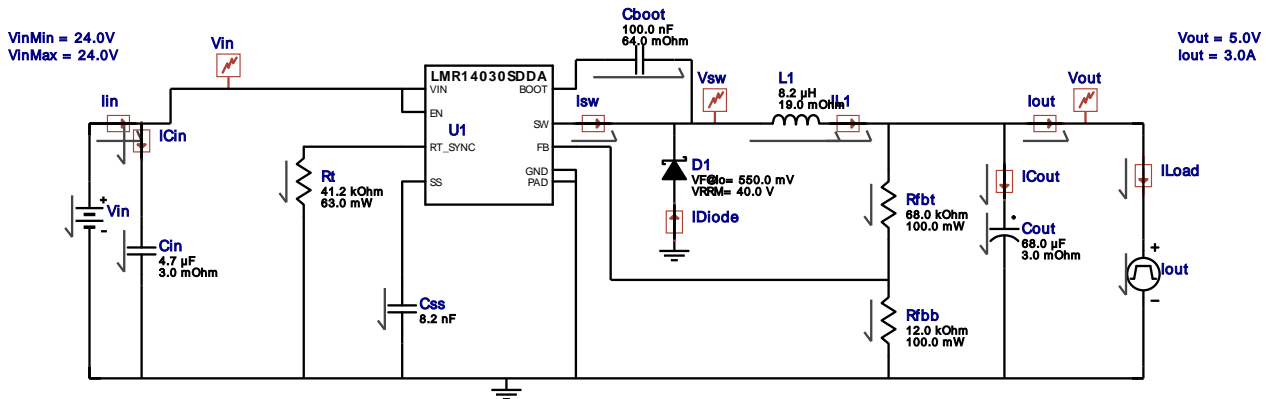



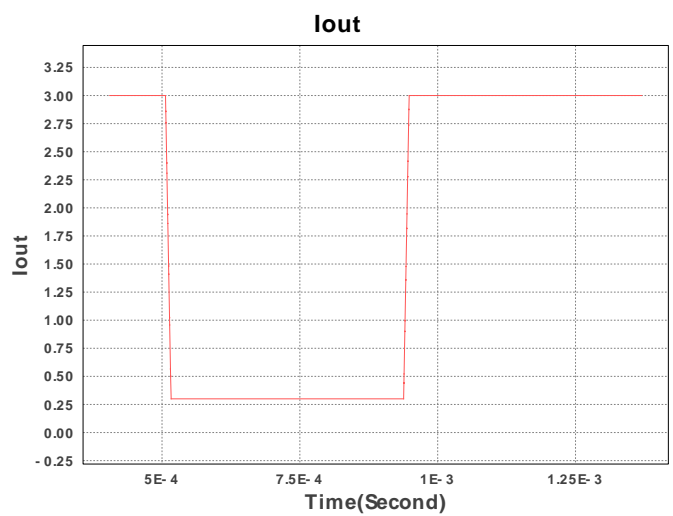
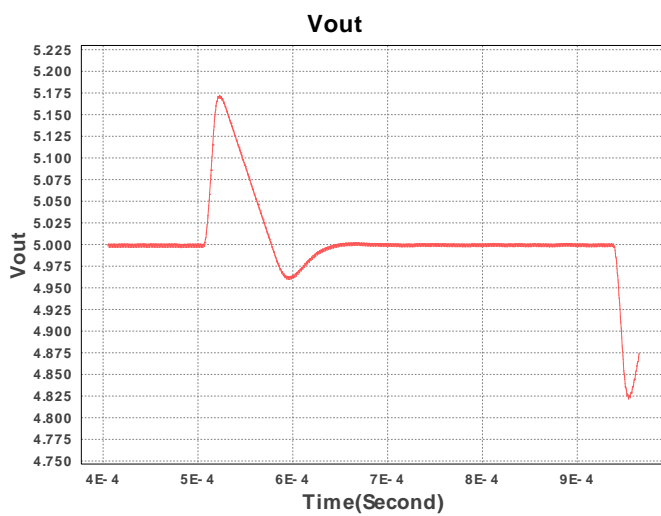
WEBENCH® Electrical Simulation Report

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	\$0.01	 0805 7 mm ²
2.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 µF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	1	\$0.07	 1206 11 mm ²
3.	Cout	CUSTOM	CUSTOM_CAP_MD Series= CUSTOM	Cap= 68.0 µF ESR= 3.0 mOhm VDC= 16.0 V IRMS= 240.0 mA	1	\$0.10	 1210 51 mm ²
4.	Css	MuRata	GRM155R71C822KA01D Series= X7R	Cap= 8.2 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
5.	D1	Diodes Inc.	B540C-13-F	VF@Io= 550.0 mV VRRM= 40.0 V	1	\$0.17	 SMC 83 mm ²
6.	L1	Bourns	SDR1307-8R2ML	L= 8.2 µH DCR= 19.0 mOhm	1	\$0.35	 SDR1307 227 mm ²
7.	Rfbb	Susumu Co Ltd	RR1220P-123-D Series= RR12	Res= 12.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	 0805 7 mm ²
8.	Rfbt	Susumu Co Ltd	RR1220P-683-D Series= RR12	Res= 68.0 kOhm Power= 100.0 mW Tolerance= 0.5%	1	\$0.01	 0805 7 mm ²
9.	Rt	Vishay-Dale	CRCW040241K2FKED Series= CRCW...e3	Res= 41.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	U1	Texas Instruments	LMR14030SDDAR	Switcher	1	\$1.68	 DDA0008E 57 mm ²

Simulation Parameters

#	Name	Parameter Name	Description	Values
1.	Cboot	IC	Initial Voltage	10 V
2.	L1	IC	Initial Current	3.0 A
3.	Iout	signal_type	Signal Type	PULSE
		I1	Initial Load Current	3.0 A
		I2	Minimum Load Current	0.3 A
		Td	Initial Time Delay	5.063057294963687E-4 s
		Tf	Fall Time	10u s
		Tr	Rise Time	10u s
		Pw	Pulse Width	4.2192144124697387E-4 s



Operating Values

#	Name	Value	Category	Description
1.	BOM Count	10		Total Design BOM count
2.	Total BOM	\$2.42		Total BOM Cost
3.	Cin IRMS	1.249 A	Current	Input capacitor RMS ripple current
4.	Cout IRMS	250.254 mA	Current	Output capacitor RMS ripple current
5.	IC Ipk	3.434 A	Current	Peak switch current in IC
6.	Iin Avg	710.23 mA	Current	Average input current
7.	L Ipp	866.904 mA	Current	Peak-to-peak inductor ripple current
8.	M1 Irms	1.46 A	Current	Q Iavg
9.	FootPrint	489.0 mm ²	General	Total Foot Print Area of BOM components
10.	Frequency	592.527 kHz	General	Switching frequency
11.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
12.	M Vds Act	101.287 mV	General	Voltage drop across the MosFET
13.	Mode	CCM	General	Conduction Mode
14.	Pout	15.0 W	General	Total output power
15.	D1 Tj	78.964 degC	Op_Point	D1 junction temperature
16.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
17.	Cross Freq	16.415 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	22.287 %	Op_point	Duty cycle
19.	Efficiency	88.002 %	Op_point	Steady state efficiency
20.	IC Tj	65.93 degC	Op_point	IC junction temperature
21.	ICThetaJA	42.5 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	3.0 A	Op_point	Iout operating point
23.	Phase Marg	-969.1 mdeg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	24.0 V	Op_point	Vin operating point
25.	Vout p-p	3.741 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	4.677 mW	Power	Input capacitor power dissipation
27.	Cout Pd	187.881 μW	Power	Output capacitor power dissipation
28.	Diode Pd	979.285 mW	Power	Diode power dissipation
29.	IC Pd	845.422 mW	Power	IC power dissipation

#	Name	Value	Category	Description
30.	L Pd	215.246 mW	Power	Inductor power dissipation
31.	Total Pd	2.045 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	3.0 A	Maximum Output Current
2.	Iout1	3.0 Amps	Output Current #1
3.	SoftStart	2.0 ms	Soft Start Time (ms)
4.	VinMax	24.0 V	Maximum input voltage
5.	VinMin	24.0 V	Minimum input voltage
6.	Vout	5.0 V	Output Voltage
7.	Vout1	5.0 Volt	Output Voltage #1
8.	base_pn	LMR14030S	Base Product Number
9.	source	DC	Input Source Type
10.	Ta	30.0 degC	Ambient temperature
11.	UserFsw	600.0 kHz	Customer Selected Frequency

Design Assistance

1. **LMR14030S** Product Folder : <http://www.ti.com/product/LMR14030> : contains the data sheet and other resources.

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