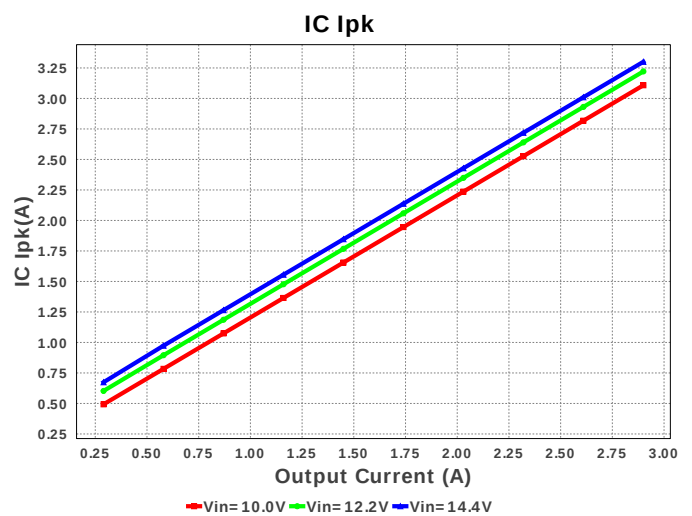
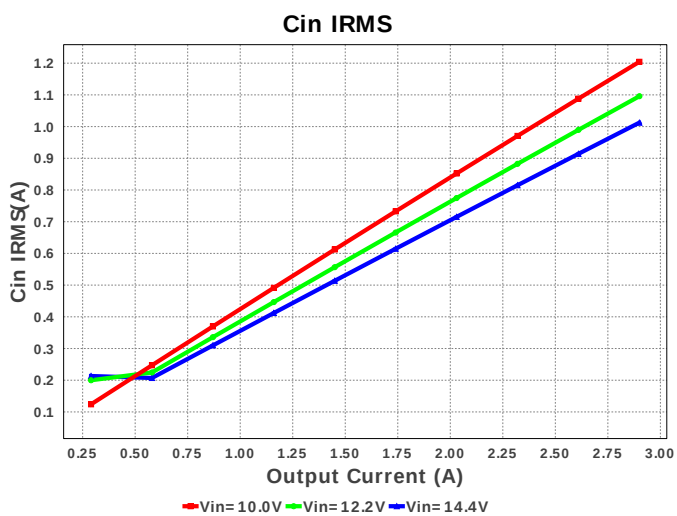
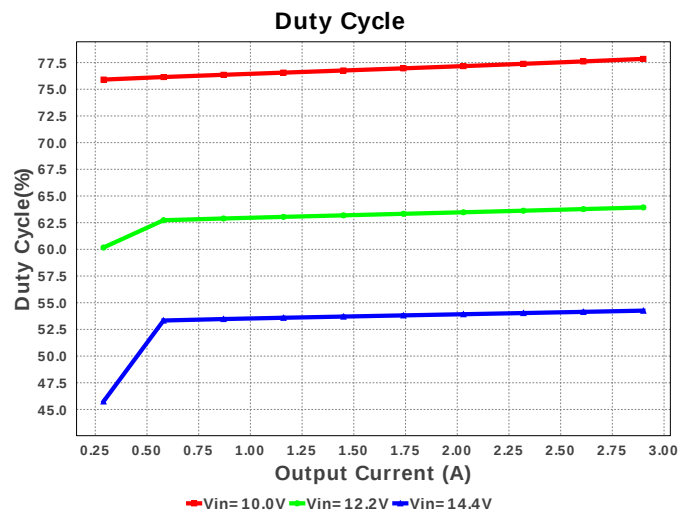
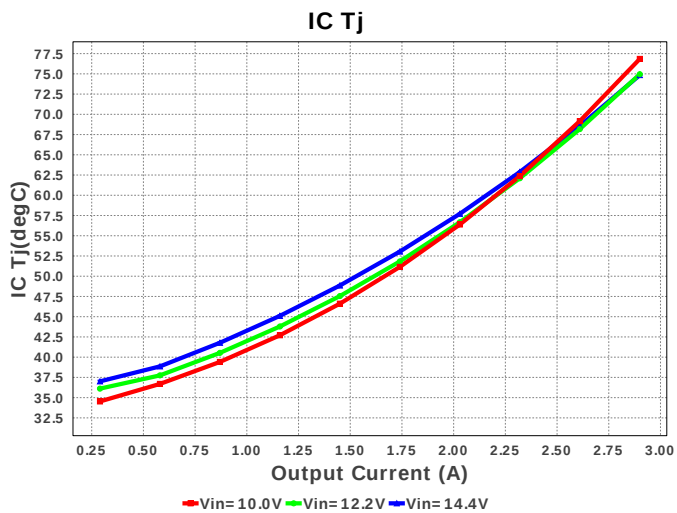
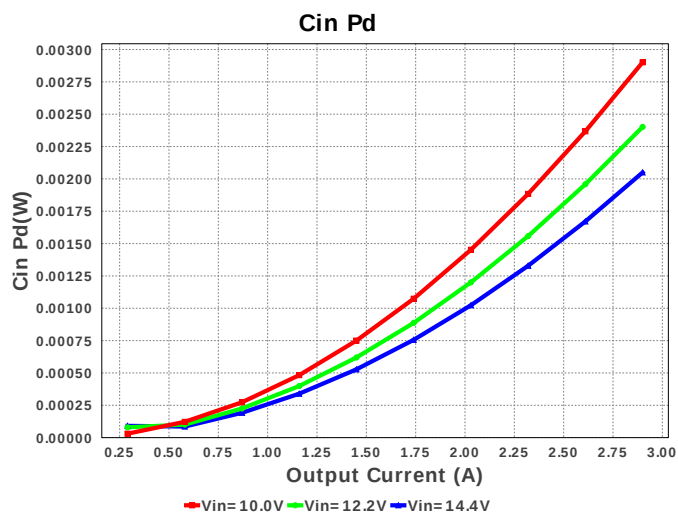
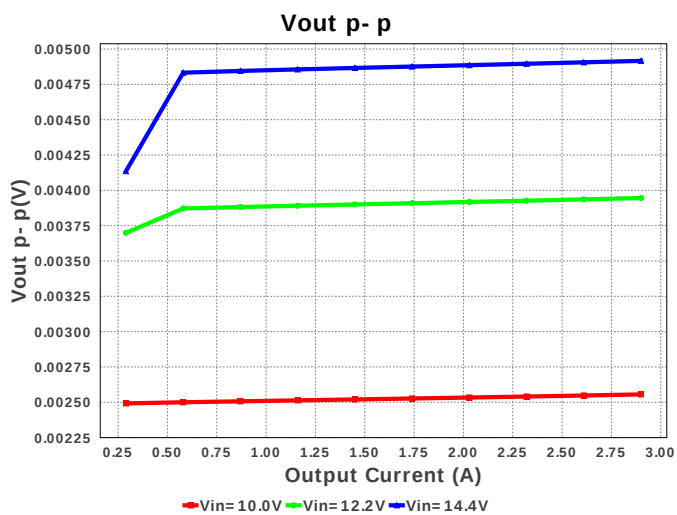
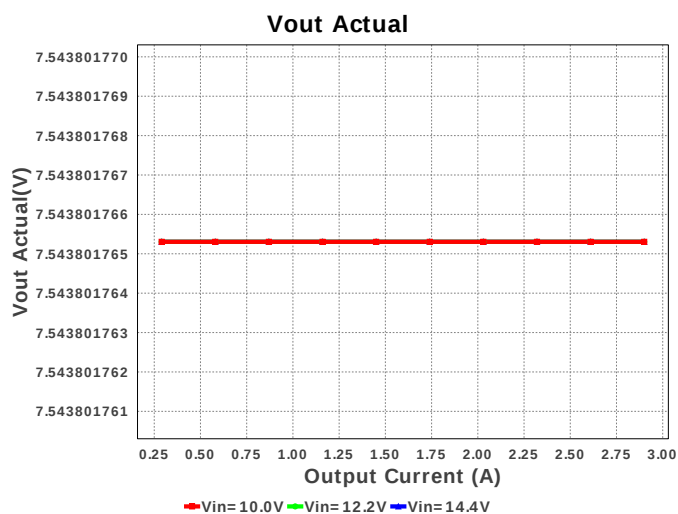
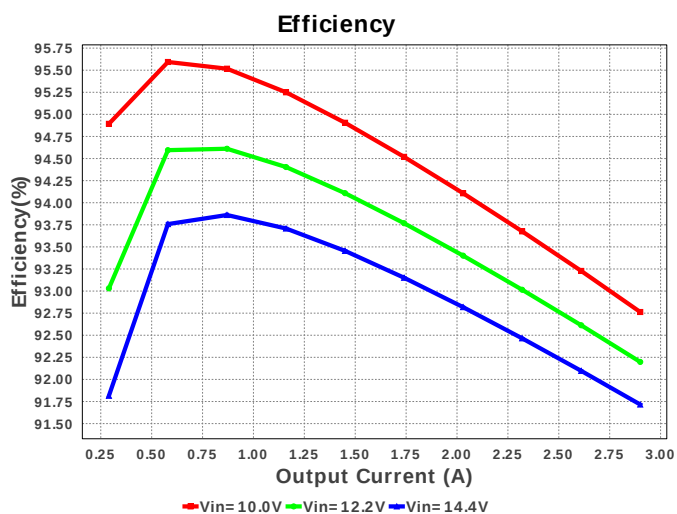
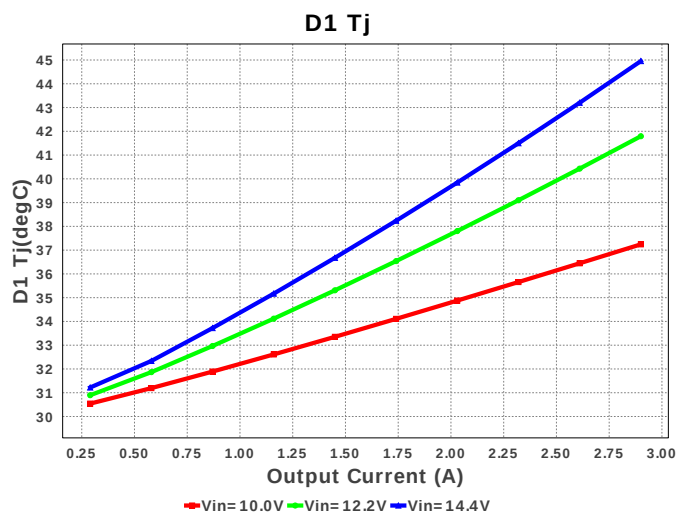
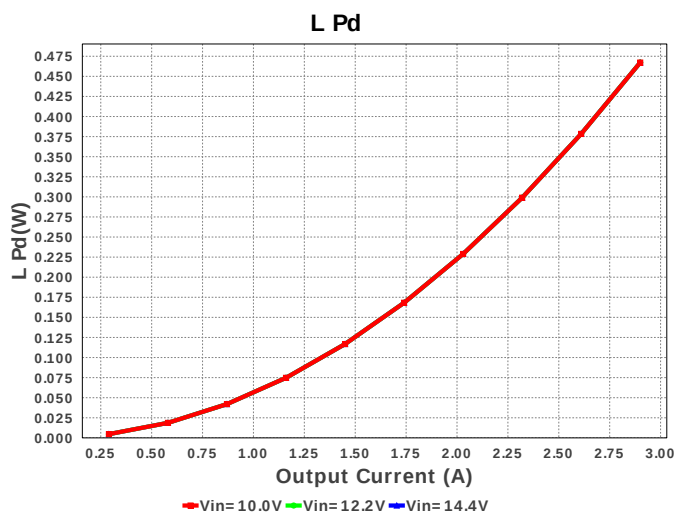


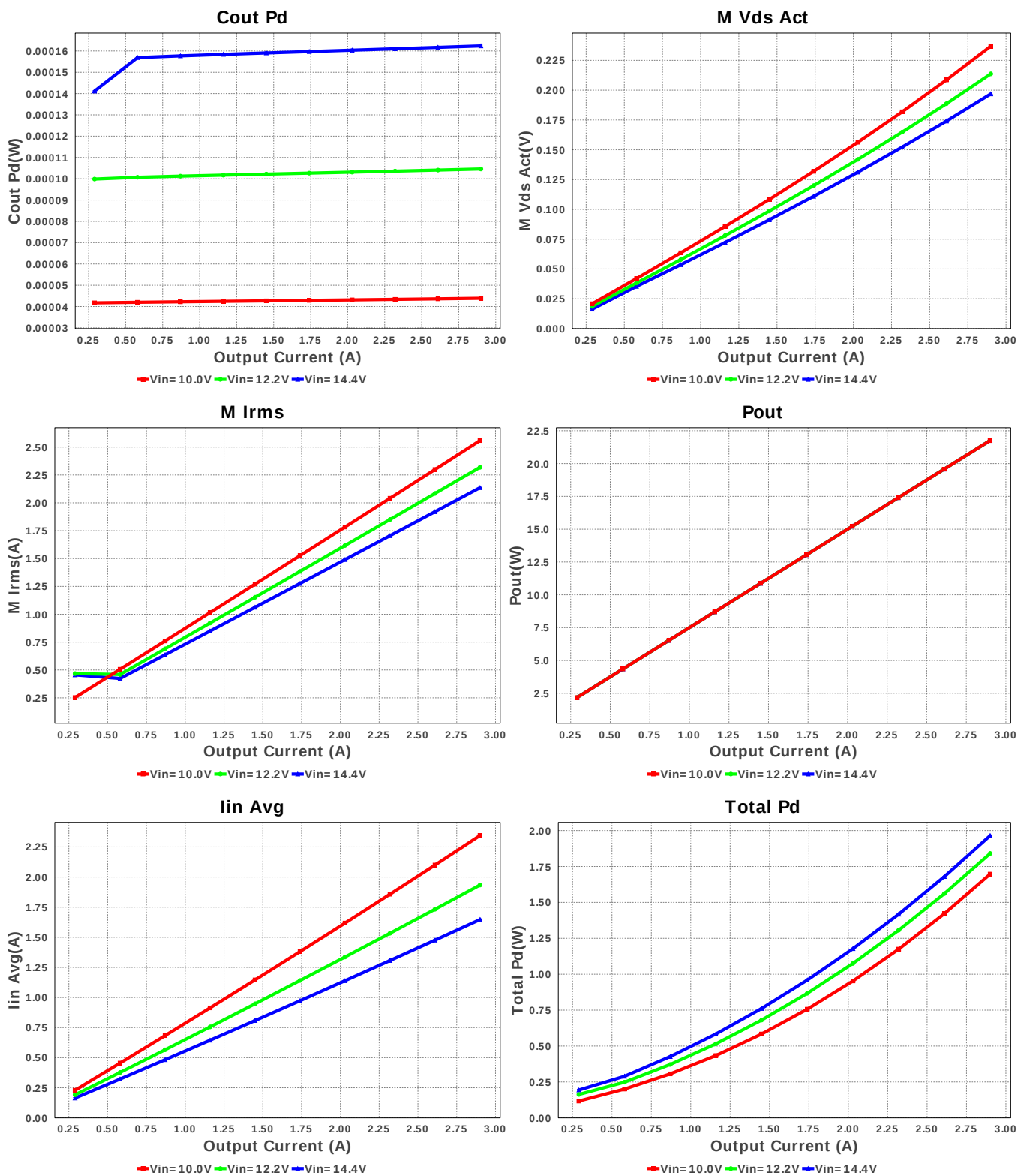


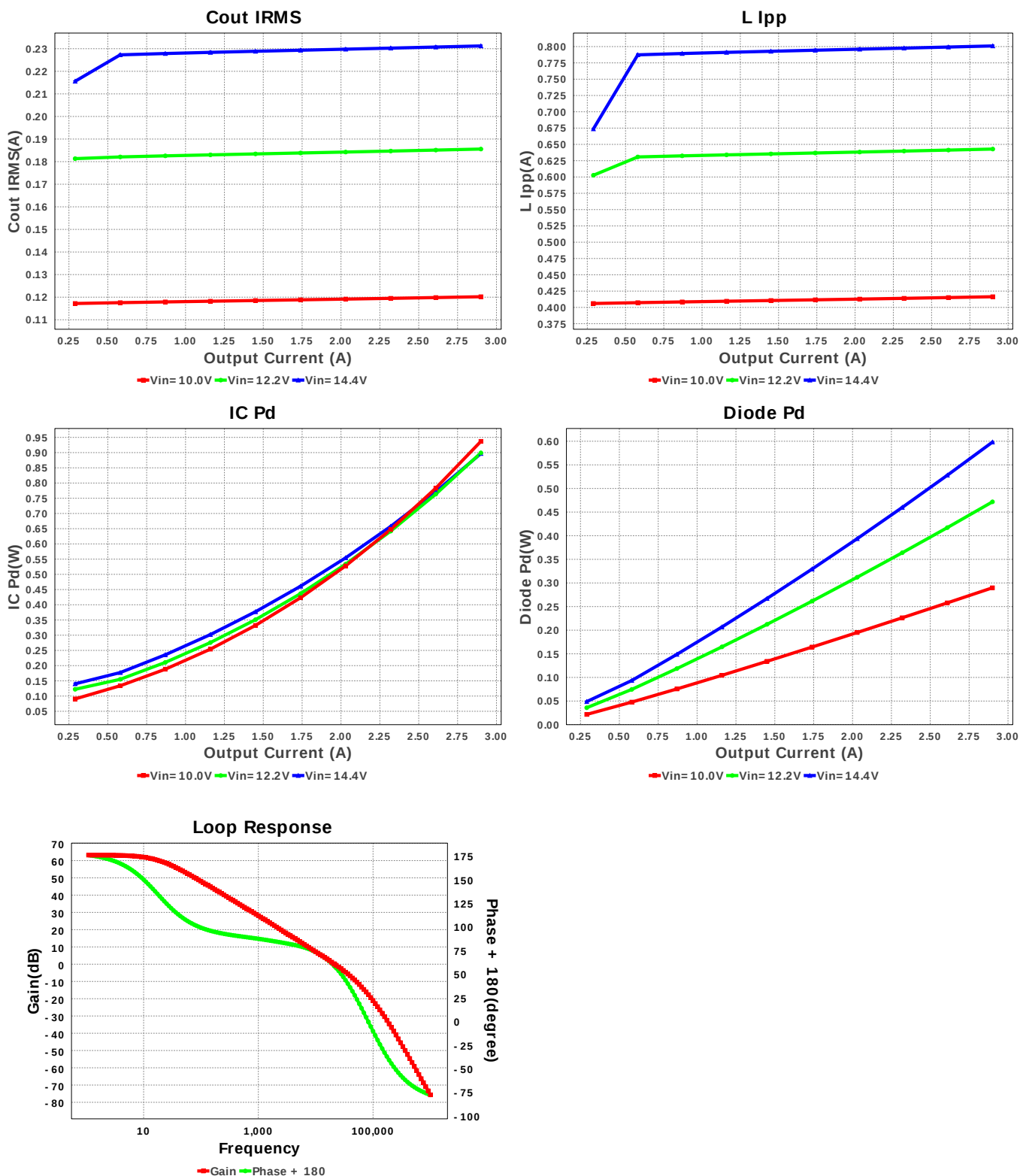
Device = TPS54331DDAR
Topology = Buck
Created = 7/11/16 2:19:52 AM
BOM Cost = \$1.70
BOM Count = 12
Total Pd = 1.96W

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
12.	U1	Texas Instruments	TPS54331DDAR	Switcher	1	\$0.65	 DDA0008H 57 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.012 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	231.222 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	3.3 A	Current	Peak switch current in IC
4.	Iin Avg	1.647 A	Current	Average input current
5.	L Ipp	800.98 mA	Current	Peak-to-peak inductor ripple current
6.	M1 Irms	2.136 A	Current	Q lavg
7.	BOM Count	12	General	Total Design BOM count
8.	FootPrint	234.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	570.0 kHz	General	Switching frequency
10.	M Vds Act	196.867 mV	General	Voltage drop across the MosFET
11.	Pout	21.75 W	General	Total output power

#	Name	Value	Category	Description
12.	Total BOM	\$1.7	General	Total BOM Cost
13.	D1 Tj	44.954 degC	Op_Point	D1 junction temperature
14.	Low Freq Gain	63.191 dB	Op_Point	Gain at 10Hz
15.	Vout Actual	7.544 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	7.5 V	Op_Point	Operational Output Voltage
17.	Cross Freq	21.53 kHz	Op_point	Bode plot crossover frequency
18.	Duty Cycle	54.257 %	Op_point	Duty cycle
19.	Efficiency	91.716 %	Op_point	Steady state efficiency
20.	Gain Marg	-17.676 dB	Op_point	Bode Plot Gain Margin
21.	IC Tj	74.847 degC	Op_point	IC junction temperature
22.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	2.9 A	Op_point	Iout operating point
24.	Phase Marg	58.584 deg	Op_point	Bode Plot Phase Margin
25.	VIN_OP	14.4 V	Op_point	Vin operating point
26.	Vout p-p	4.916 mV	Op_point	Peak-to-peak output ripple voltage
27.	Cin Pd	2.05 mW	Power	Input capacitor power dissipation
28.	Cout Pd	162.369 µW	Power	Output capacitor power dissipation
29.	Diode Pd	598.161 mW	Power	Diode power dissipation
30.	IC Pd	896.95 mW	Power	IC power dissipation
31.	L Pd	467.176 mW	Power	Inductor power dissipation
32.	Total Pd	1.964 W	Power	Total Power Dissipation
33.	Vout Tolerance	5.369 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.9	Maximum Output Current
2.	VinMax	14.4	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	7.5	Output Voltage
5.	base_pn	TPS54331	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS54331** Product Folder : <http://www.ti.com/product/TPS54331> : contains the data sheet and other resources.

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