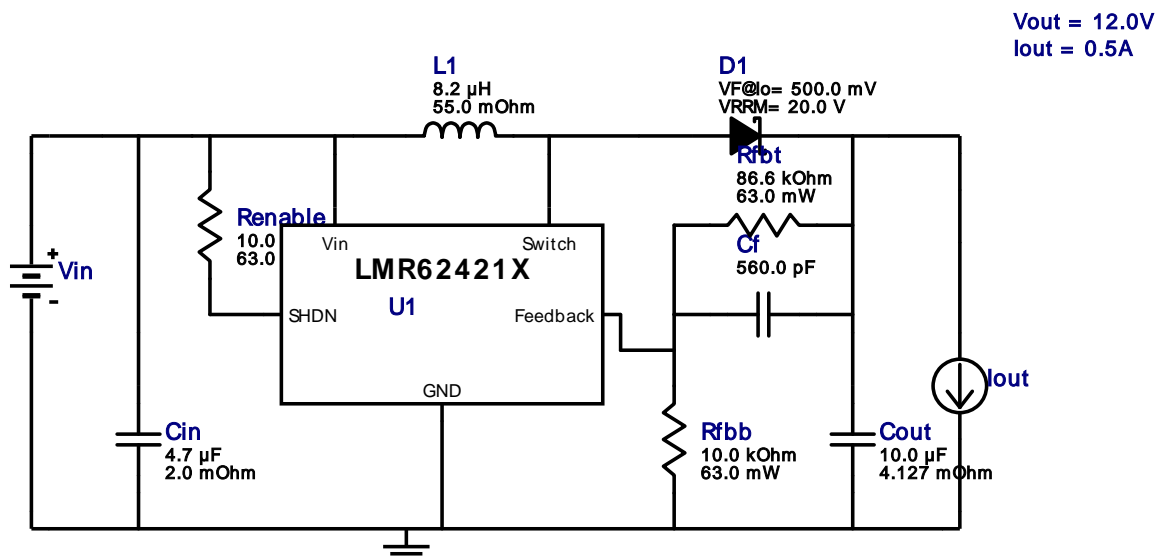



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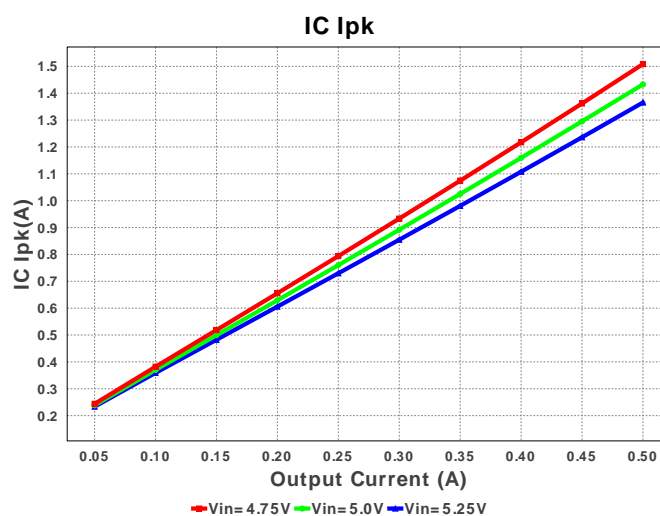
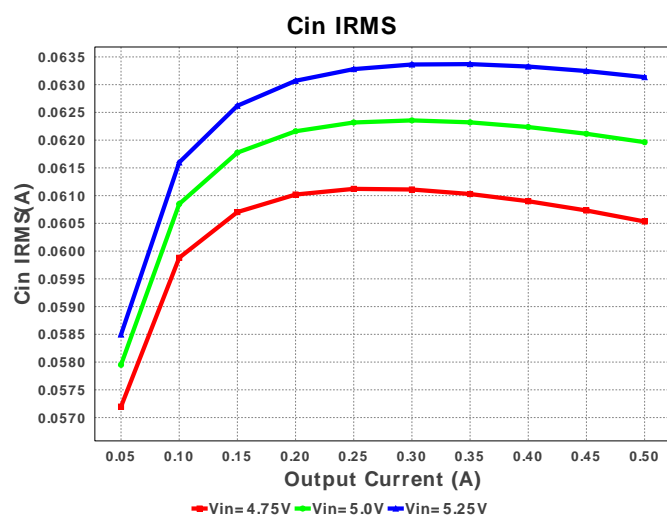
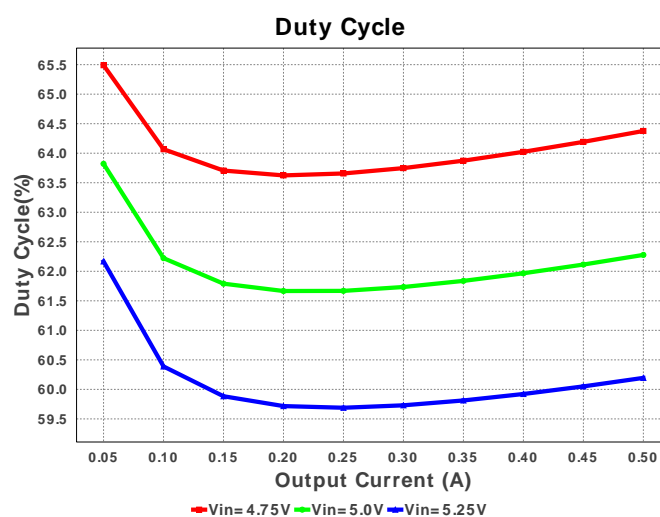
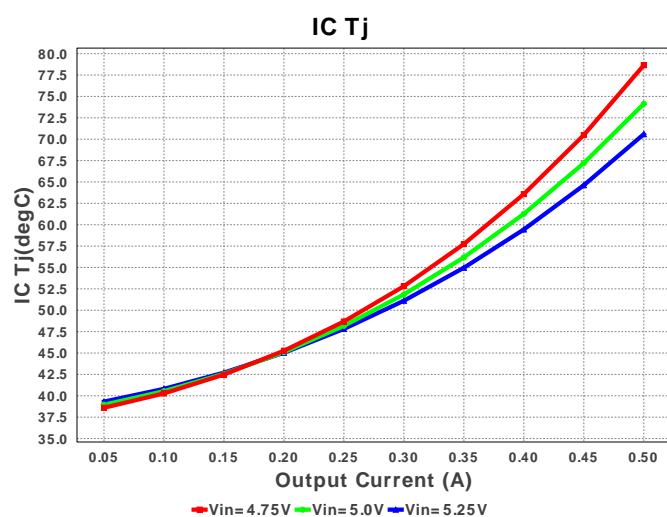
Design : 3962751/6 LMR62421XMF/NOPB
LMR62421XMF/NOPB 4.75V-5.25V to 12.00V @ 0.5A

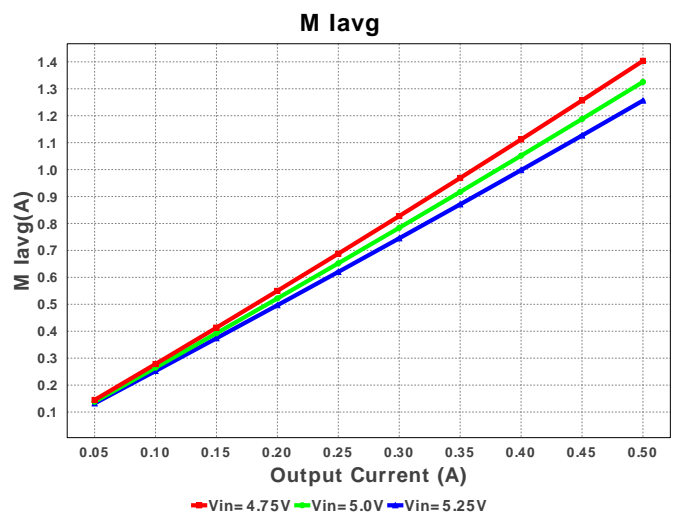
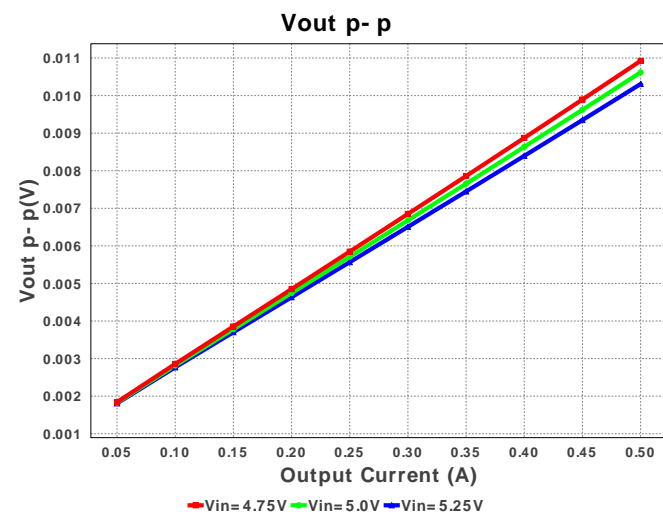
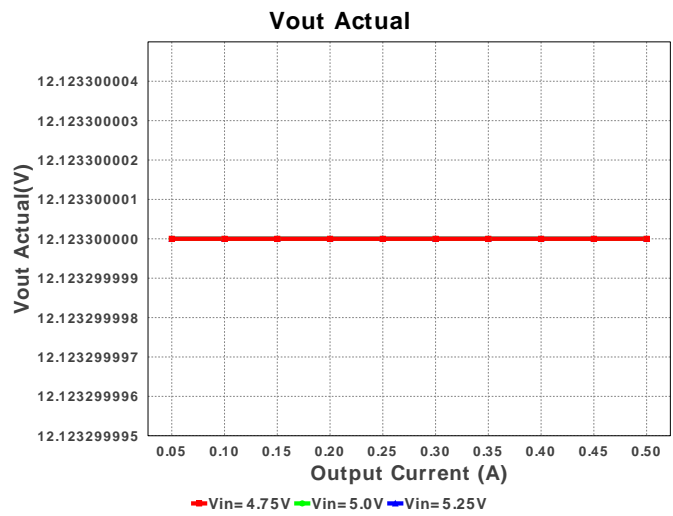
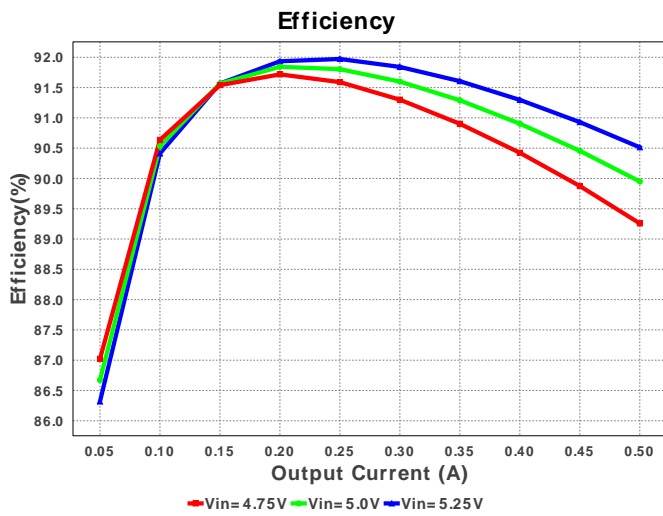
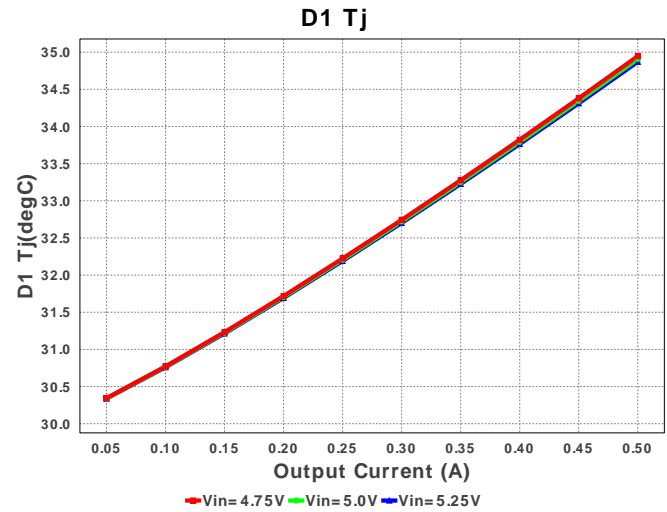
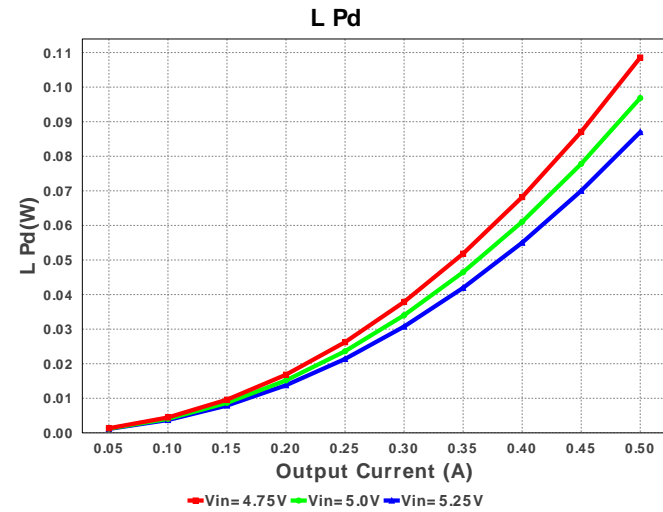


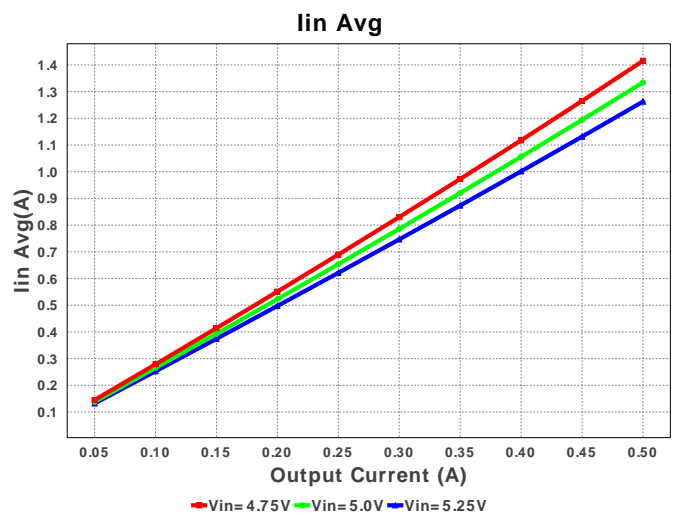
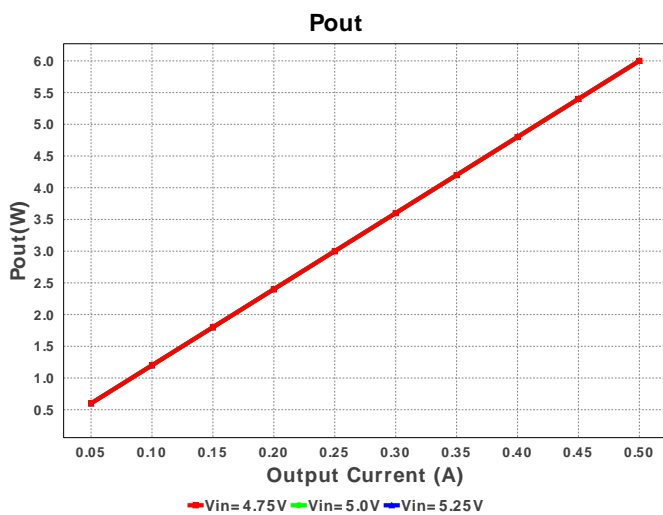
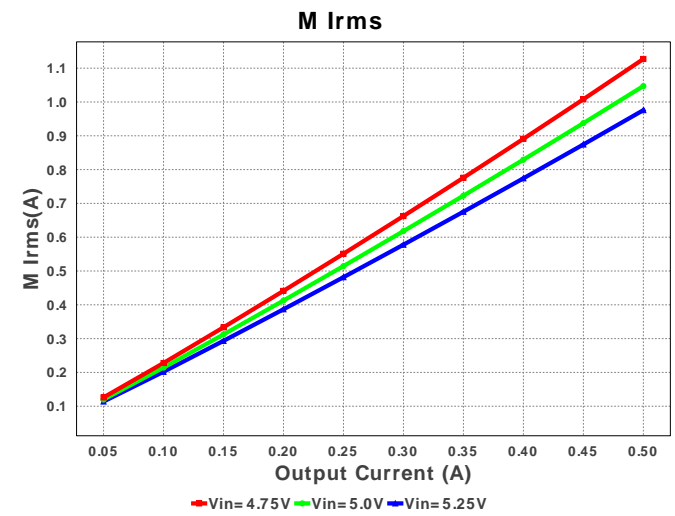
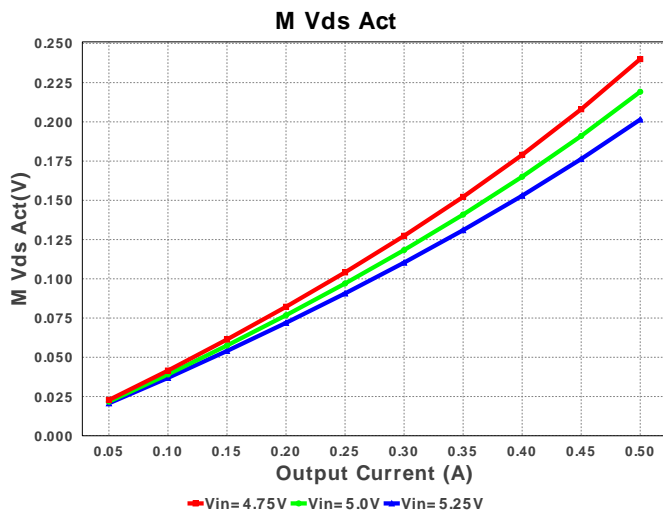
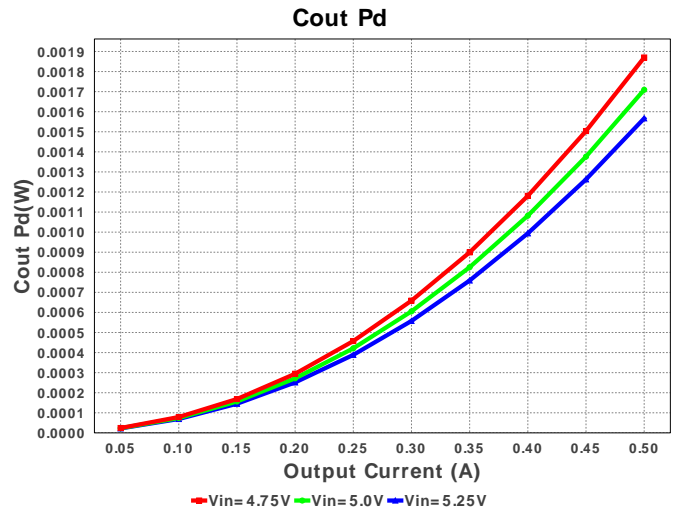
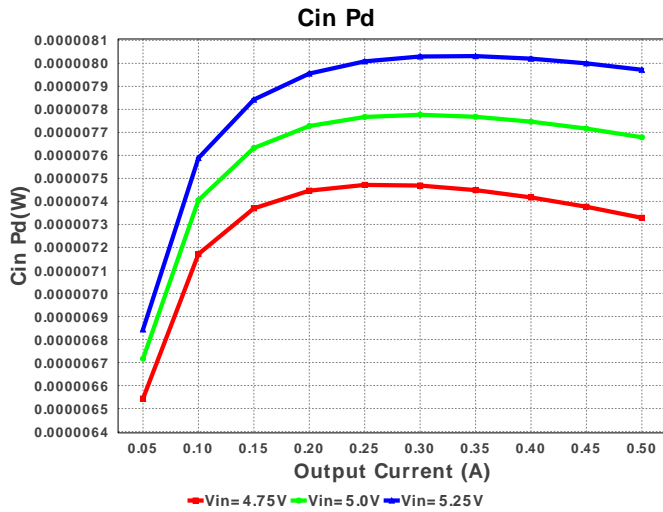
Electrical BOM

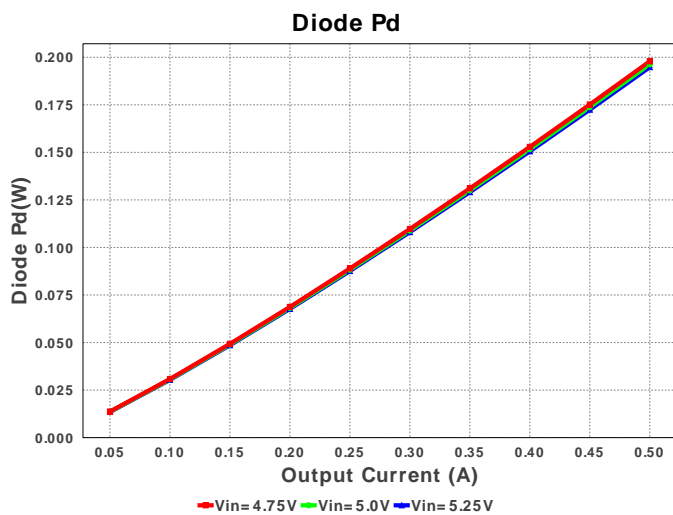
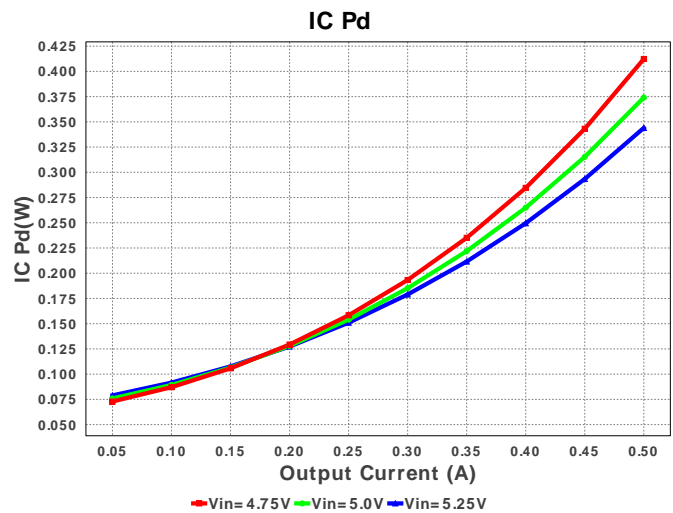
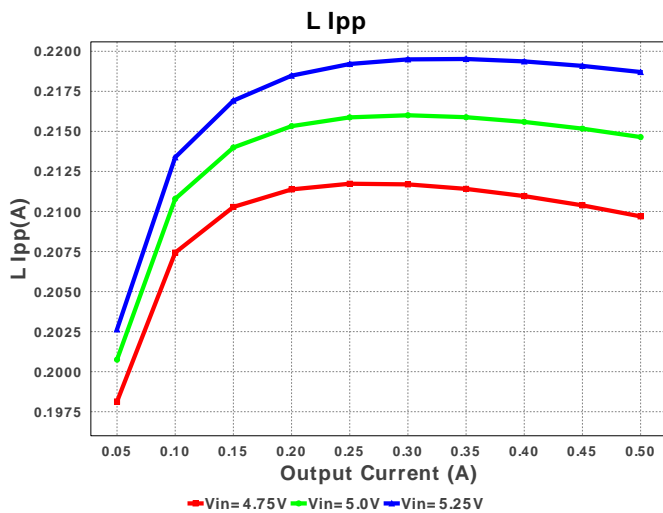
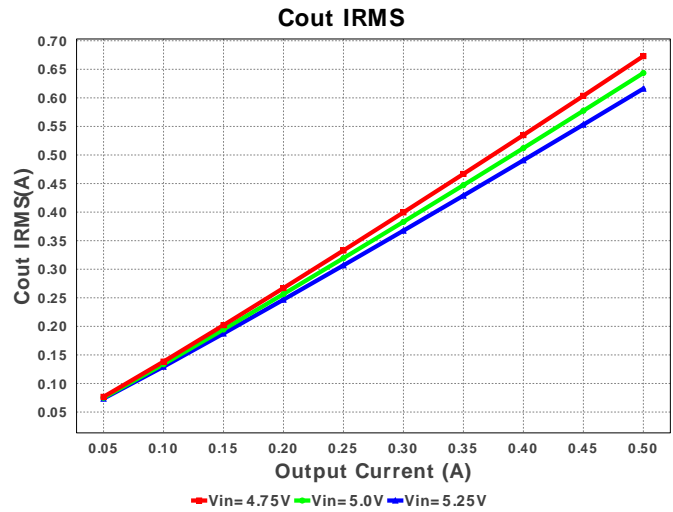
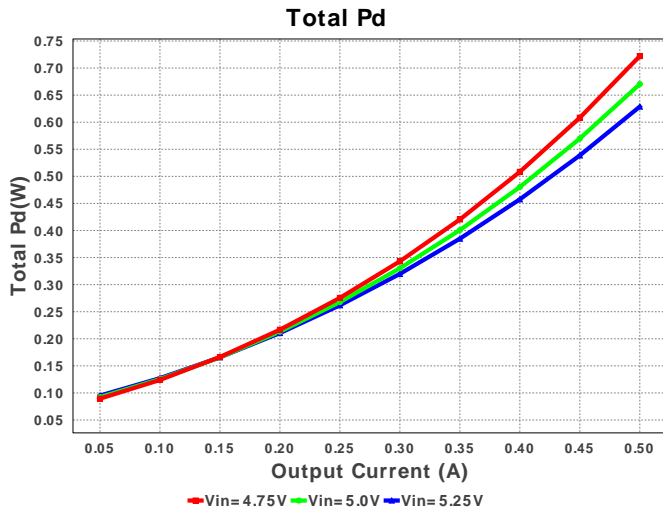
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cf	Samsung Electro-Mechanics	CL21C561JBANFNC Series= C0G/NP0	Cap= 560.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
2.	Cin	MuRata	GRM21BR61E475MA12L Series= X5R	Cap= 4.7 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 7.29 A	1	\$0.02	 0805 7 mm 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	SRN6045-8R2Y	L= 8.2 uH DCR= 55.0 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	LMR62421XMF/NOPB	Switcher	1	\$0.75	 MF05A 15 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	60.534 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	673.119 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.508 A	Current	Peak switch current in IC
4.	Iin Avg	1.415 A	Current	Average input current
5.	L Ipp	209.7 mA	Current	Peak-to-peak inductor ripple current
6.	M Iavg	1.404 A	Current	MOSFET Average current
7.	M1 Irms	1.127 A	Current	Q Iavg
8.	BOM Count	9	General	Total Design BOM count
9.	FootPrint	152.0 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	240.002 mV	General	Voltage drop across the MosFET
13.	Mode	CCM	General	Conduction Mode
14.	Pout	6.0 W	General	Total output power
15.	Total BOM	\$1.08	General	Total BOM Cost
16.	D1 Tj	34.947 degC	Op_Point	D1 junction temperature
17.	Vout Actual	12.123 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
18.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
19.	Cross Freq	8.812 kHz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	64.377 %	Op_point	Duty cycle
21.	Efficiency	89.258 %	Op_point	Steady state efficiency
22.	IC Tj	78.649 degC	Op_point	IC junction temperature
23.	ICThetaJA	118.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
24.	IOUT_OP	500.0 mA	Op_point	Iout operating point
25.	Phase Marg	85.367 deg	Op_point	Bode Plot Phase Margin
26.	VIN_OP	4.75 V	Op_point	Vin operating point
27.	Vout p-p	10.924 mV	Op_point	Peak-to-peak output ripple voltage
28.	Cin Pd	7.329 µW	Power	Input capacitor power dissipation
29.	Cout Pd	1.87 mW	Power	Output capacitor power dissipation
30.	Diode Pd	197.897 mW	Power	Diode power dissipation
31.	IC Pd	412.283 mW	Power	IC power dissipation
32.	L Pd	108.552 mW	Power	Inductor power dissipation
33.	Total Pd	722.099 mW	Power	Total Power Dissipation
34.	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	5.25	Maximum input voltage
3.	VinMin	4.75	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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