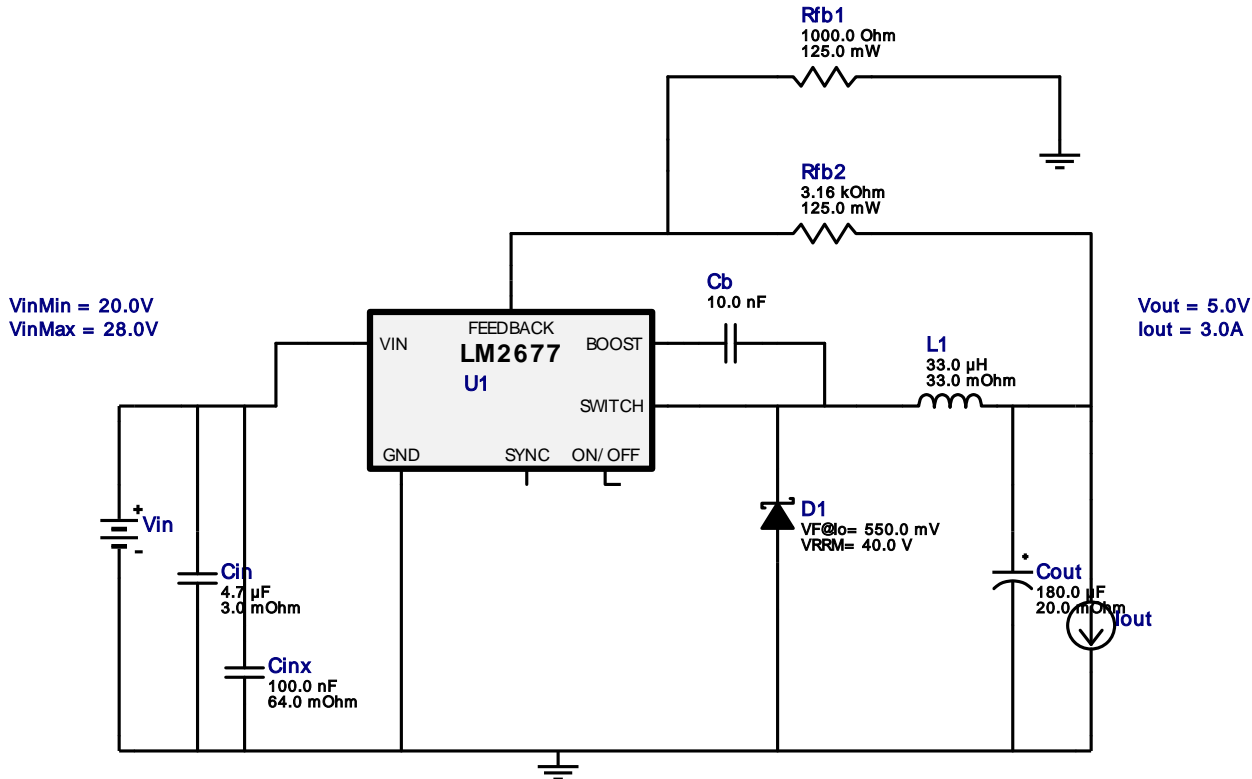



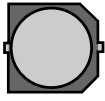

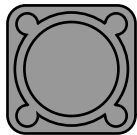


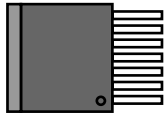
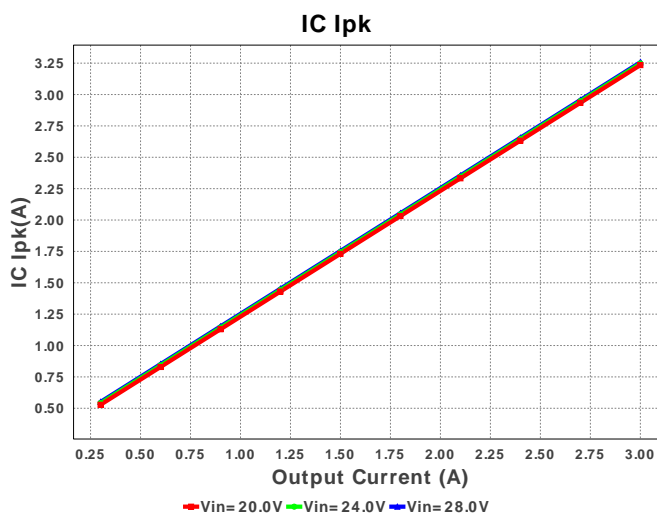
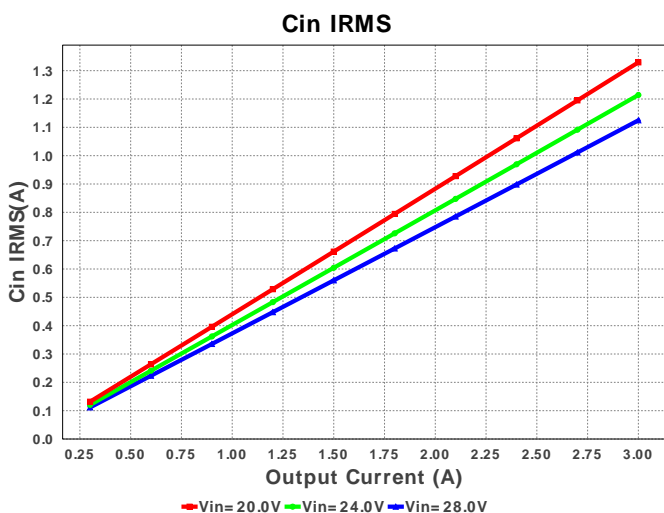
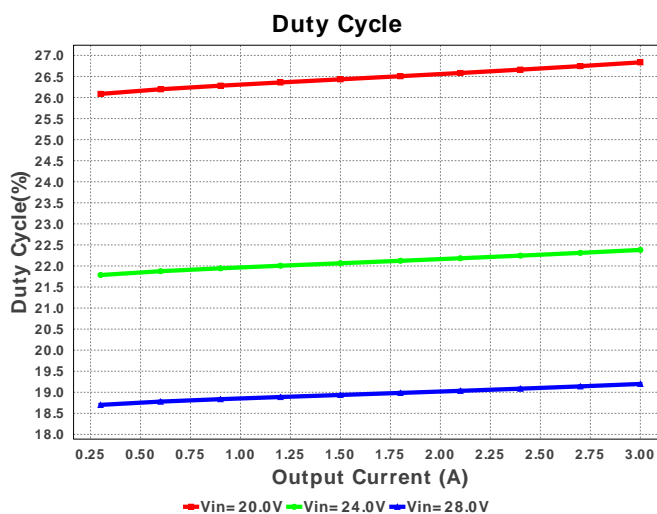
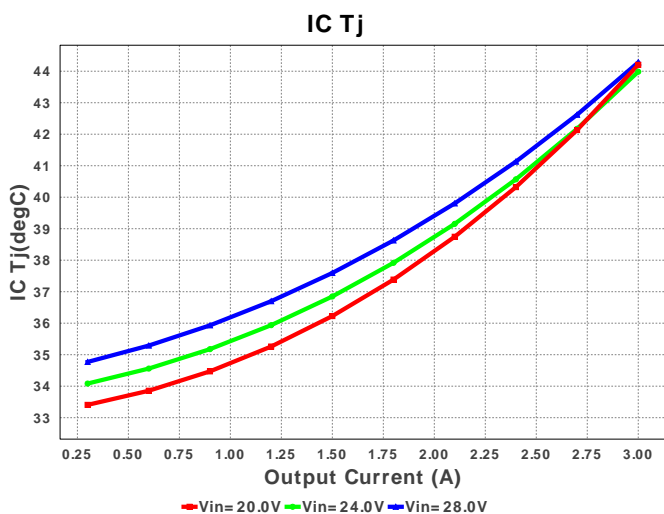


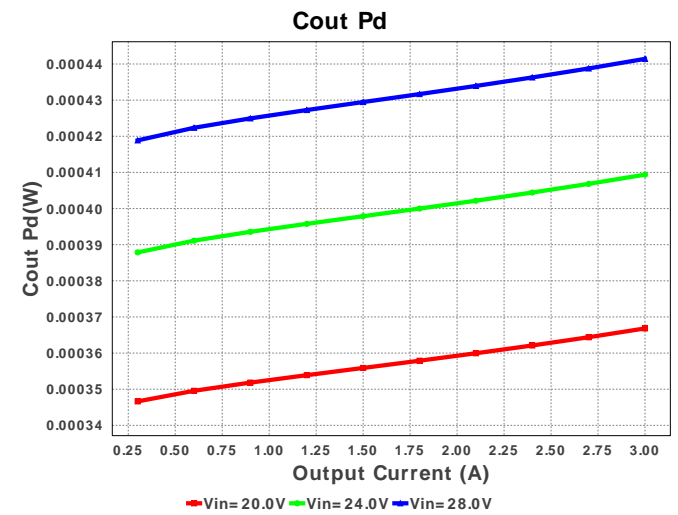
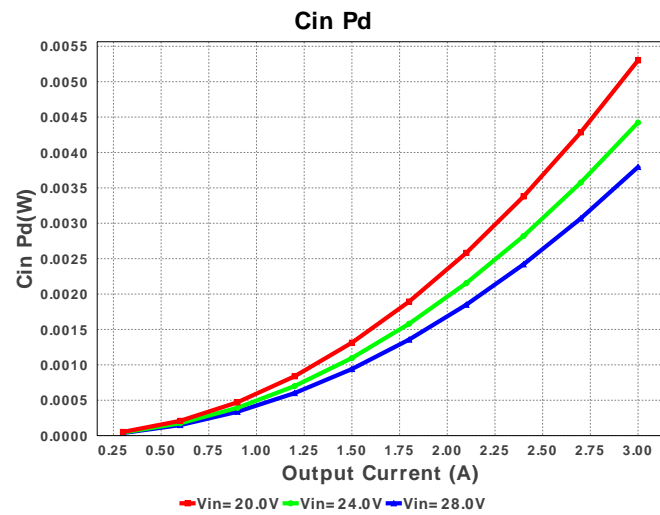
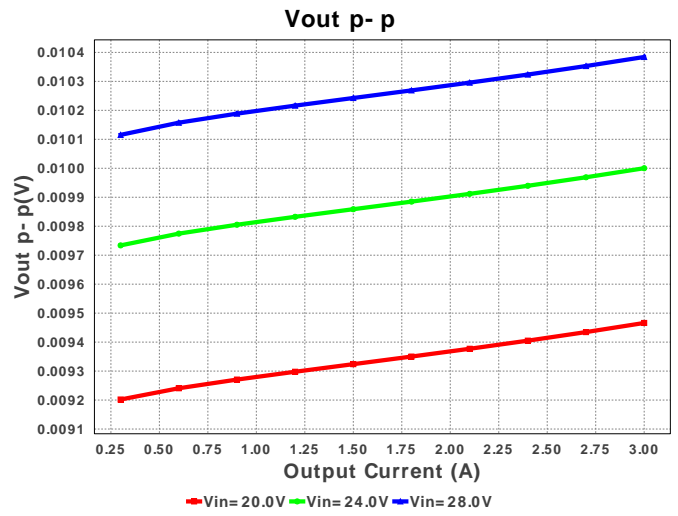
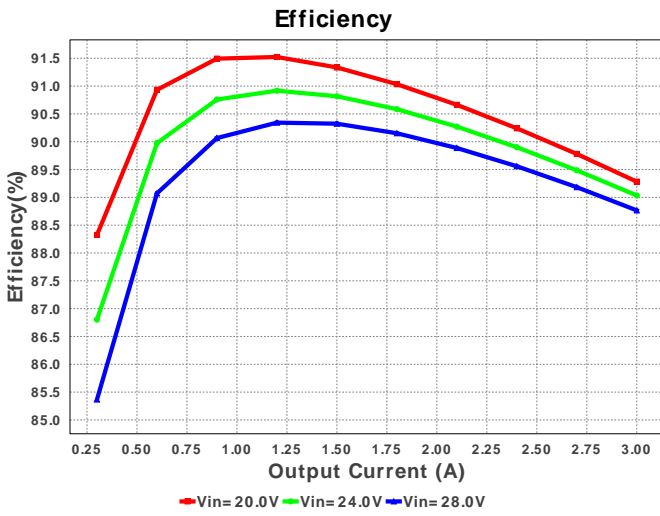
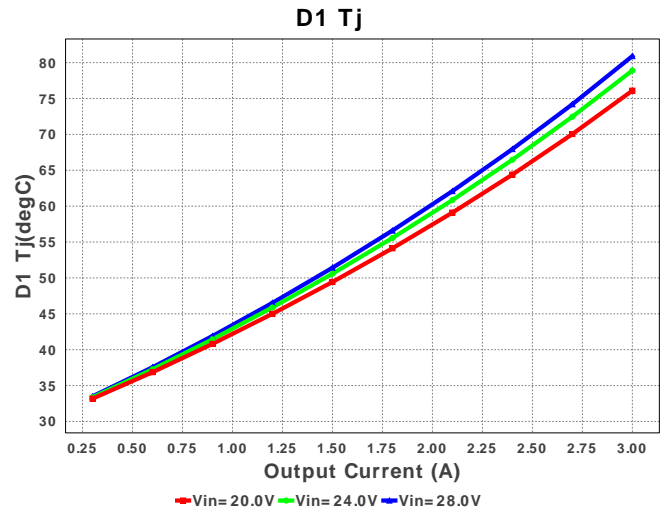
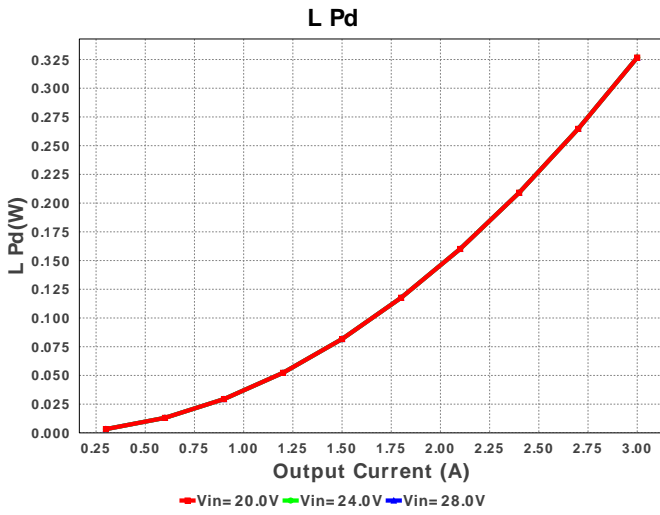
**WEBENCH<sup>®</sup> Design Report**

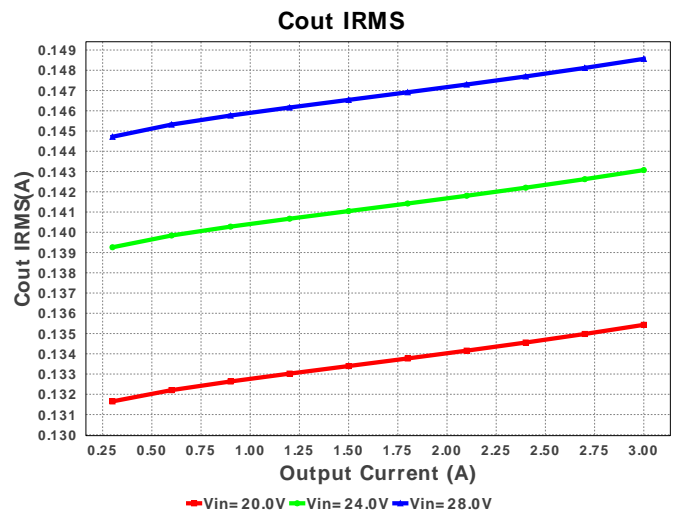
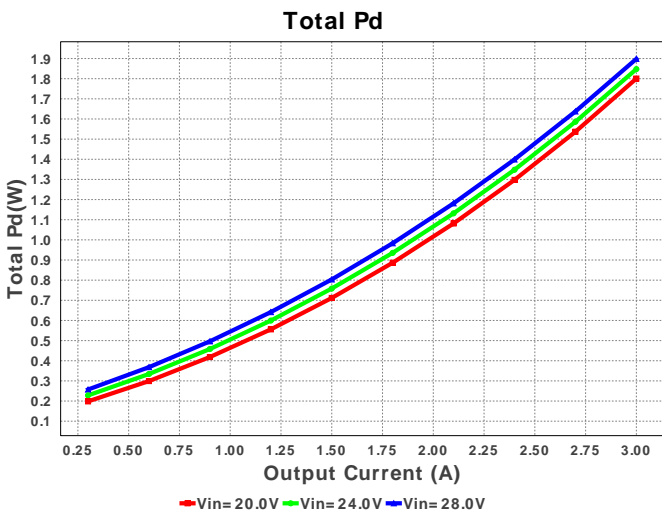
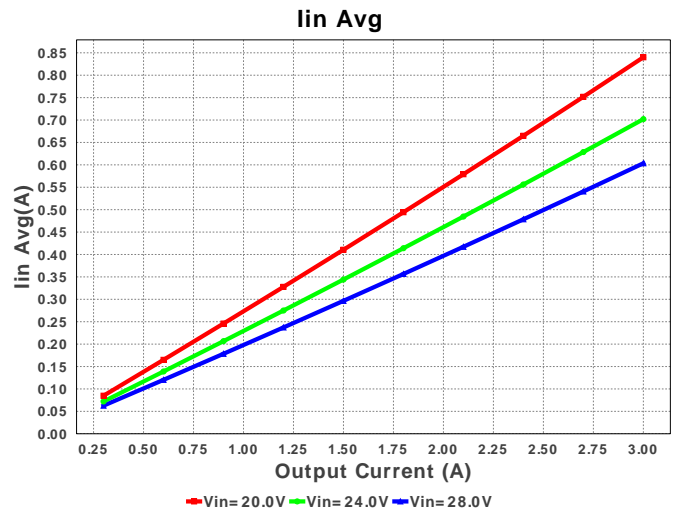
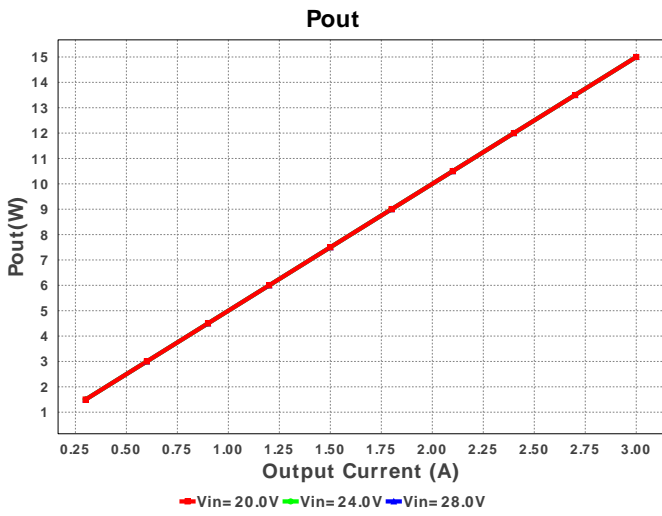
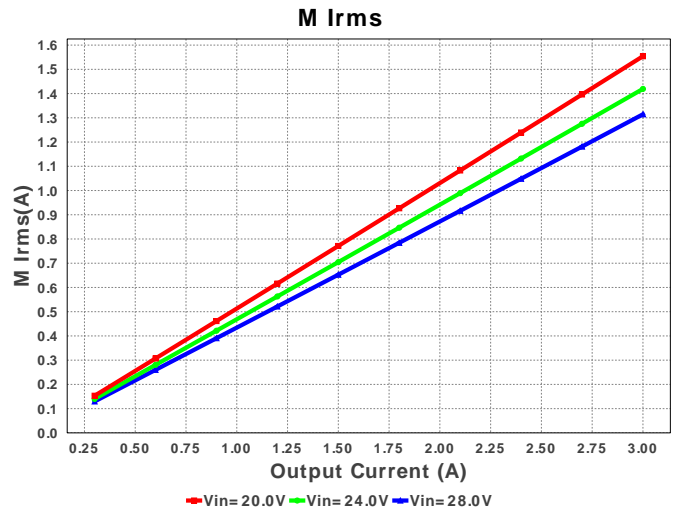
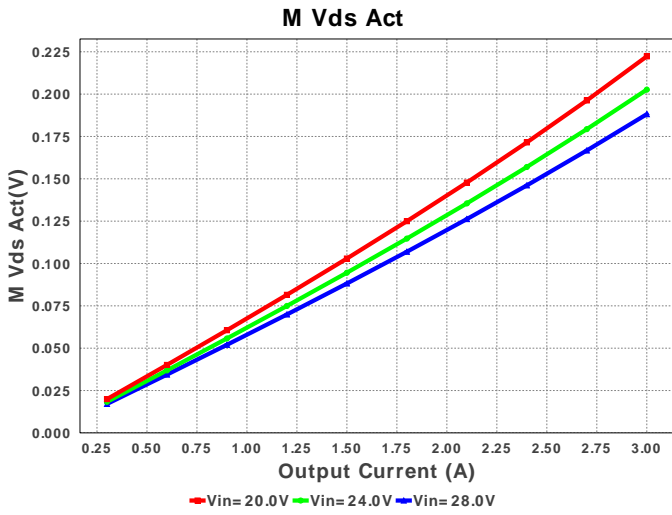
 Design : 4320088/19 LM2677SX-ADJ/NOPB  
 LM2677SX-ADJ/NOPB 20.0V-28.0V to 5.00V @ 3.0A

**Electrical BOM**

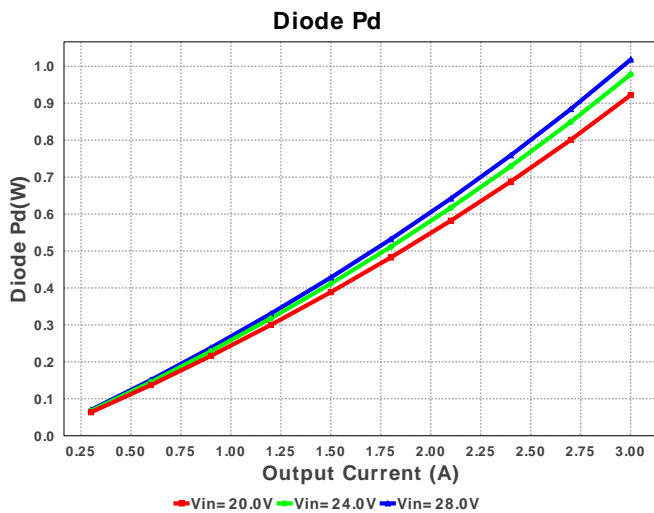
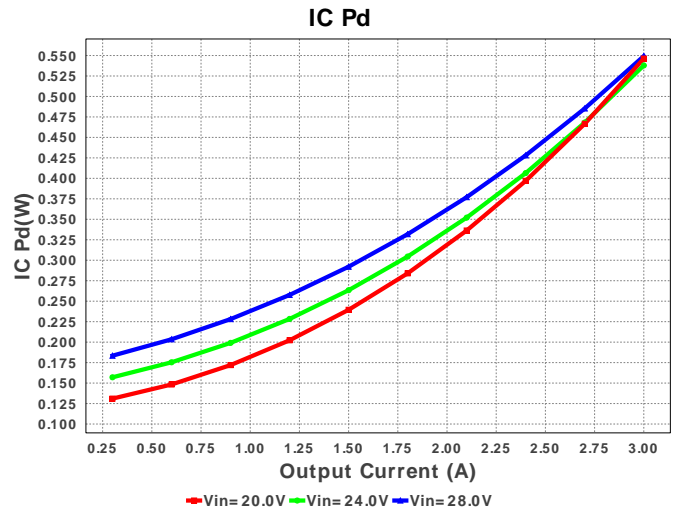
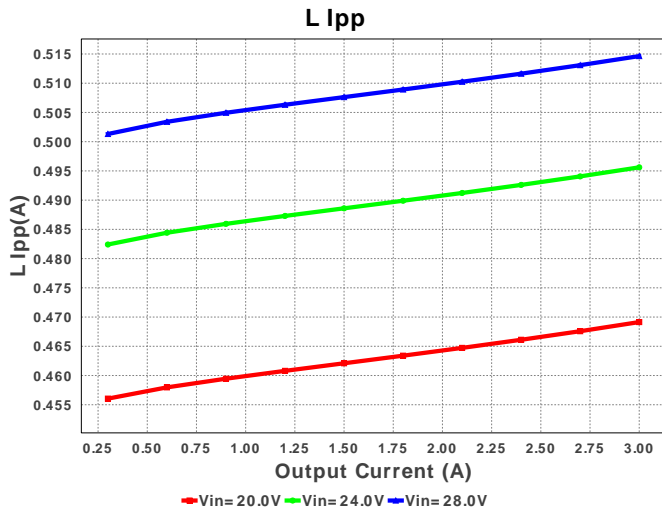
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cb	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm <sup>2</sup>
2.	Cin	MuRata	GRM31CR71H475KA12L Series= X7R	Cap= 4.7 uF ESR= 3.0 mOhm VDC= 50.0 V IRMS= 4.98 A	1	\$0.07	 1206 11 mm <sup>2</sup>
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 mm <sup>2</sup>
4.	Cout	Panasonic	16SVP180M Series= SVP	Cap= 180.0 uF ESR= 20.0 mOhm VDC= 16.0 V IRMS= 3.64 A	1	\$0.29	 SM_RADIAL_8MM 113 mm <sup>2</sup>
5.	D1	Diodes Inc.	B540C-13-F	VF@Io= 550.0 mV VRRM= 40.0 V	1	\$0.17	 SMC 83 mm <sup>2</sup>

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
6.	L1	Coilcraft	MSS1210-333MEB	L= 33.0 $\mu$ H DCR= 33.0 mOhm	1	\$0.81	 MSS1210 204 mm <sup>2</sup>
7.	Rfb1	Panasonic	ERJ-6ENF1001V Series= ERJ-6E	Res= 1000.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
8.	Rfb2	Panasonic	ERJ-6ENF3161V Series= ERJ-6E	Res= 3.16 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm <sup>2</sup>
9.	U1	Texas Instruments	LM2677SX-ADJ/NOPB	Switcher	1	\$2.25	 TS7B 199 mm <sup>2</sup>









## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.126 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	148.91 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	3.258 A	Current	Peak switch current in IC
4.	Iin Avg	604.87 mA	Current	Average input current
5.	L Ipp	515.84 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	1.316 A	Current	MOSFET RMS current
7.	BOM Count	9	General	Total Design BOM count
8.	FootPrint	638.0 mm <sup>2</sup>	General	Total Foot Print Area of BOM components
9.	Frequency	260.0 kHz	General	Switching frequency
10.	IC Tolerance	24.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	188.402 mV	General	Voltage drop across the MosFET
12.	Pout	15.0 W	General	Total output power
13.	Total BOM	\$3.63	General	Total BOM Cost
14.	D1 Tj	82.77 degC	Op_Point	D1 junction temperature
15.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	16.425 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	19.243 %	Op_point	Duty cycle
18.	Efficiency	88.567 %	Op_point	Steady state efficiency
19.	IC Tj	44.302 degC	Op_point	IC junction temperature
20.	ICThetaJA	26.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	3.0 A	Op_point	Iout operating point
22.	Phase Marg	62.756 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	28.0 V	Op_point	Vin operating point
24.	Vout p-p	10.408 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	3.801 mW	Power	Input capacitor power dissipation
26.	Cout Pd	443.484 μW	Power	Output capacitor power dissipation
27.	Diode Pd	1.055 W	Power	Diode power dissipation
28.	IC Pd	550.066 mW	Power	IC power dissipation
29.	L Pd	326.7 mW	Power	Inductor power dissipation
30.	Total Pd	1.936 W	Power	Total Power Dissipation

## Design Inputs

#	Name	Value	Description
1.	Iout	3.0	Maximum Output Current
2.	Iout1	3.0	Output Current #1
3.	VinMax	28.0	Maximum input voltage
4.	VinMin	20.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	LM2677	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	30.0	Ambient temperature

## Design Assistance

1. LM2677 Product Folder : <http://www.ti.com/product/LM2677> : contains the data sheet and other resources.

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