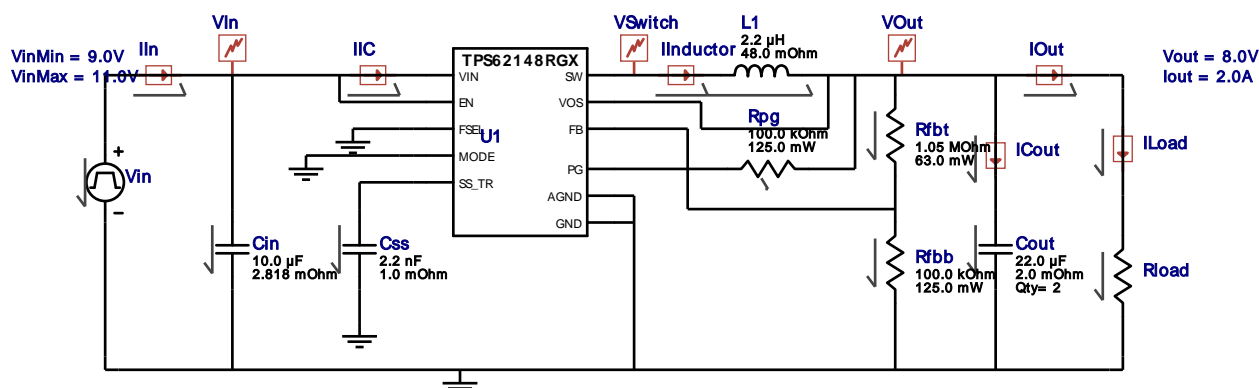


## WEBENCH® Electrical Simulation Report



### My Comments

Input Transient Simulation

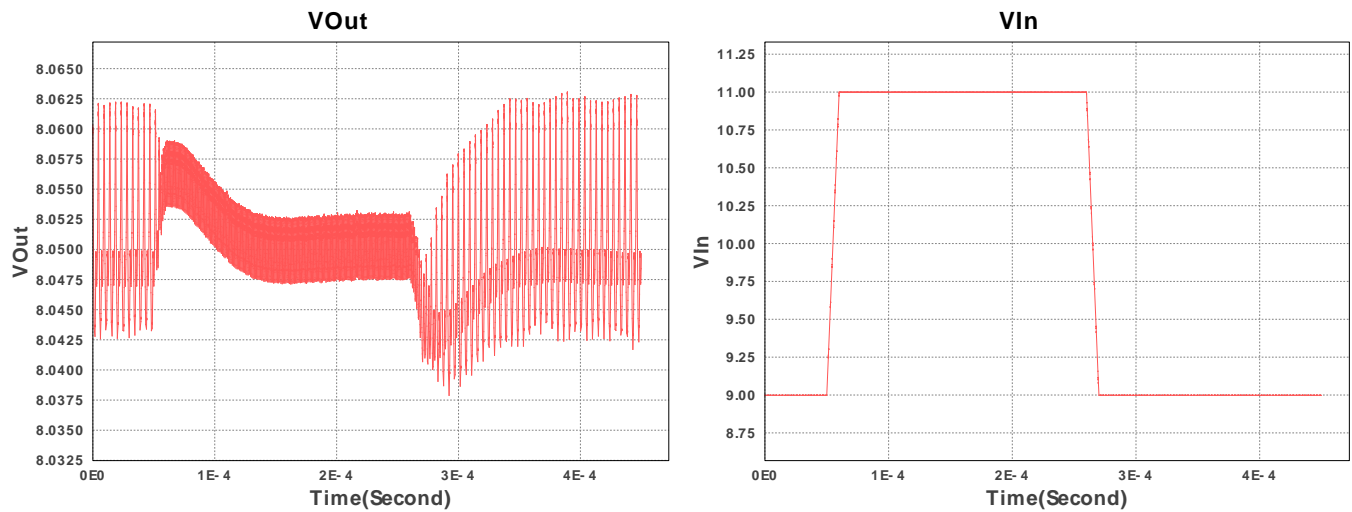
### Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	TDK	C2012X6S1C106K085AC Series= X6S	Cap= 10.0 µF ESR= 2.818 mOhm VDC= 16.0 V IRMS= 3.887 A	1	\$0.07	0805 7 mm <sup>2</sup>
2.	Cout	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 µF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	2	\$0.15	1210 15 mm <sup>2</sup>
3.	Css	MuRata	GRM033R61A222KA01D Series= X5R	Cap= 2.2 nF ESR= 1.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm <sup>2</sup>
4.	L1	Pulse Engineering	PA4332.222NLT	L= 2.2 µH DCR= 48.0 mOhm	1	\$0.21	PA4332 27 mm <sup>2</sup>
5.	Rfbb	Panasonic	ERJ-6ENF1003V Series= ERJ-6E	Res= 100.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm <sup>2</sup>
6.	Rfbs	Vishay-Dale	CRCW04021M05FKED Series= CRCW..e3	Res= 1.05 MOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
7.	Rpg	Panasonic	ERJ-6ENF1003V Series= ERJ-6E	Res= 100.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm <sup>2</sup>
8.	U1	Texas Instruments	TPS62148RGXR	Switcher	1	\$0.81	RGX0011A 12 mm <sup>2</sup>

### Simulation Parameters

#	Name	Parameter Name	Description	Values
1.	Cout	IC	Initial Voltage	8.0 V
2.	Css	IC	Initial Voltage	0.7 V

#	Name	Parameter Name	Description	Values
3.	Rload	R	Load Resistance	4.0 Ohm



## Design Inputs

#	Name	Value	Description
1.	Iout	2.0 A	Maximum Output Current
2.	VinMax	11.0 V	Maximum input voltage
3.	VinMin	9.0 V	Minimum input voltage
4.	Vout	8.0 V	Output Voltage
5.	base_pn	TPS62148	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0 degC	Ambient temperature

## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	900.404 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	266.778 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.462 A	Current	Peak switch current in IC
4.	Iin Avg	1.539 A	Current	Average input current
5.	L Ipp	924.14 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	9	General	Total Design BOM count
7.	FootPrint	94.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
8.	Frequency	1.005 MHz	General	Switching frequency
9.	Mode	CCM	General	Conduction Mode
10.	Pout	16.0 W	General	Total output power
11.	Total BOM	\$1.43	General	Total BOM Cost
12.	Duty Cycle	74.616 %	Op Point	Duty cycle
13.	Efficiency	94.486 %	Op Point	Steady state efficiency
14.	IC Tj	58.259 degC	Op Point	IC junction temperature
15.	ICThetaJA	38.4 degC/W	Op Point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	2.0 A	Op Point	Iout operating point
17.	VIN_OP	11.0 V	Op Point	Vin operating point
18.	Vout Actual	8.05 V	Op Point	Vout Actual calculated based on selected voltage divider resistors
19.	Vout OP	8.0 V	Op Point	Operational Output Voltage
20.	Vout Sch	8.0 V	Op Point	Output voltage selected
21.	Vout Tolerance	5.482 %	Op Point	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
22.	Vout p-p	5.278 mV	Op Point	Peak-to-peak output ripple voltage
23.	Cin Pd	2.285 mW	Power	Input capacitor power dissipation
24.	Cout Pd	71.17 $\mu$ W	Power	Output capacitor power dissipation
25.	IC Iq Pd	253.0 $\mu$ W	Power	IC Iq Pd
26.	IC Pd	735.915 mW	Power	IC power dissipation
27.	L Pd	195.416 mW	Power	Inductor power dissipation
28.	Total Pd	933.708 mW	Power	Total Power Dissipation

## Design Assistance

1. **TPS62148** Product Folder : <http://www.ti.com/product/tps62148> : contains the data sheet and other resources.

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