


Figure 3. Vout Transient Response (200 mA step load from full load)

