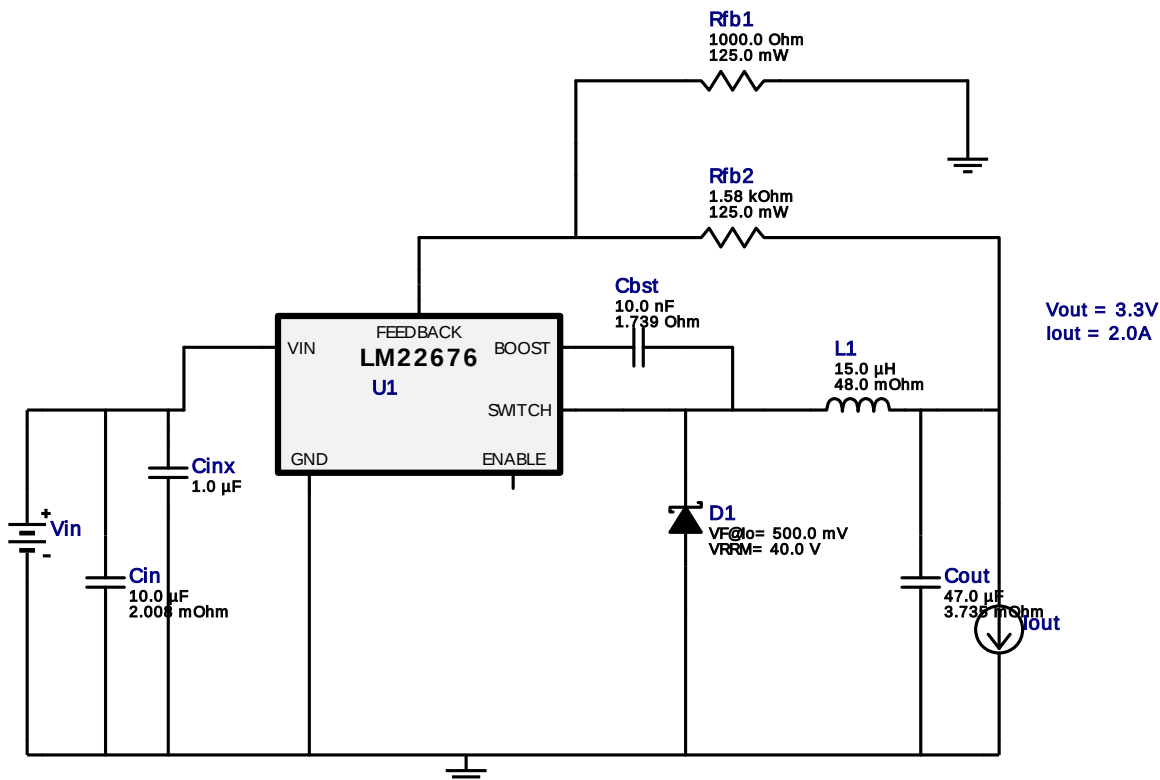
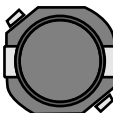


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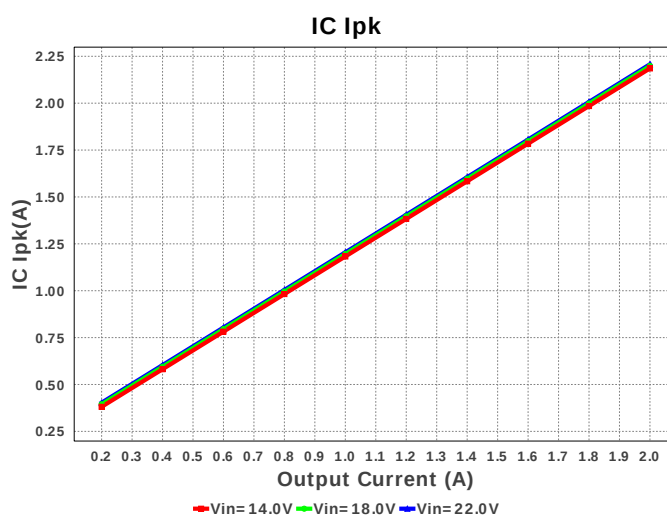
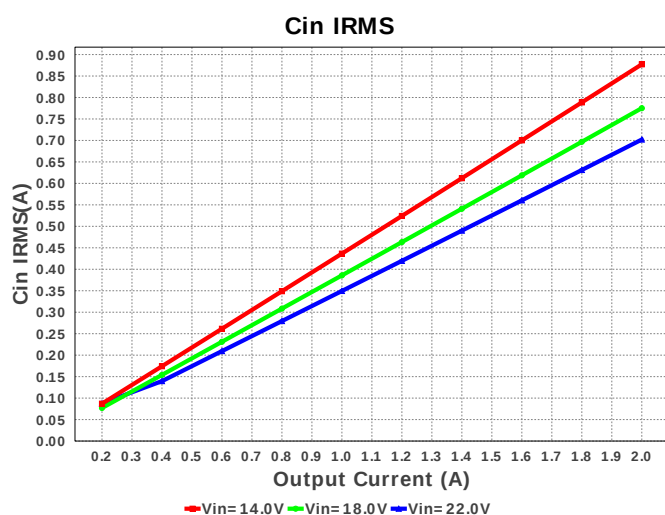
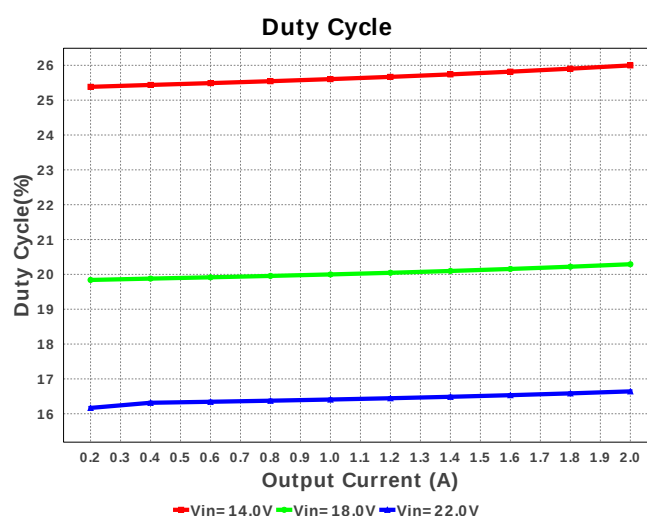
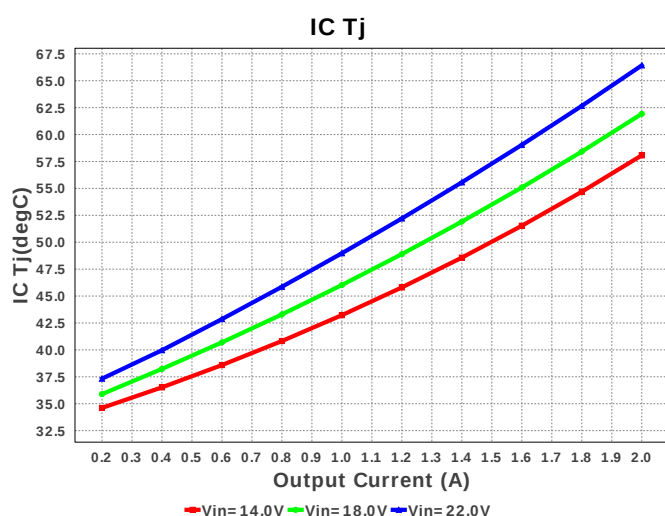
Design : 4737567/67 LM22676MRE-ADJ/NOPB
LM22676MRE-ADJ/NOPB 14.0V-22.0V to 3.30V @ 2.0A

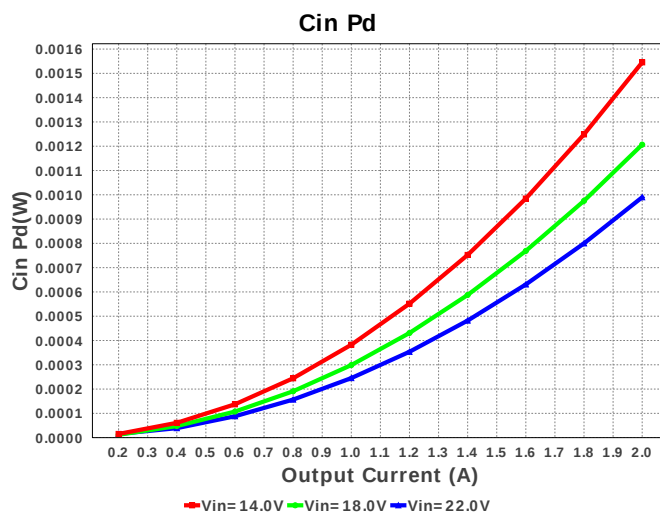
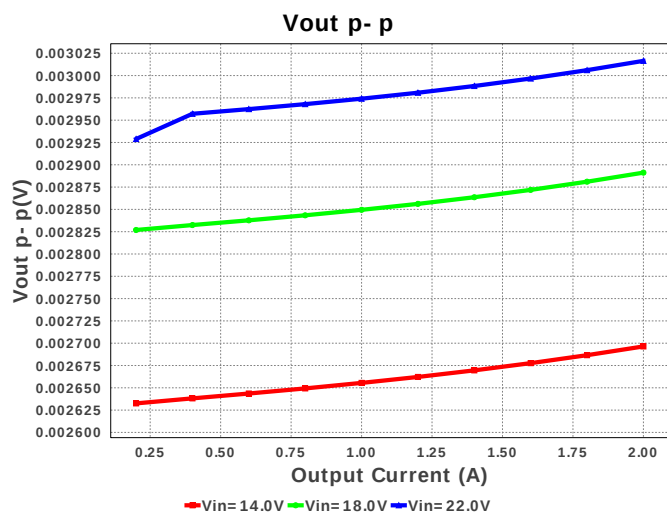
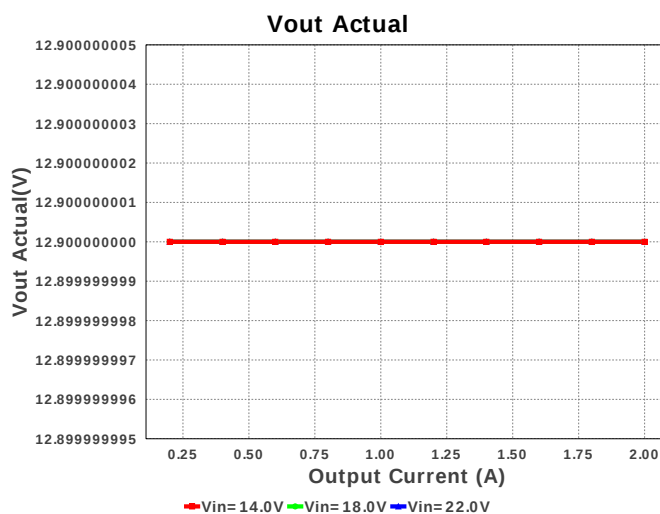
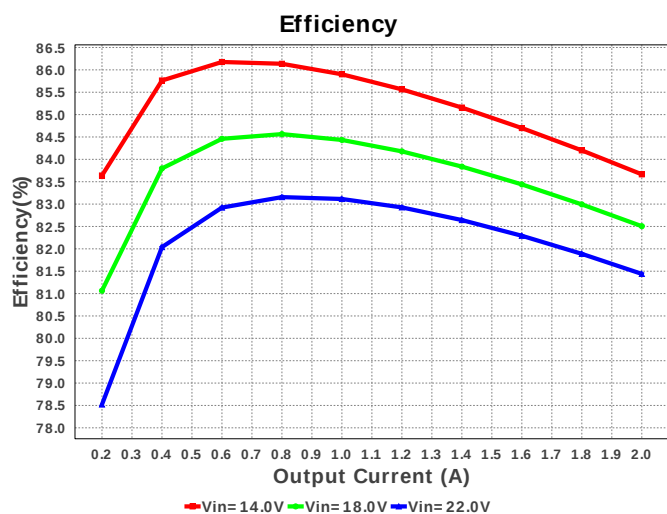
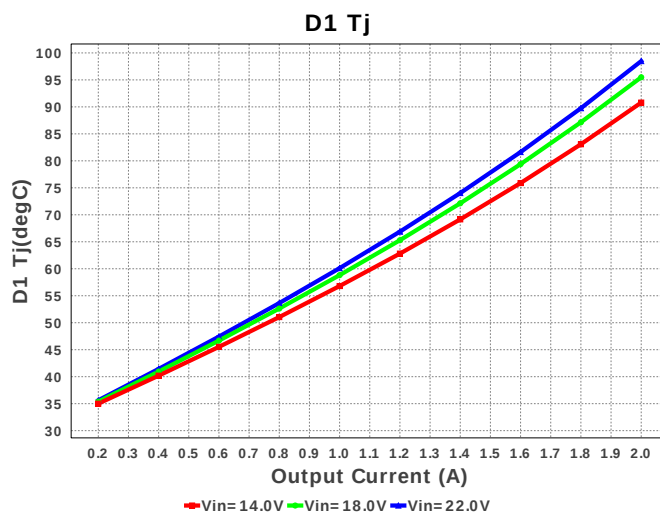
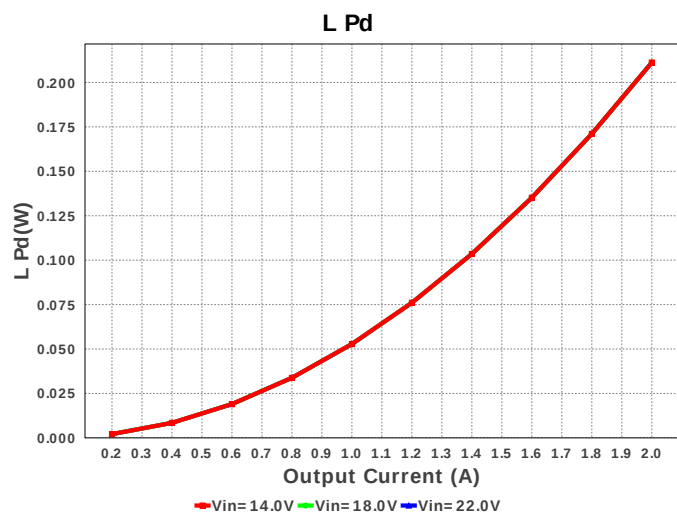


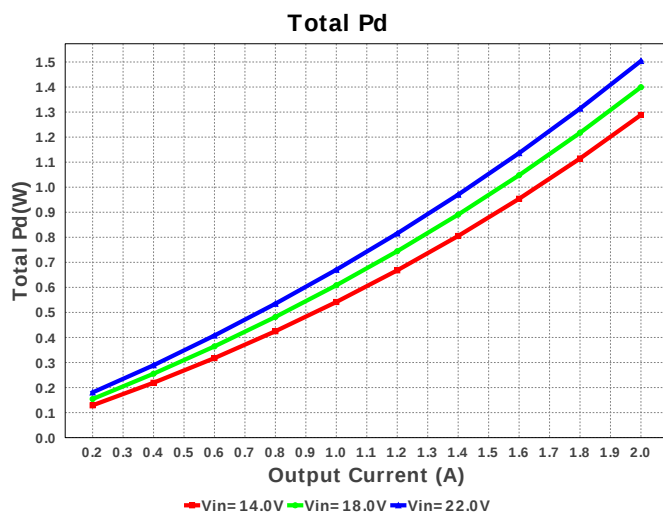
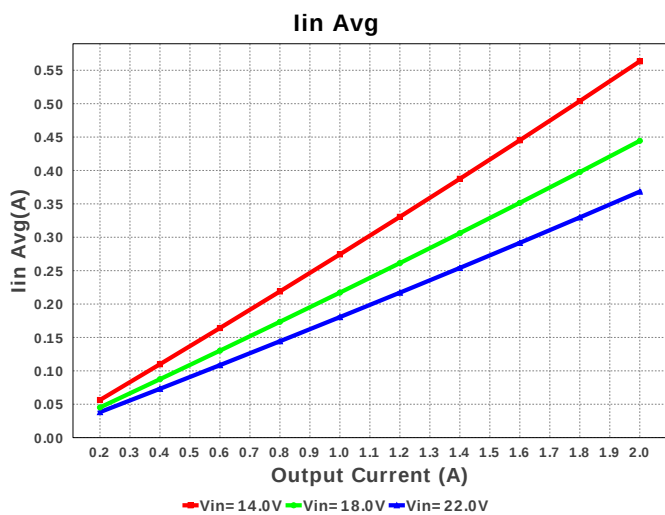
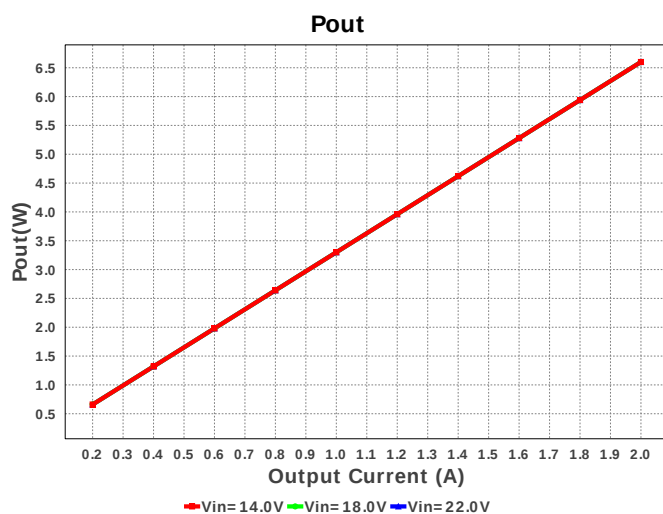
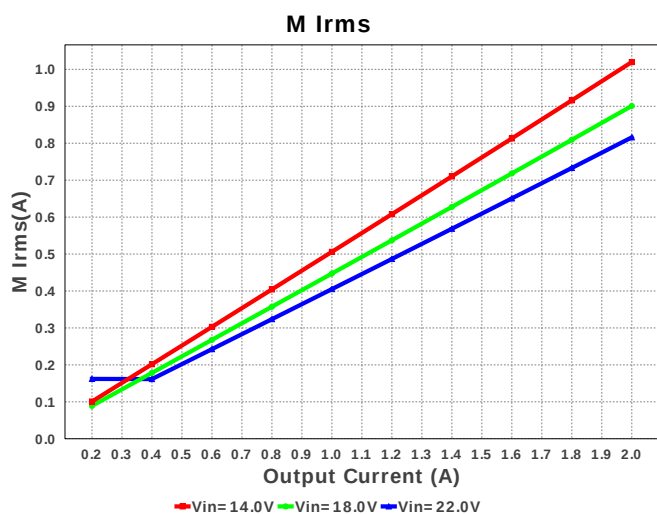
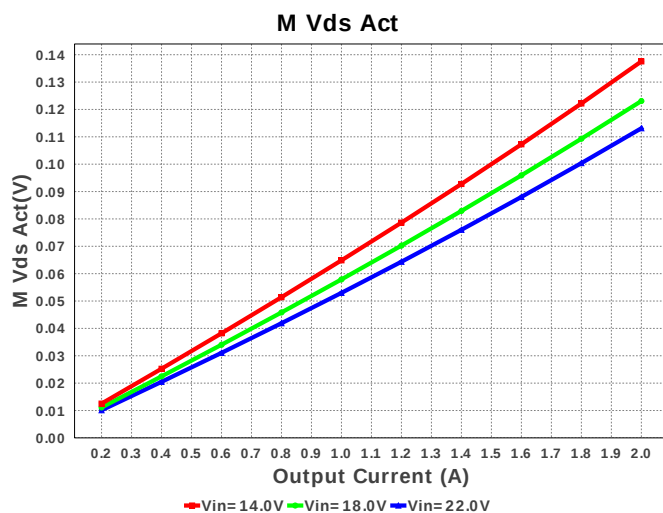
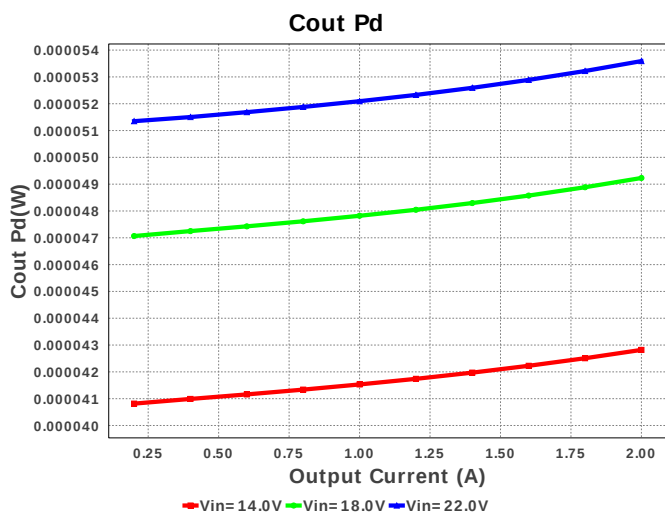
Electrical BOM

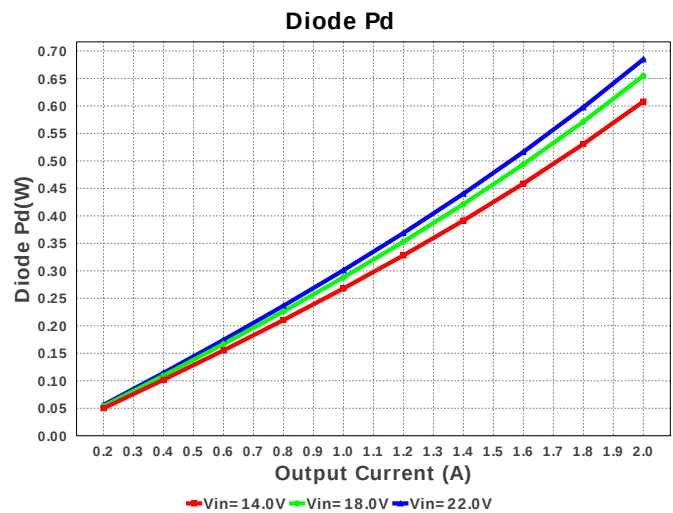
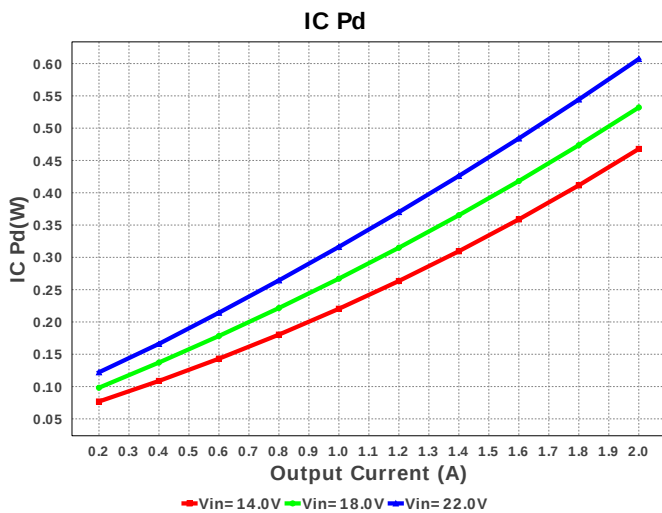
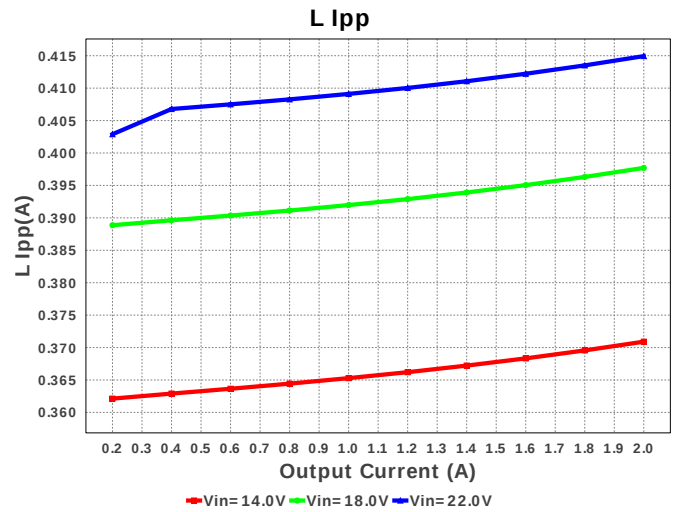
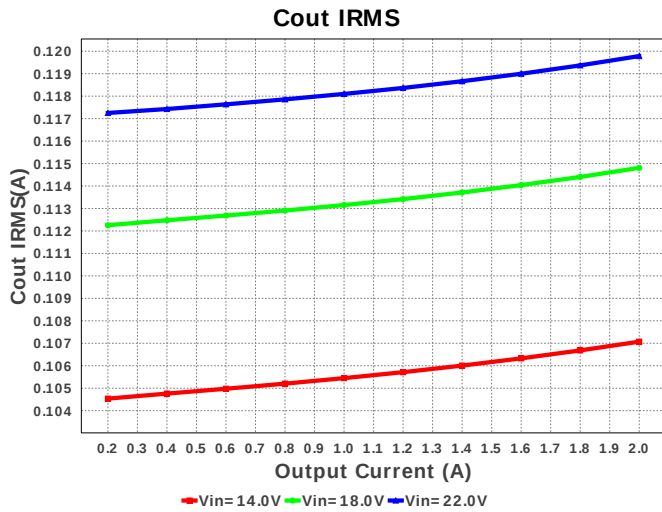
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	Kemet	C0805C103K5RACTU Series= X7R	Cap= 10.0 nF ESR= 1.739 Ohm VDC= 50.0 V IRMS= 411.0 mA	1	\$0.01	 0805 7 mm ²
2.	Cin	MuRata	GRM32ER7YA106KA12L Series= X7R	Cap= 10.0 uF ESR= 2.008 mOhm VDC= 35.0 V IRMS= 4.6772 A	1	\$0.22	 1210_280 15 mm ²
3.	Cinx	Taiyo Yuden	GMK212B7105KG-T Series= X7R	Cap= 1.0 uF VDC= 35.0 V IRMS= 0.0 A	1	\$0.05	 0805 7 mm ²
4.	Cout	MuRata	GRM31CC80J476KE18L Series= X6S	Cap= 47.0 uF ESR= 3.735 mOhm VDC= 6.3 V IRMS= 4.0522 A	1	\$0.10	 1206_190 11 mm ²
5.	D1	Diodes Inc.	B340A-13-F	VF@Io= 500.0 mV VRRM= 40.0 V	1	\$0.11	 SMA 37 mm ²
6.	L1	TDK	CLF10040T-150M	L= 15.0 µH DCR= 48.0 mOhm	1	\$0.46	 CLF10040 148 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
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 ²
8.	Rfb2	Panasonic	ERJ-6ENF1581V Series= ERJ-6E	Res= 1.58 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
9.	U1	Texas Instruments	LM22676MRE-ADJ/NOPB	Switcher	1	\$2.07	 MRA08B 56 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	702.076 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	119.783 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.207 A	Current	Peak switch current in IC
4.	Iin Avg	368.37 mA	Current	Average input current
5.	L Ipp	414.94 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	815.892 mA	Current	MOSFET RMS current
7.	BOM Count	9	General	Total Design BOM count
8.	FootPrint	293.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	500.0 kHz	General	Switching frequency
10.	IC Tolerance	19.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	113.116 mV	General	Voltage drop across the MosFET
12.	Pout	6.6 W	General	Total output power
13.	Total BOM	\$3.04	General	Total BOM Cost
14.	D1 Tj	98.483 degC	Op_Point	D1 junction temperature
15.	Vout Actual	3.315 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
17.	Cross Freq	51.095 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	16.642 %	Op_point	Duty cycle
19.	Efficiency	81.44 %	Op_point	Steady state efficiency
20.	IC Tj	66.425 degC	Op_point	IC junction temperature
21.	ICThetaJA	60.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.0 A	Op_point	Iout operating point
23.	Phase Marg	48.243 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	22.0 V	Op_point	Vin operating point
25.	Vout p-p	3.016 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	989.766 μ W	Power	Input capacitor power dissipation
27.	Cout Pd	53.59 μ W	Power	Output capacitor power dissipation
28.	Diode Pd	684.829 mW	Power	Diode power dissipation
29.	IC Pd	607.091 mW	Power	IC power dissipation
30.	L Pd	211.2 mW	Power	Inductor power dissipation
31.	Total Pd	1.504 W	Power	Total Power Dissipation

#	Name	Value	Category	Description
32.	Vout Tolerance	2.734 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	VinMax	22.0	Maximum input voltage
3.	VinMin	14.0	Minimum input voltage
4.	Vout	3.3	Output Voltage
5.	base_pn	LM22676	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. Part Description The LM22676 is a monolithic integrated circuit that provides all of the active functions for a step-down (buck) switching regulator capable of driving up to 3.0A 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. LM22676 Product Folder : <http://www.ti.com/product/LM22676> : contains the data sheet and other resources.

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