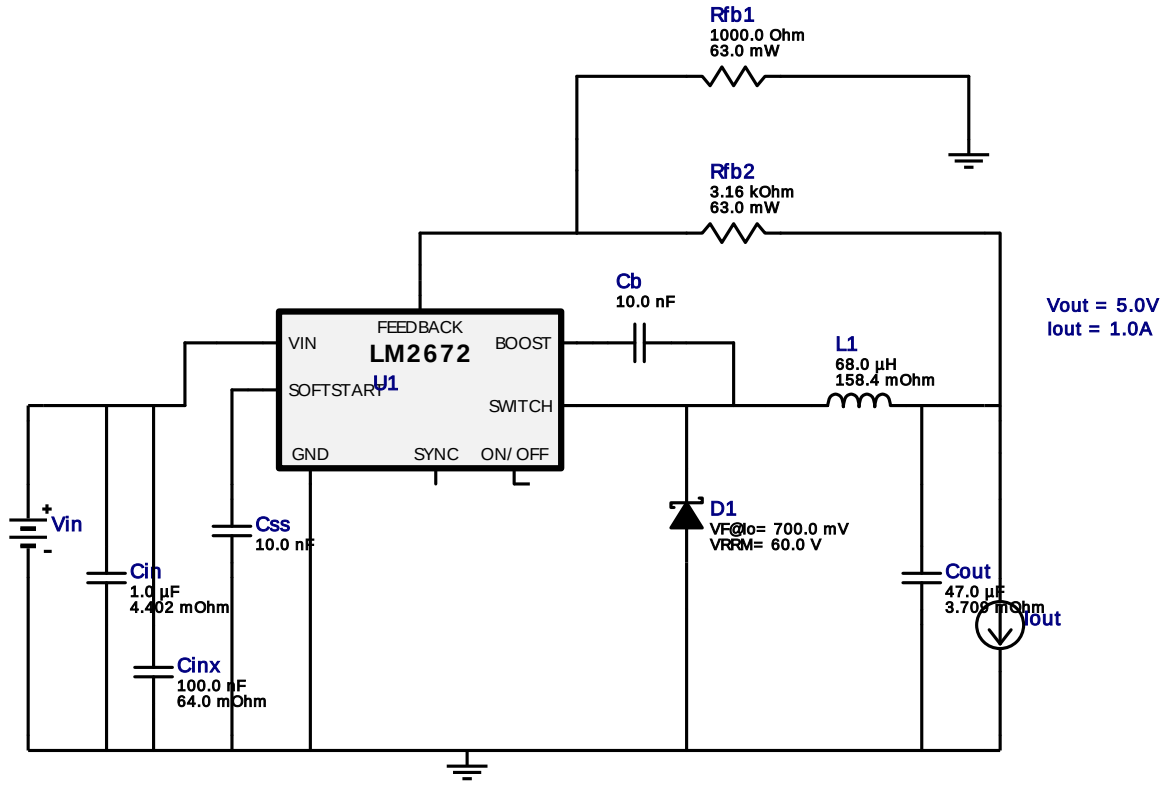
WEBENCH® Design Report

VinMin = 30.0V
VinMax = 37.0V
Vout = 5.0V
Iout = 1.0A

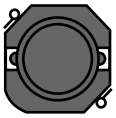
Device = LM2672MX-ADJ/NOPB
Topology = Buck
Created = 7/16/16 1:32:58 AM
BOM Cost = $2.55
BOM Count = 10
Total Pd = 0.85W

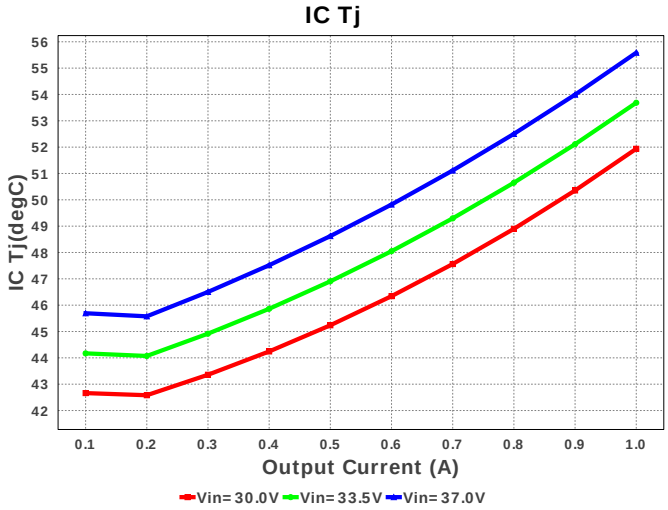
Design : 4742013/93 LM2672MX-ADJ/NOPB
LM2672MX-ADJ/NOPB 30.0V-37.0V to 5.00V @ 1.0A

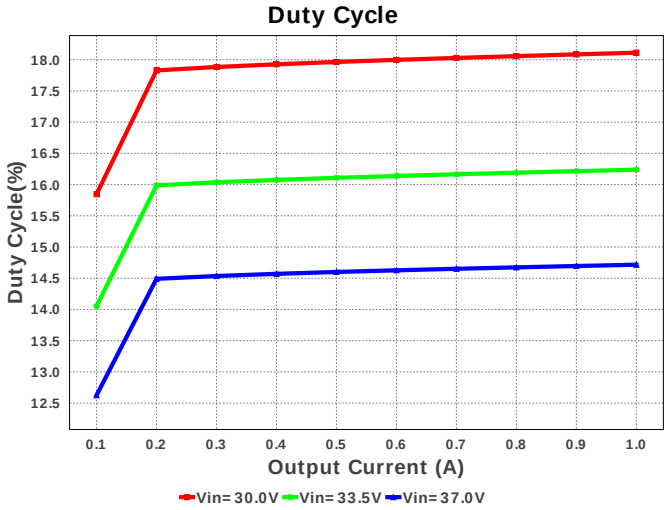


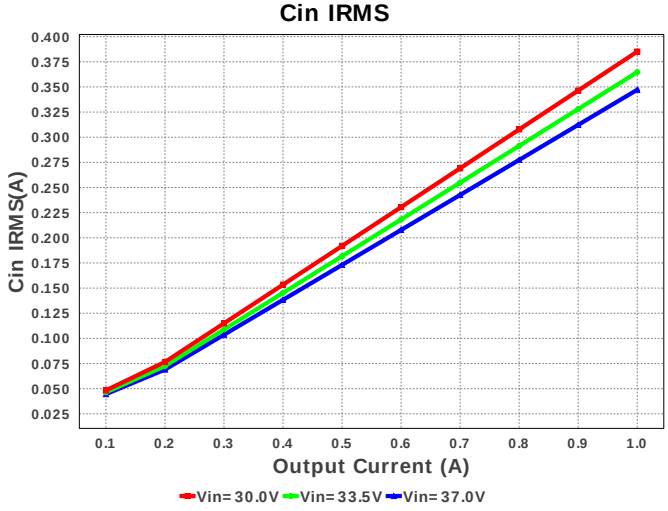
Electrical BOM

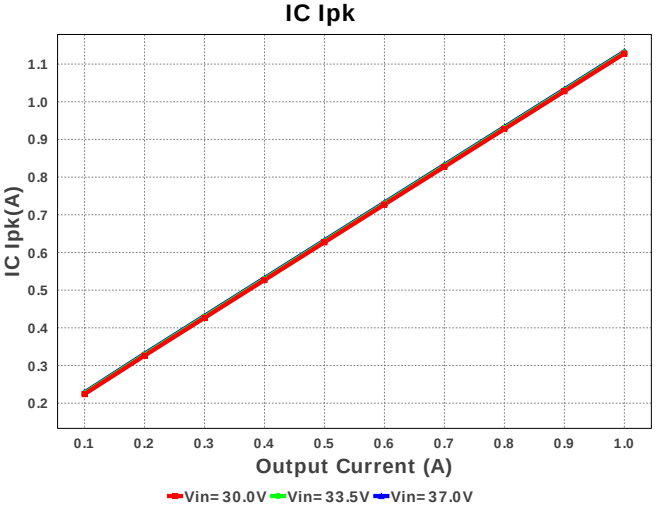
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cb	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
2.	Cin	MuRata	GRM21BR71H105KA12L Series= X7R	Cap= 1.0 uF ESR= 4.402 mOhm VDC= 50.0 V IRMS= 1.677 A	1	$0.05	0805 7 mm²
3.	Cinx	Kemet	C0805C104K5RACTU Series= X7R	Cap= 100.0 nF ESR= 64.0 mOhm VDC= 50.0 V IRMS= 1.64 A	1	$0.01	0805 7 mm²
4.	Cout	MuRata	GRM31CR61A476KE15L Series= X5R	Cap= 47.0 uF ESR= 3.709 mOhm VDC= 10.0 V IRMS= 4.2862 A	1	$0.15	1206_190 11 mm²
5.	Css	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0805 7 mm²
6.	D1	Diodes Inc.	B260A-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	$0.09	SMA 37 mm²

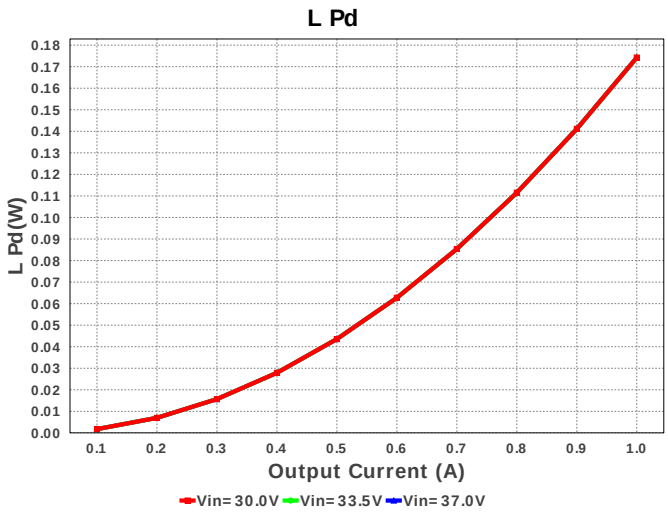
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
7.	L1	Coilcraft	MSS1048-683MLB	L= 68.0 µH DCR= 158.4 mOhm	1	$0.56	 MSS1048 146 mm^2
8.	Rfb1	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1000.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
9.	Rfb2	Vishay-Dale	CRCW04023K16FKED Series= CRCW..e3	Res= 3.16 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	 0402 3 mm^2
10.	U1	Texas Instruments	LM2672MX-ADJ/NOPB	Switcher	1	$1.65	 M08A 55 mm^2

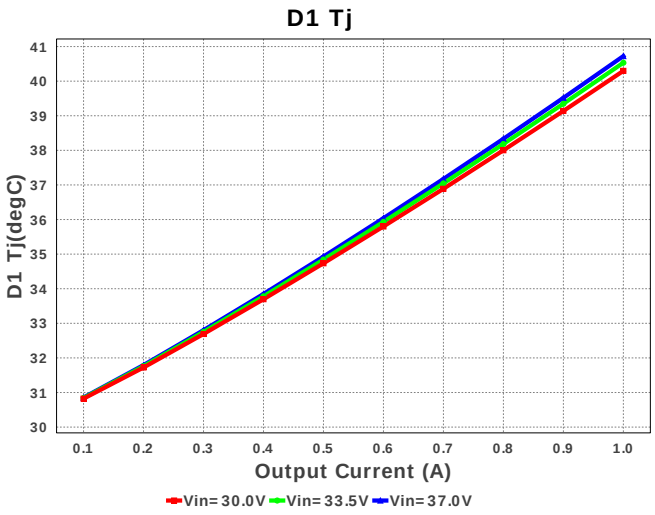


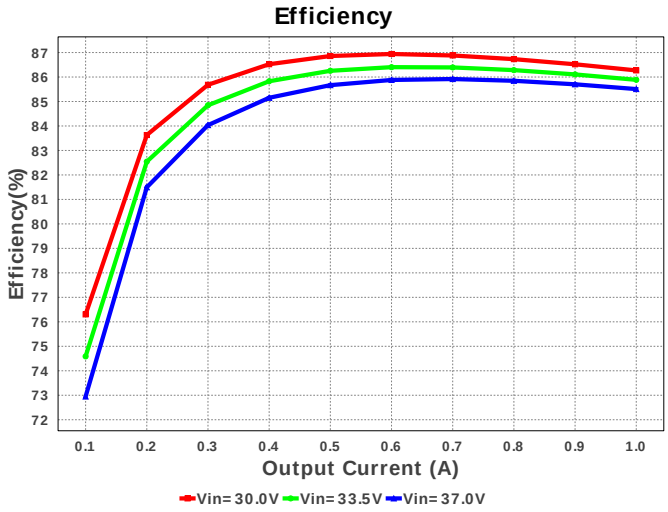


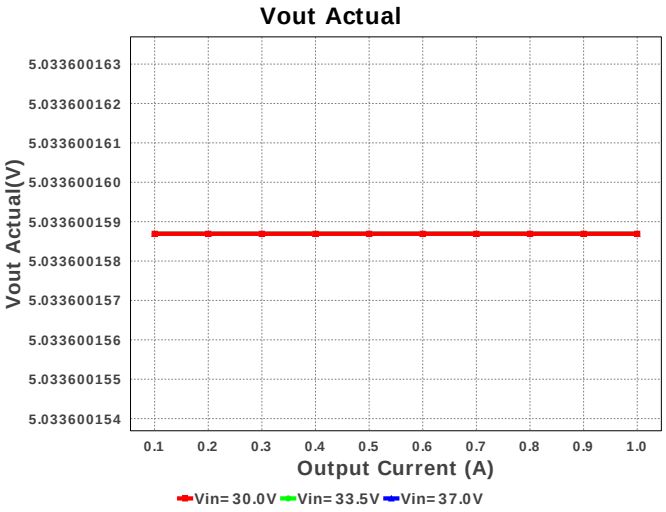


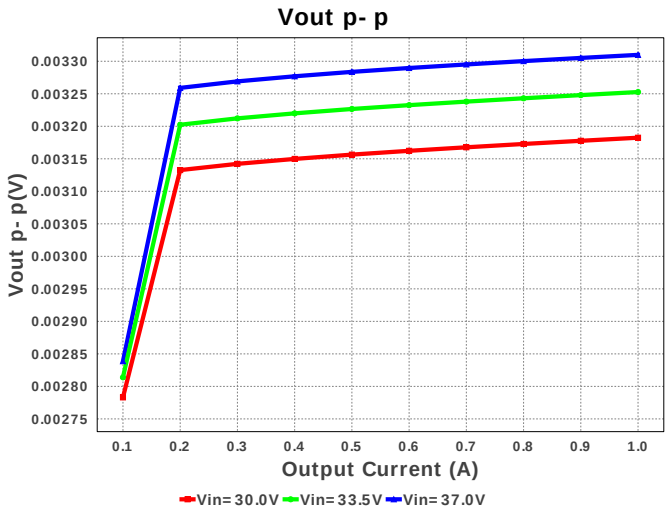


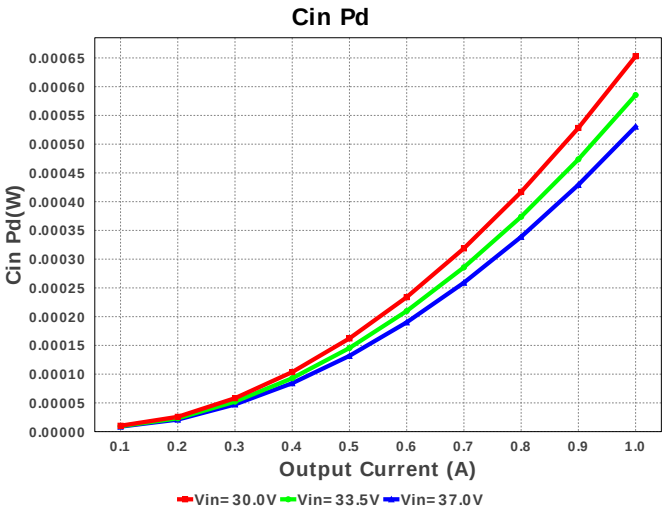


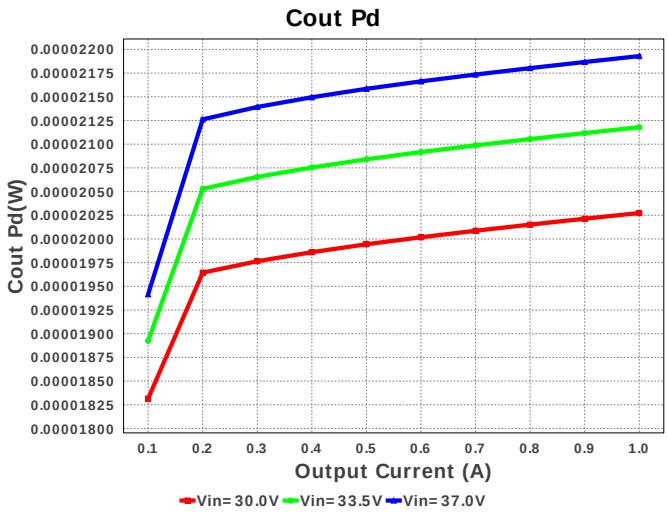


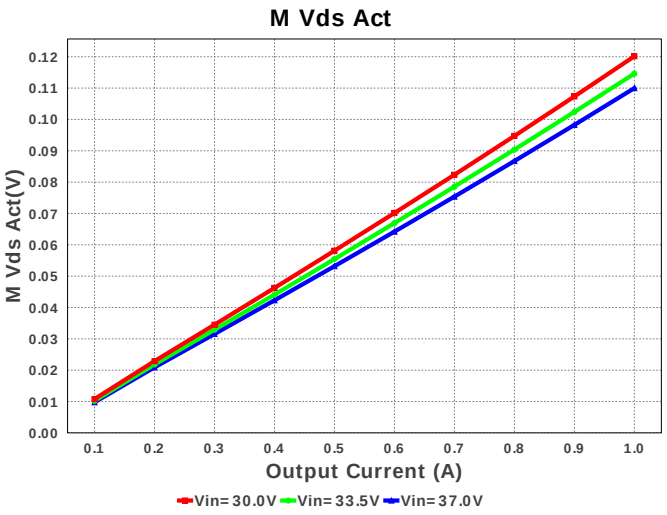


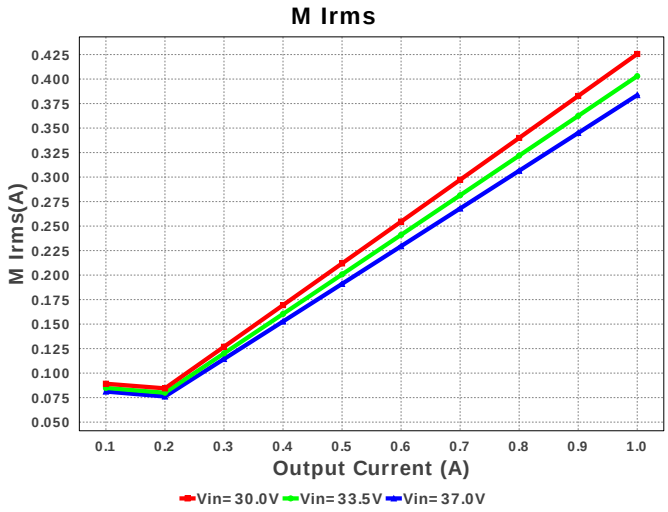


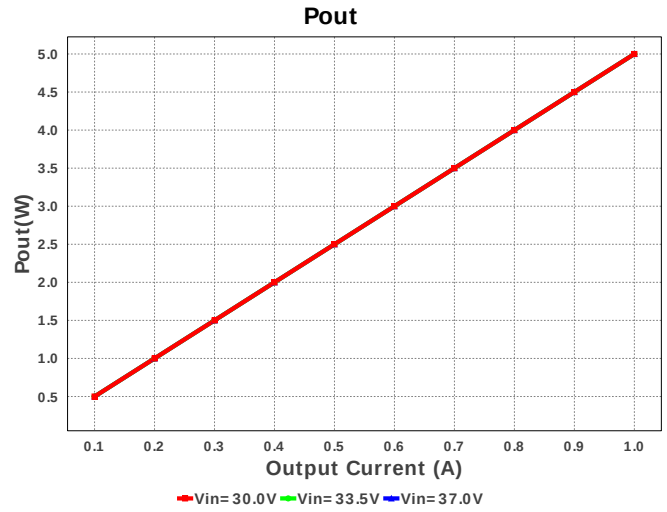


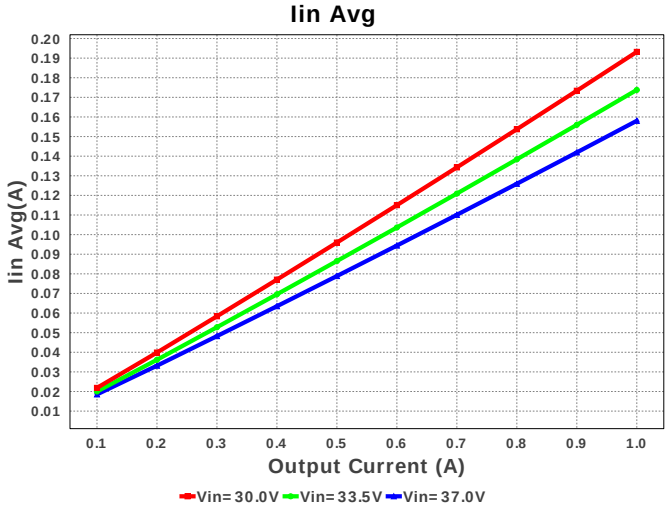


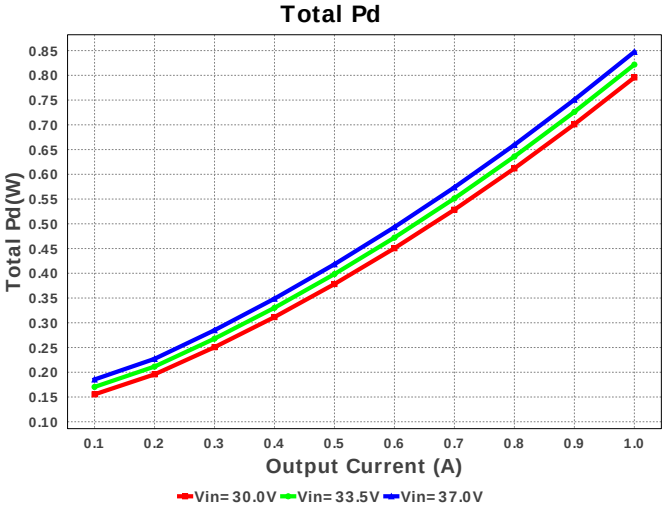


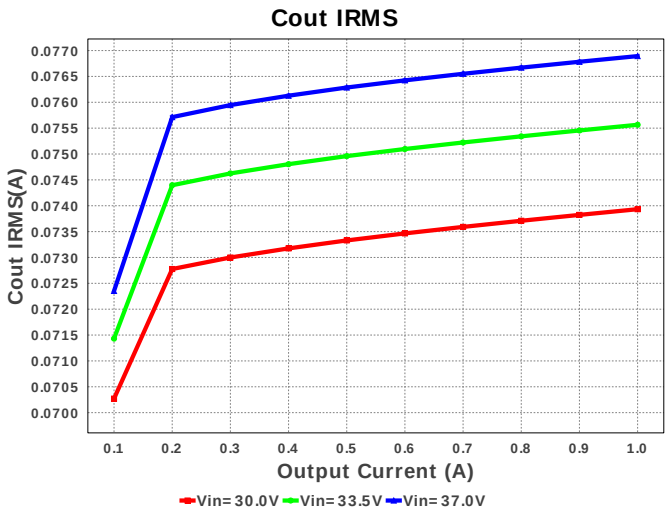


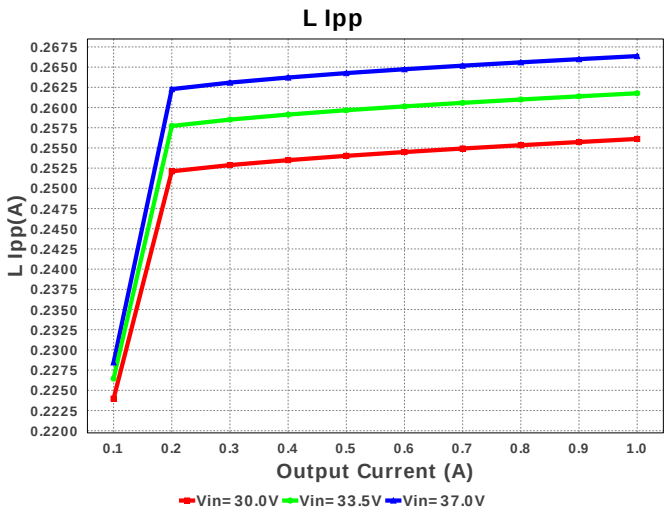


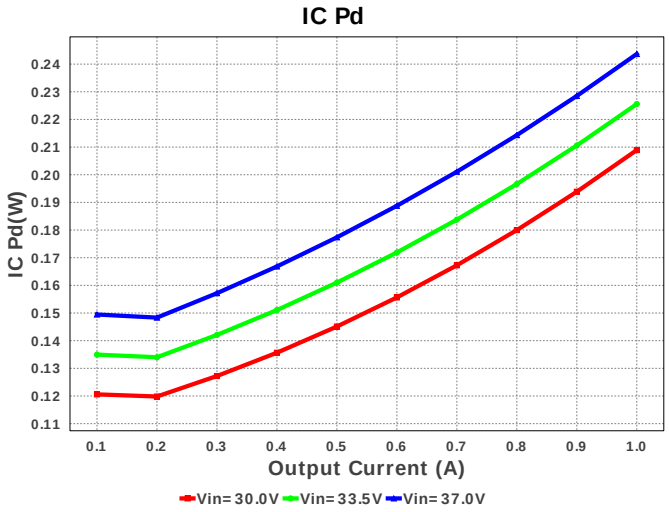


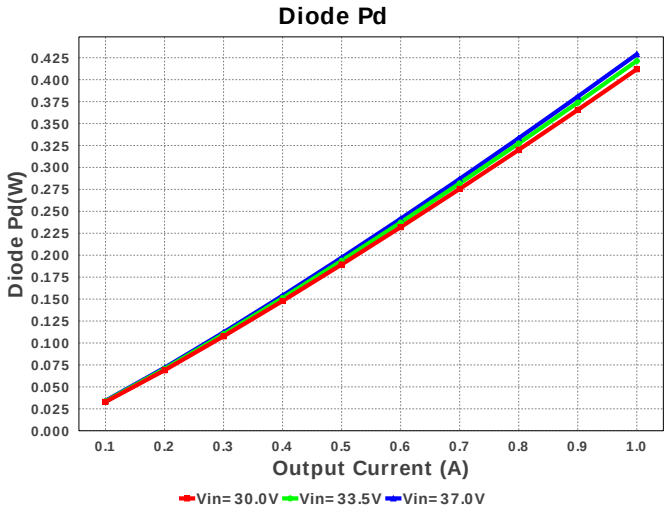












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	347.16 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	76.893 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.133 A	Current	Peak switch current in IC
4.	Iin Avg	158.04 mA	Current	Average input current
5.	L Ipp	266.36 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	383.623 mA	Current	Q Iavg
7.	BOM Count	10	General	Total Design BOM count
8.	FootPrint	283.0 mm^2	General	Total Foot Print Area of BOM components
9.	Frequency	260.0 kHz	General	Switching frequency
10.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	109.985 mV	General	Voltage drop across the MosFET
12.	Pout	5.0 W	General	Total output power
13.	Total BOM	$2.55	General	Total BOM Cost
14.	D1 Tj	40.724 degC	Op_Point	D1 junction temperature
15.	Vout Actual	5.034 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
17.	Cross Freq	32.052 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	14.717 %	Op_point	Duty cycle
19.	Efficiency	85.508 %	Op_point	Steady state efficiency
20.	IC Tj	55.585 degC	Op_point	IC junction temperature
21.	ICThetaJA	105.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	1.0 A	Op_point	Iout operating point
23.	Phase Marg	40.749 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	37.0 V	Op_point	Vin operating point
25.	Vout p-p	3.31 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	530.53 µW	Power	Input capacitor power dissipation
27.	Cout Pd	21.929 µW	Power	Output capacitor power dissipation
28.	Diode Pd	428.97 mW	Power	Diode power dissipation
29.	IC Pd	243.666 mW	Power	IC power dissipation
30.	L Pd	174.24 mW	Power	Inductor power dissipation
31.	Total Pd	847.417 mW	Power	Total Power Dissipation

#	Name	Value	Category	Description
32.	Vout Tolerance	3.045 %		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	37.0	Maximum input voltage
3.	VinMin	30.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LM2672	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. Warning! With certain softstart capacitor values and operating conditions, the LM267X can exhibit an overshoot on the output voltage during turn on. Especially when starting up into no load or low load, the softstart function may not be effective in preventing a larger voltage overshoot on the output. With larger loads or lower input voltages during startup this effect is minimized. In particular, avoid using softstart capacitors between 0.033uF and 1uF.

2. **LM2672** Product Folder : http://www.ti.com/product/LM2672 : contains the data sheet and other resources.