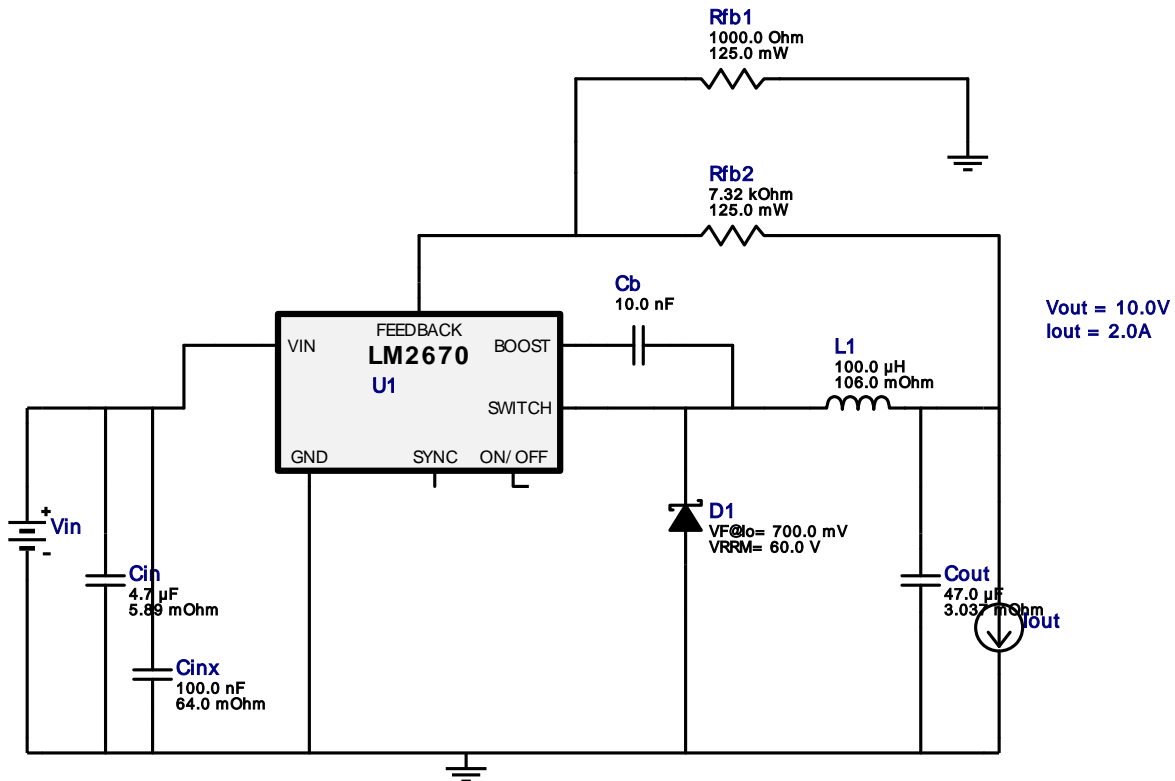


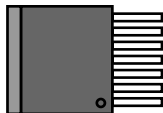
## WEBENCH® Design Report

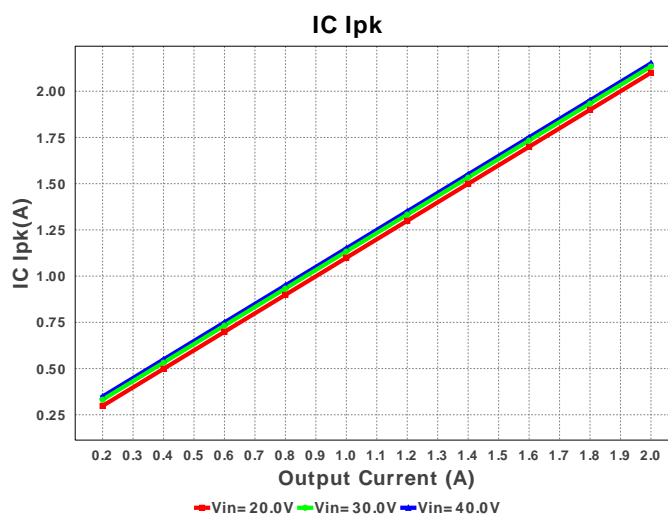
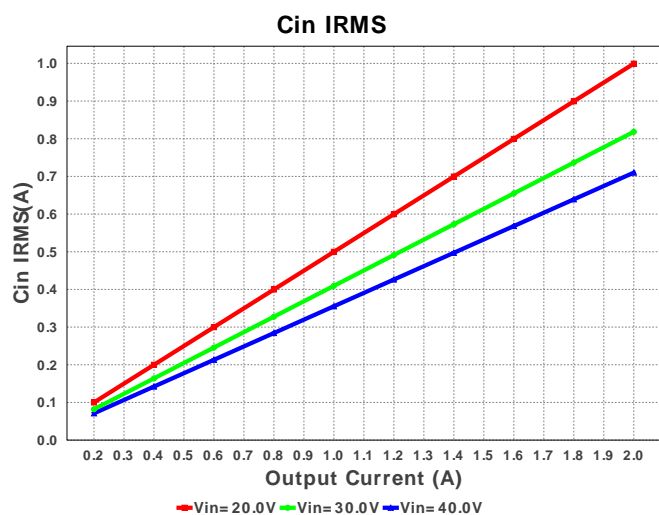
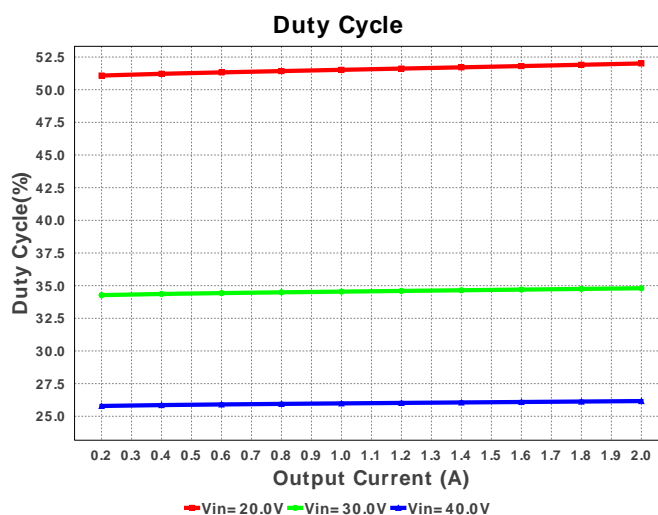
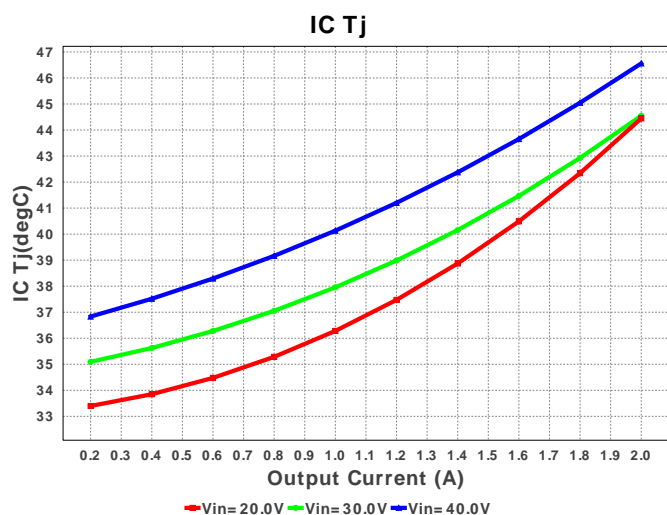
Design : 4352199/65 LM2670SX-ADJ/NOPB  
LM2670SX-ADJ/NOPB 20.0V-40.0V to 10.00V @ 2.0A

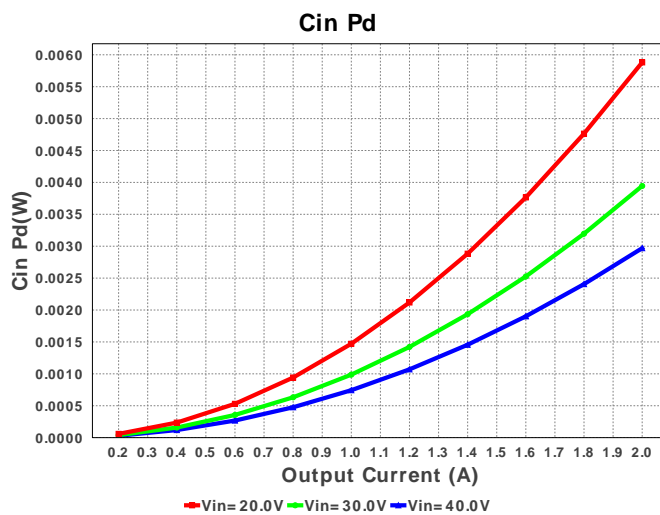
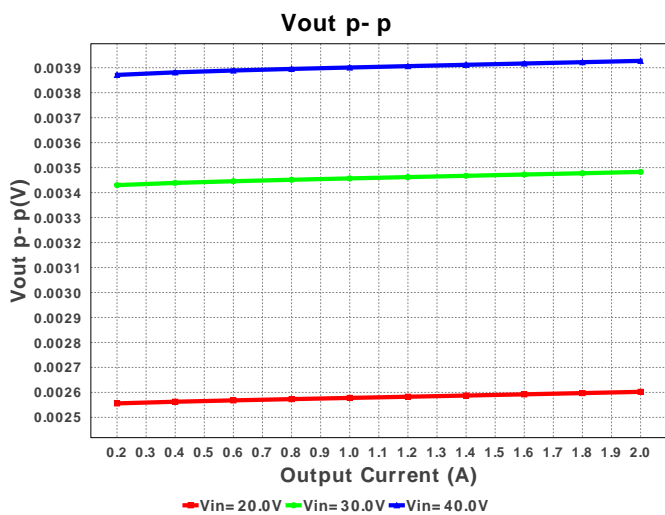
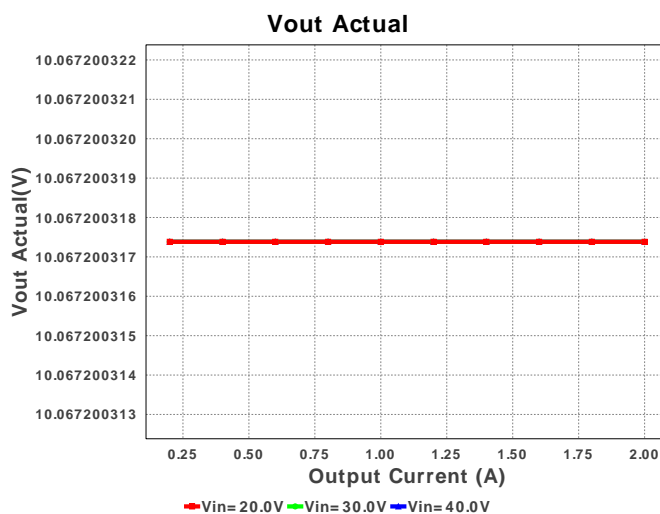
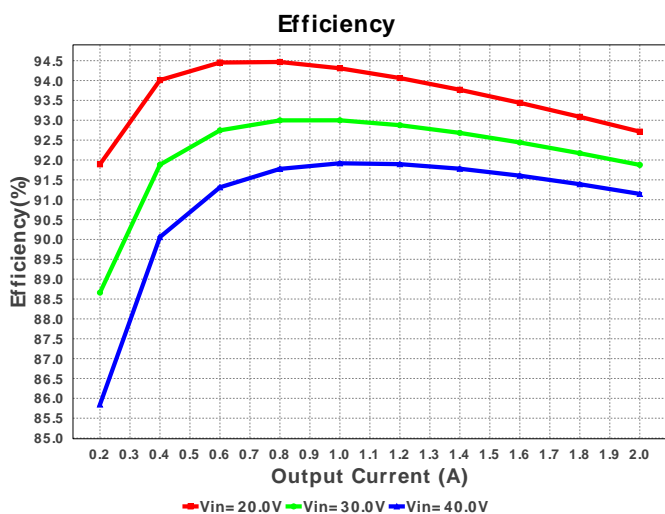
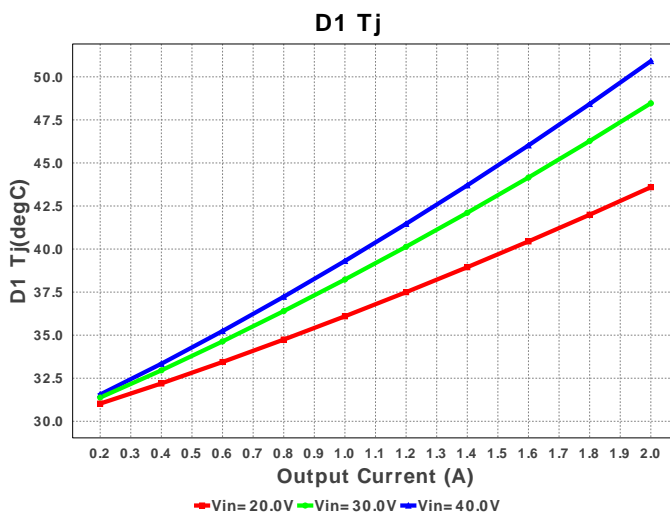
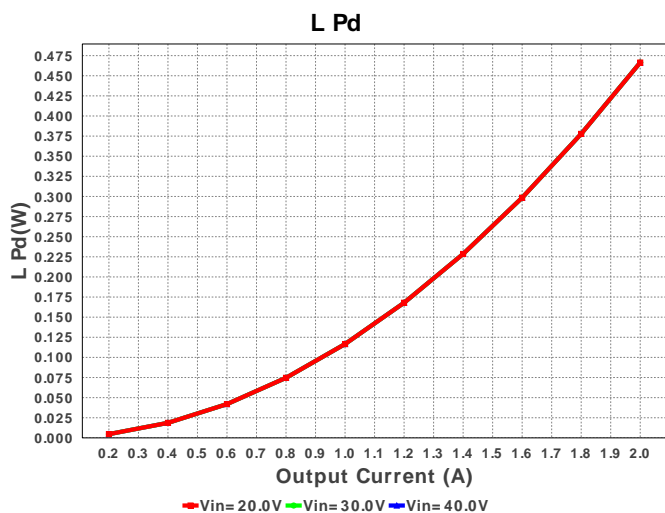


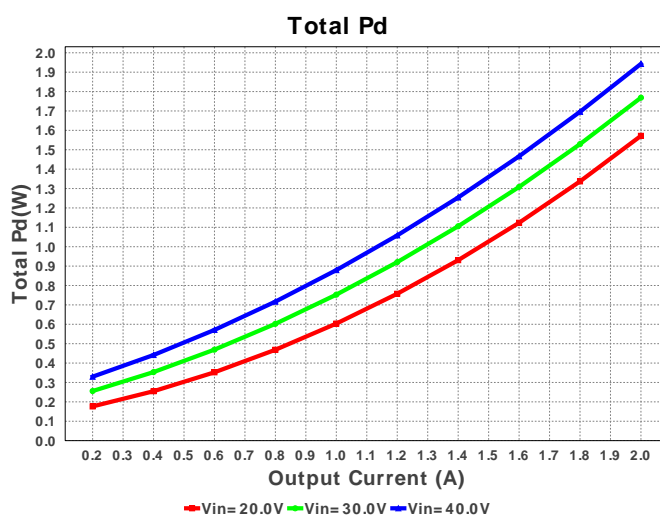
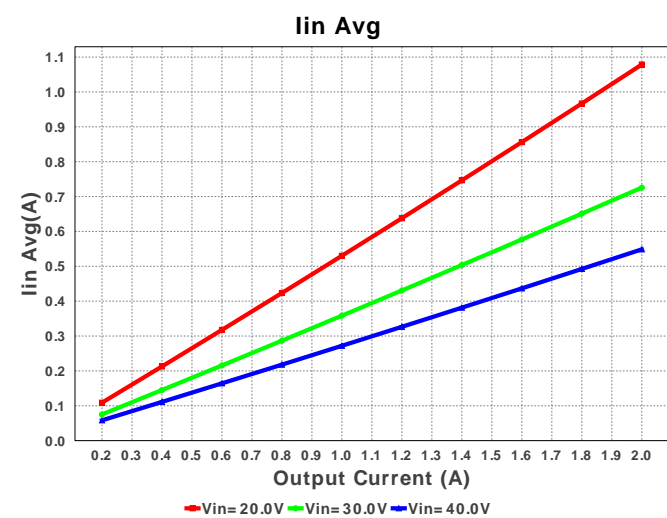
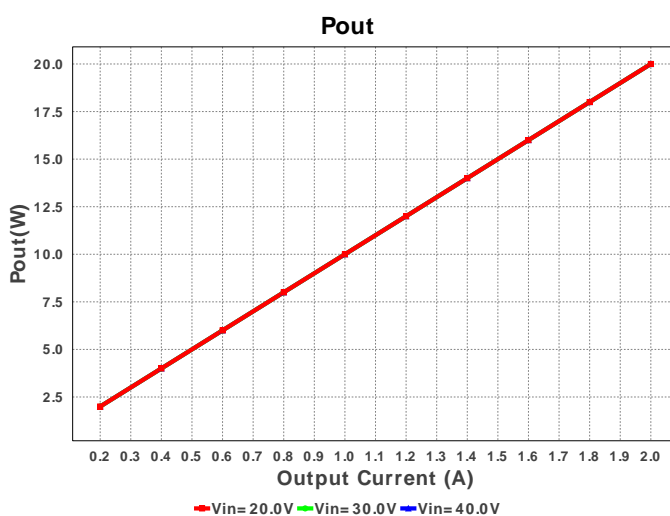
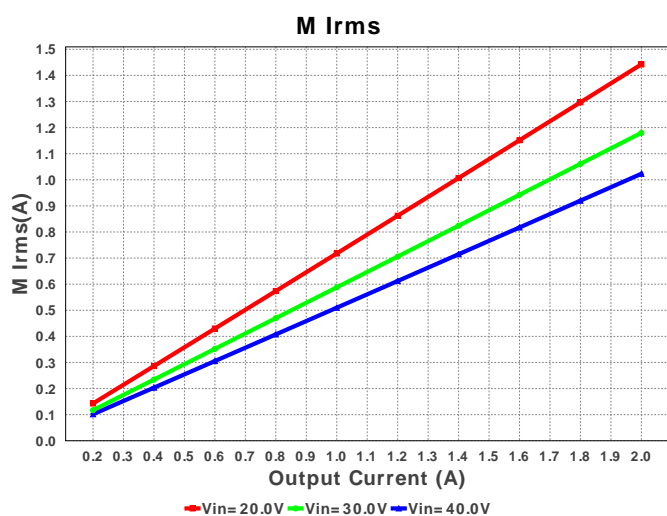
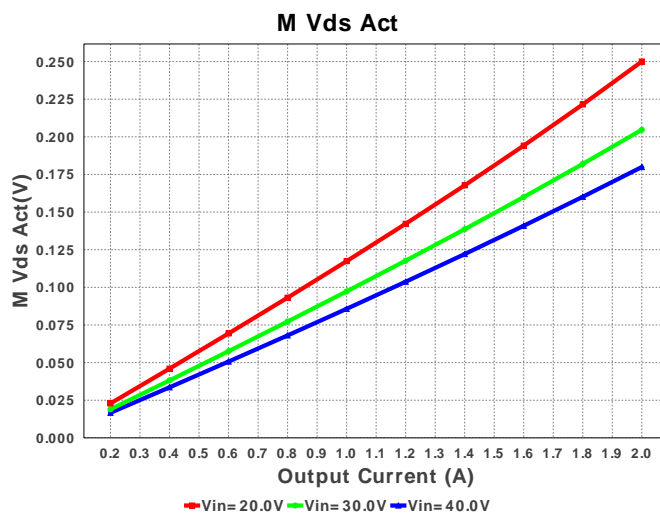
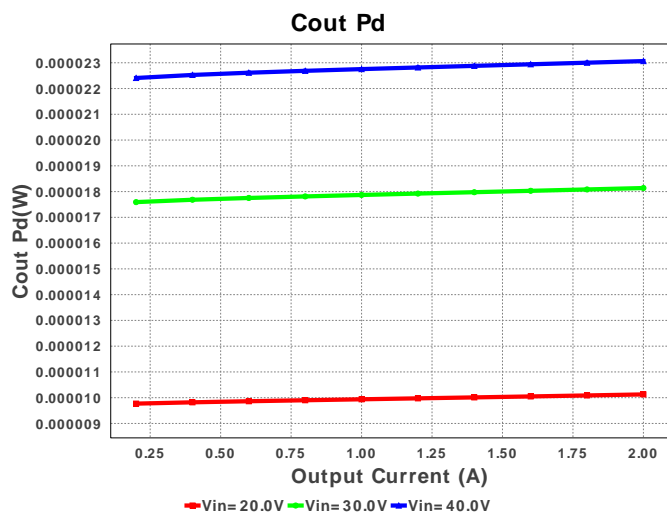
## Electrical BOM

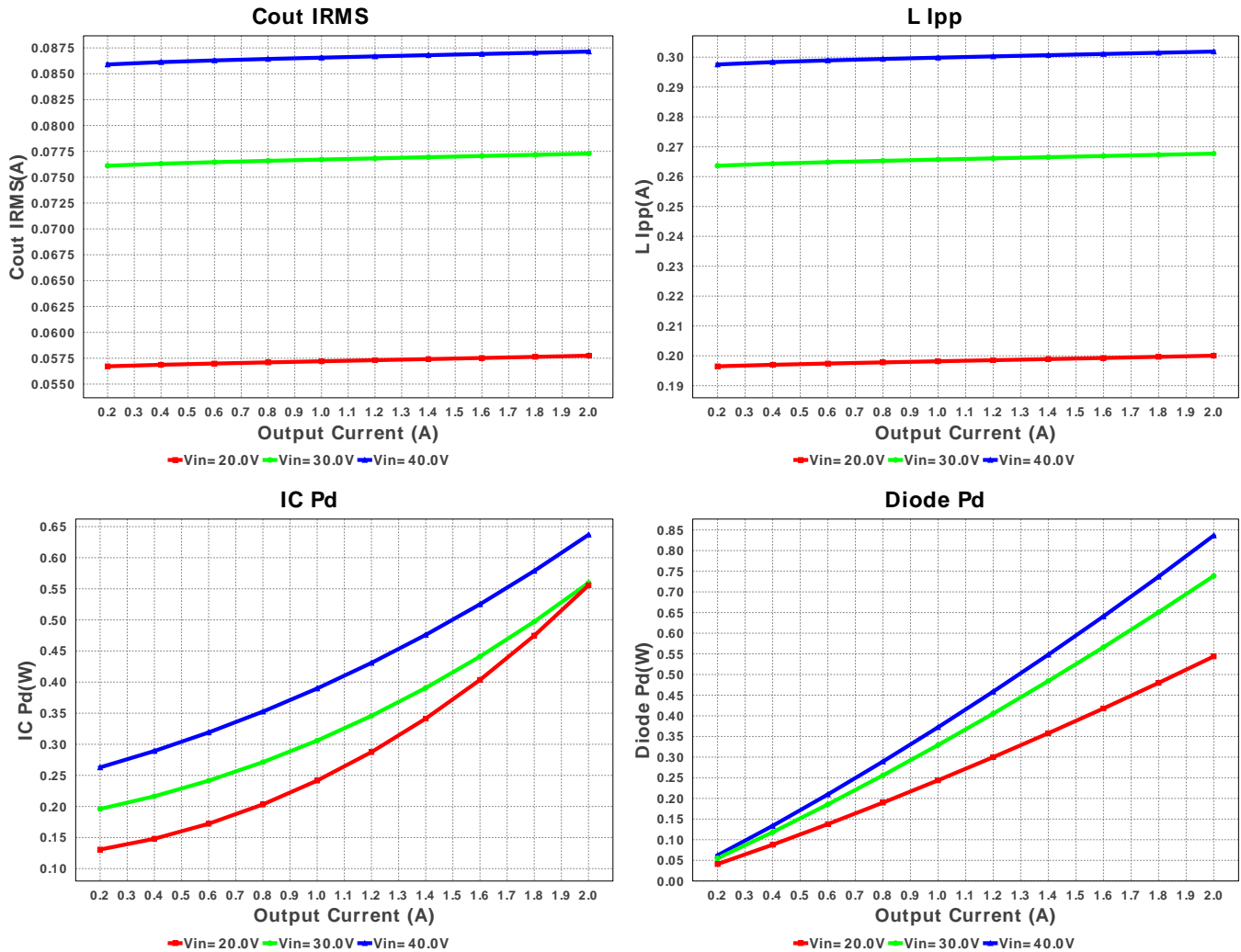
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cb	MuRata	GRM216R71H103KA01D Series= X7R	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm <sup>2</sup>
2.	Cin	TDK	C3225X7S2A475M200AB Series= X7S	Cap= 4.7 uF ESR= 5.89 mOhm VDC= 100.0 V IRMS= 6.7739 A	1	\$0.42	1210 15 mm <sup>2</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	MuRata	GRM32ER61C476ME15L Series= X5R	Cap= 47.0 uF ESR= 3.037 mOhm VDC= 16.0 V IRMS= 4.59346 A	1	\$0.24	1210_280 15 mm <sup>2</sup>
5.	D1	Diodes Inc.	B260A-13-F	VF@Io= 700.0 mV VRRM= 60.0 V	1	\$0.09	SMA 37 mm <sup>2</sup>
6.	L1	Coilcraft	MSS1210-104KEB	L= 100.0 uH DCR= 106.0 mOhm	1	\$0.81	MSS1210 204 mm <sup>2</sup>

#	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 <sup>2</sup>
8.	Rfb2	Panasonic	ERJ-6ENF7321V Series= ERJ-6E	Res= 7.32 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm <sup>2</sup>
9.	U1	Texas Instruments	LM2670SX-ADJ/NOPB	Switcher	1	\$1.85	 TS7B 199 mm <sup>2</sup>









## Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	710.006 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	87.147 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	2.151 A	Current	Peak switch current in IC
4.	Iin Avg	548.57 mA	Current	Average input current
5.	L Ipp	301.88 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	1.023 A	Current	MOSFET RMS current
7.	BOM Count	9	General	Total Design BOM count
8.	FootPrint	497.0 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	179.915 mV	General	Voltage drop across the MosFET
12.	Pout	20.0 W	General	Total output power
13.	Total BOM	\$3.45	General	Total BOM Cost
14.	D1 Tj	50.914 degC	Op_Point	D1 junction temperature
15.	Vout Actual	10.067 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	10.0 V	Op_Point	Operational Output Voltage
17.	Cross Freq	13.243 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	26.163 %	Op_point	Duty cycle
19.	Efficiency	91.146 %	Op_point	Steady state efficiency
20.	IC Tj	46.558 degC	Op_point	IC junction temperature
21.	ICThetaJA	26.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	2.0 A	Op_point	Iout operating point
23.	Phase Marg	42.843 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	40.0 V	Op_point	Vin operating point
25.	Vout p-p	3.927 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	2.969 mW	Power	Input capacitor power dissipation
27.	Cout Pd	23.065 μW	Power	Output capacitor power dissipation
28.	Diode Pd	836.543 mW	Power	Diode power dissipation
29.	IC Pd	636.838 mW	Power	IC power dissipation
30.	L Pd	466.4 mW	Power	Inductor power dissipation
31.	Total Pd	1.943 W	Power	Total Power Dissipation

#	Name	Value	Category	Description
32.	Vout Tolerance	3.796 %		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	40.0	Maximum input voltage
3.	VinMin	20.0	Minimum input voltage
4.	Vout	10.0	Output Voltage
5.	base_pn	LM2670	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

## Design Assistance

1. LM2670 Product Folder : <http://www.ti.com/product/LM2670> : contains the data sheet and other resources.

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