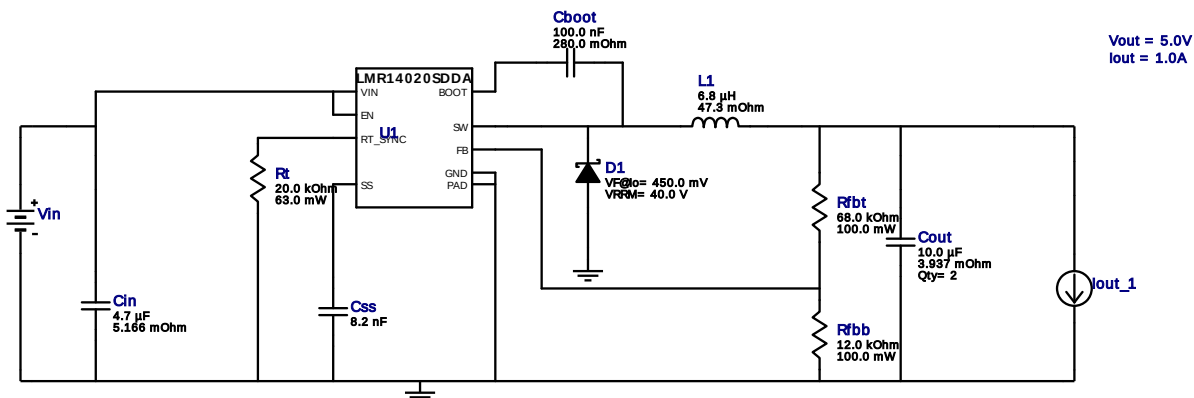


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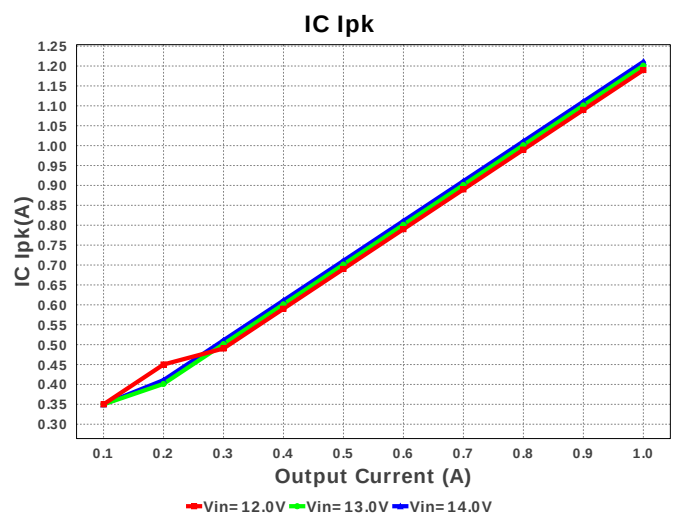
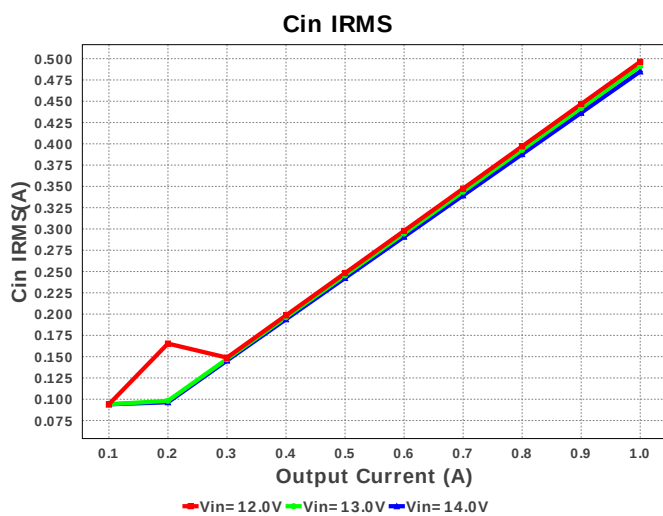
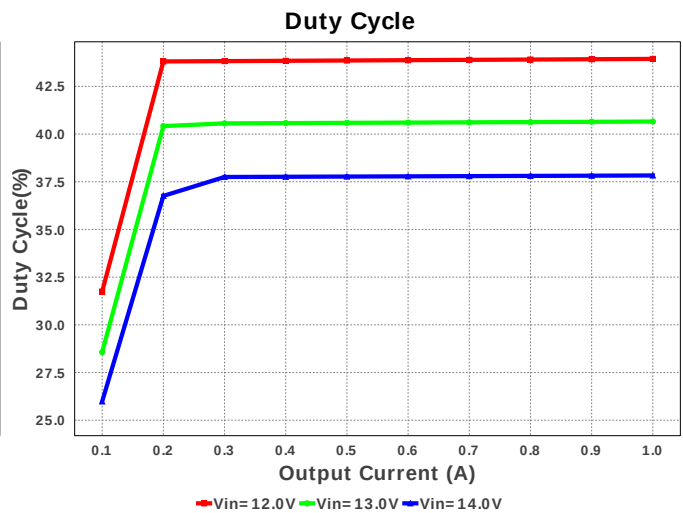
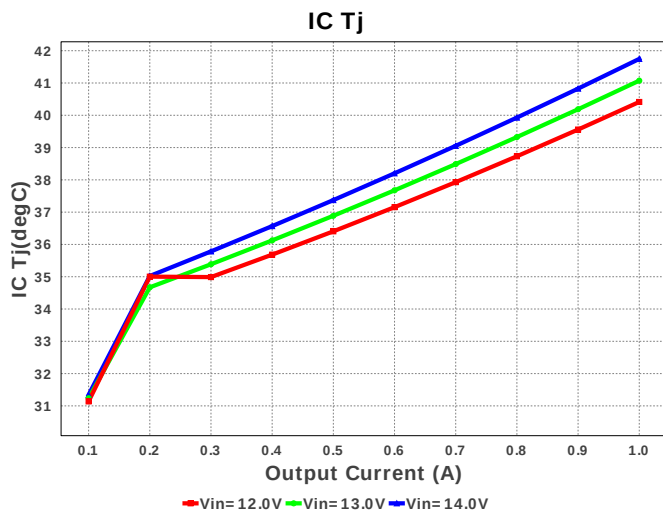
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LMR14020SDDAR 12.0V-14.0V to 5.00V @ 1.0001875000000002A

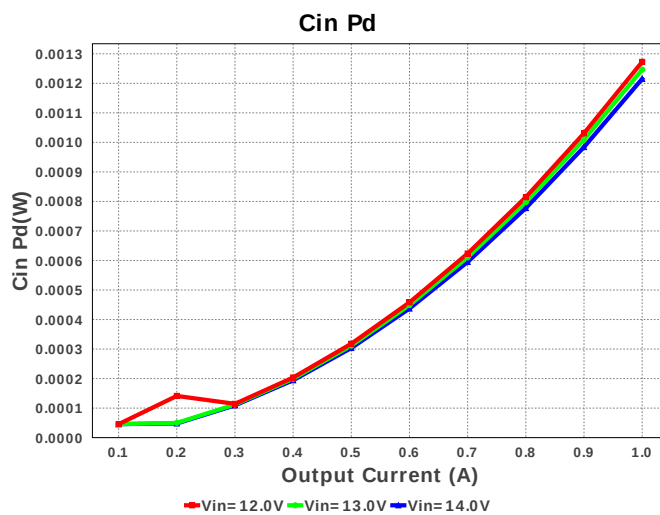
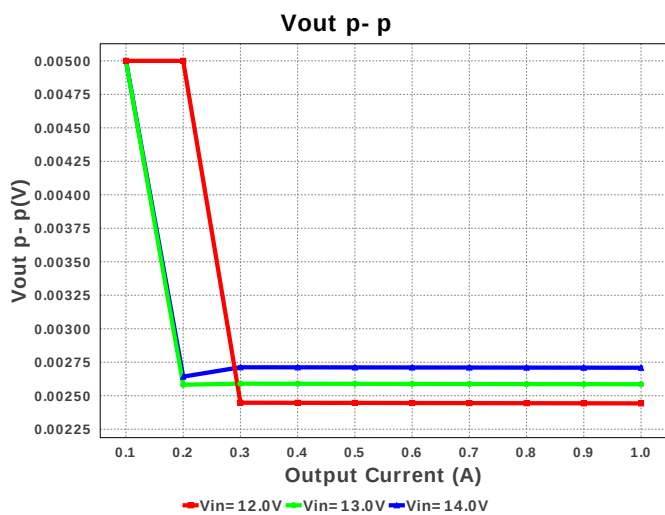
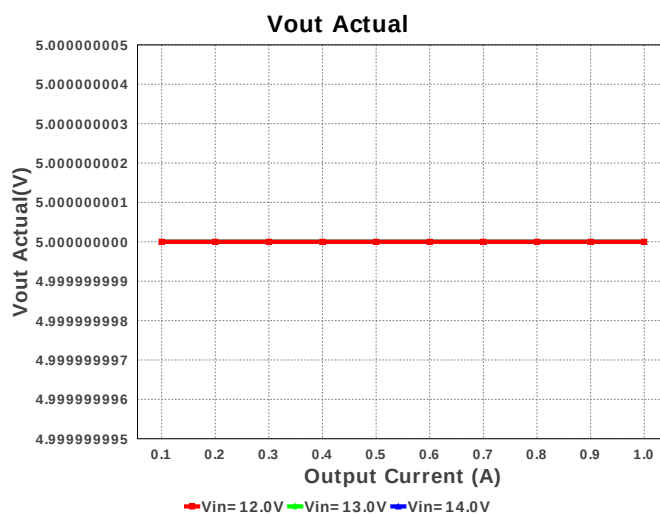
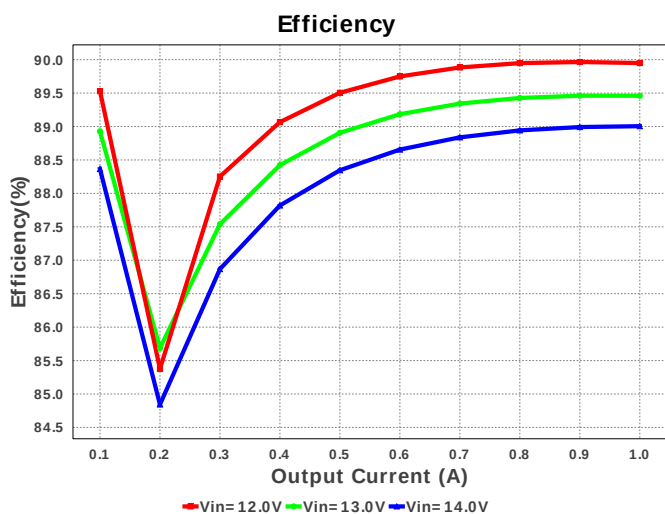
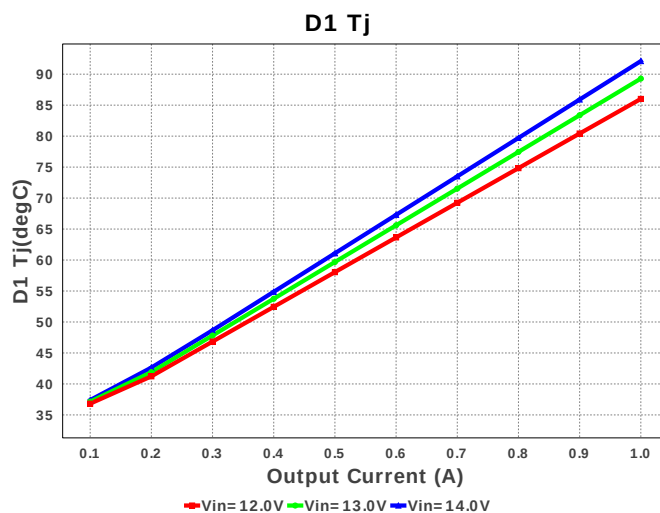
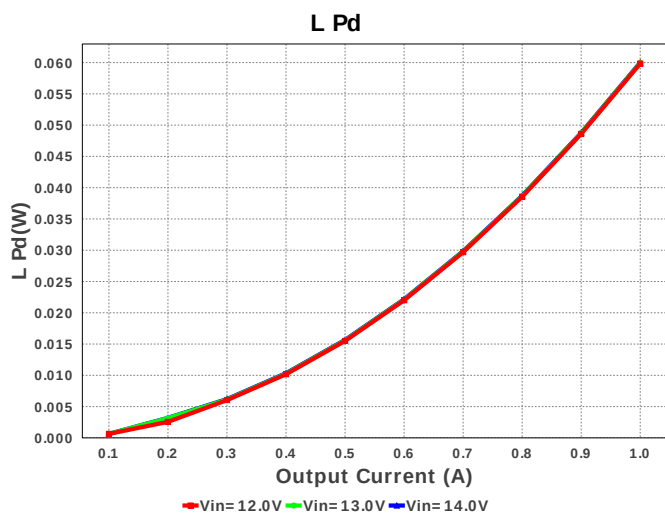


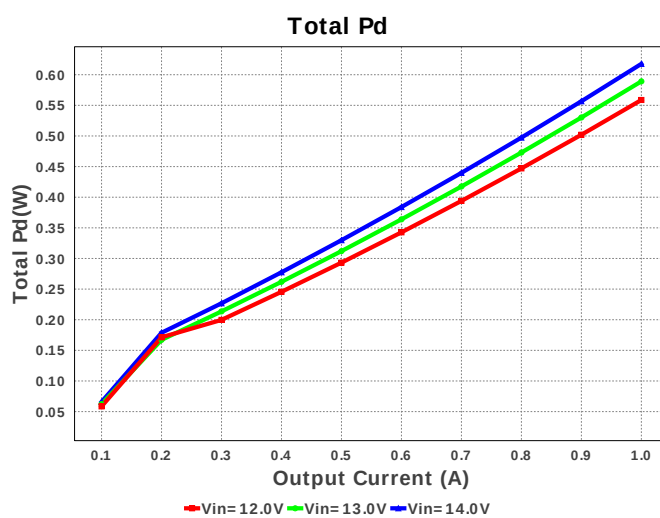
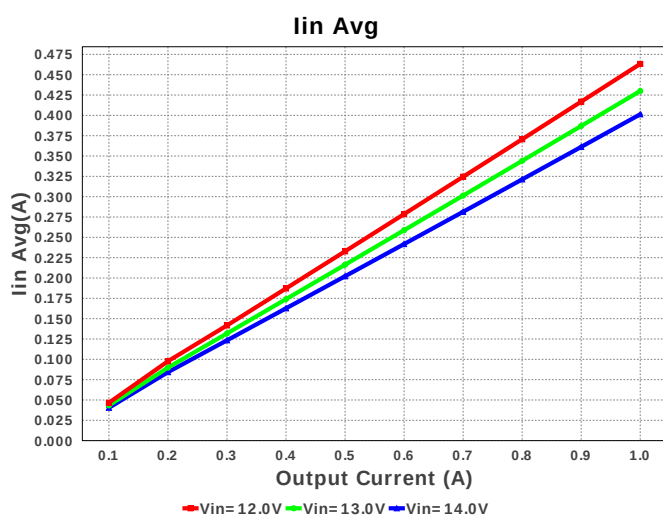
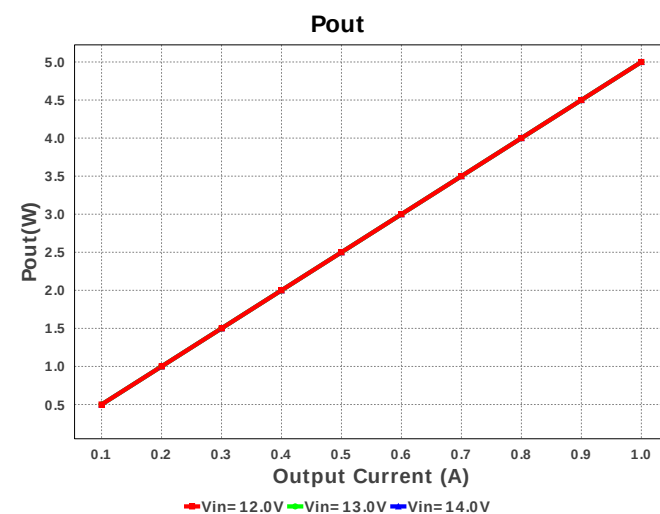
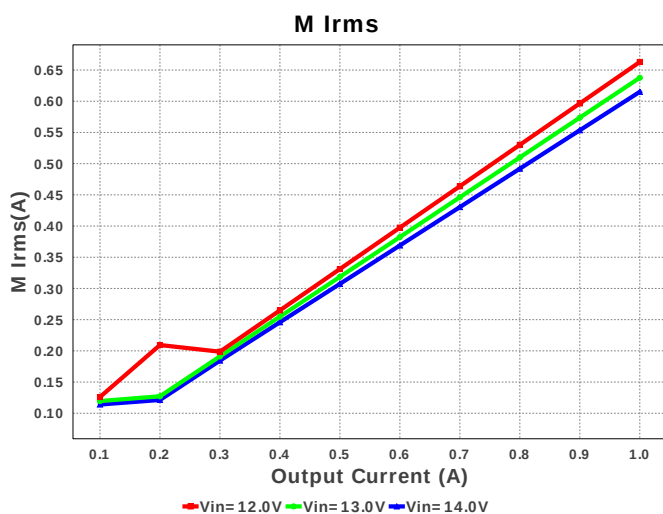
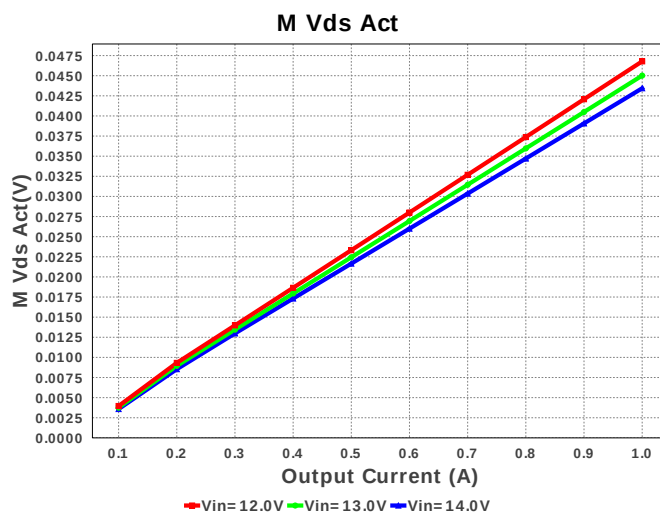
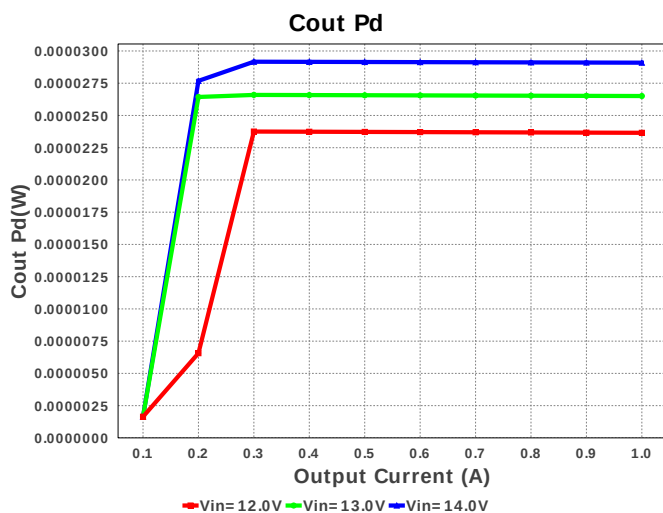
Electrical BOM

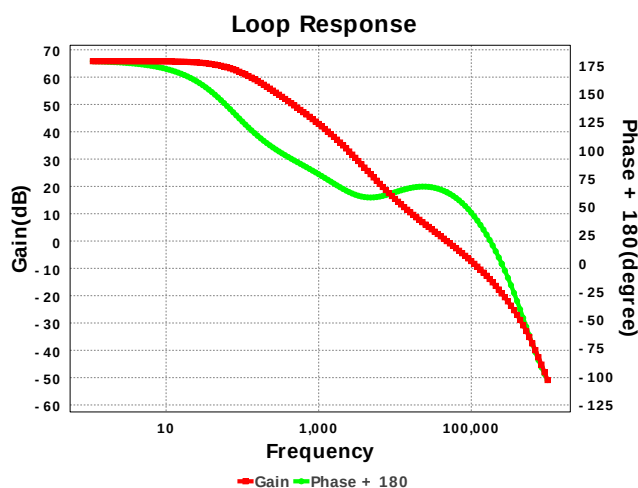
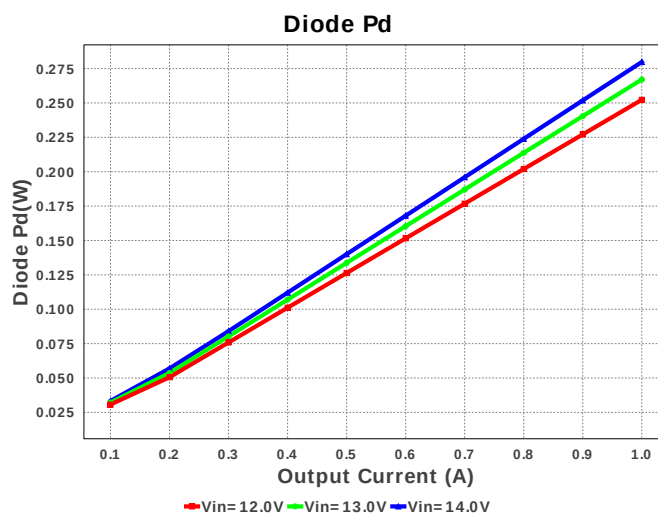
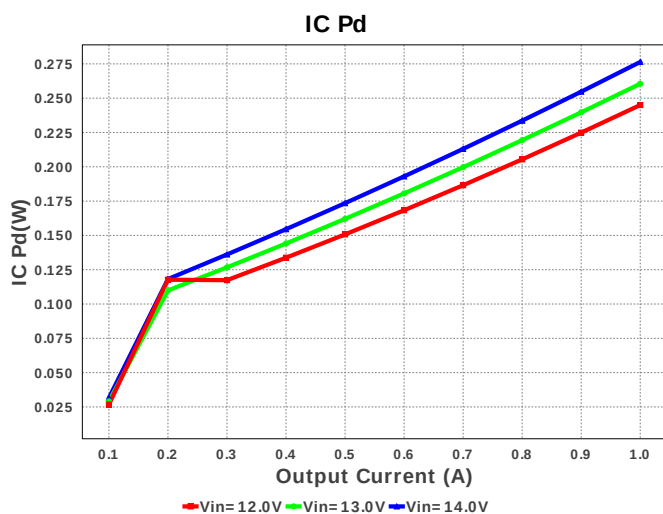
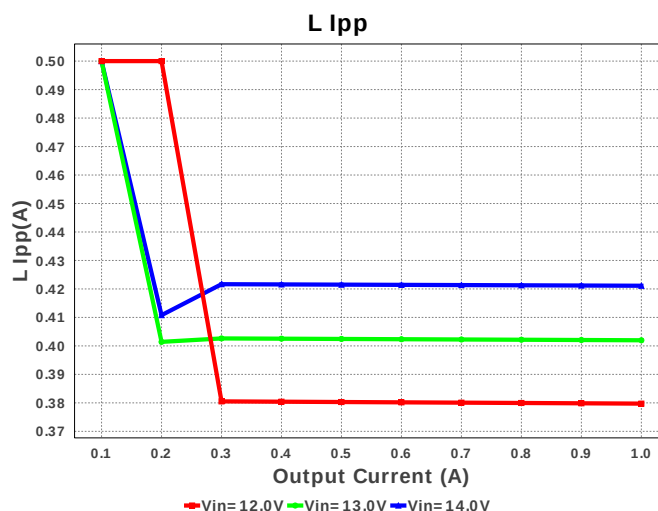
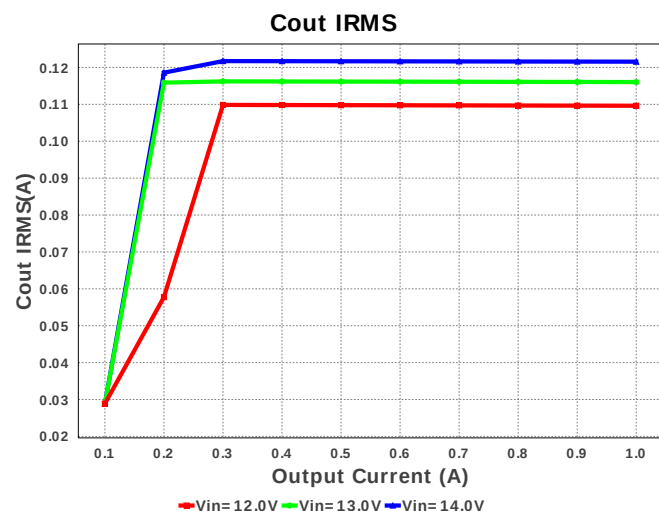
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	AVX	08053C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 280.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
2.	Cin	MuRata	GRM21BC81E475KA12L Series= X6S	Cap= 4.7 uF ESR= 5.166 mOhm VDC= 25.0 V IRMS= 2.03531 A	1	\$0.02	0805 7 mm ²
3.	Cout	MuRata	GRM219R61A106KE44D Series= X5R	Cap= 10.0 uF ESR= 3.937 mOhm VDC= 10.0 V IRMS= 2.7713 A	2	\$0.03	0805 7 mm ²
4.	Css	MuRata	GRM155R71C822KA01D Series= X7R	Cap= 8.2 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
5.	D1	Diodes Inc.	1N5819HW-7-F	VF@Io= 450.0 mV VRRM= 40.0 V	1	\$0.08	SOD-123 13 mm ²
6.	L1	Bourns	SRN6045-6R8Y	L= 6.8 uH DCR= 47.3 mOhm	1	\$0.16	SRN6045 64 mm ²
7.	Rfbb	Yageo America	RC0603FR-0712KL Series= ?	Res= 12.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	0603 5 mm ²
8.	Rfbbt	Yageo America	RC0603FR-0768KL Series= ?	Res= 68.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	0603 5 mm ²
9.	Rt	Vishay-Dale	CRCW040220K0FKED Series= CRCW..e3	Res= 20.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10. U1		Texas Instruments	LMR14020SDDAR	Switcher	1	\$1.46	 DDA0008E_N 57 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	484.993 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	121.568 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.211 A	Current	Peak switch current in IC
4.	Iin Avg	401.29 mA	Current	Average input current
5.	L Ipp	421.12 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	615.099 mA	Current	Q lavg
7.	BOM Count	11	General	Total Design BOM count
8.	FootPrint	177.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	1.183 MHz	General	Switching frequency
10.	IC Tolerance	18.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	43.435 mV	General	Voltage drop across the MosFET

#	Name	Value	Category	Description
12.	Pout	5.0 W	General	Total output power
13.	Total BOM	\$1.83	General	Total BOM Cost
14.	D1 Tj	92.112 degC	Op_Point	D1 junction temperature
15.	Vout Actual	5.0 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	47.844 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	37.83 %	Op_point	Duty cycle
19.	Efficiency	89.005 %	Op_point	Steady state efficiency
20.	IC Tj	41.608 degC	Op_point	IC junction temperature
21.	ICThetaJA	42.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
22.	IOUT_OP	1.0 A	Op_point	Iout operating point
23.	Phase Marg	63.207 deg	Op_point	Bode Plot Phase Margin
24.	VIN_OP	14.0 V	Op_point	Vin operating point
25.	Vout p-p	2.709 mV	Op_point	Peak-to-peak output ripple voltage
26.	Cin Pd	1.215 mW	Power	Input capacitor power dissipation
27.	Cout Pd	29.092 μW	Power	Output capacitor power dissipation
28.	Diode Pd	279.783 mW	Power	Diode power dissipation
29.	IC Pd	276.376 mW	Power	IC power dissipation
30.	L Pd	60.006 mW	Power	Inductor power dissipation
31.	Total Pd	617.706 mW	Power	Total Power Dissipation
32.	Vout Tolerance	4.158 %		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	14.0	Maximum input voltage
3.	VinMin	12.0	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	LMR14020S	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **LMR14020S** Product Folder : <http://www.ti.com/product/LMR14020> : contains the data sheet and other resources.

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