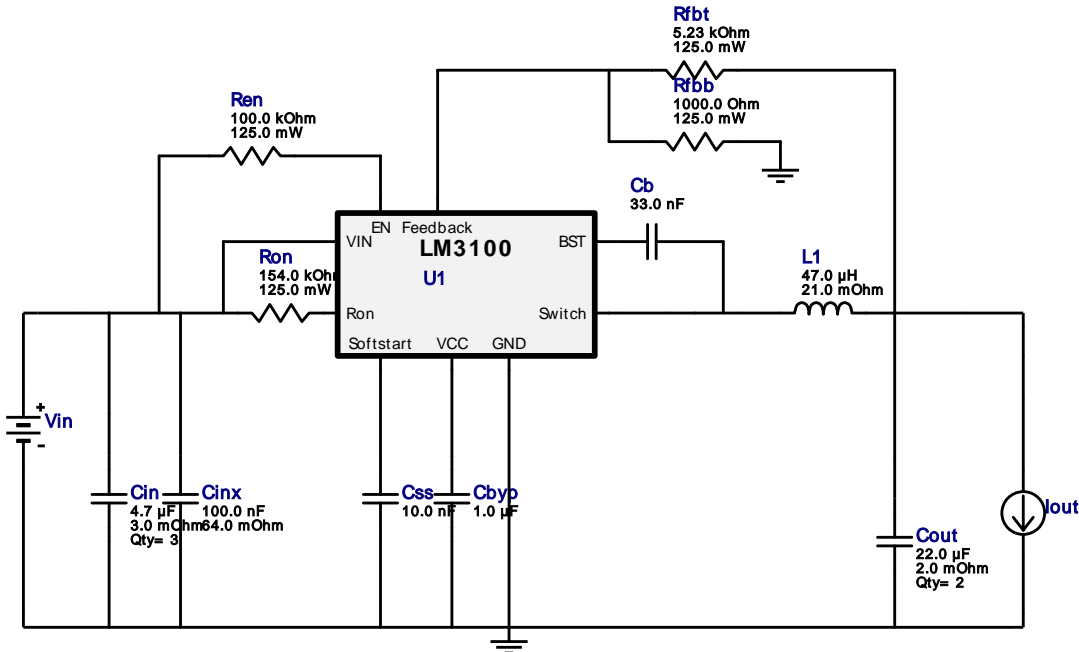


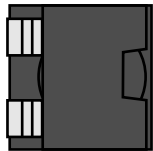





WEBENCH[®] Design Report

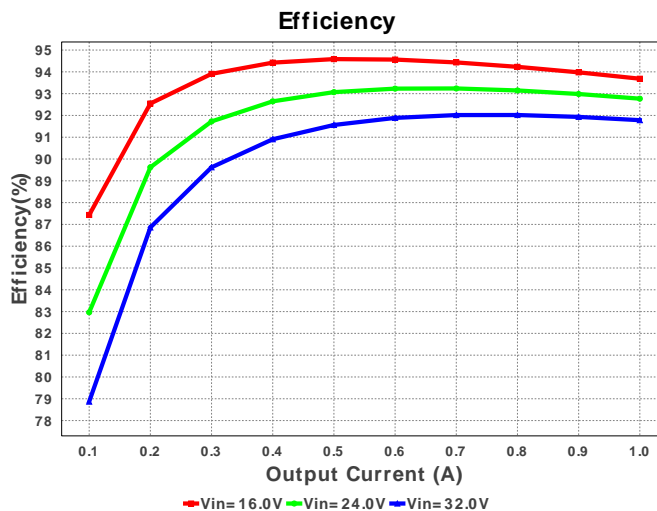
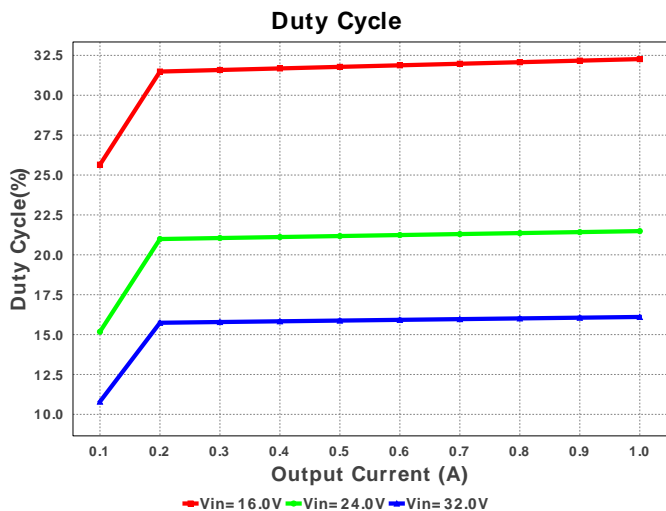
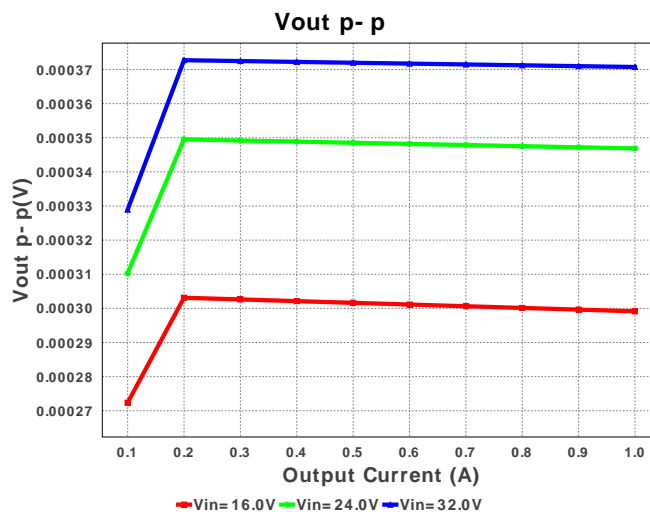
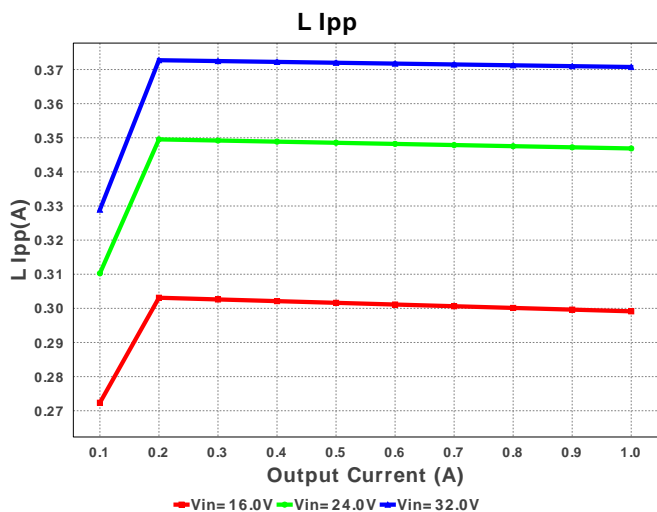
 Design : 4425714/33 LM3100MH/NOPB
 LM3100MH/NOPB 16.0V-32.0V to 5.00V @ 1.0A
VinMin = 16.0V
VinMax = 32.0V
vout = 5.0V
Iout = 1.0A


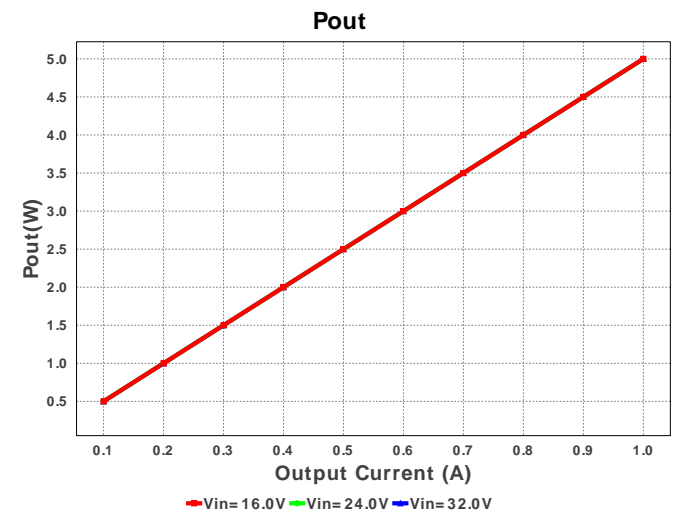
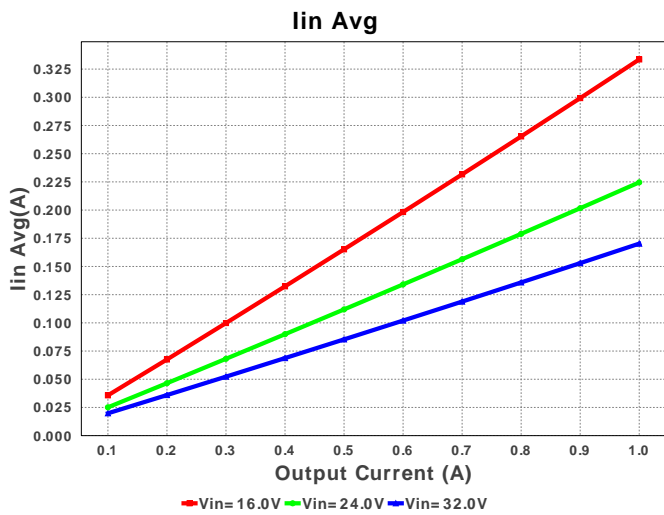
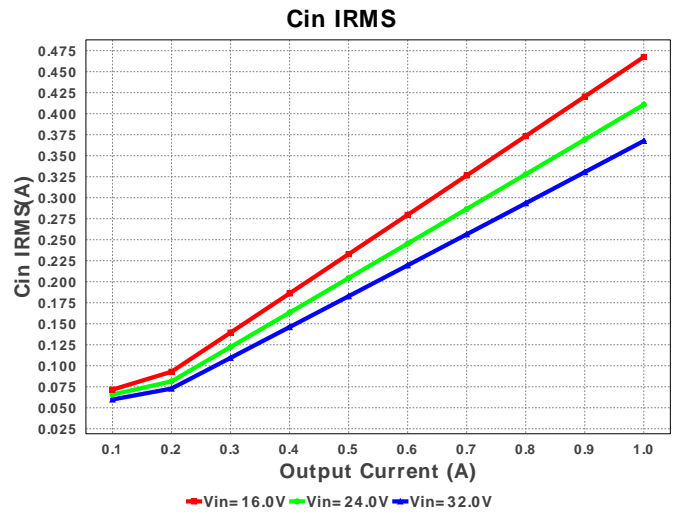
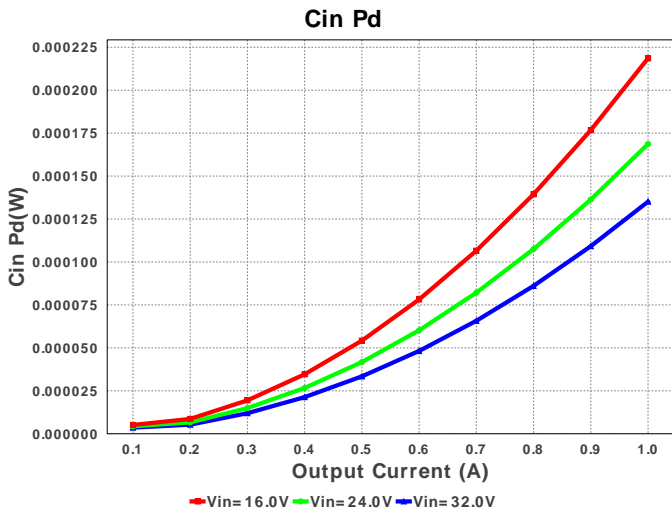
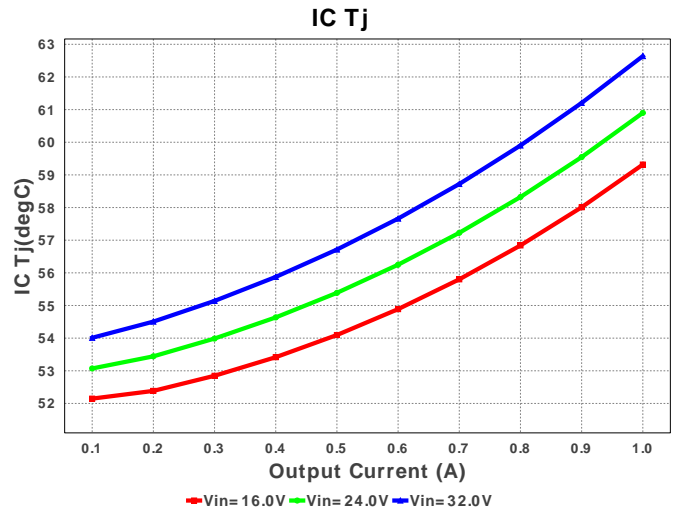
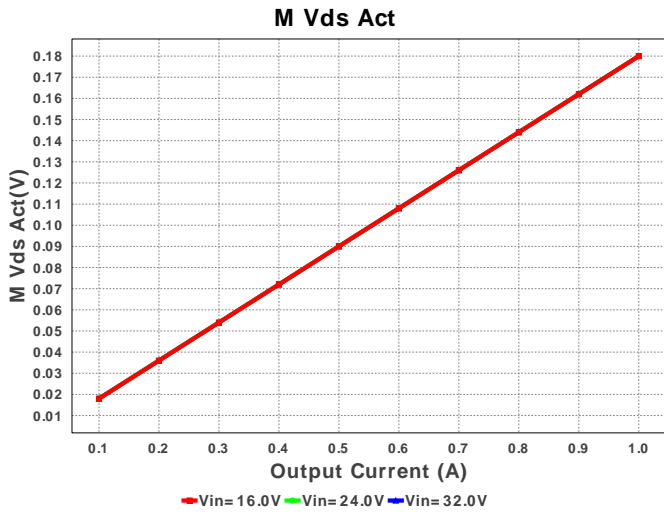
1. This regulator device is qualified for Automotive applications. All passives and other components selected in this design may not be qualified for Automotive applications. The user is required to verify that all components in the design meet the qualification and safety requirements for their specific application. View WEBENCH(R) Disclaimer.

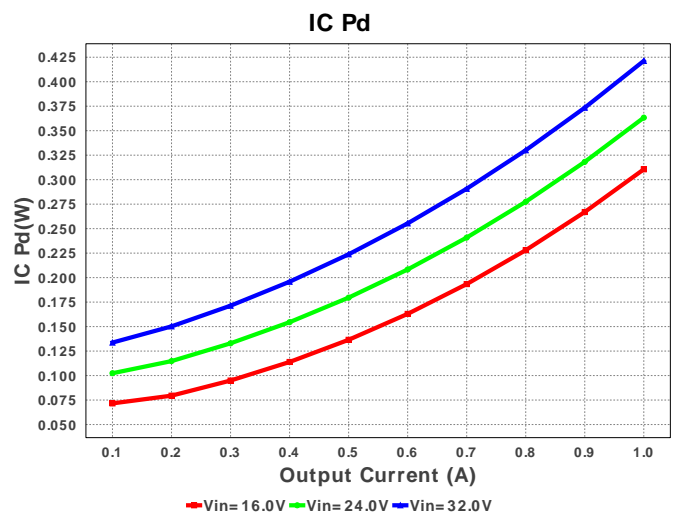
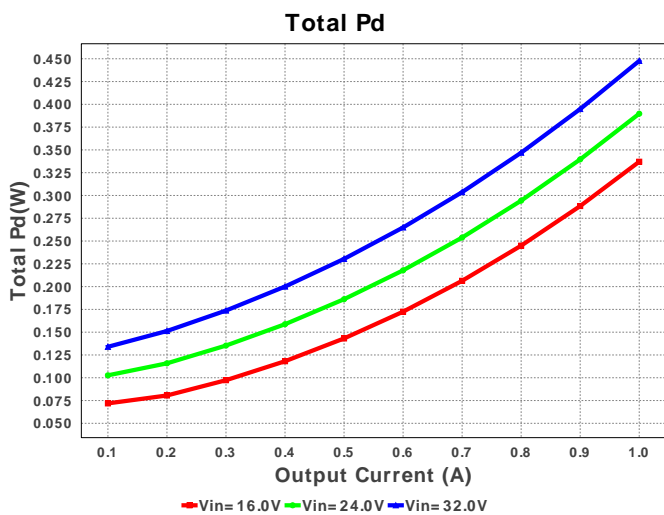
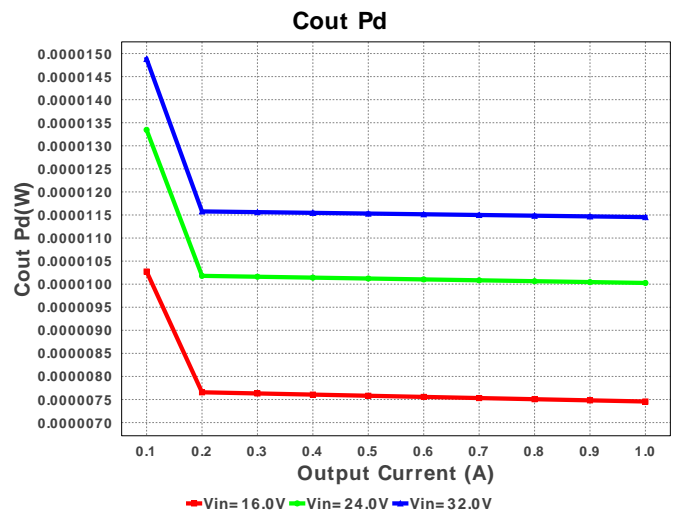
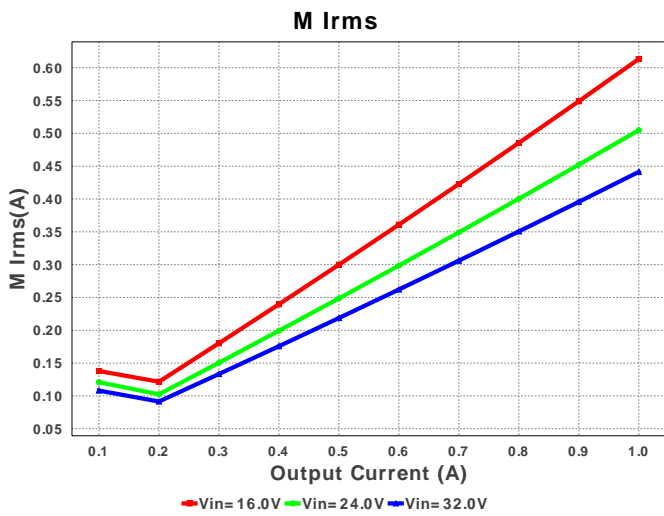
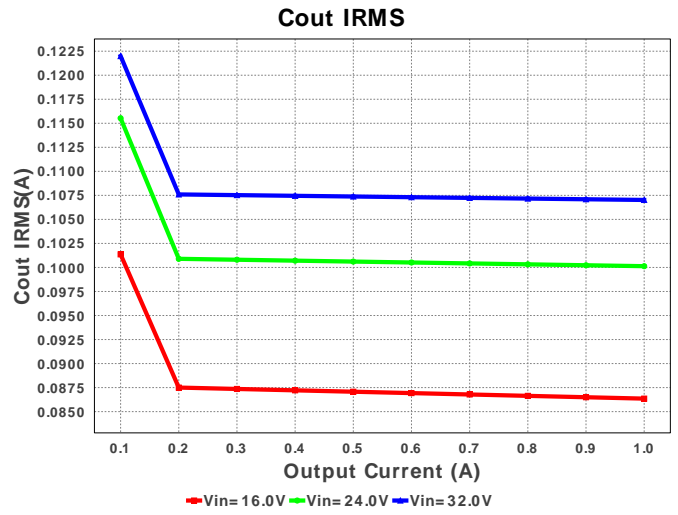
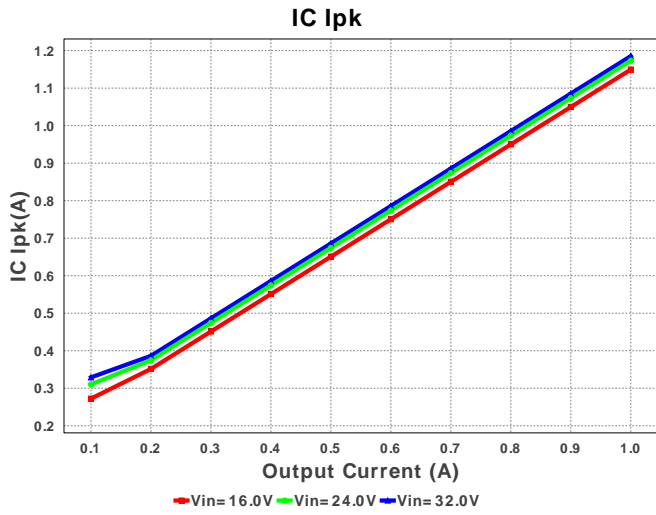
Electrical BOM

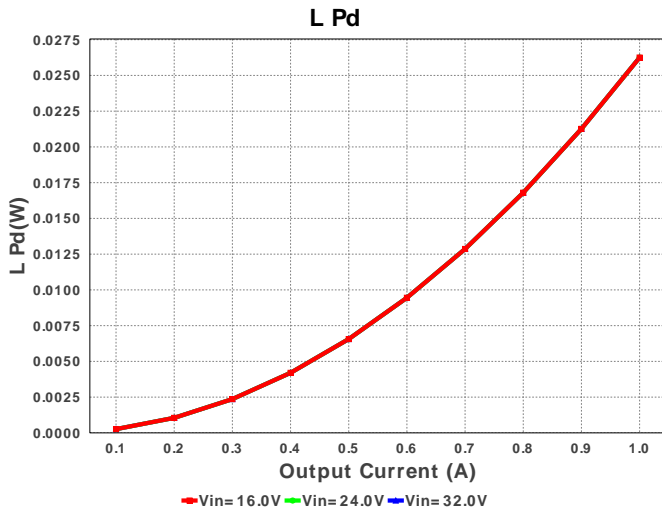
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cb	MuRata	GRM155R71E333KA88D Series= X7R	Cap= 33.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
2.	Cbyp	MuRata	GRM21BR61C105KA01L Series= X5R	Cap= 1.0 uF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 uF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	3	\$0.07	1206 11 mm ²
4.	Cinx	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
5.	Cout	MuRata	GRM32ER61C226KE20L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 16.0 V IRMS= 3.68 A	2	\$0.16	1210 15 mm ²
6.	Css	MuRata	GRM155R71E103KA01D Series= X7R	Cap= 10.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
7.	L1	Coilcraft	SER1390-473MLB	L= 47.0 µH DCR= 21.0 mOhm	1	\$0.95	 SER1390 240 mm ²
8.	Ren	Panasonic	ERJ-6ENF1003V Series= ERJ-6E	Res= 100.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
9.	Rfbb	Panasonic	ERJ-6ENF1001V Series= ERJ-6E	Res= 1000.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
10.	Rfbt	Panasonic	ERJ-6ENF5231V Series= ERJ-6E	Res= 5.23 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
11.	Ron	Panasonic	ERJ-6ENF1543V Series= ERJ-6E	Res= 154.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
12.	U1	Texas Instruments	LM3100MH/NOPB	Switcher	1	\$2.22	 MXA20A 71 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	367.576 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	107.022 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.185 A	Current	Peak switch current in IC
4.	Iin Avg	170.34 mA	Current	Average input current
5.	L Ipp	370.74 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	441.653 mA	Current	MOSFET RMS current
7.	BOM Count	15	General	Total Design BOM count
8.	FootPrint	420.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	247.886 kHz	General	Switching frequency
10.	IC Tolerance	16.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	180.0 mV	General	Voltage drop across the MosFET
12.	Pout	5.0 W	General	Total output power
13.	Total BOM	\$3.78	General	Total BOM Cost
14.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
15.	Duty Cycle	16.105 %	Op_point	Duty cycle
16.	Efficiency	91.726 %	Op_point	Steady state efficiency
17.	IC Tj	66.984 degC	Op_point	IC junction temperature
18.	ICThetaJA	40.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
19.	IOUT_OP	1.0 A	Op_point	Iout operating point
20.	VIN_OP	32.0 V	Op_point	Vin operating point
21.	Vout p-p	370.737 μV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	135.112 μW	Power	Input capacitor power dissipation
23.	Cout Pd	11.454 μW	Power	Output capacitor power dissipation
24.	IC Pd	424.611 mW	Power	IC power dissipation
25.	L Pd	26.25 mW	Power	Inductor power dissipation
26.	Total Pd	451.006 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	Iout1	1.0	Output Current #1
3.	VinMax	32.0	Maximum input voltage
4.	VinMin	16.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	LM3100	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	50.0	Ambient temperature

Design Assistance

1. LM3100 Product Folder : <http://www.ti.com/product/LM3100> : 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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