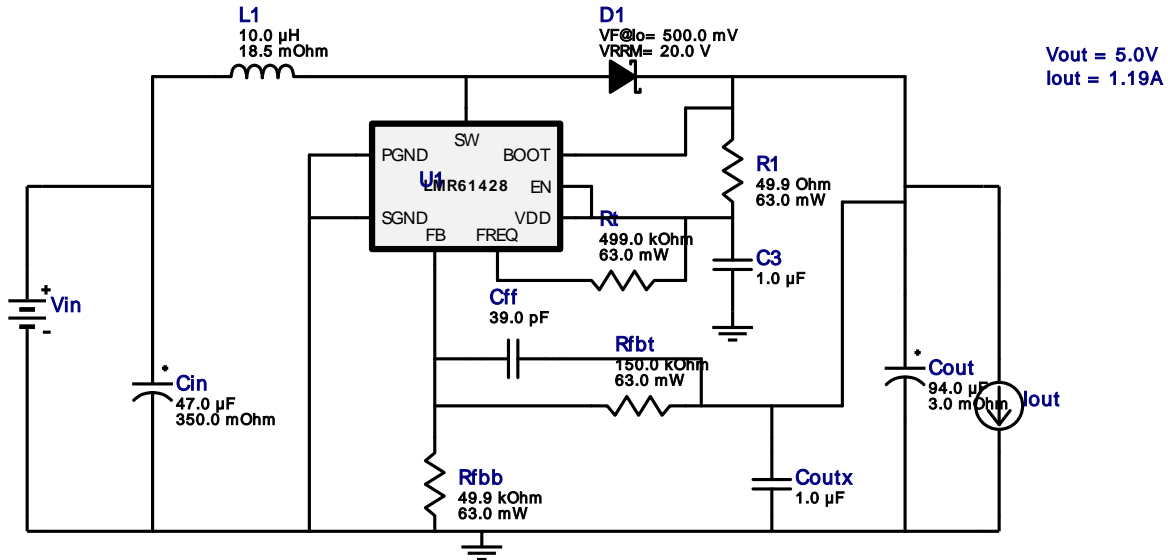


WEBENCH® Design Report


Design : 3965648/645 LMR61428XMM/NOPB
 LMR61428XMM/NOPB 3.5V-4.2V to 5.00V @ 1.19A

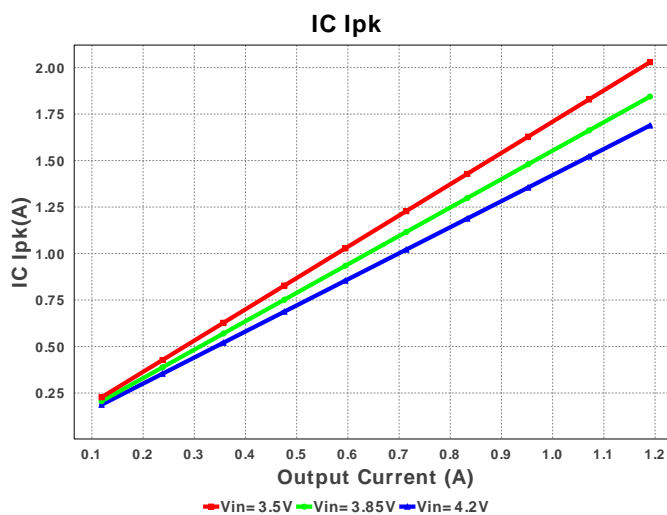
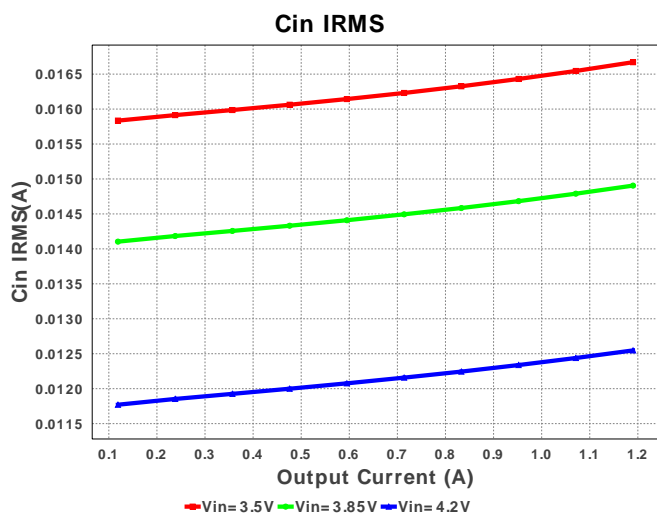
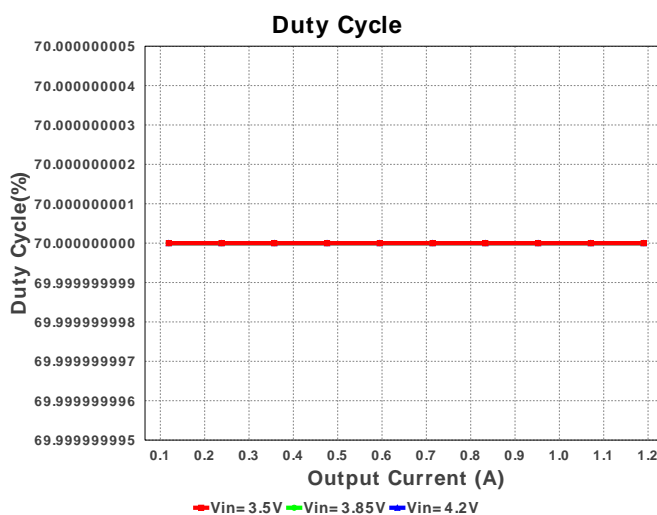
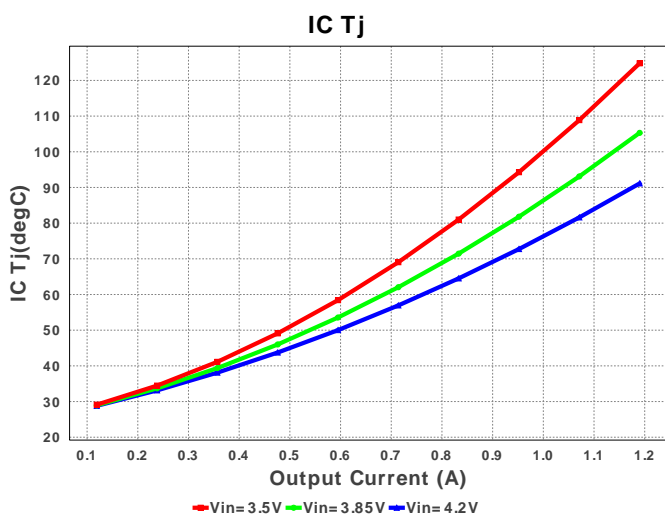


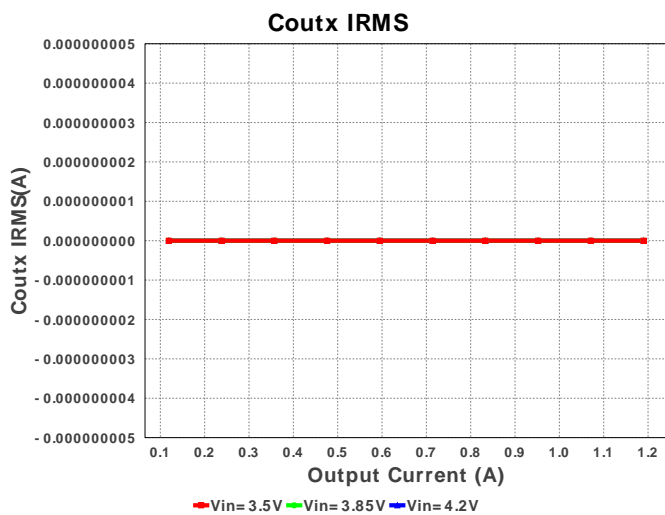
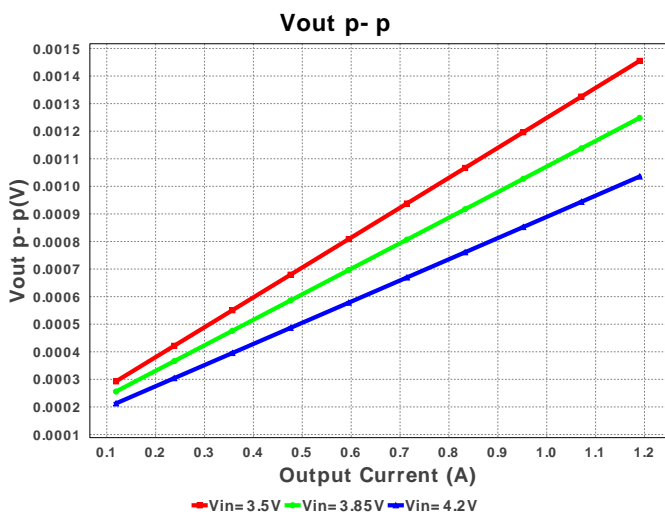
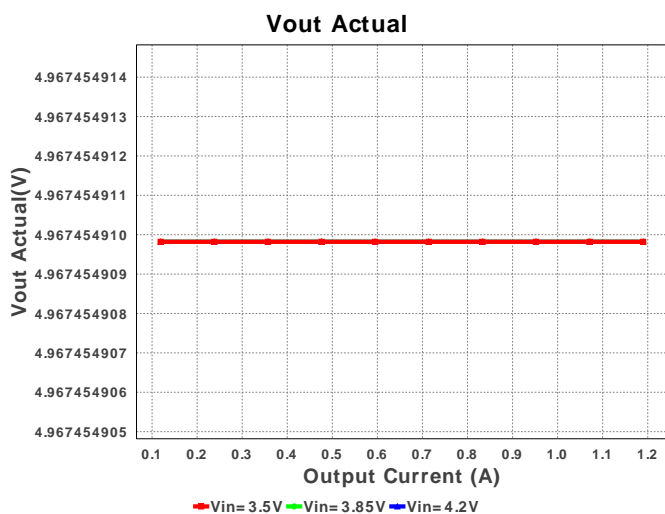
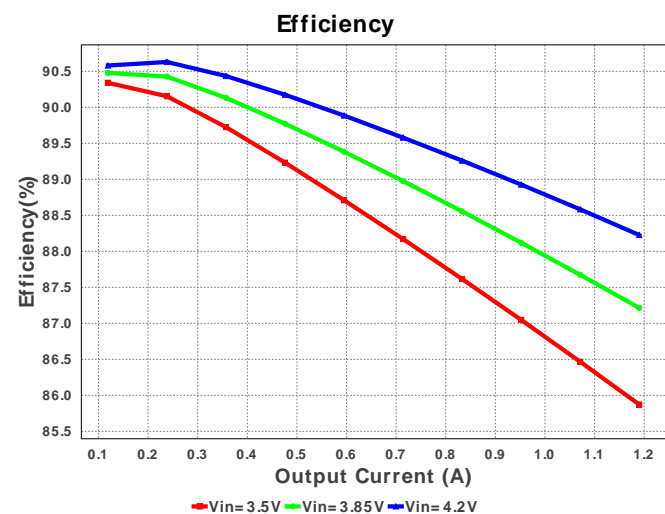
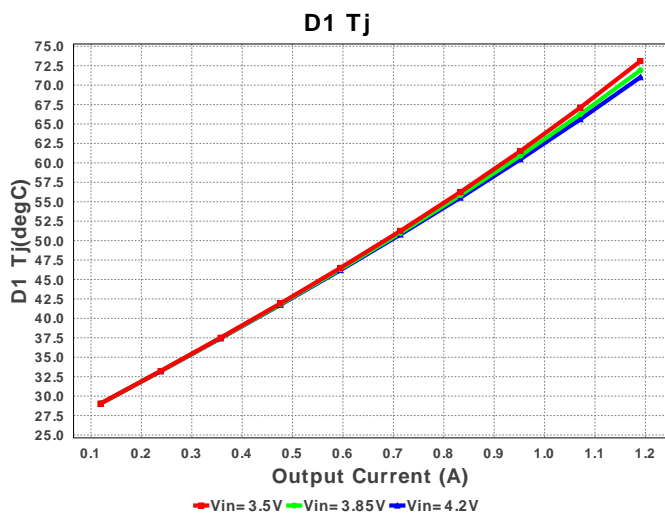
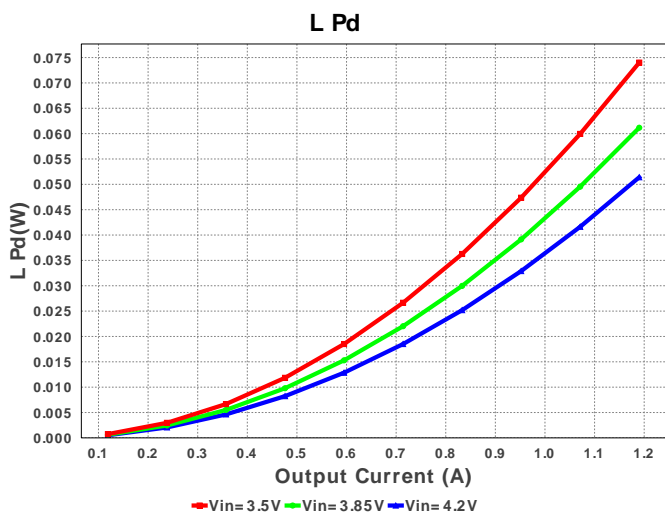
My Comments
 No comments

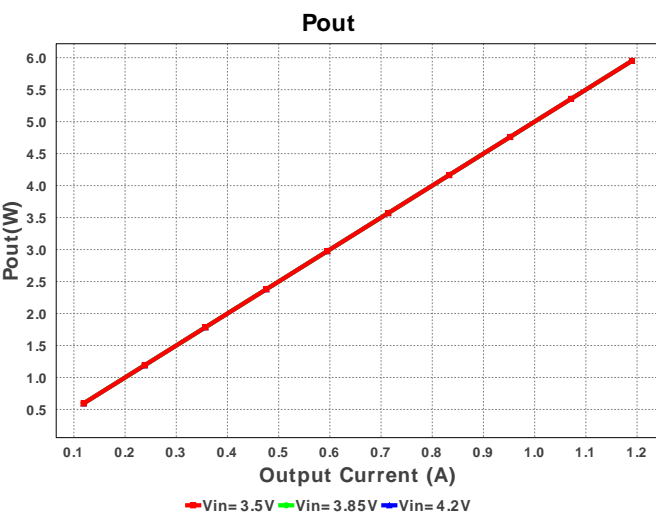
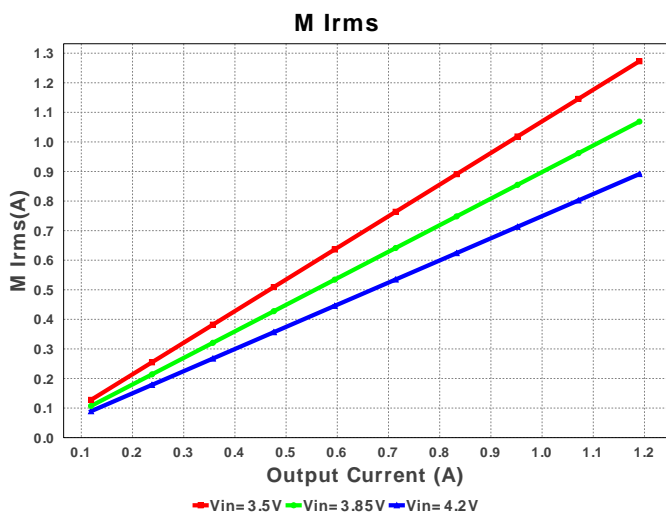
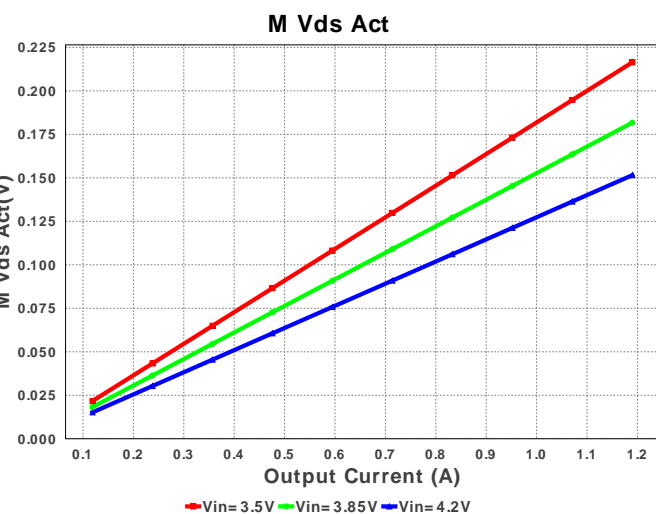
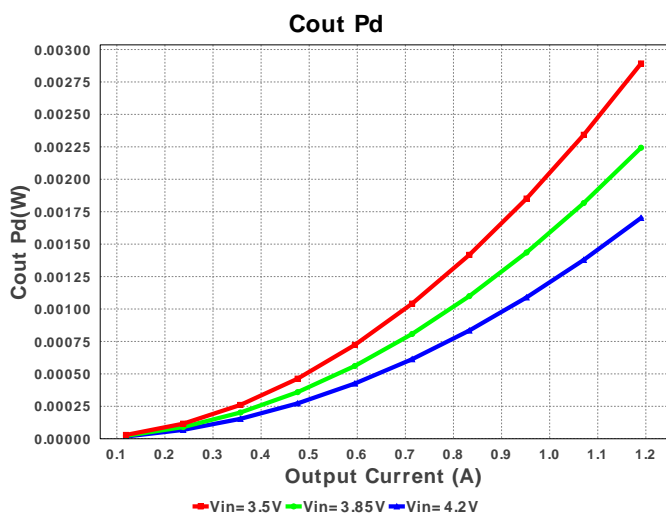
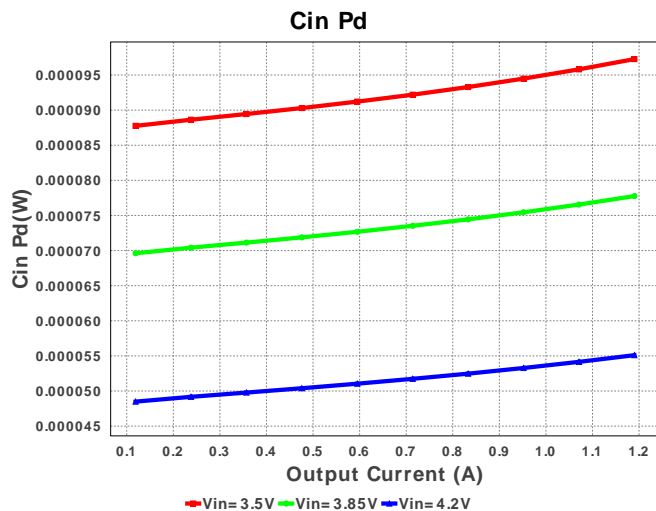
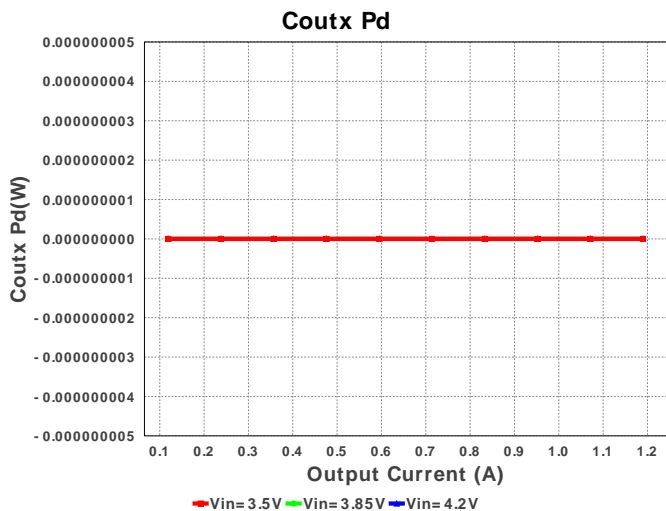
Electrical BOM

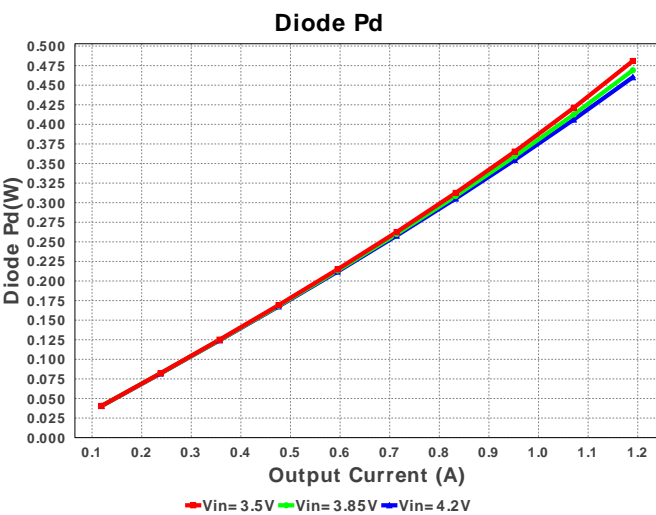
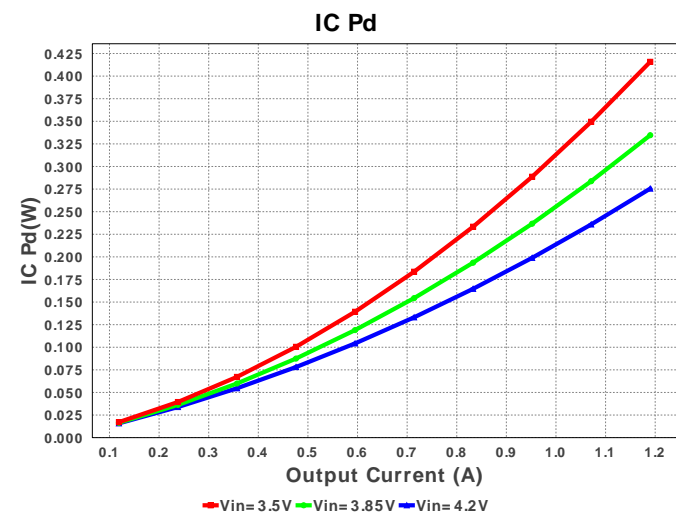
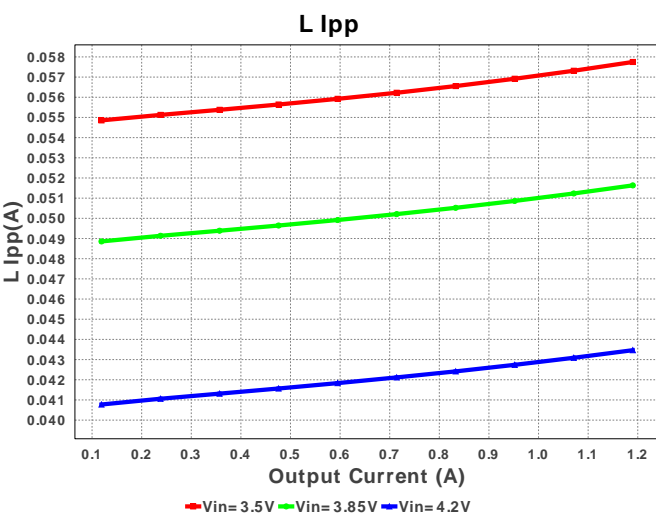
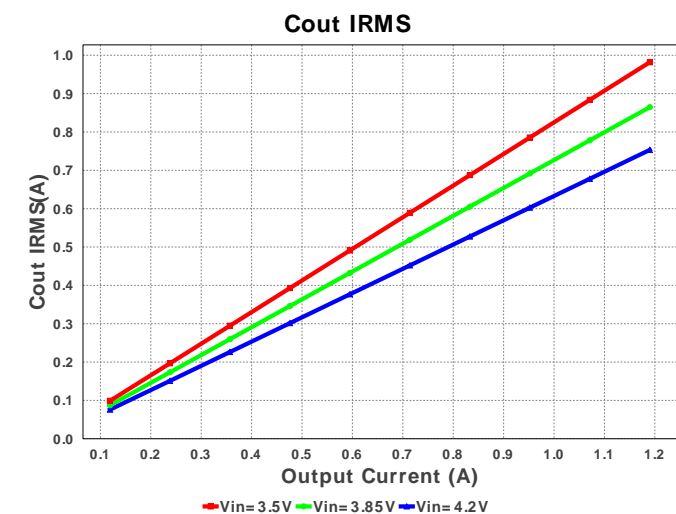
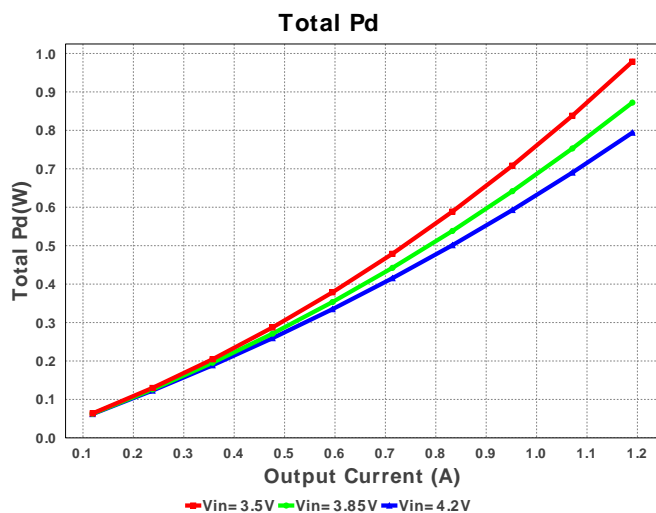
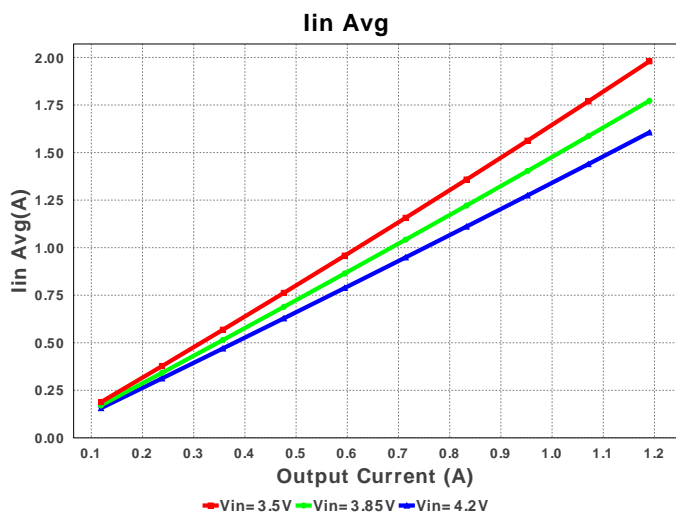
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	C3	Taiyo Yuden	EMK212B7105KG-T Series= X7R	Cap= 1.0 uF VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	0805 7 mm ²
2.	Cff	Yageo America	CC0805JRNP09BN390 Series= COG/NPO	Cap= 39.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
3.	Cin	AVX	TPSC476K016R0350 Series= TPS	Cap= 47.0 uF ESR= 350.0 mOhm VDC= 16.0 V IRMS= 505.0 mA	1	\$0.23	6032-28 42 mm ²
4.	Cout	CUSTOM	CUSTOM_CAP_MD Series= CUSTOM	Cap= 94.0 uF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 1.22 A	1	\$0.10	1210 31 mm ²
5.	Coutx	Kemet	C0603C105Z9VACTU Series= Y5V	Cap= 1.0 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0603 5 mm ²
6.	D1	Diodes Inc.	B320A-13-F	VF@Io= 500.0 mV VRRM= 20.0 V	1	\$0.13	SMA 37 mm ²
7.	L1	Bourns	SRU1048-100Y	L= 10.0 uH DCR= 18.5 mOhm	1	\$0.33	SRU1048 144 mm ²
8.	R1	Vishay-Dale	CRCW040249R9FKED Series= CRCW..e3	Res= 49.9 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Rfbb	Vishay-Dale	CRCW040249K9FKED Series= CRCW...e3	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
10.	Rfbt	Vishay-Dale	CRCW0402150KFKED Series= CRCW...e3	Res= 150.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
11.	Rt	Vishay-Dale	CRCW0402499KFKED Series= CRCW...e3	Res= 499.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
12.	U1	Texas Instruments	LMR61428XMM/NOPB	Switcher	1	\$0.65	 MUA08A 24 mm ²









Operating Values

#	Name	Value	Category	Description
1.	BOM Count	12		Total Design BOM count
2.	Total BOM	\$1.52		Total BOM Cost
3.	Cin IRMS	16.671 mA	Current	Input capacitor RMS ripple current
4.	Cout IRMS	981.868 mA	Current	Output capacitor RMS ripple current
5.	Coutx IRMS	0.0 A	Current	Output capacitor_x RMS ripple current
6.	IC Ipk	2.029 A	Current	Peak switch current in IC
7.	Iin Avg	1.98 A	Current	Average input current
8.	L Ipp	57.749 mA	Current	Peak-to-peak inductor ripple current
9.	M Irms	1.273 A	Current	MOSFET RMS current
10.	FootPrint	335.0 mm ²	General	Total Foot Print Area of BOM components
11.	Frequency	2.0 MHz	General	Switching frequency

#	Name	Value	Category	Description
12.	IC Tolerance	37.2 mV	General	IC Feedback Tolerance
13.	M Vds Act	216.382 mV	General	Voltage drop across the MosFET
14.	Mode	CCM	General	Conduction Mode
15.	Pout	5.95 W	General	Total output power
16.	D1 Tj	73.091 degC	Op_Point	D1 junction temperature
17.	Vout Actual	4.967 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
18.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
19.	Duty Cycle	70.0 %	Op_point	Duty cycle
20.	Efficiency	85.873 %	Op_point	Steady state efficiency
21.	IC Tj	124.793 degC	Op_point	IC junction temperature
22.	ICThetaJA	240.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	1.19 A	Op_point	Iout operating point
24.	VIN_OP	3.5 V	Op_point	Vin operating point
25.	Vout p-p	1.455 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	97.268 μ W	Power	Input capacitor power dissipation
27.	Cout Pd	2.892 mW	Power	Output capacitor power dissipation
28.	Coutx Pd	0.0 W	Power	Output capacitor_x power loss
29.	Diode Pd	480.91 mW	Power	Diode power dissipation
30.	IC Pd	415.804 mW	Power	IC power dissipation
31.	L Pd	74.005 mW	Power	Inductor power dissipation
32.	Total Pd	978.853 mW	Power	Total Power Dissipation
33.	Vout Tolerance	4.561 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.19	Maximum Output Current
2.	VinMax	4.2	Maximum input voltage
3.	VinMin	3.5	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LMR61428	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	25.0	Ambient temperature

Design Assistance

1. LMR61428 Product Folder : <http://www.ti.com/product/LMR61428> : contains the data sheet and other resources.

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