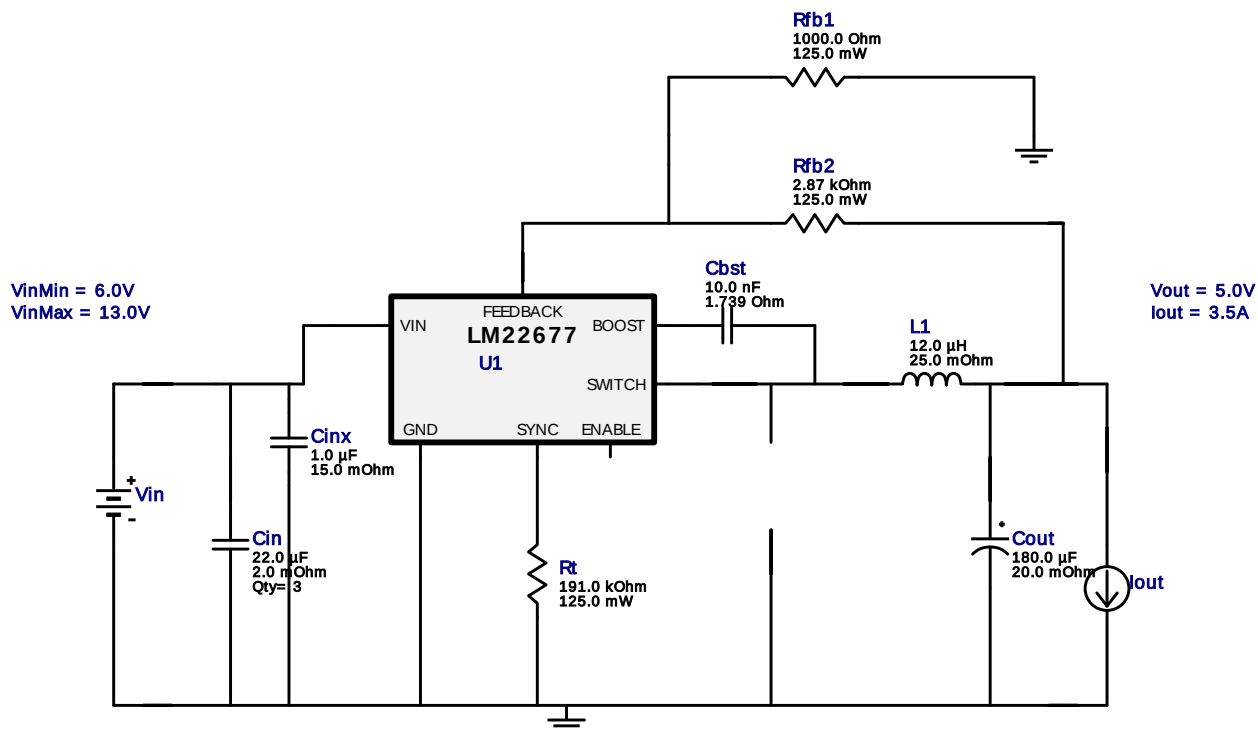
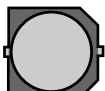


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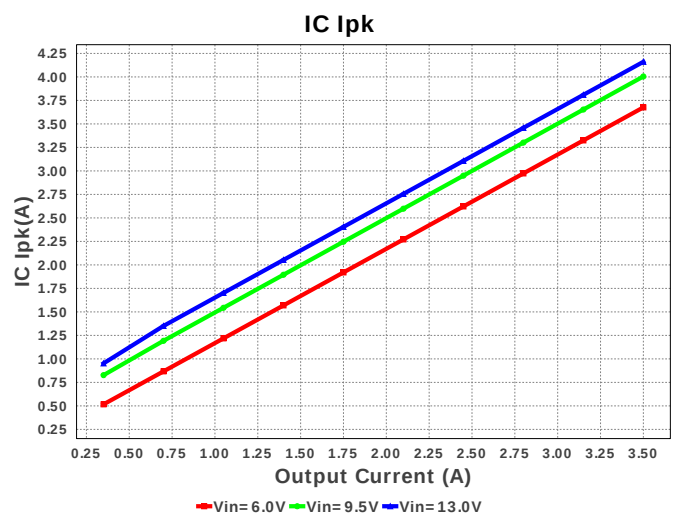
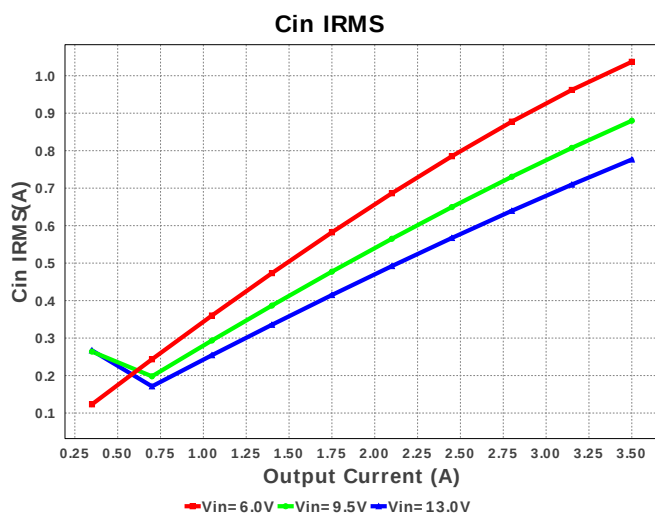
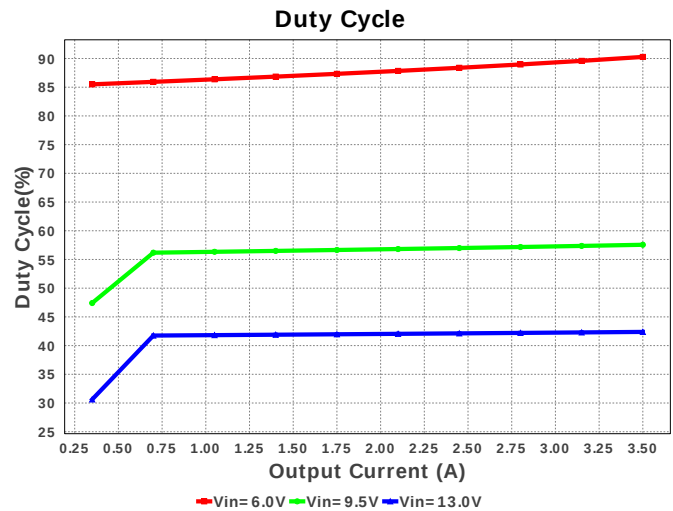
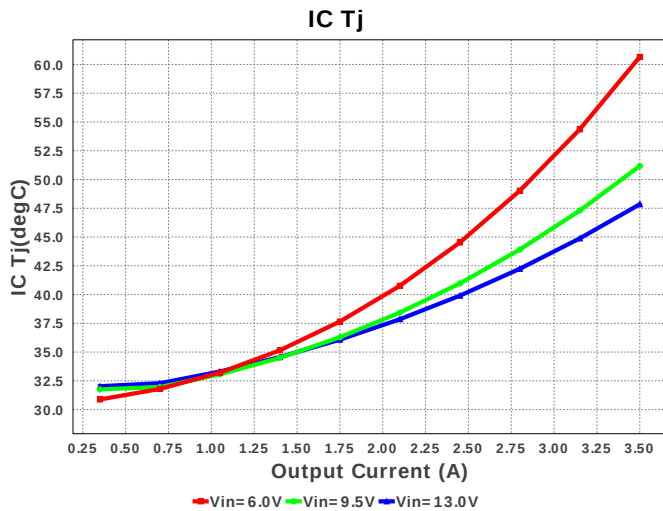
Design : 627318/85 LM22677TJ-ADJ/NOPB
LM22677TJ-ADJ/NOPB 6.0V-13.0V to 5.00V @ 3.5A

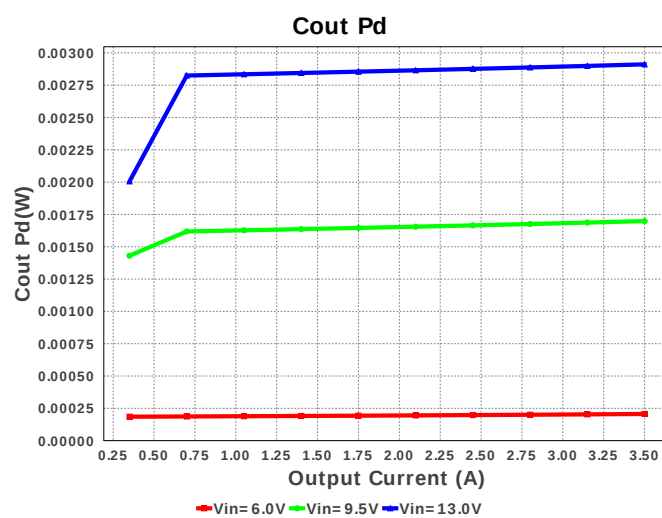
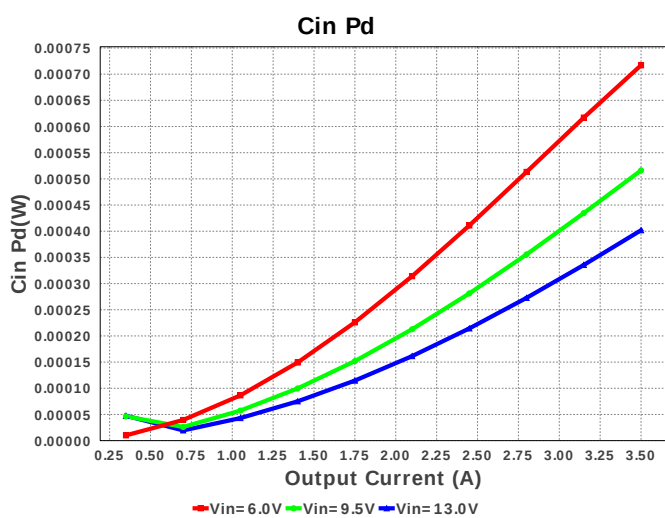
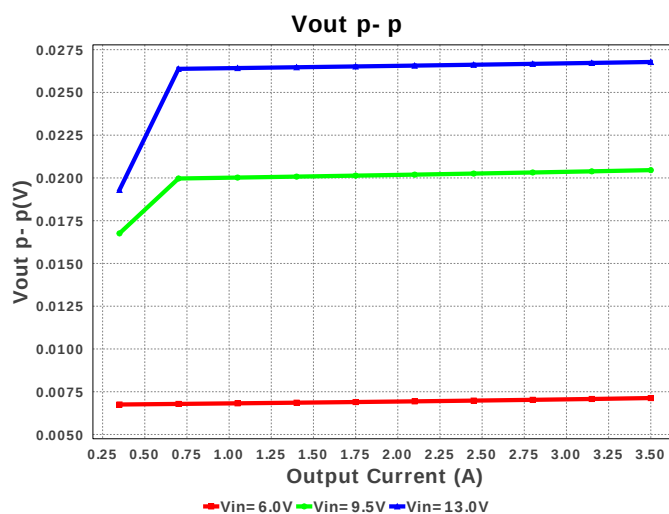
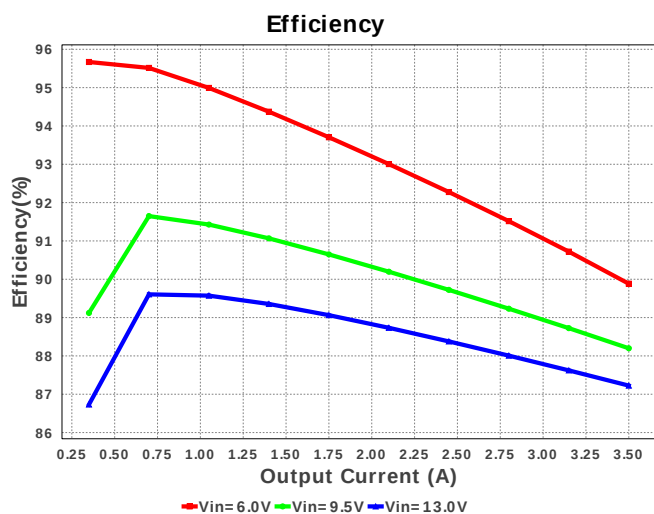
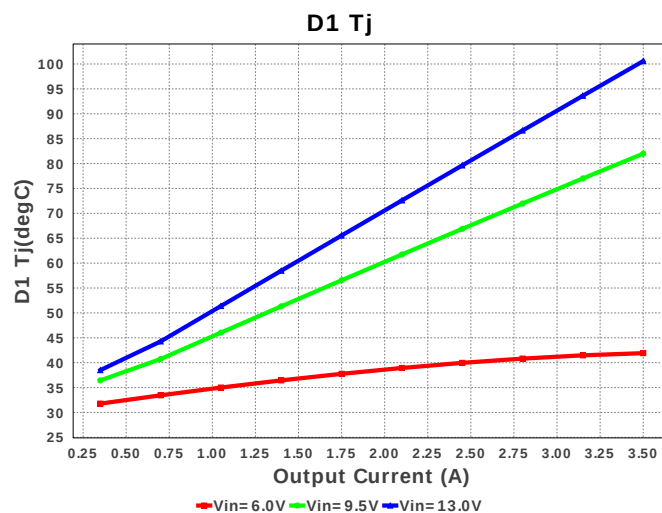
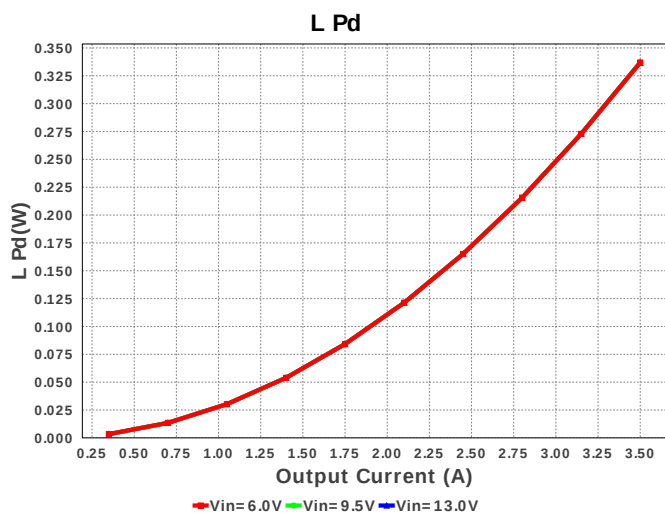


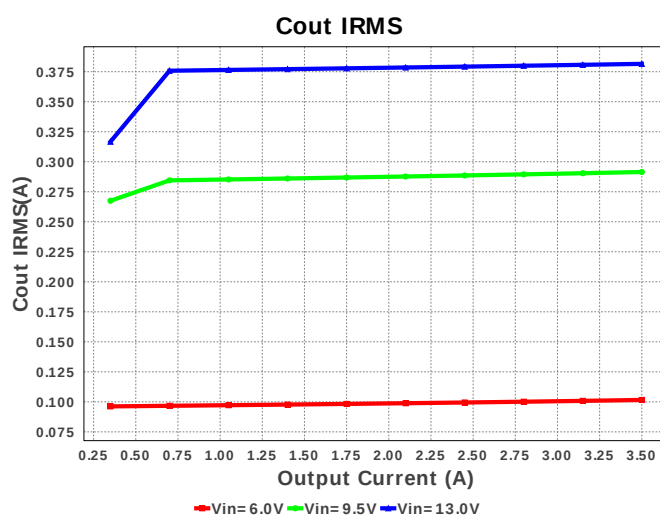
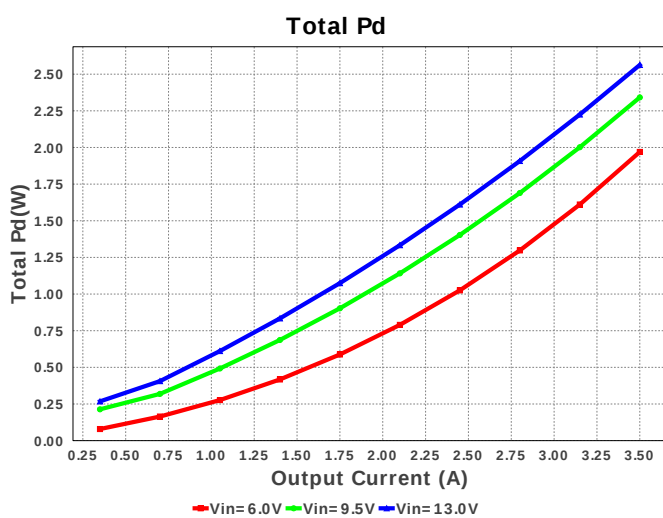
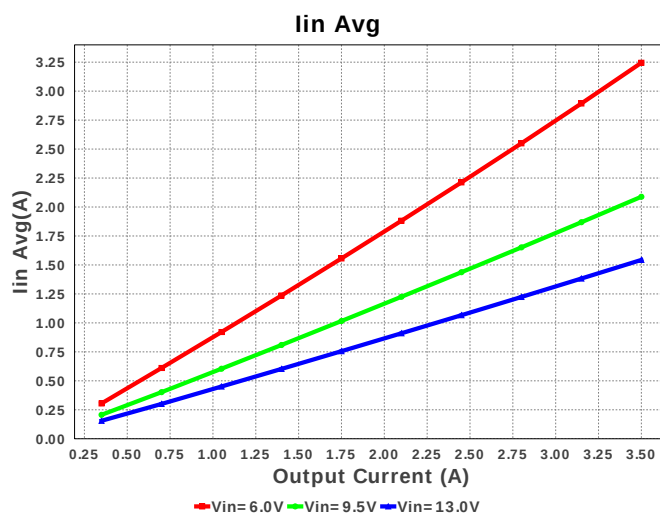
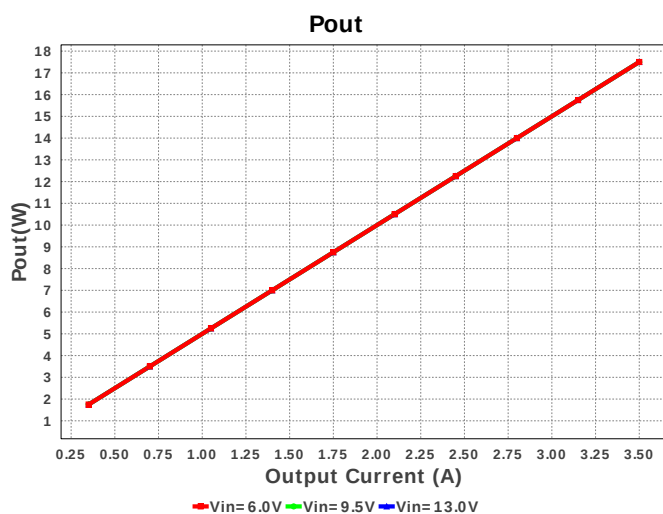
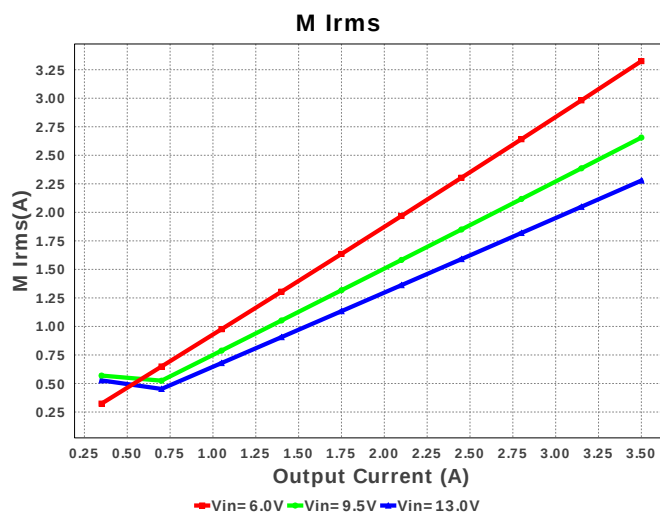
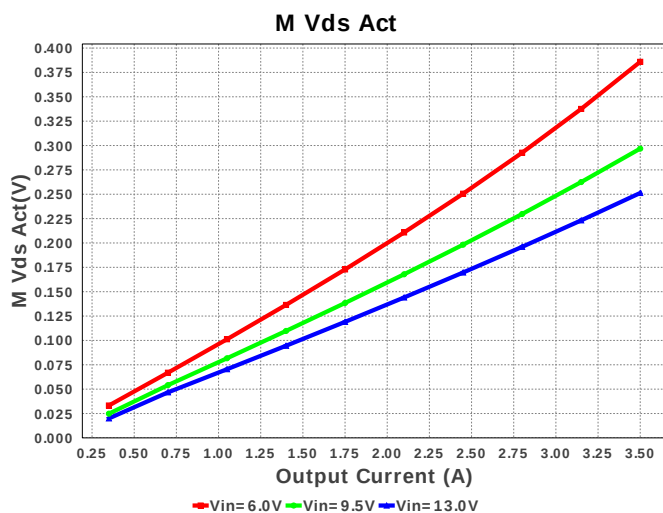
Electrical BOM

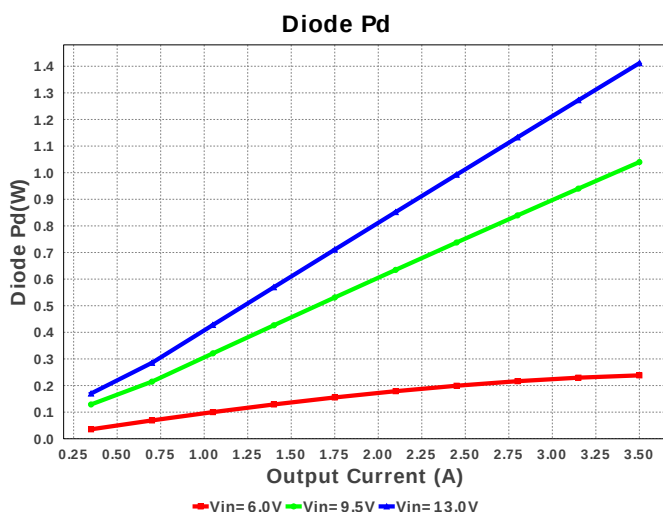
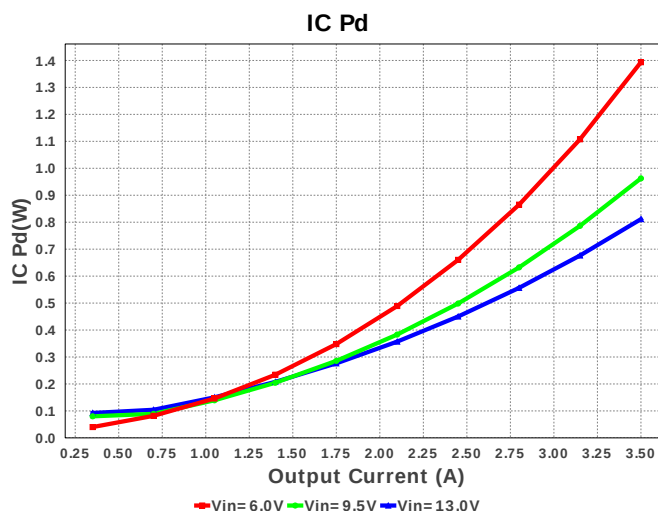
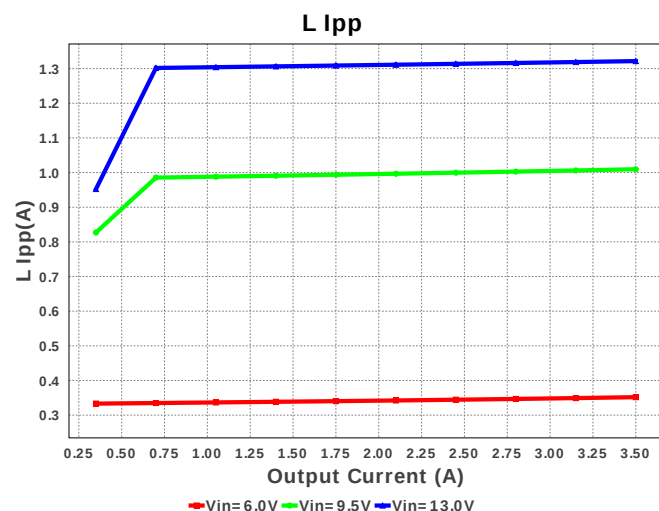
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	Kemet	C0805C103K5RACTU Series= X7R	Cap= 10.0 nF ESR= 1.739 Ohm VDC= 50.0 V IRMS= 411.0 mA	1	\$0.01	 0805 7 mm ²
2.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	3	\$0.28	 1210 15 mm ²
3.	Cinx	Kemet	C0805C105K4RACTU Series= X7R	Cap= 1.0 uF ESR= 15.0 mOhm VDC= 16.0 V IRMS= 8.19 A	1	\$0.02	 0805 7 mm ²
4.	Cout	Panasonic	16SVP180M Series= 261	Cap= 180.0 uF ESR= 20.0 mOhm VDC= 16.0 V IRMS= 3.64 A	1	\$0.29	 SM_RADIAL_8MM 113 mm ²
5.	D1	Diodes Inc.	B550C-13-F	VF@Io= 700.0 mV VRRM= 50.0 V	1	\$0.33	 SMC 83 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
6.	L1	Bourns	SRR1208-120ML	L= 12.0 μ H DCR= 25.0 mOhm	1	\$0.46	 SRR1208 216 mm ²
7.	Rfb1	Panasonic	ERJ-6ENF1001V Series= 225	Res= 1000.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
8.	Rfb2	Panasonic	ERJ-6ENF2871V Series= 225	Res= 2.87 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
9.	Rt	Panasonic	ERJ-6ENF1913V Series= 225	Res= 191.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
10.	U1	Texas Instruments	LM22677TJ-ADJ/NOPB	Switcher	1	\$2.50	 TJ7A 199 mm ²









Operating Values

#	Name	Value	Category	Description
1.	BOM Count	12		Total Design BOM count
2.	Total BOM	\$4.478		Total BOM Cost
3.	Cin IRMS	776.401 mA	Current	Input capacitor RMS ripple current
4.	Cout IRMS	381.53 mA	Current	Output capacitor RMS ripple current
5.	IC Ipk	4.161 A	Current	Peak switch current in IC
6.	Iin Avg	1.543 A	Current	Average input current
7.	L Ipp	1.322 A	Current	Peak-to-peak inductor ripple current
8.	M1 Irms	2.279 A	Current	Q Iavg
9.	FootPrint	689.0 mm ²	General	Total Foot Print Area of BOM components
10.	Frequency	213.788 kHz	General	Switching frequency
11.	IC Tolerance	75.0 mV	General	IC Feedback Tolerance
12.	M Vds Act	251.287 mV	General	Voltage drop across the MosFET
13.	Pout	17.5 W	General	Total output power
14.	D1 Tj	100.581 degC	Op_Point	D1 junction temperature
15.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
16.	Cross Freq	14.821 kHz	Op_point	Bode plot crossover frequency
17.	Duty Cycle	42.383 %	Op_point	Duty cycle
18.	Efficiency	87.225 %	Op_point	Steady state efficiency
19.	IC Tj	47.849 degC	Op_point	IC junction temperature
20.	ICThetaJA	22.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	3.5 A	Op_point	Iout operating point
22.	Phase Marg	56.398 deg	Op_point	Bode Plot Phase Margin
23.	VIN_OP	13.0 V	Op_point	Vin operating point
24.	Vout p-p	26.78 mV	Op_point	Peak-to-peak output ripple voltage
25.	Cin Pd	401.866 μ W	Power	Input capacitor power dissipation
26.	Cout Pd	2.911 mW	Power	Output capacitor power dissipation
27.	Diode Pd	1.412 W	Power	Diode power dissipation
28.	IC Pd	811.326 mW	Power	IC power dissipation
29.	L Pd	336.875 mW	Power	Inductor power dissipation
30.	Total Pd	2.563 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	3.5 A	Maximum Output Current
2.	Iout1	3.5 Amps	Output Current #1
3.	VinMax	13.0 V	Maximum input voltage
4.	VinMin	6.0 V	Minimum input voltage
5.	Vout	5.0 V	Output Voltage
6.	Vout1	5.0 Volt	Output Voltage #1
7.	base_pn	LM22677	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. Part Description The LM22677 is a monolithic integrated circuit that provides all of the active functions for a step-down (buck) switching regulator capable of driving up to 5.0A loads with excellent line and load regulation characteristics. High efficiency (>90%) is obtained through the use of a low ON-resistance N-channel MOSFET.

2. **LM22677** Product Folder : <http://www.ti.com/product/lm22677> : contains the data sheet and other resources.

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

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