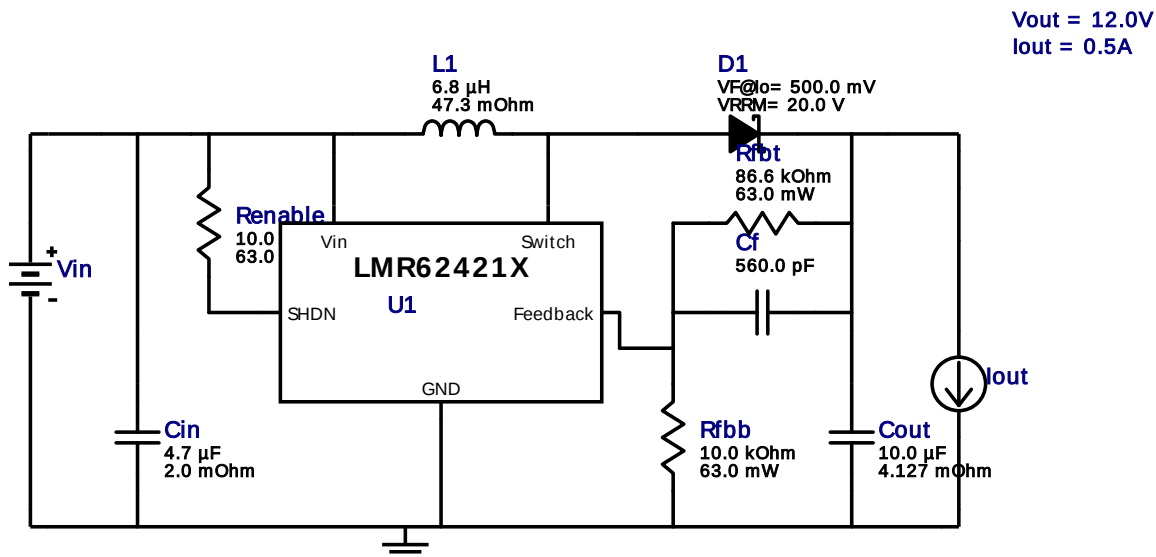


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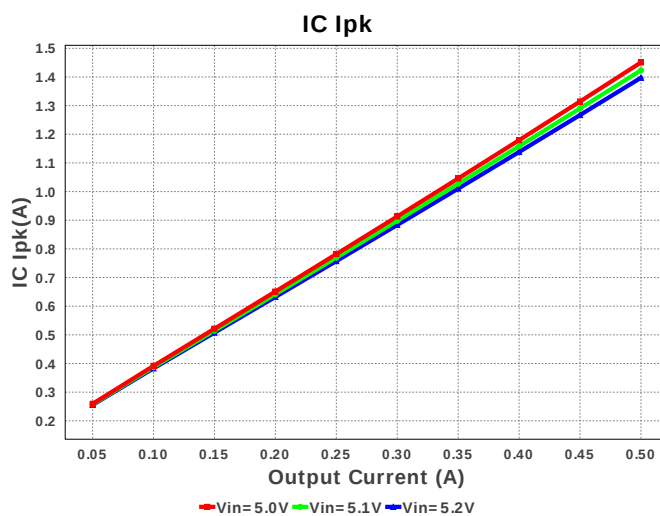
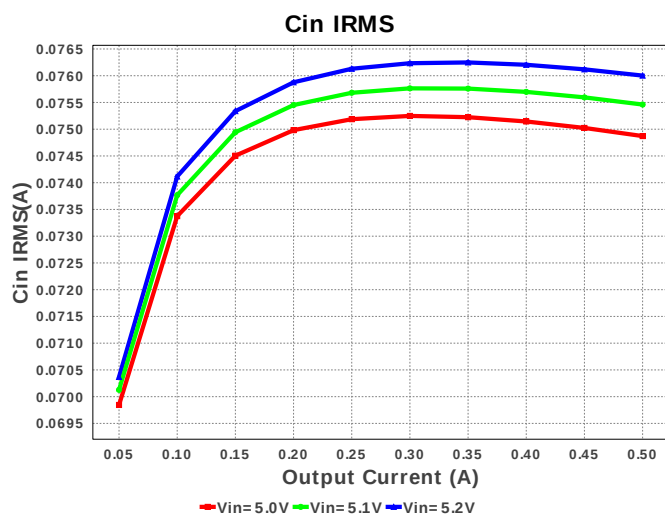
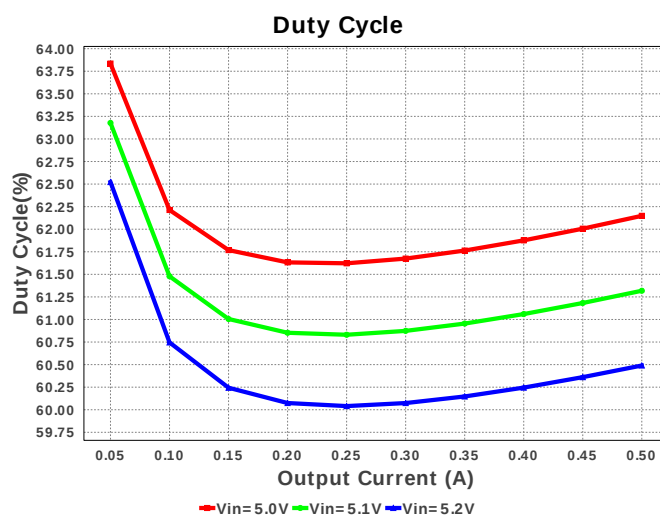
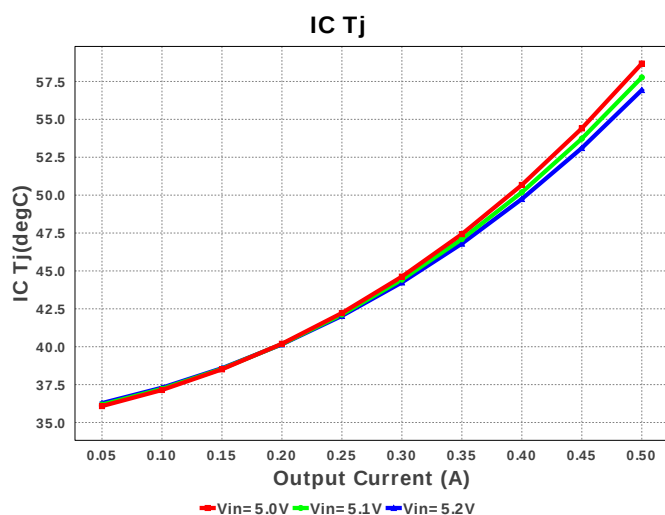
Design : 4738396/10 LMR62421XSD/NOPB
LMR62421XSD/NOPB 5.0V-5.2V to 12.00V @ 0.5A

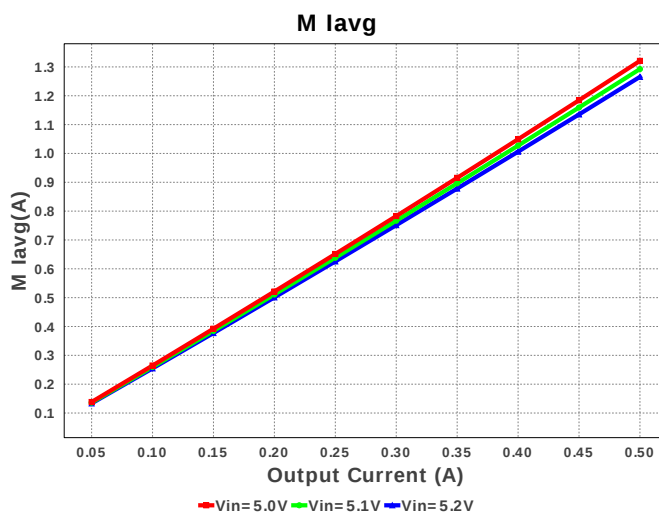
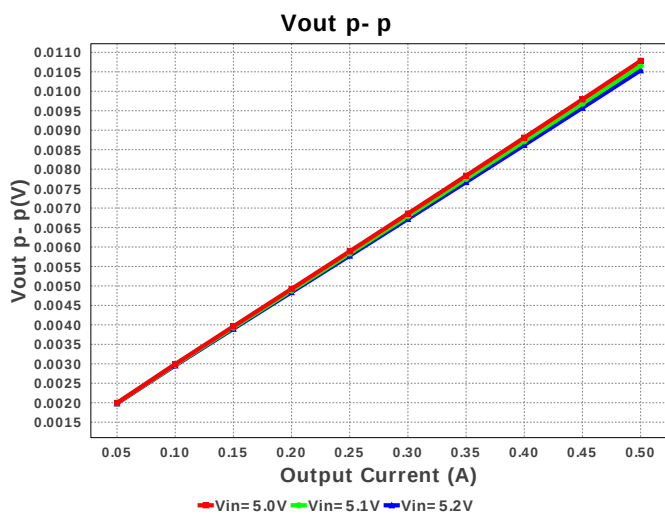
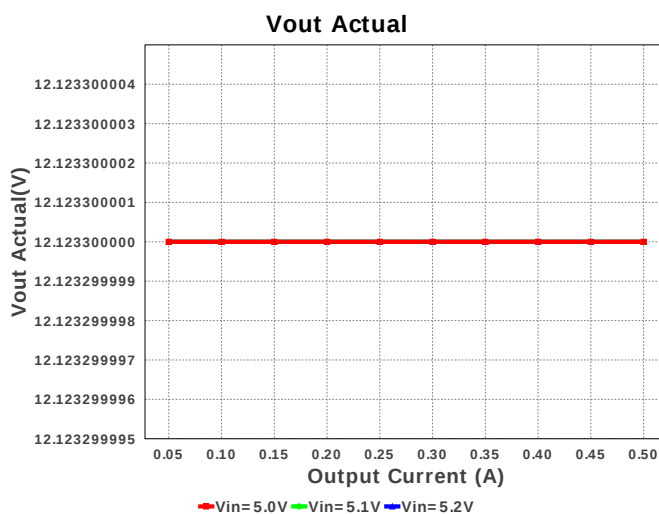
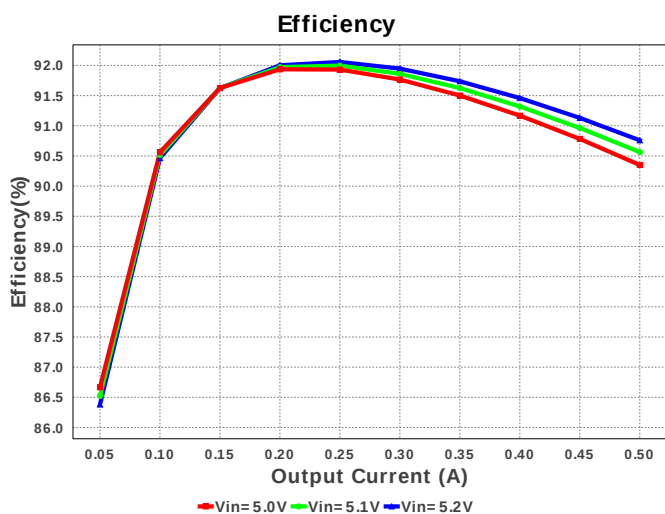
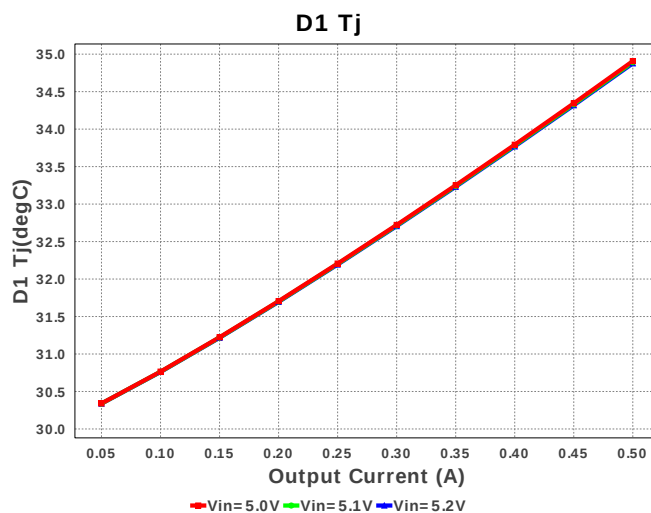
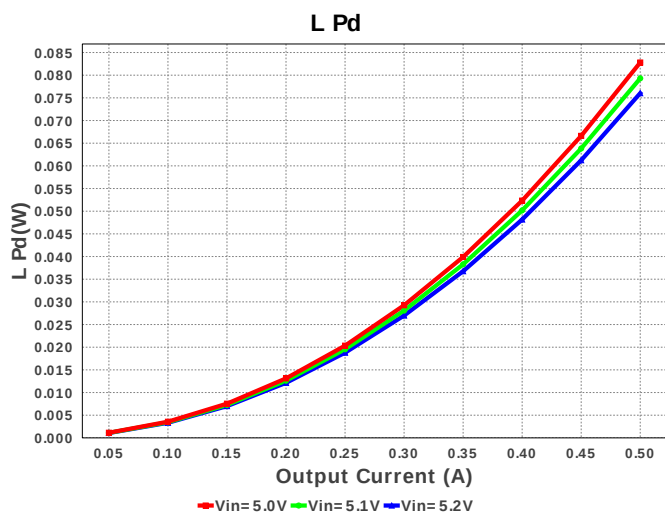


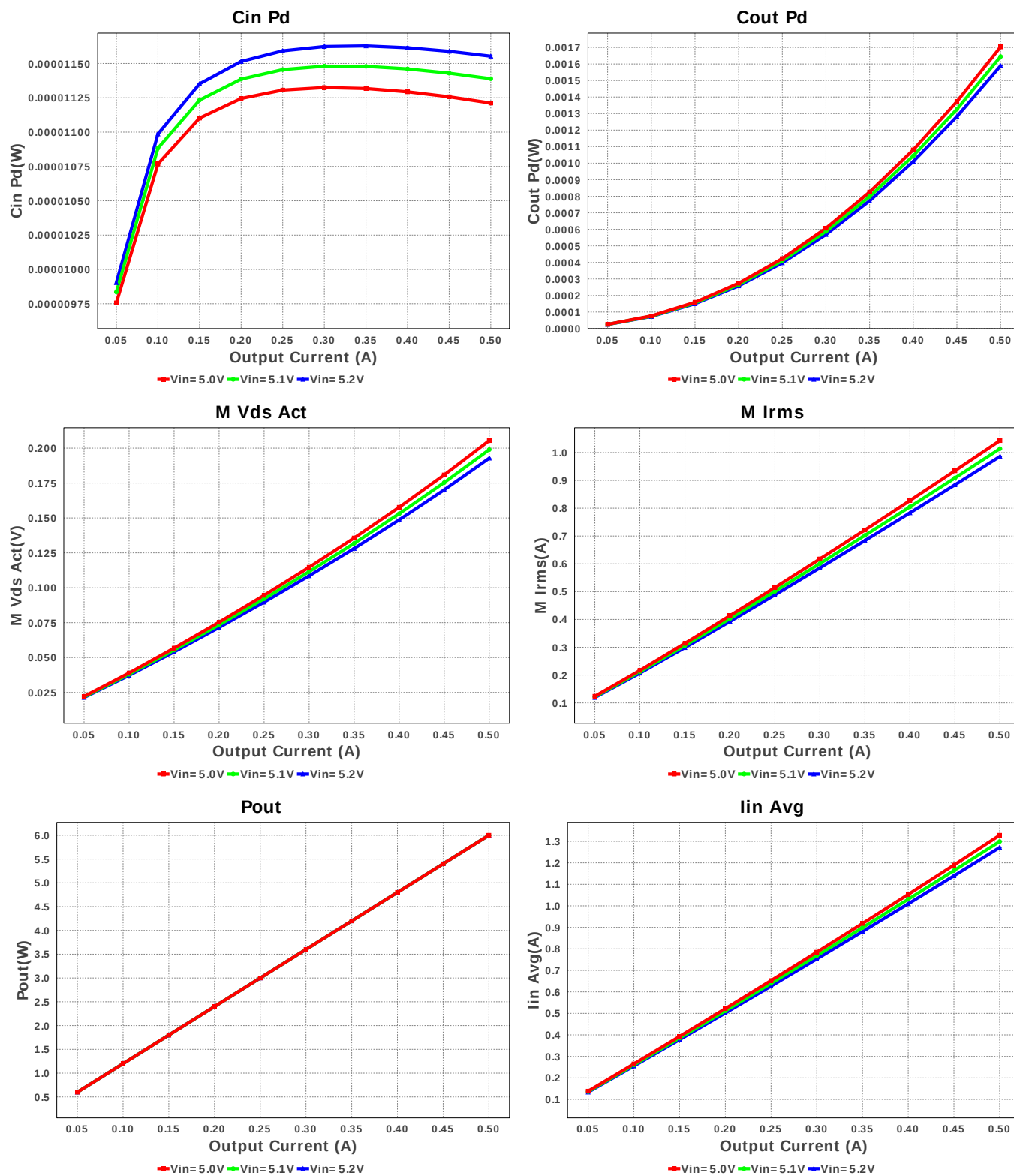
Electrical BOM

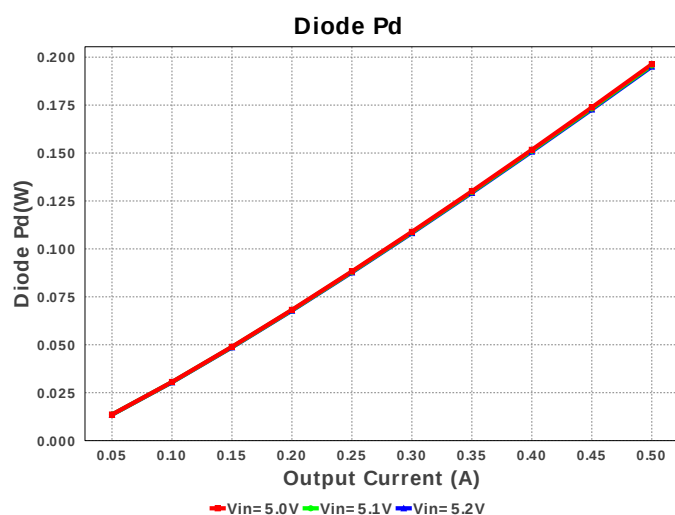
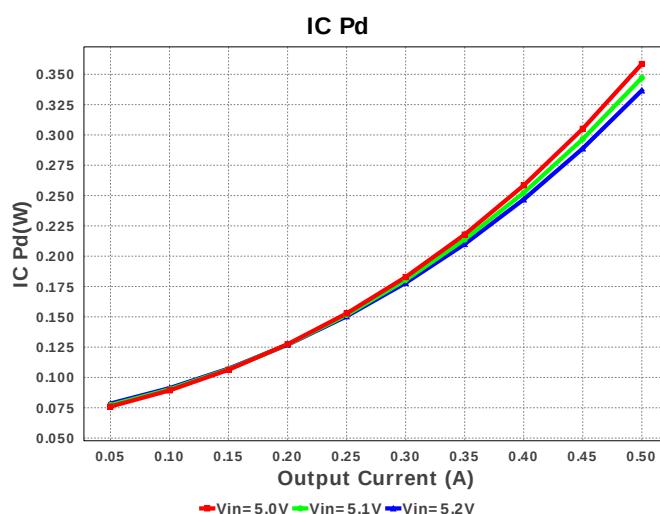
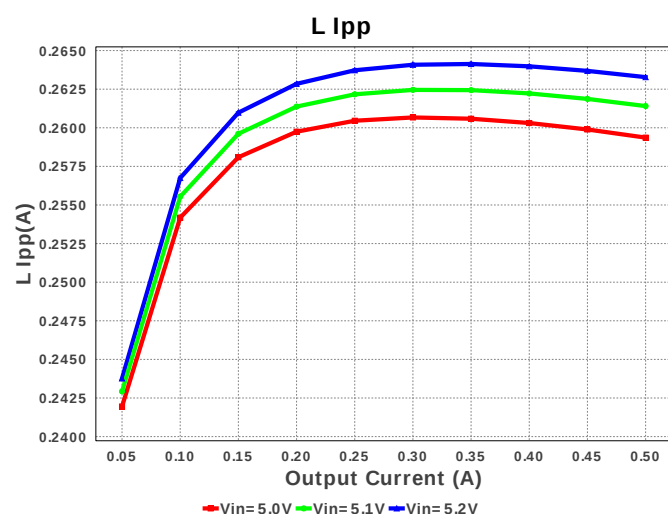
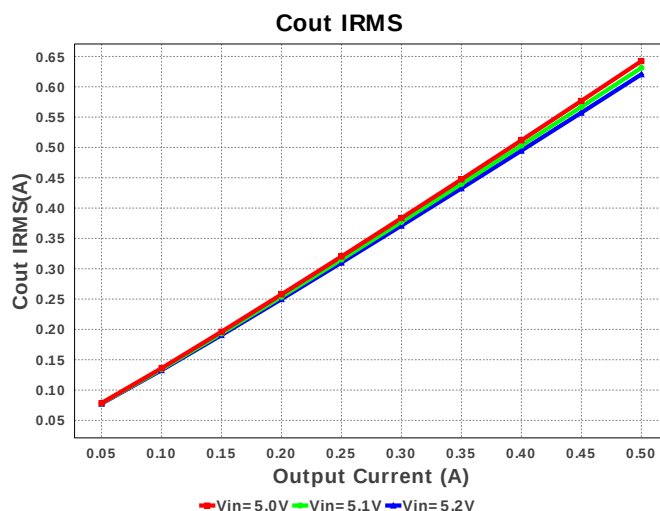
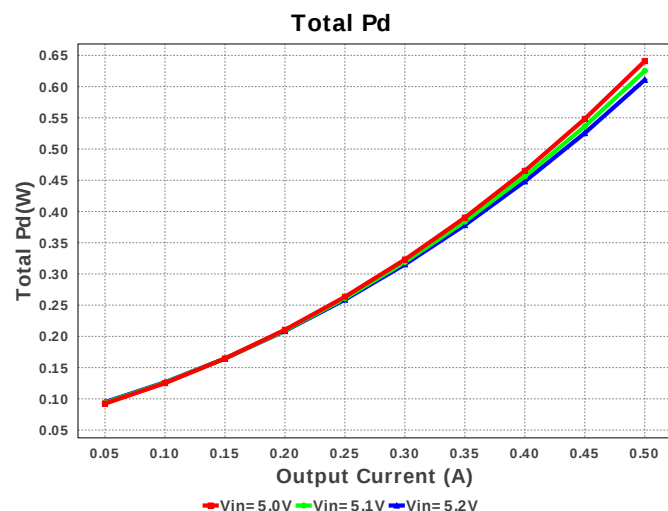
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cf	Yageo America	CC0805KRX7R9BB561 Series= X7R	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.02	0805 7 mm ²
3.	Cout	MuRata	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	1	\$0.03	0805 7 mm ²
4.	D1	Diodes Inc.	B220-13-F	VF@Io= 500.0 mV VRRM= 20.0 V	1	\$0.08	SMB 44 mm ²
5.	L1	Bourns	SRN6045-6R8Y	L= 6.8 uH DCR= 47.3 mOhm	1	\$0.16	SRN6045 64 mm ²
6.	Renable	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
7.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
8.	Rfbb	Vishay-Dale	CRCW040286K6FKED Series= CRCW..e3	Res= 86.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	U1	Texas Instruments	LMR62421XSD/NOPB	Switcher	1	\$0.75	 SDE06A 16 mm²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	74.872 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	642.335 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.451 A	Current	Peak switch current in IC
4.	Iin Avg	1.328 A	Current	Average input current
5.	L Ipp	259.36 mA	Current	Peak-to-peak inductor ripple current
6.	M Iavg	1.321 A	Current	MOSFET Average current
7.	M1 Irms	1.043 A	Current	Q Iavg
8.	BOM Count	9	General	Total Design BOM count
9.	FootPrint	153.0 mm ²	General	Total Foot Print Area of BOM components
10.	Frequency	1.6 MHz	General	Switching frequency
11.	IC Tolerance	25.0 mV	General	IC Feedback Tolerance

#	Name	Value	Category	Description
12.	M Vds Act	205.419 mV	General	Voltage drop across the MosFET
13.	Pout	6.0 W	General	Total output power
14.	Total BOM	\$1.08	General	Total BOM Cost
15.	D1 Tj	34.907 degC	Op_Point	D1 junction temperature
16.	Vout Actual	12.123 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
18.	Cross Freq	9.266 kHz	Op_point	Bode plot crossover frequency
19.	Duty Cycle	62.148 %	Op_point	Duty cycle
20.	Efficiency	90.35 %	Op_point	Steady state efficiency
21.	IC Tj	58.681 degC	Op_point	IC junction temperature
22.	ICThetaJA	80.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	500.0 mA	Op_point	Iout operating point
24.	Phase Marg	88.047 deg	Op_point	Bode Plot Phase Margin
25.	VIN_OP	5.0 V	Op_point	Vin operating point
26.	Vout p-p	10.781 mV	Op_point	Peak-to-peak output ripple voltage
27.	Cin Pd	11.212 μW	Power	Input capacitor power dissipation
28.	Cout Pd	1.703 mW	Power	Output capacitor power dissipation
29.	Diode Pd	196.294 mW	Power	Diode power dissipation
30.	IC Pd	358.514 mW	Power	IC power dissipation
31.	L Pd	82.799 mW	Power	Inductor power dissipation
32.	Total Pd	640.857 mW	Power	Total Power Dissipation
33.	Vout Tolerance	3.839 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	5.2	Maximum input voltage
3.	VinMin	5.0	Minimum input voltage
4.	Vout	12.0	Output Voltage
5.	base_pn	LMR62421X	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **LMR62421X** Product Folder : <http://www.ti.com/product/LMR62421> : contains the data sheet and other resources.

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