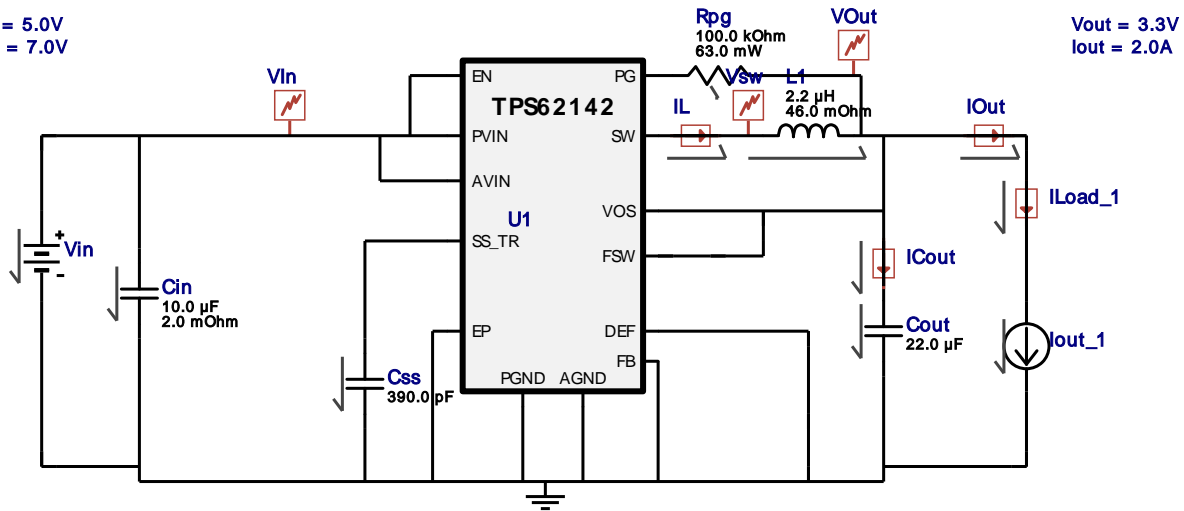


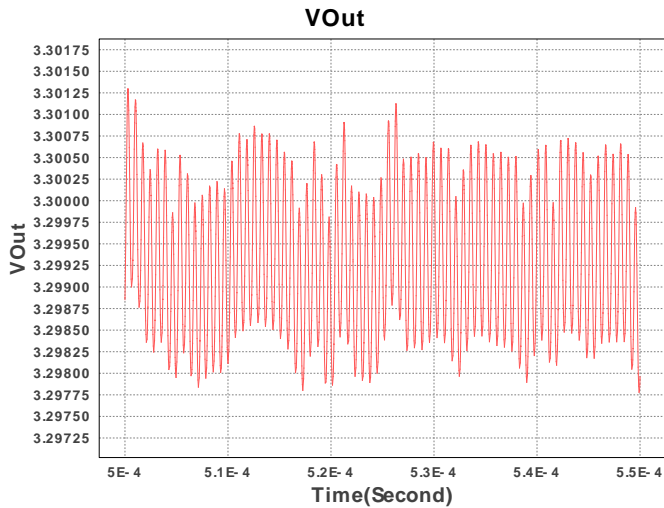
**WEBENCH® Electrical Simulation Report**

 VinMin = 5.0V  
 VinMax = 7.0V

**Electrical BOM**

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM21BR61A106KE19L Series= X5R	Cap= 10.0 μF ESR= 2.0 mOhm VDC= 10.0 V IRMS= 0.0 A	1	\$0.03	0805 7 mm <sup>2</sup>
2.	Cout	TDK	C2012X5R0J226M Series= X5R	Cap= 22.0 μF VDC= 6.3 V IRMS= 0.0 A	1	\$0.06	0805 7 mm <sup>2</sup>
3.	Css	MuRata	GRM033R71C391KA01D Series= X7R	Cap= 390.0 pF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0201 2 mm <sup>2</sup>
4.	L1	Vishay-Dale	IHLP1212BZER2R2M11	L= 2.2 μH DCR= 46.0 mOhm	1	\$0.56	IHLP-1212BZ 19 mm <sup>2</sup>
5.	Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm <sup>2</sup>
6.	U1	Texas Instruments	TPS62142RGTR	Switcher	1	\$0.95	S-PVQFN-N16 25 mm <sup>2</sup>

**Simulation Parameters**

#	Name	Parameter Name	Description	Values
1.	L1	IC	Initial Condition	Iout A
2.	Iout_1	I	Output Current	2.0 A



## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	999.772 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	178.854 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.31 A	Current	Peak switch current in IC
4.	Iin Avg	1.04 A	Current	Average input current
5.	L Ipp	619.57 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	6	General	Total Design BOM count
7.	FootPrint	63.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
8.	Frequency	1.386 MHz	General	Switching frequency
9.	Mode	CCM	General	Conduction Mode
10.	Pout	6.6 W	General	Total output power
11.	Total BOM	\$1.62	General	Total BOM Cost
12.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
13.	Duty Cycle	51.067 %	Op_point	Duty cycle
14.	Efficiency	90.62 %	Op_point	Steady state efficiency
15.	IC Tj	43.129 degC	Op_point	IC junction temperature
16.	ICThetaJA	29.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
17.	IOUT_OP	2.0 A	Op_point	Iout operating point
18.	VIN_OP	7.0 V	Op_point	Vin operating point
19.	Vout p-p	2.978 mV	Op_point	Peak-to-peak output ripple voltage
20.	Cin Pd	1.999 mW	Power	Input capacitor power dissipation
21.	Cout Pd	0.0 W	Power	Output capacitor power dissipation
22.	IC Iq Pd	140.0 μW	Power	IC Iq Pd
23.	IC Pd	451.178 mW	Power	IC power dissipation
24.	L Pd	230.0 mW	Power	Inductor power dissipation
25.	Total Pd	683.192 mW	Power	Total Power Dissipation

## Design Inputs

#	Name	Value	Description
1.	Iout	2.0 A	Maximum Output Current
2.	Iout1	2.0 Amps	Output Current #1
3.	VinMax	7.0 V	Maximum input voltage
4.	VinMin	5.0 V	Minimum input voltage
5.	Vout	3.3 V	Output Voltage
6.	Vout1	3.3 Volt	Output Voltage #1
7.	base_pn	TPS62142	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature

## Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with upto 2A output current, 3V to 17V Input Voltage Range, 3.3V Fixed Output voltage>Selectable operating frequency, Optional Softstart Capacitor for slow startup, Tracking, Pin selectable output voltage (nominal, +5%) Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

2. TPS62142 Product Folder : <http://www.ti.com/product/TPS62142> : contains the data sheet and other resources.

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**You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.**

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