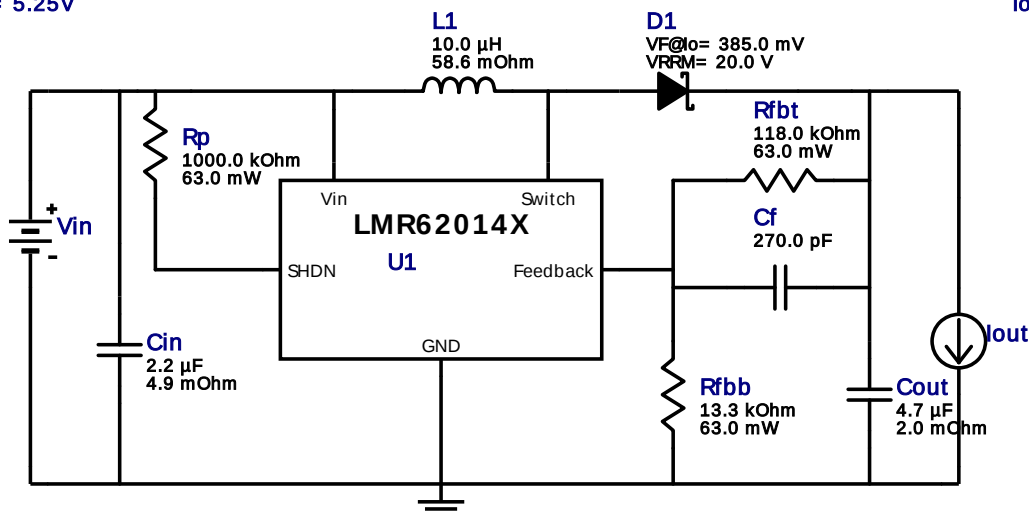


WEBENCH® Design Report

Design : 2261631/85 LMR62014XMF/NOPB
LMR62014XMF/NOPB 4.75V-5.25V to 12.00V @ 0.4A

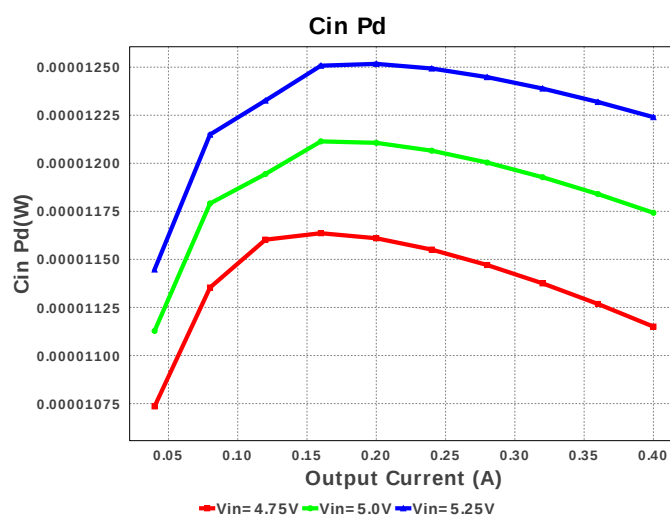
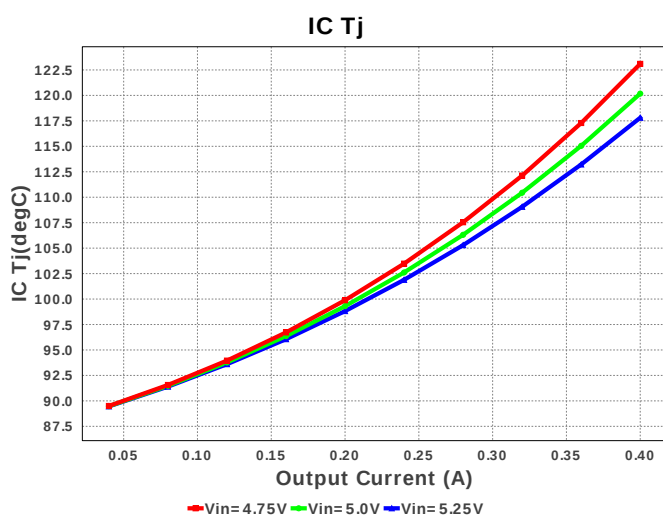
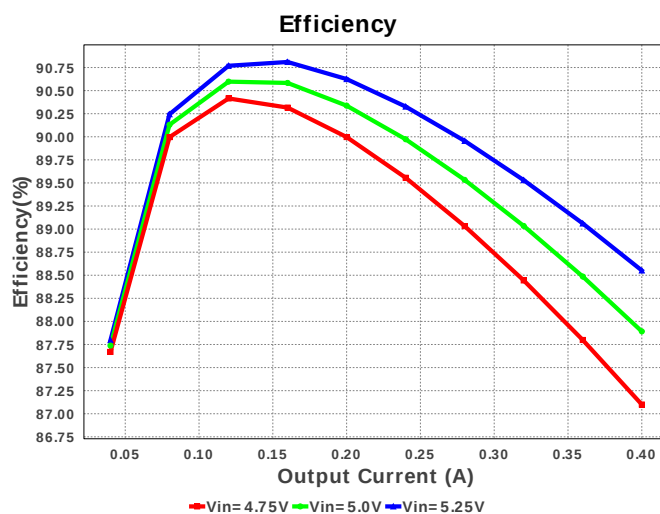
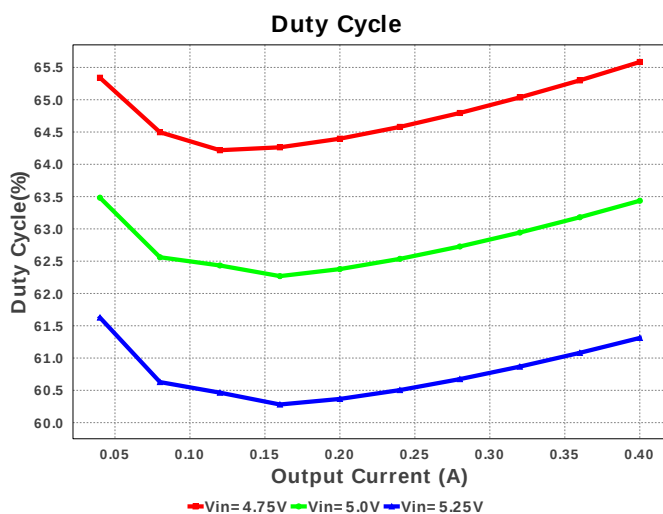
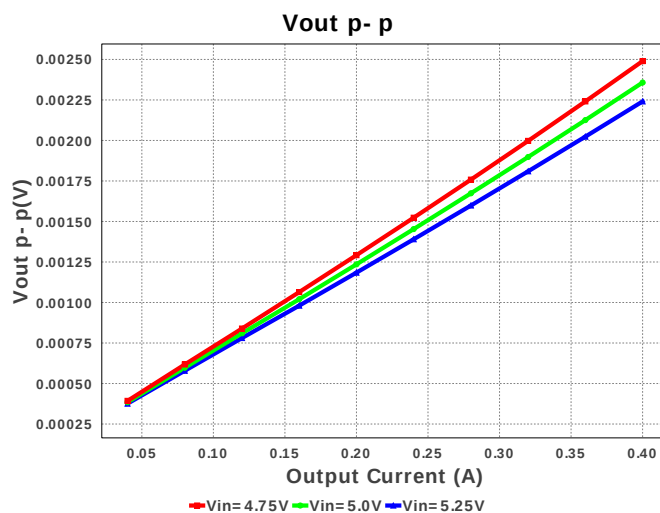
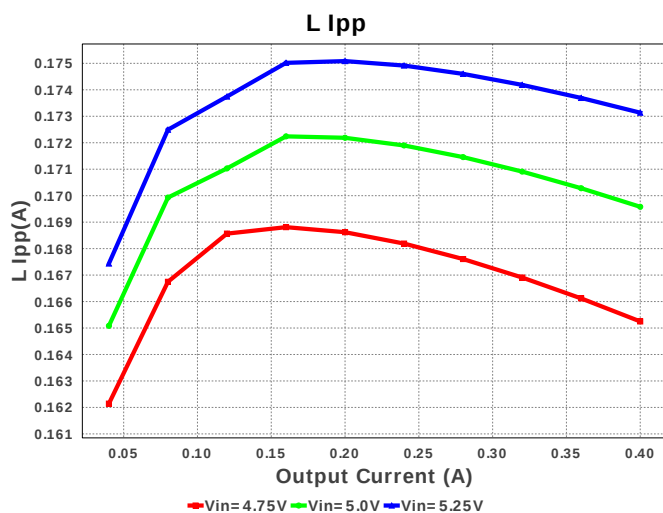
VinMin = 4.75V
VinMax = 5.25V

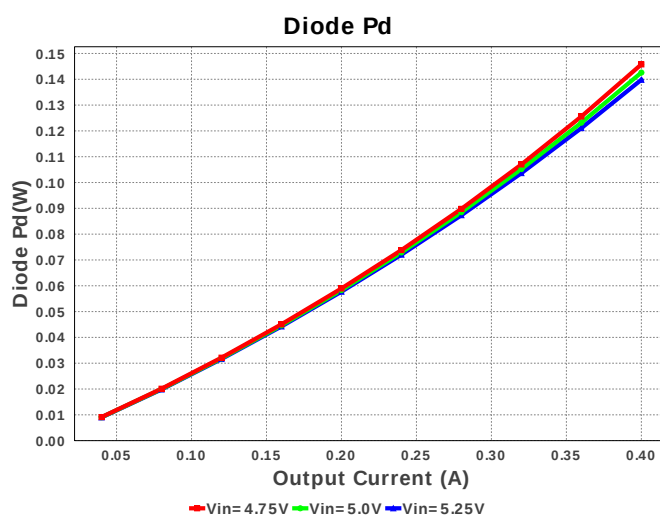
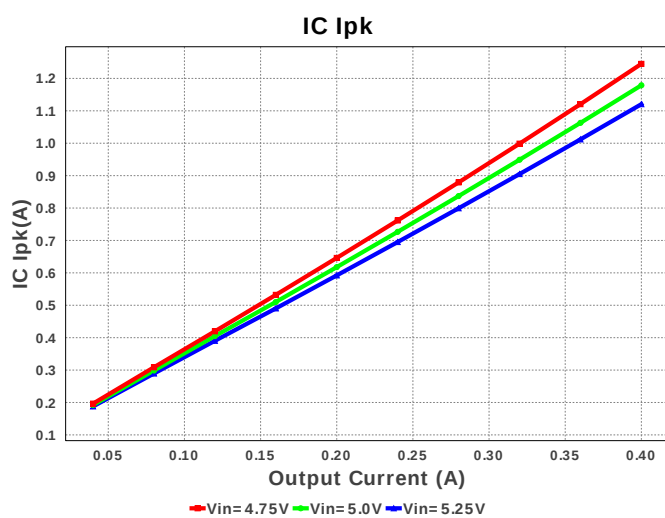
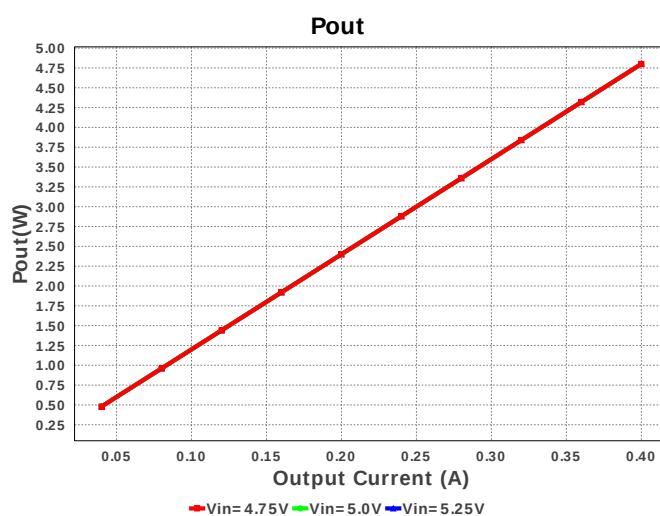
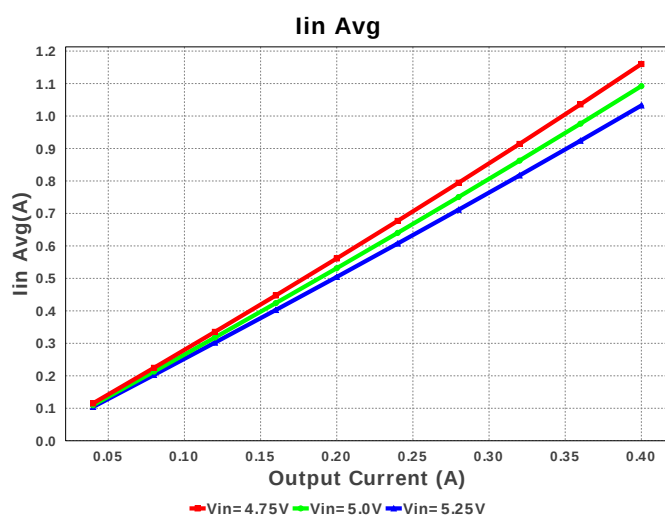
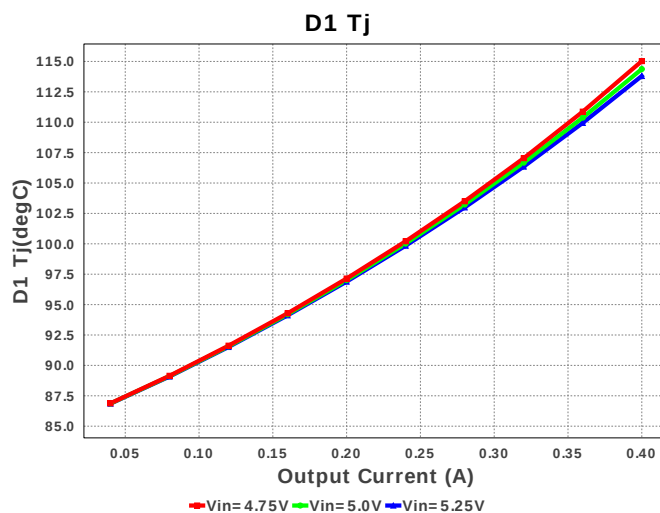
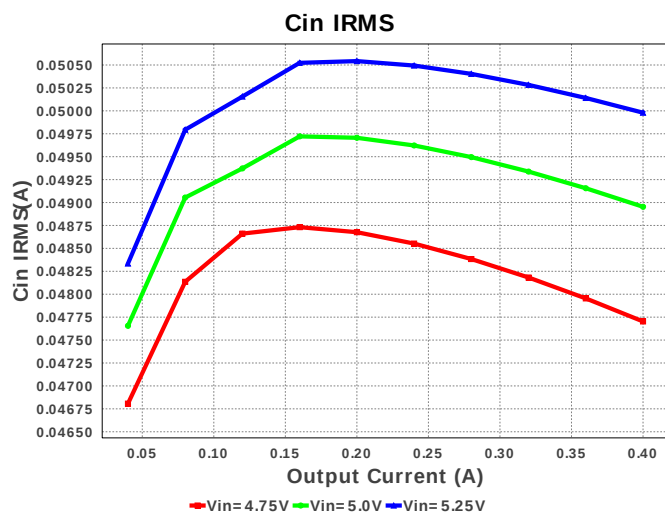
Vout = 12.0V
Iout = 0.4A

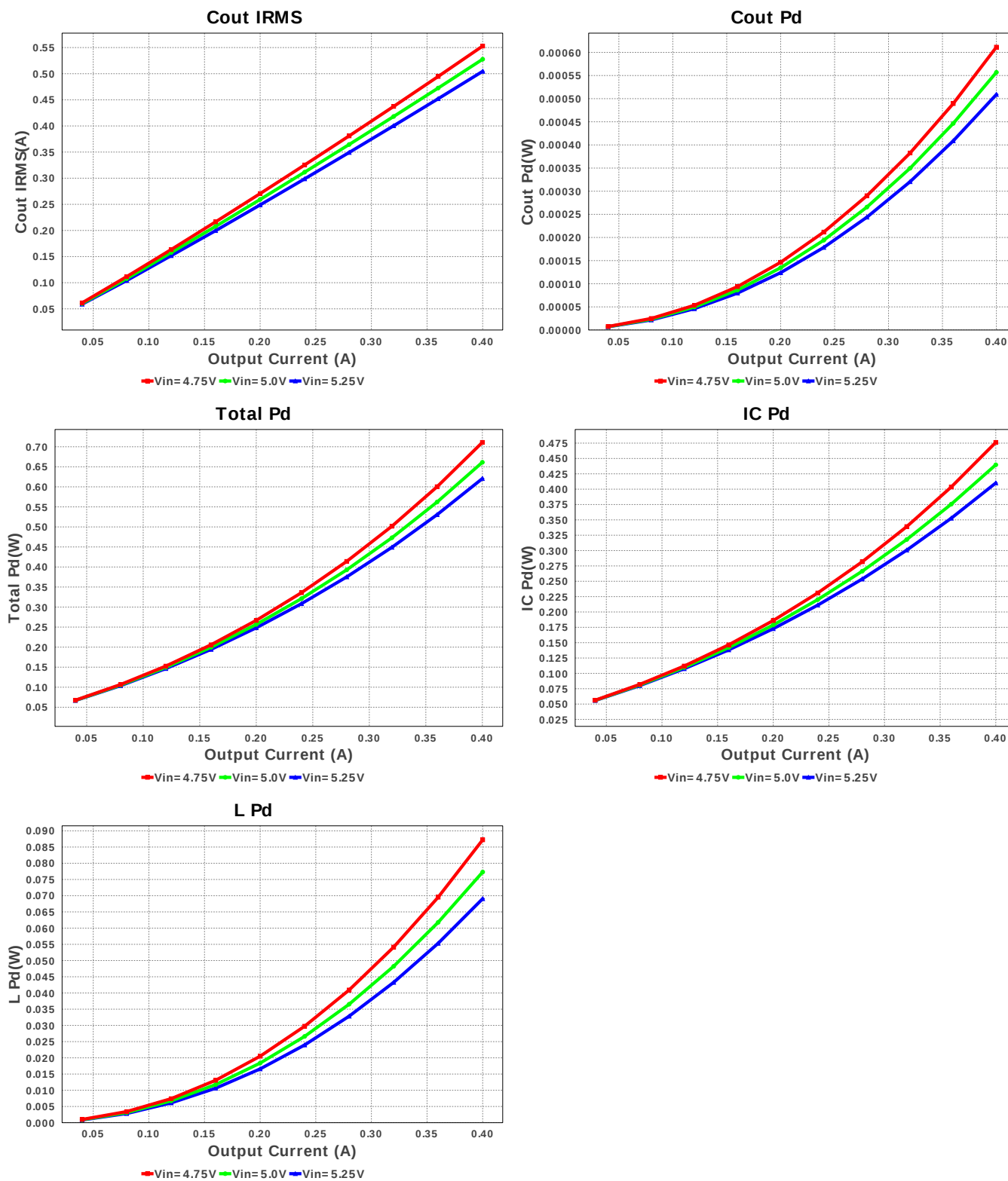


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cf	TDK	C2012C0G1H271J Series= COG/NPO	Cap= 270.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
2.	Cin	TDK	C2012X5R1A225K/0.85 Series= X5R	Cap= 2.2 uF ESR= 4.9 mOhm VDC= 10.0 V IRMS= 2.08 A	1	\$0.03	 0805 7 mm ²
3.	Cout	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.06	 0805 7 mm ²
4.	D1	ON Semiconductor	MBR0520LT1G	VF@Io= 385.0 mV VRRM= 20.0 V	1	\$0.06	 SOD-123 13 mm ²
5.	L1	Bourns	SRN6045-100M	L= 10.0 uH DCR= 58.6 mOhm	1	\$0.16	 SRN6045 64 mm ²
6.	Rfbb	Vishay-Dale	CRCW040213K3FKED Series= CRCW..e3	Res= 13.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
7.	Rfht	Vishay-Dale	CRCW0402118KFKED Series= CRCW..e3	Res= 118.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
8.	Rp	Vishay-Dale	CRCW04021M00FKED Series= CRCW..e3	Res= 1000.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
9.	U1	Texas Instruments	LMR62014XMF/NOPB	Switcher	1	\$0.55	 DBV0005A 15 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	47.703 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	552.892 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.245 A	Current	Peak switch current in IC
4.	Iin Avg	1.16 A	Current	Average input current
5.	L Ipp	165.25 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	9	General	Total Design BOM count
7.	FootPrint	121.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	1.6 MHz	General	Switching frequency
9.	Pout	4.8 W	General	Total output power
10.	Total BOM	\$0.9	General	Total BOM Cost
11.	D1 Tj	115.028 degC	Op_Point	D1 junction temperature

#	Name	Value	Category	Description
12.	Duty Cycle	65.584 %	Op_point	Duty cycle
13.	Efficiency	87.1 %	Op_point	Steady state efficiency
14.	IC Tj	123.097 degC	Op_point	IC junction temperature
15.	IOUT_OP	400.0 mA	Op_point	Iout operating point
16.	VIN_OP	4.75 V	Op_point	Vin operating point
17.	Vout p-p	2.49 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	11.15 μ W	Power	Input capacitor power dissipation
19.	Cout Pd	611.38 μ W	Power	Output capacitor power dissipation
20.	Diode Pd	145.766 mW	Power	Diode power dissipation
21.	IC Pd	476.207 mW	Power	IC power dissipation
22.	L Pd	87.223 mW	Power	Inductor power dissipation
23.	Total Pd	710.913 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	400.0 m	Maximum Output Current
2.	Iout1	400.0 m	Output Current #1
3.	VinMax	5.25	Maximum input voltage
4.	VinMin	4.75	Minimum input voltage
5.	Vout	12.0	Output Voltage
6.	Vout1	12.0	Output Voltage #1
7.	base_pn	LMR62014X	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	85.0	Ambient temperature

Design Assistance

1. LMR62014X Product Folder : <http://www.ti.com/product/LMR62014> : contains the data sheet and other resources.

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