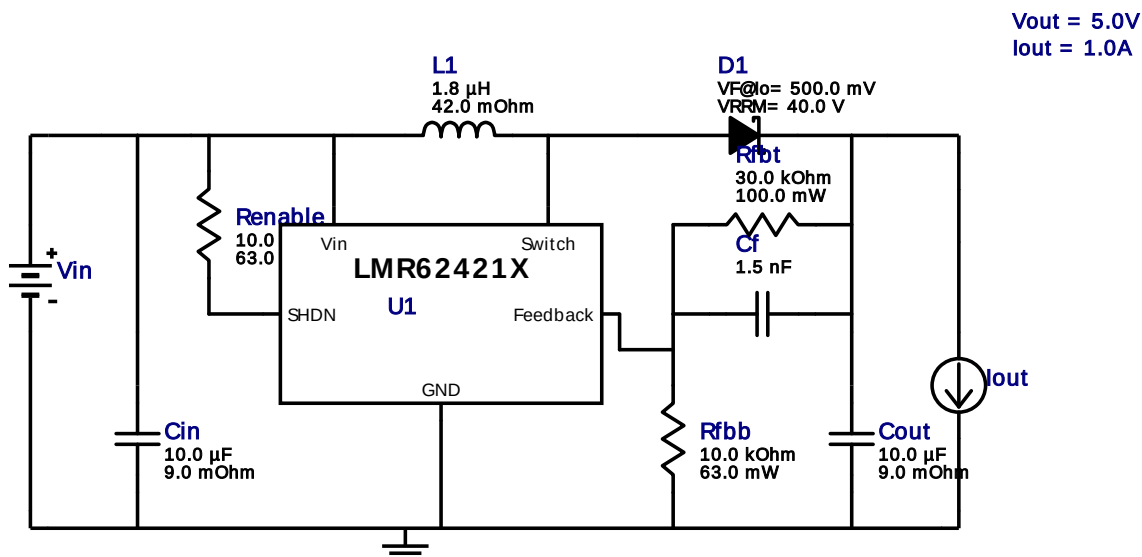


WEBENCH® Design Report

Design : 3893481/30 LMR62421XSD/NOPB
LMR62421XSD/NOPB 3.6V-4.2V to 5.00V @ 1.0A



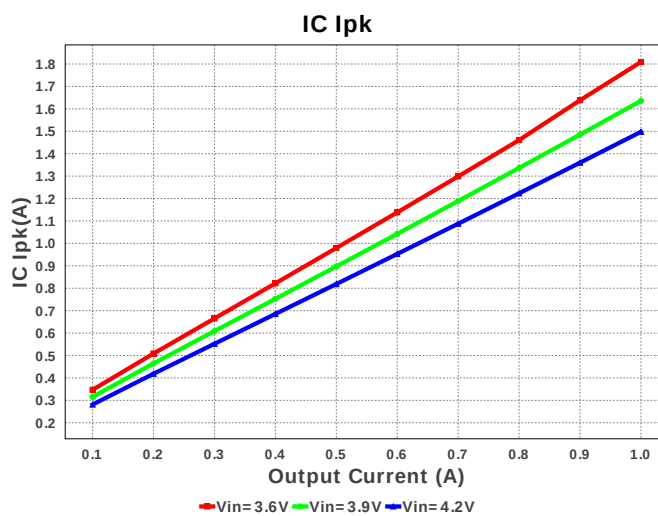
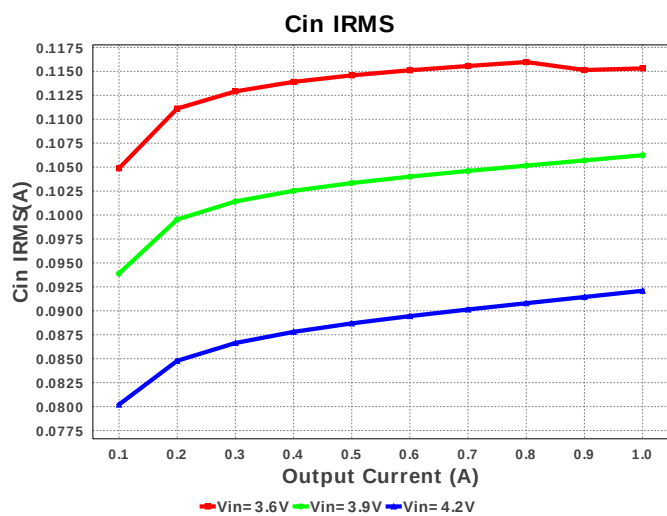
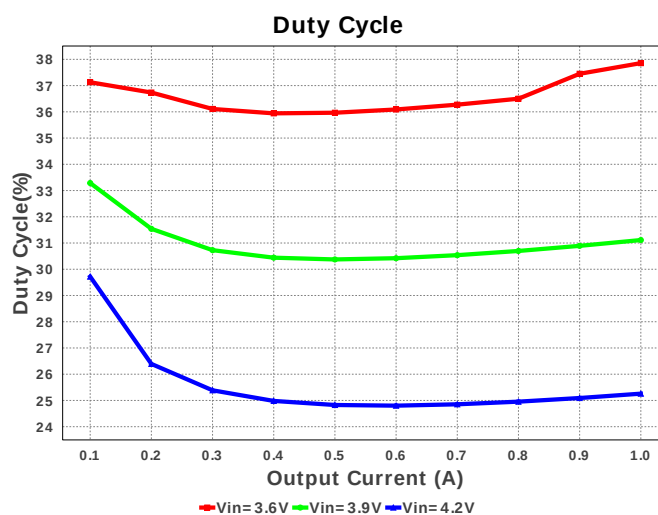
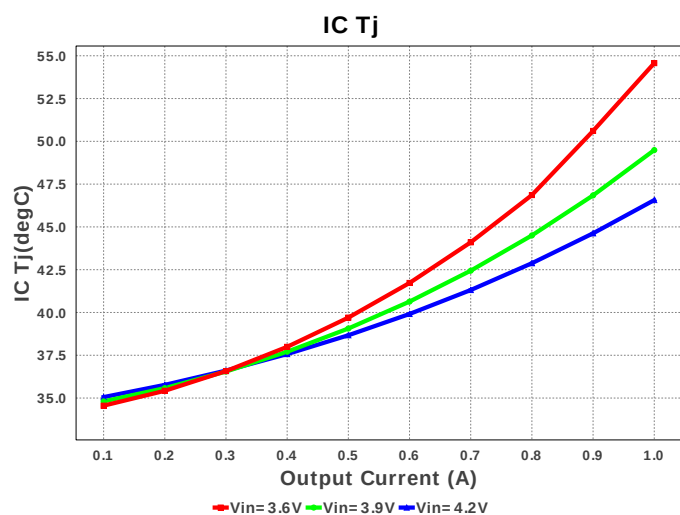
My Comments

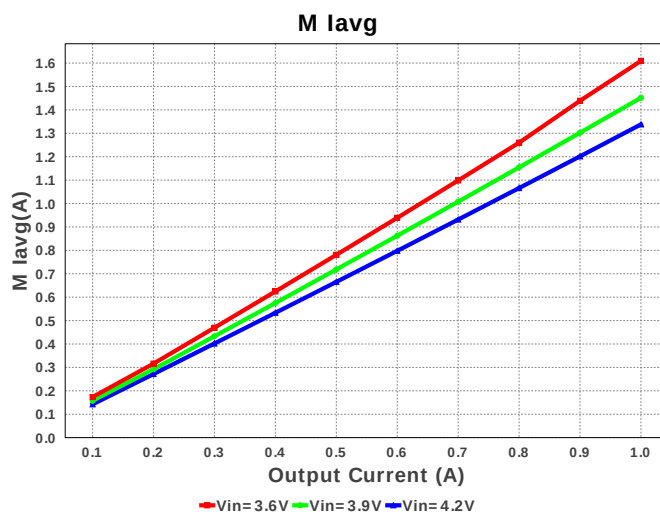
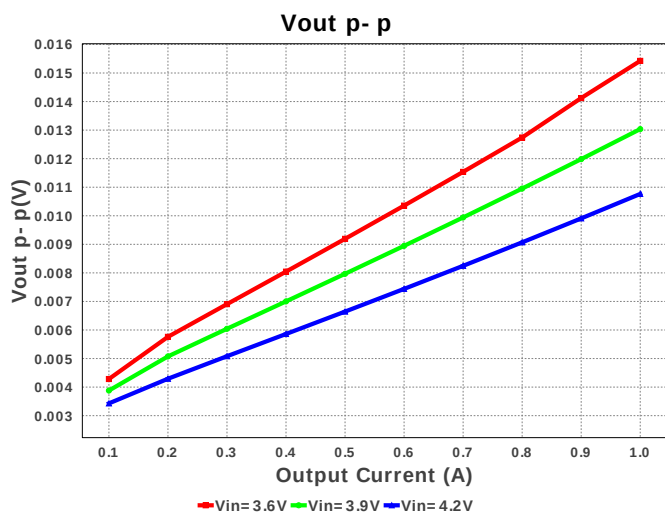
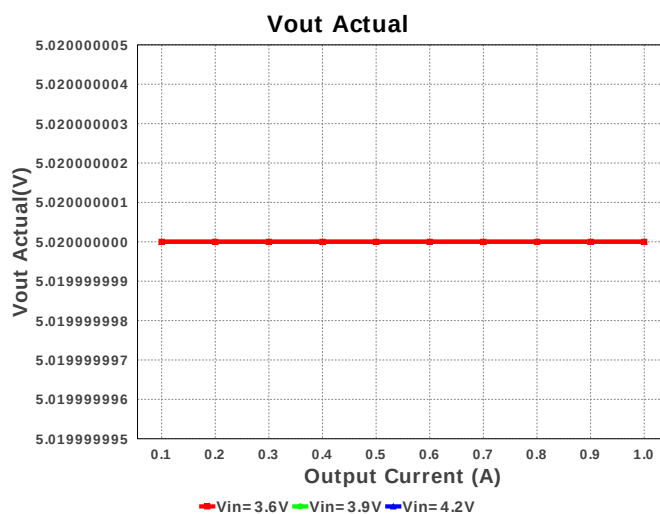
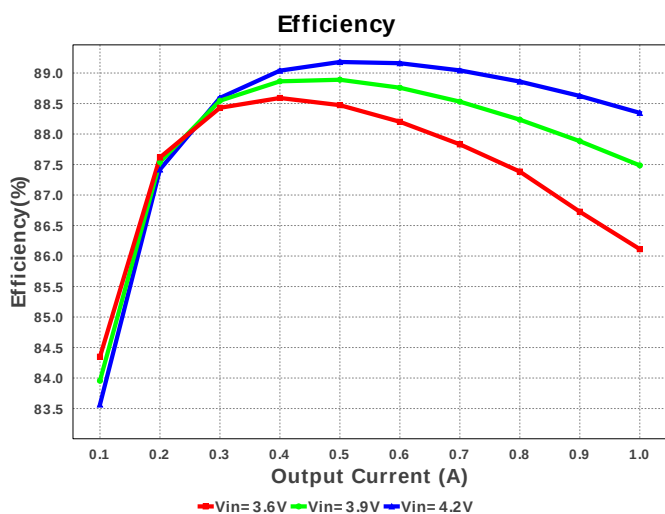
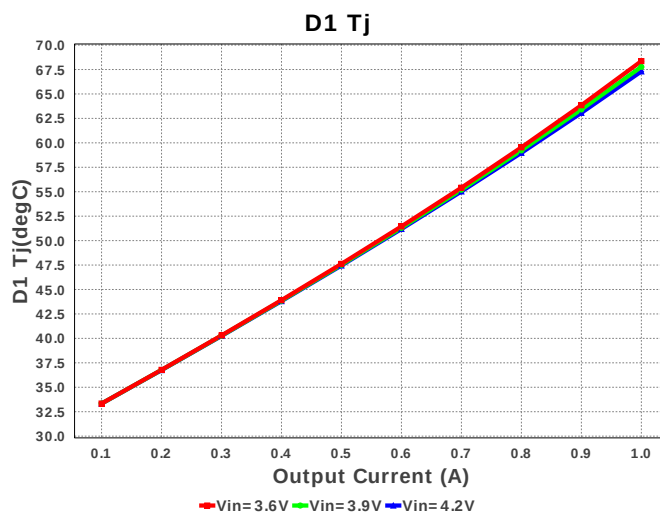
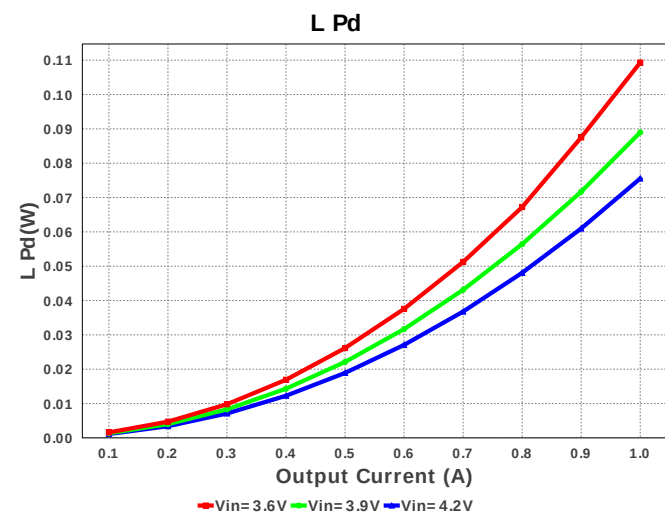
32

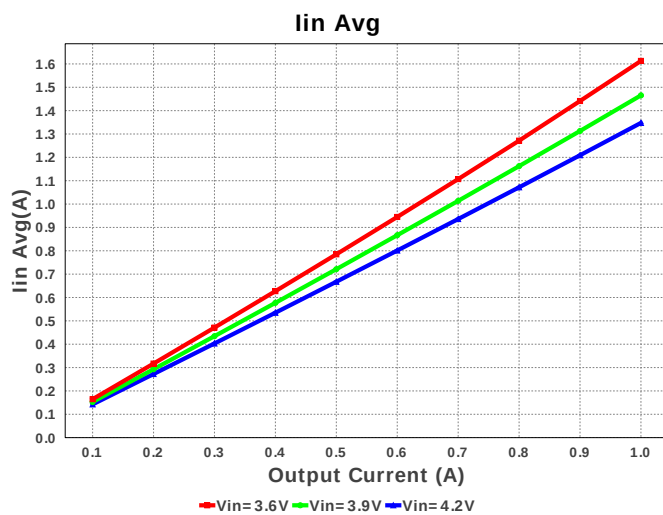
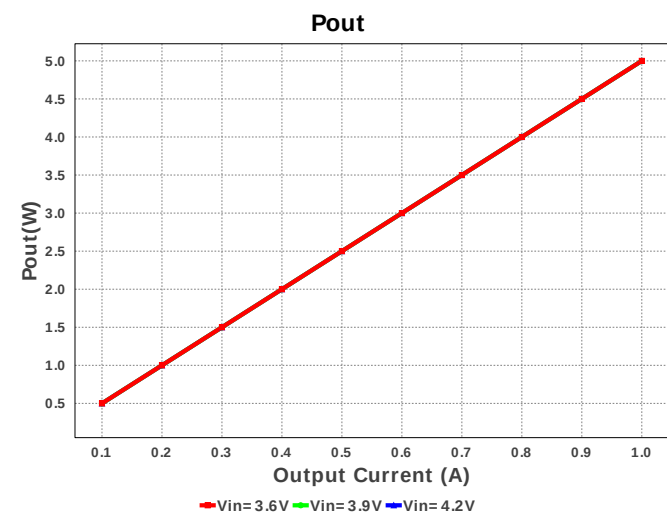
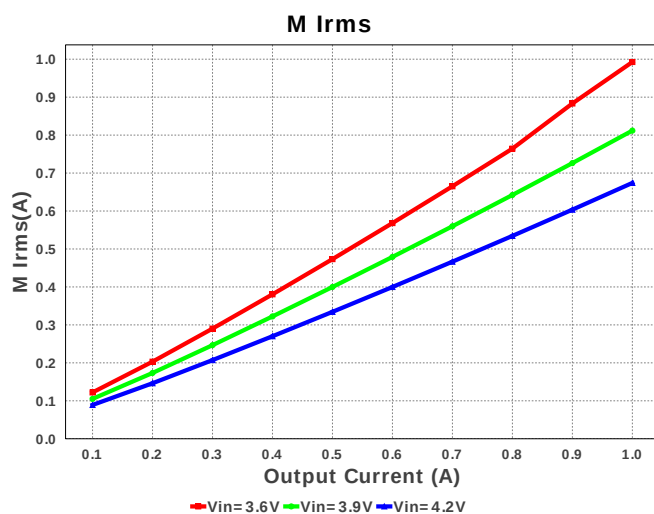
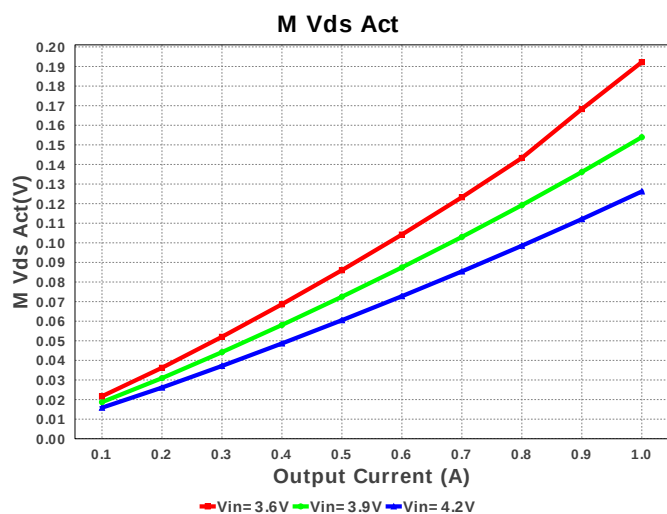
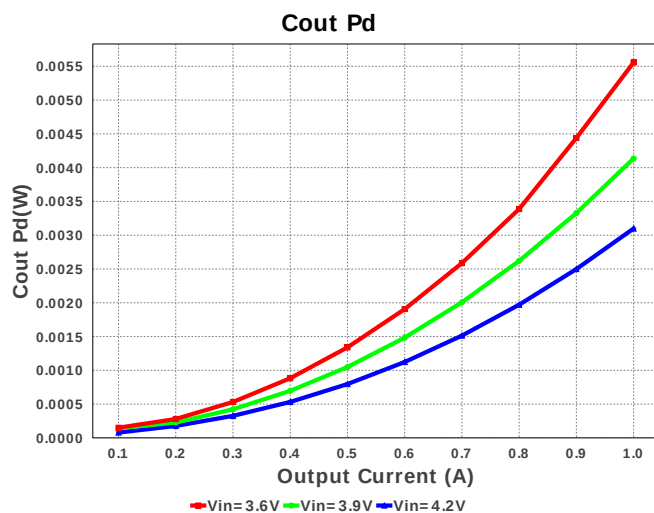
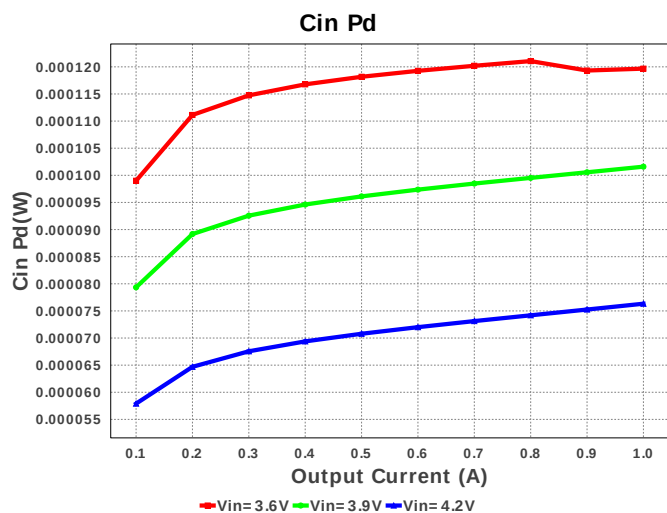
Electrical BOM

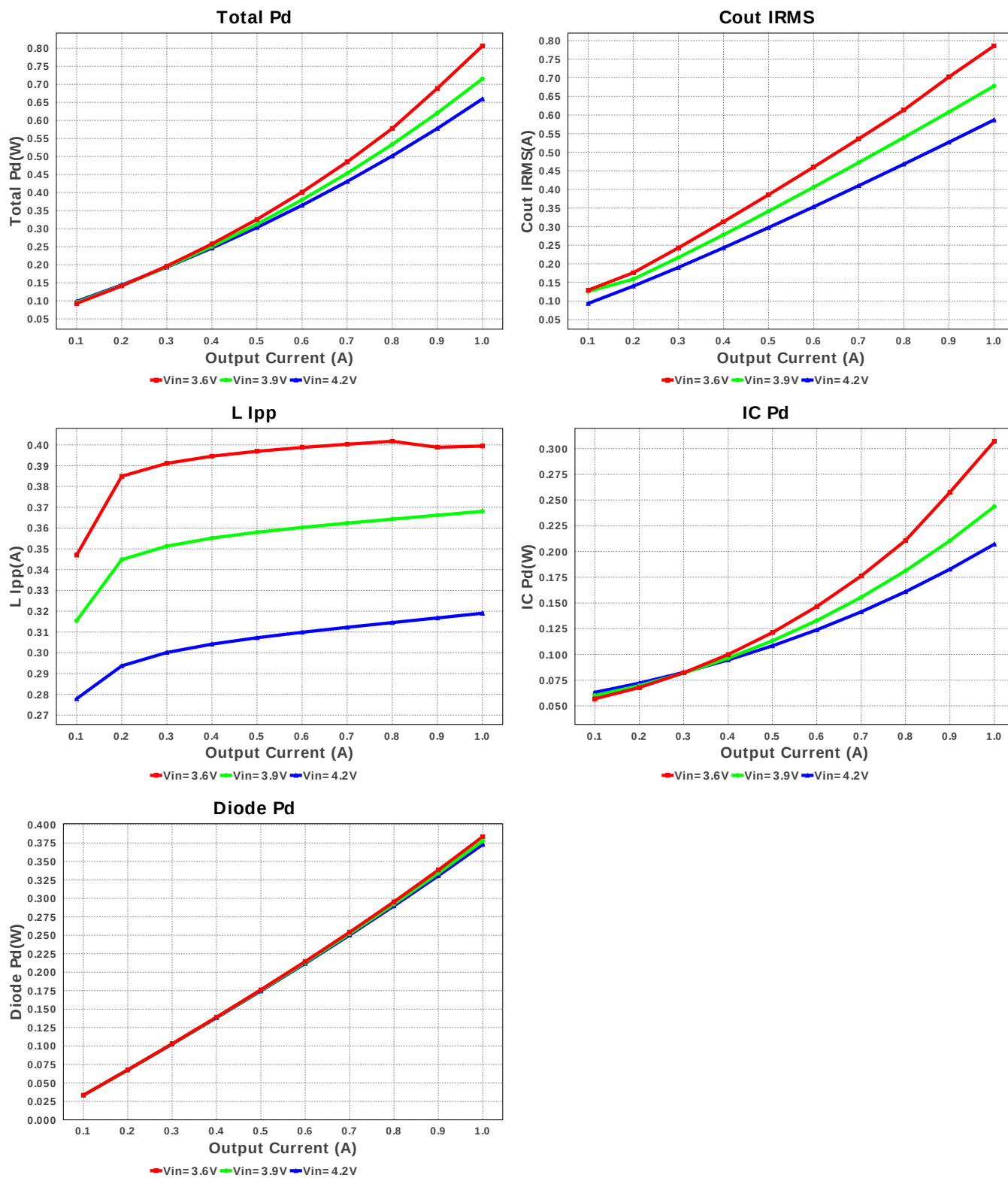
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cf	Yageo America	CC0805KRX7R9BB152 Series= X7R	Cap= 1.5 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 mm ²
3.	Cout	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.02	0603 5 mm ²
4.	D1	Diodes Inc.	B340A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.11	SMA 37 mm ²
5.	L1	Bourns	SDR0403-1R8ML	L= 1.8 uH DCR= 42.0 mOhm	1	\$0.18	SDR0403 28 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.	Rfbt	Yageo America	RC0603FR-0730KL Series= ?	Res= 30.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	0603 5 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	115.311 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	785.76 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.809 A	Current	Peak switch current in IC
4.	Iin Avg	1.613 A	Current	Average input current
5.	L Ipp	399.45 mA	Current	Peak-to-peak inductor ripple current
6.	M Iavg	1.609 A	Current	MOSFET Average current
7.	M Irms	992.602 mA	Current	MOSFET RMS current
8.	BOM Count	9	General	Total Design BOM count
9.	FootPrint	108.0 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	192.223 mV	General	Voltage drop across the MosFET
13.	Pout	5.0 W	General	Total output power
14.	Total BOM	\$1.12	General	Total BOM Cost
15.	D1 Tj	68.36 degC	Op_Point	D1 junction temperature
16.	Vout Actual	5.02 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
17.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
18.	Cross Freq	23.3 kHz	Op_point	Bode plot crossover frequency
19.	Duty Cycle	37.856 %	Op_point	Duty cycle
20.	Efficiency	86.113 %	Op_point	Steady state efficiency
21.	IC Tj	54.569 degC	Op_point	IC junction temperature
22.	ICThetaJA	80.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	1.0 A	Op_point	Iout operating point
24.	Phase Marg	92.861 deg	Op_point	Bode Plot Phase Margin
25.	VIN_OP	3.6 V	Op_point	Vin operating point
26.	Vout p-p	15.425 mV	Op_point	Peak-to-peak output ripple voltage
27.	Cin Pd	119.669 μ W	Power	Input capacitor power dissipation
28.	Cout Pd	5.557 mW	Power	Output capacitor power dissipation
29.	Diode Pd	383.604 mW	Power	Diode power dissipation
30.	IC Pd	307.116 mW	Power	IC power dissipation
31.	L Pd	109.312 mW	Power	Inductor power dissipation
32.	Total Pd	806.34 mW	Power	Total Power Dissipation
33.	Vout Tolerance	3.537 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	4.2	Maximum input voltage
3.	VinMin	3.6	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LMR62421X	Texas Instruments Base Part 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.

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

Use of Texas Instruments' WEBENCH simulation tools is subject to [Texas Instruments' Site Terms and Conditions of Use](#). Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the [Evaluation License Agreement](#).