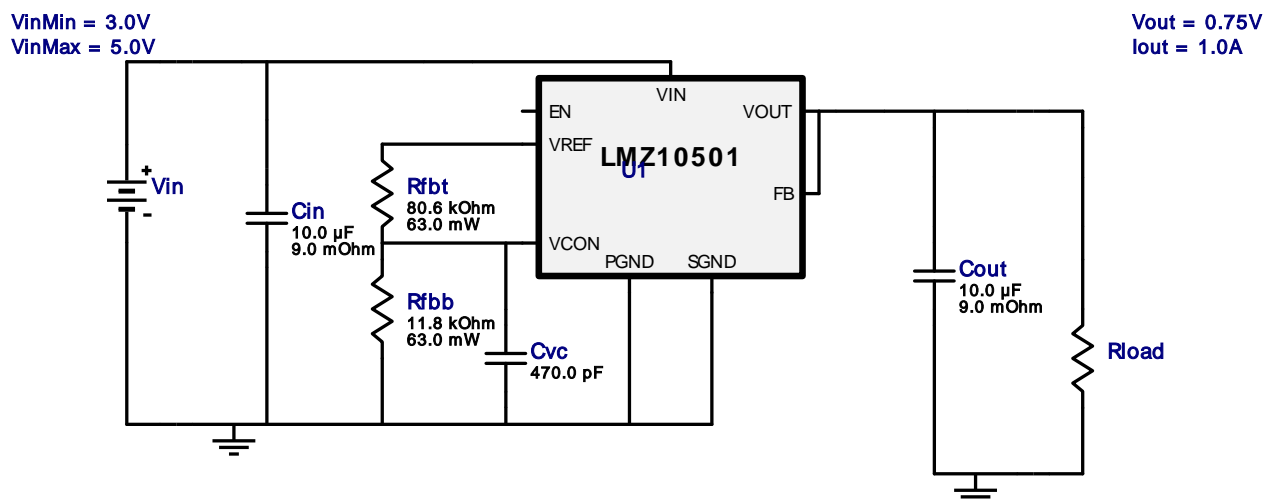


WEBENCH® Design Report

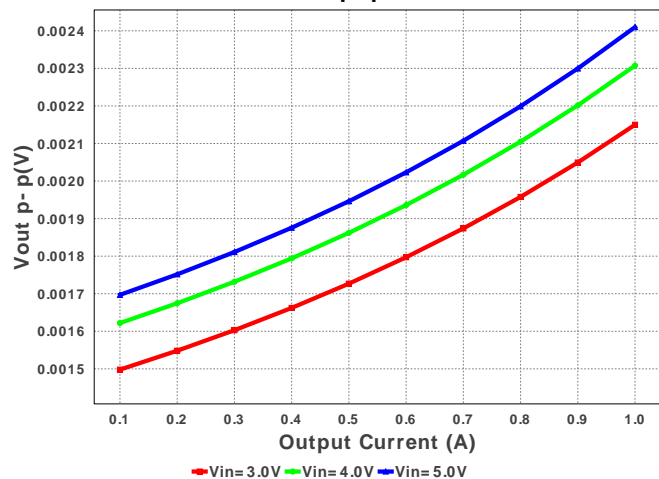
Design : 4058737/10 LMZ10501SILR
LMZ10501SILR 3.0V-5.0V to .75V @ 1.0A



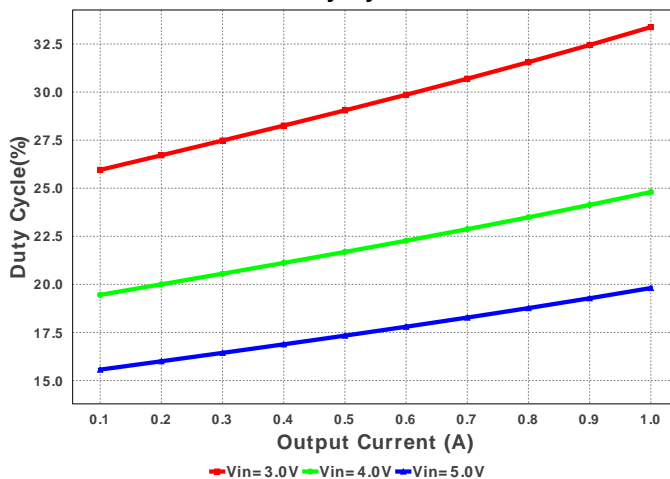
Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.03	0603 5 mm ²
2.	Cout	MuRata	GRM188R60J106ME47D Series= X5R	Cap= 10.0 uF ESR= 9.0 mOhm VDC= 6.3 V IRMS= 2.74 A	1	\$0.03	0603 5 mm ²
3.	Cvc	MuRata	GRM1555C1E471JA01D Series= C0G/NP0	Cap= 470.0 pF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
4.	Rfbb	Vishay-Dale	CRCW040211K8FKED Series= CRCW..e3	Res= 11.8 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
5.	Rfbb	Vishay-Dale	CRCW040280K6FKED Series= CRCW..e3	Res= 80.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
6.	U1	Texas Instruments	LMZ10501SILR	Switcher	1	\$1.55	SIL0008A 14 mm ²

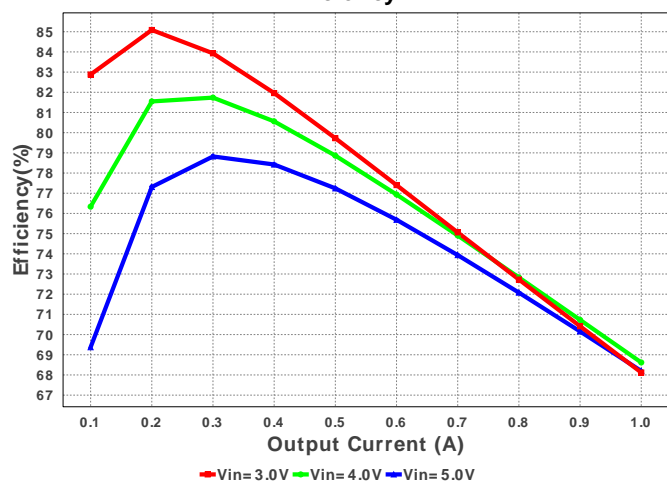
Vout p- p



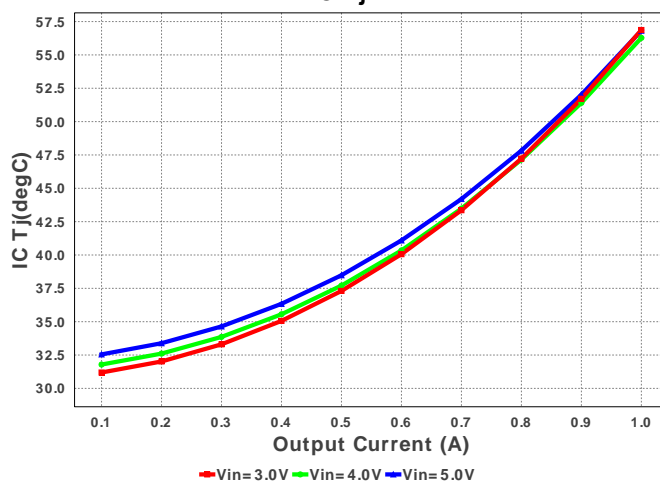
Duty Cycle



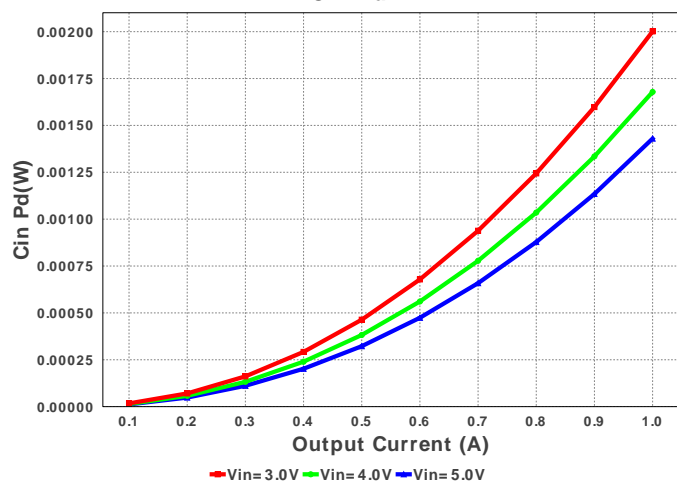
Efficiency



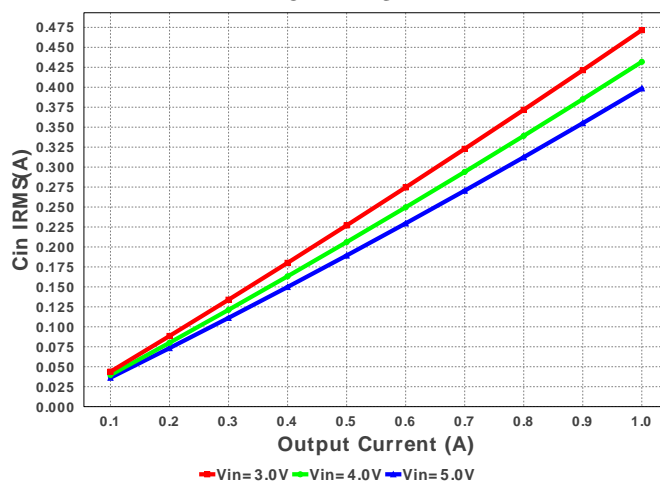
IC Tj

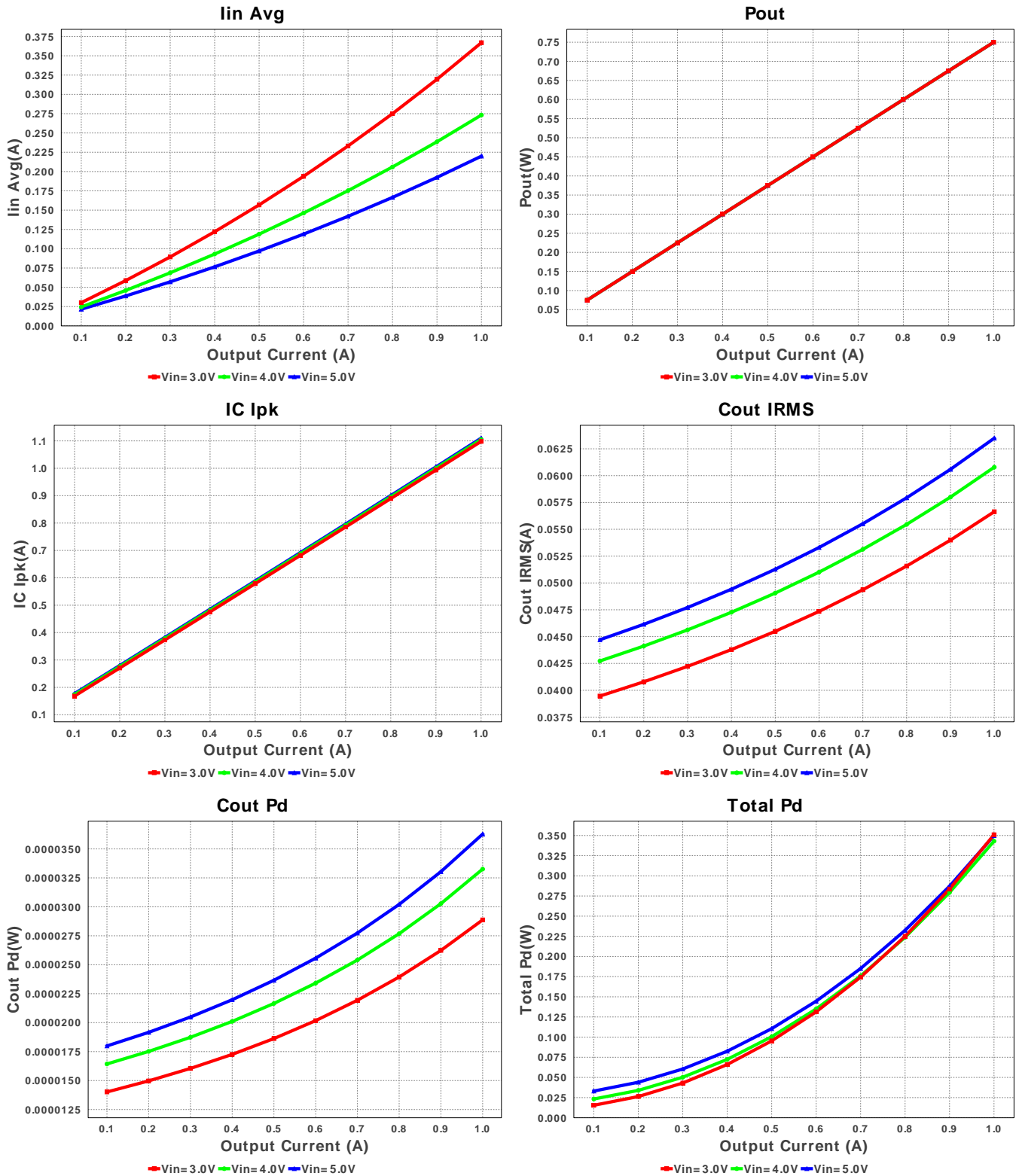


Cin Pd



Cin IRMS





Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	398.566 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	63.49 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.11 A	Current	Peak switch current in IC
4.	Iin Avg	219.96 mA	Current	Average input current
5.	BOM Count	6	General	Total Design BOM count
6.	FootPrint	33.0 mm ²	General	Total Foot Print Area of BOM components
7.	Frequency	2.0 MHz	General	Switching frequency
8.	Pout	750.0 mW	General	Total output power
9.	Total BOM	\$1.64	General	Total BOM Cost
10.	Vout OP	750.0 mV	Op_Point	Operational Output Voltage
11.	Duty Cycle	19.81 %	Op_point	Duty cycle

#	Name	Value	Category	Description
12.	Efficiency	68.195 %	Op_point	Steady state efficiency
13.	IC Tj	56.82 degC	Op_point	IC junction temperature
14.	ICThetaJA	77.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
15.	IOUT_OP	1.0 A	Op_point	Iout operating point
16.	VIN_OP	5.0 V	Op_point	Vin operating point
17.	Vout p-p	2.41 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	1.43 mW	Power	Input capacitor power dissipation
19.	Cout Pd	36.279 μ W	Power	Output capacitor power dissipation
20.	Total Pd	349.791 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	1.0 A	Maximum Output Current
2.	Iout1	1.0 Amps	Output Current #1
3.	VinMax	5.0 V	Maximum input voltage
4.	VinMin	3.0 V	Minimum input voltage
5.	Vout	750.0 mV	Output Voltage
6.	Vout1	750.0 mVolt	Output Voltage #1
7.	base_pn	LMZ10501	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0 degC	Ambient temperature

Design Assistance

1. The LMZ10501 SIMPLE SWITCHER nano module is an easy-to-use step-down DC-DC solution capable of driving up to 1.0A load in space-constrained applications. Only an input capacitor, an output capacitor, a small VCON filter capacitor, and two resistors are required for basic operation. The nano module comes in 8-pin LLP footprint package with an integrated inductor.

2. LMZ10501 Product Folder : <http://www.ti.com/product/lmz10501> : contains the data sheet and other resources.

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