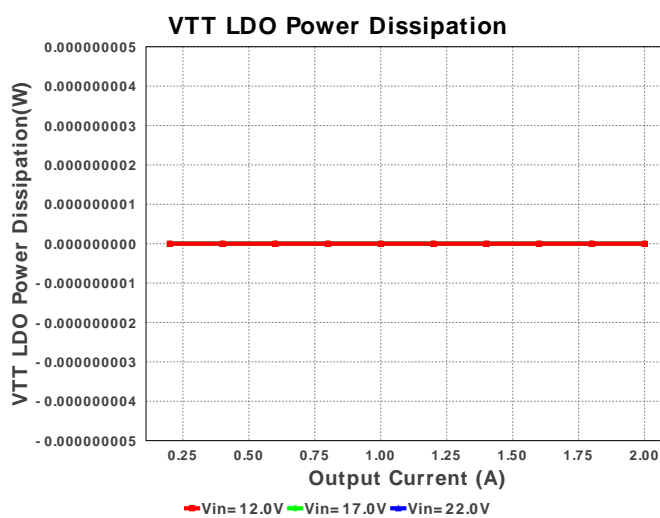
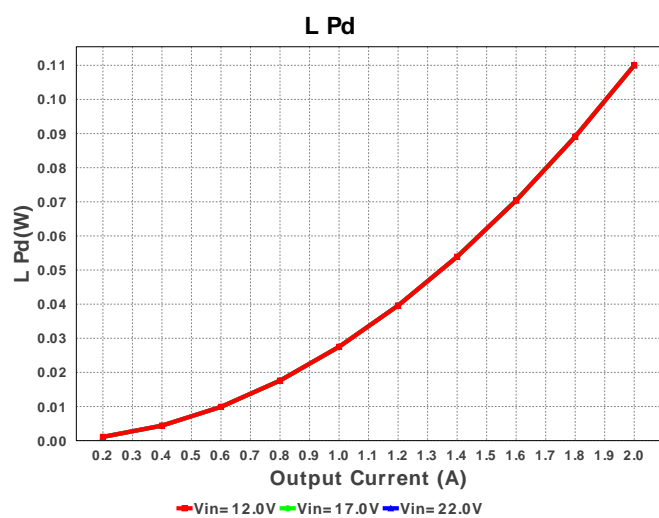
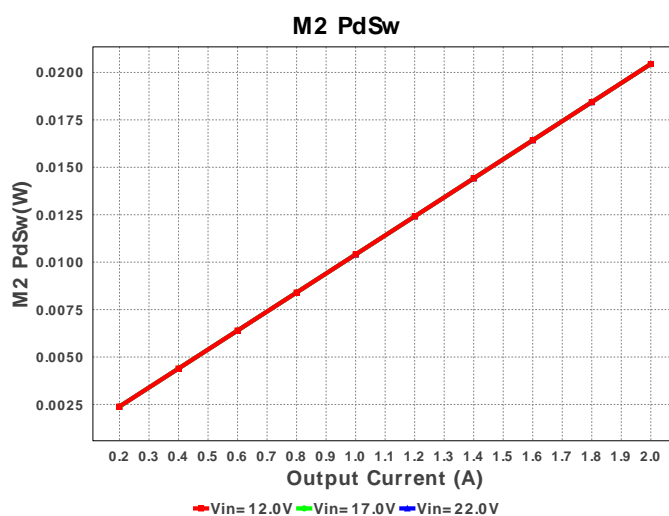
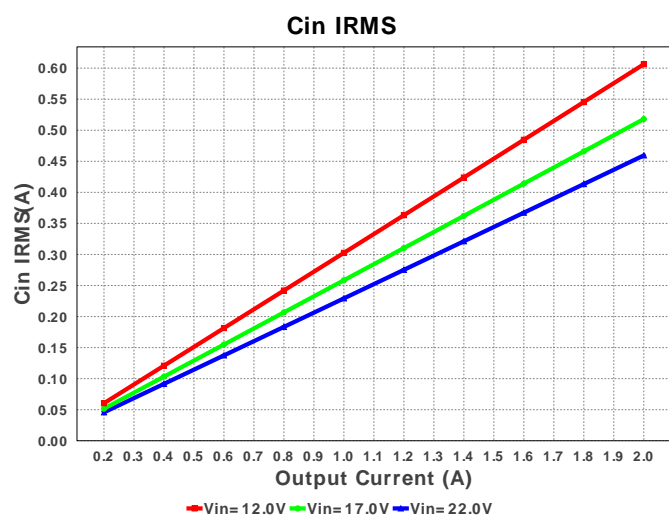
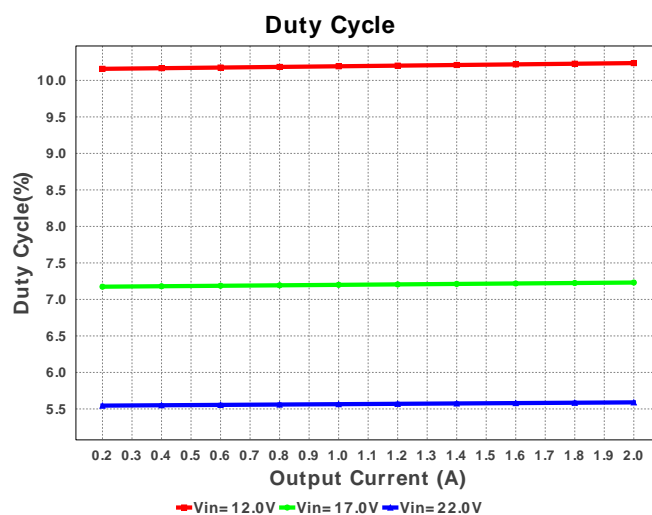
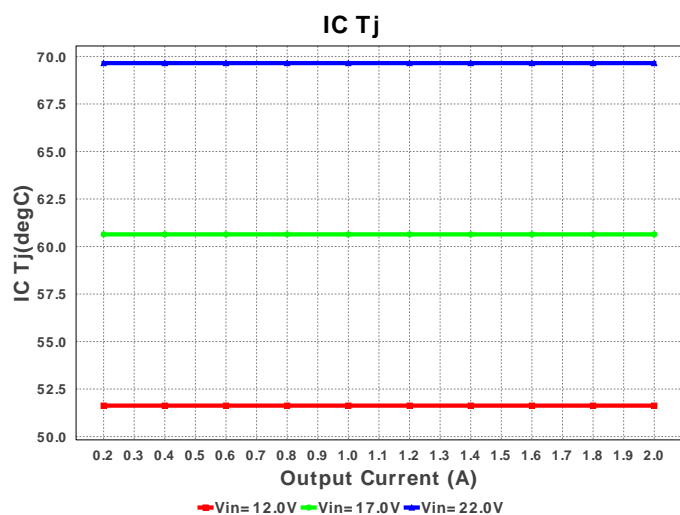
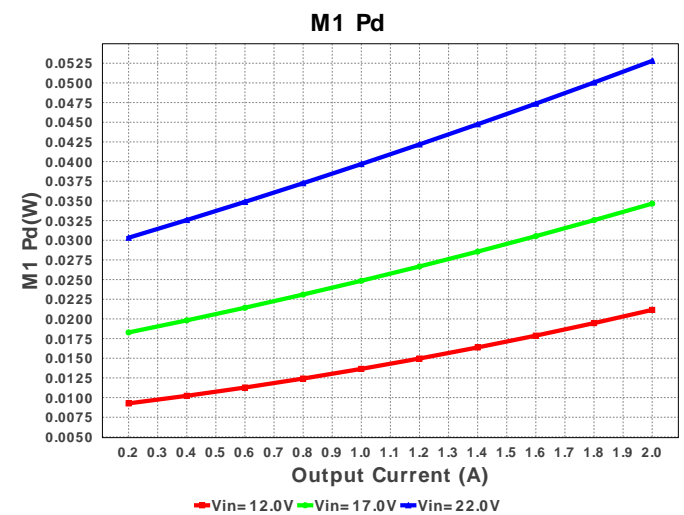
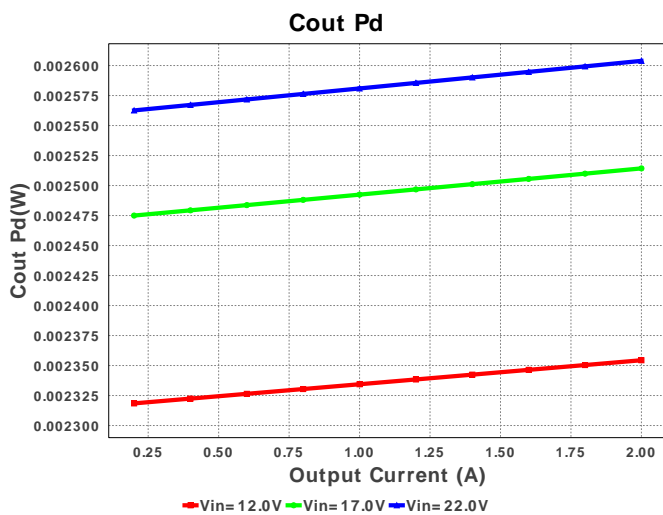
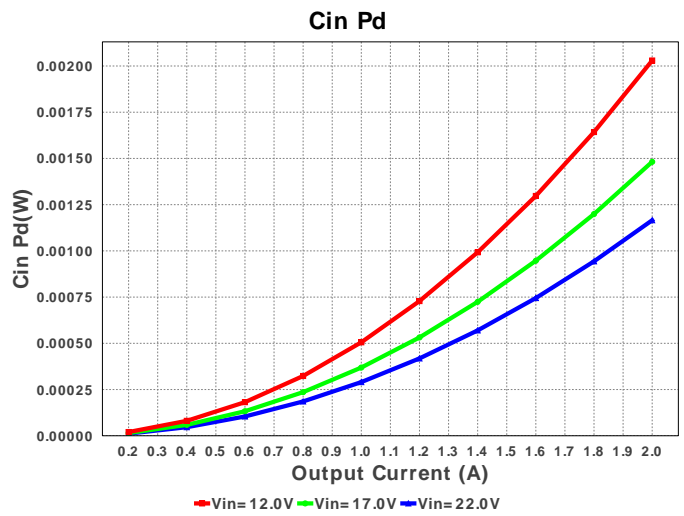
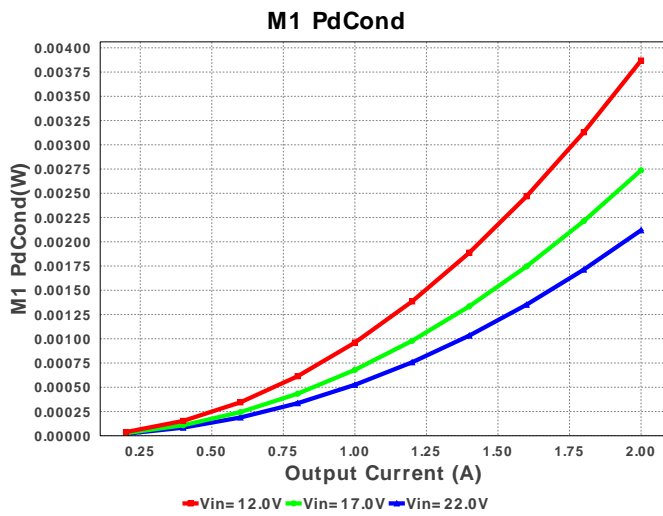
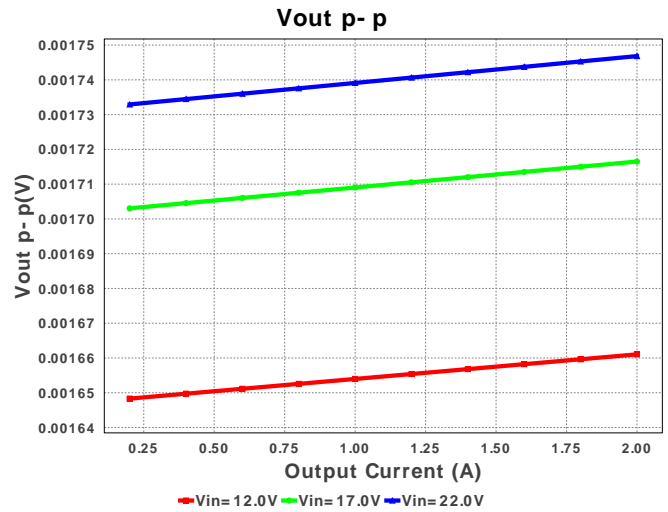
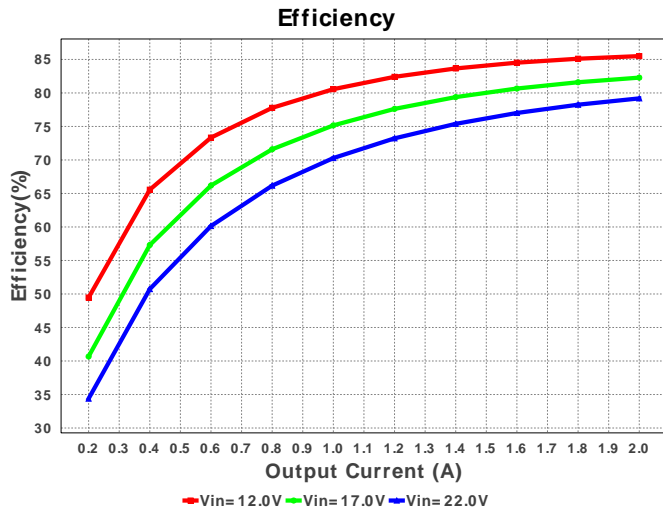


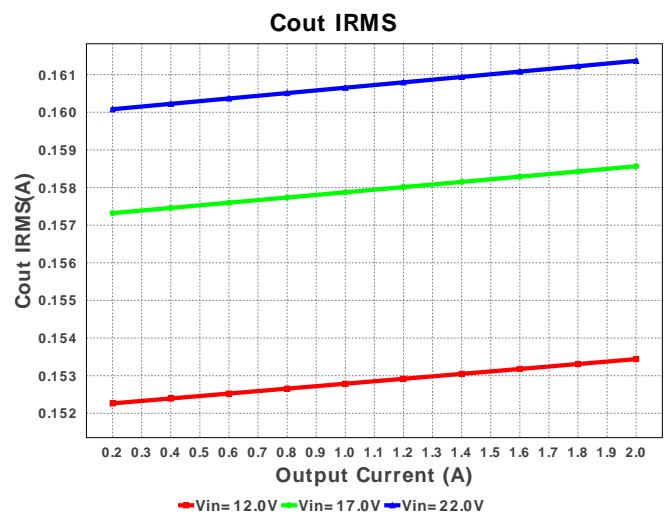
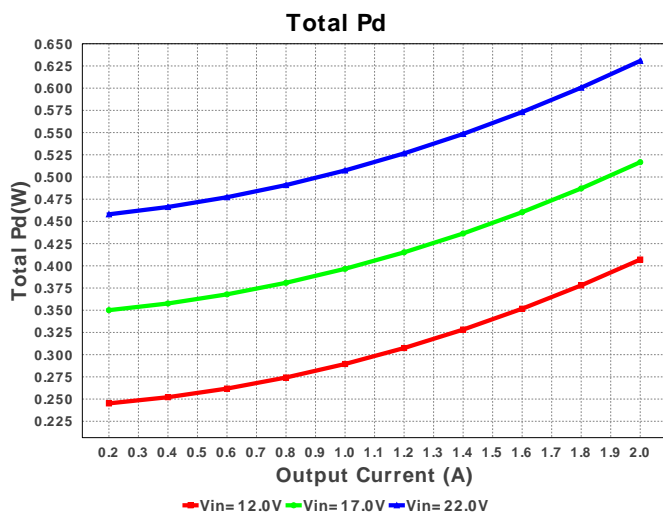
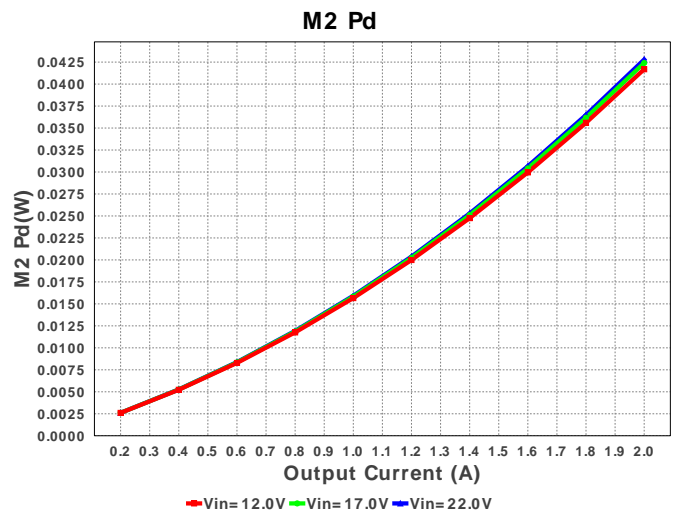
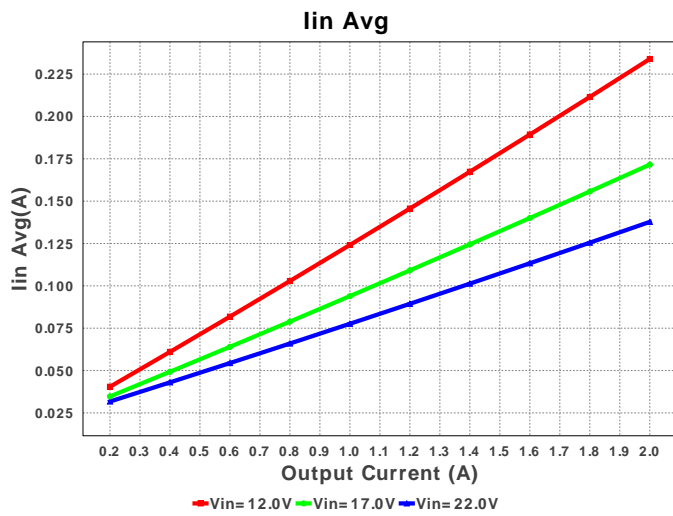
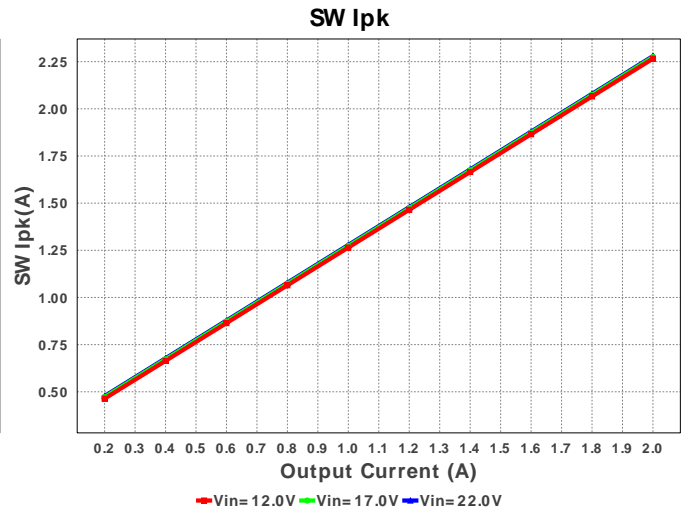
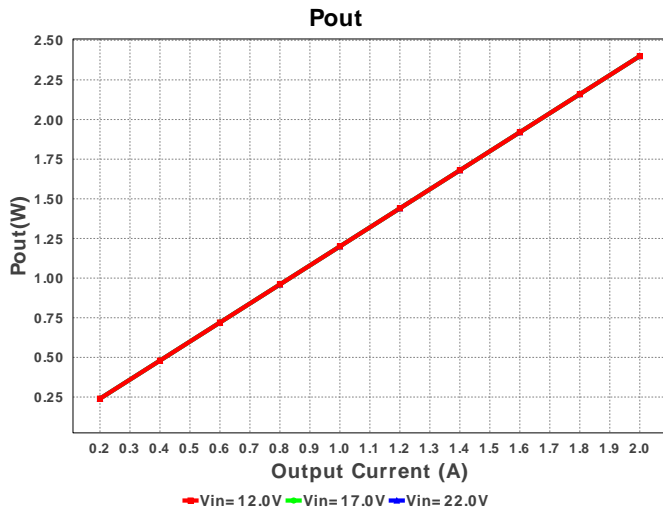


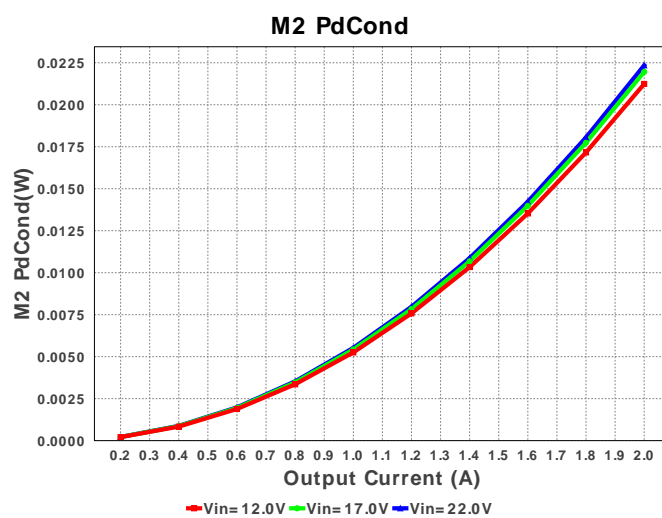
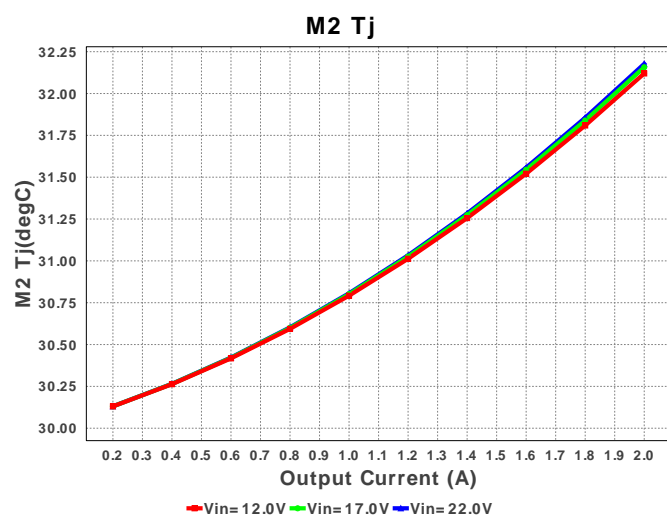
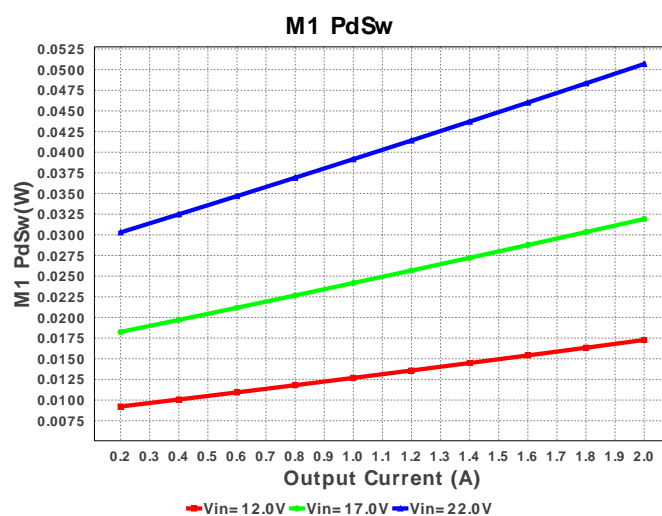
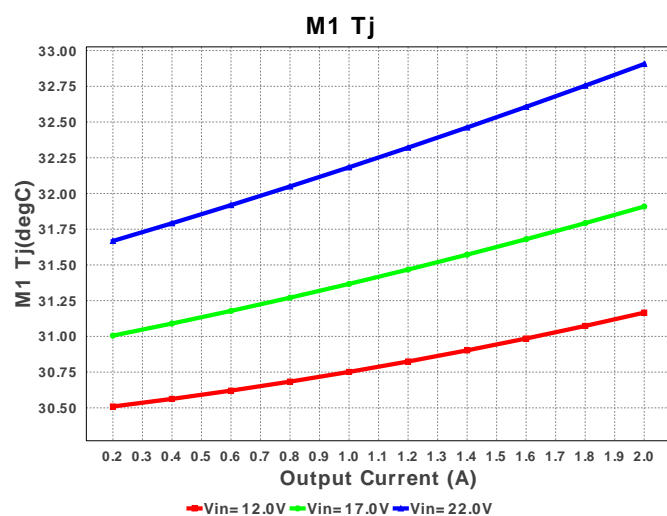
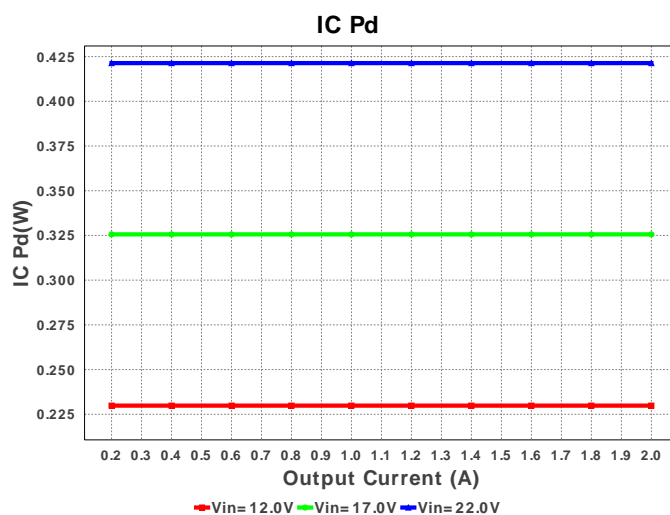
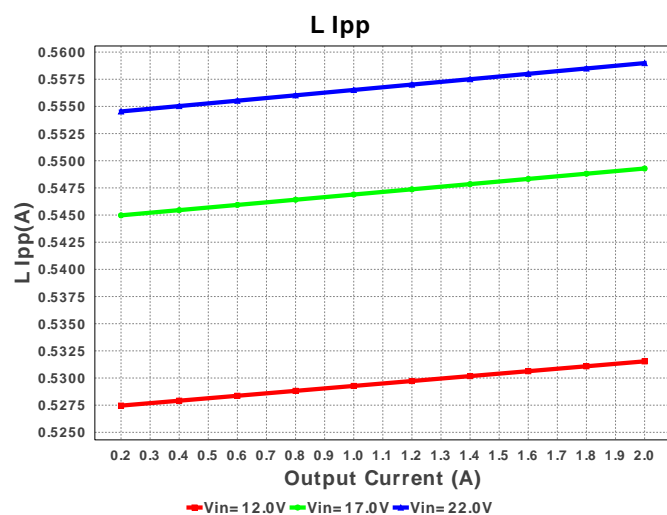
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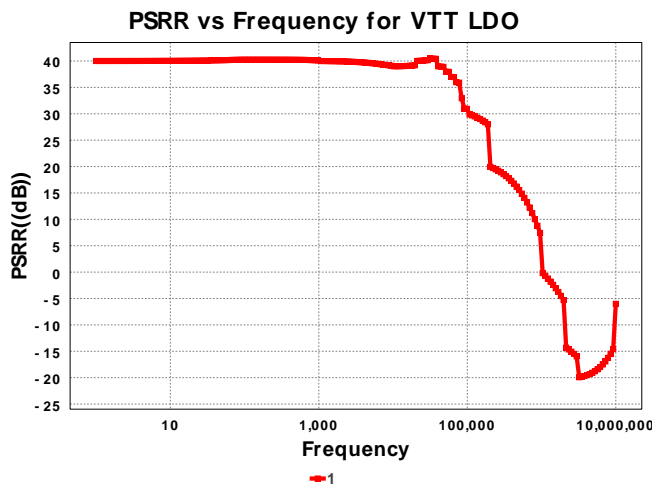
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	L1	Bourns	SRU1038-5R2Y	L= 5.2 μ H DCR= 22.0 mOhm	1	\$0.33	 SRU1038 144 mm ²
12.	M1	Texas Instruments	CSD17308Q3	VdsMax= 30.0 V IdsMax= 50.0 Amps	1	\$0.34	 TRANS_NexFET_Q3 18 mm ²
13.	M2	Texas Instruments	CSD18531Q5A	VdsMax= 60.0 V IdsMax= 100.0 Amps	1	\$0.90	 TRANS_NexFET_Q5A 55 mm ²
14.	Rbst	Vishay-Dale	CRCW04023R01FKED Series= CRCW..e3	Res= 3.01 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
15.	Rmode	Vishay-Dale	CRCW0402200KFKED Series= CRCW..e3	Res= 200.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
16.	Rpgood	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
17.	Rrefin	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
18.	Rrefin2	Vishay-Dale	CRCW040218K7FKED Series= CRCW..e3	Res= 18.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
19.	Rsnub	Vishay-Dale	CRCW04024R87FKED Series= CRCW..e3	Res= 4.87 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
20.	Rtrip	Vishay-Dale	CRCW040210K7FKED Series= CRCW..e3	Res= 10.7 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
21.	Rvtt	Vishay-Dale	CRCW0402604KFKED Series= CRCW..e3	Res= 604.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
22.	U1	Texas Instruments	TPS51216RUKR	Switcher	1	\$1.00	 RUK0020B 16 mm ²











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	459.452 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	161.366 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	137.76 mA	Current	Average input current
4.	L Ipp	558.99 mA	Current	Peak-to-peak inductor ripple current
5.	SW Ipk	2.279 A	Current	Peak switch current
6.	BOM Count	22	General	Total Design BOM count
7.	FootPrint	371.0 mm ²	General	Total Foot Print Area of BOM components
8.	Frequency	400.0 kHz	General	Switching frequency
9.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
10.	Pout	2.4 W	General	Total output power
11.	Total BOM	\$3.1	General	Total BOM Cost
12.	VTT LDO Power Dissipation	0.0 W	OP_Point	VTT LDO power dissipation
13.	Vout OP	1.2 V	Op_Point	Operational Output Voltage
14.	Duty Cycle	5.59 %	Op_point	Duty cycle
15.	Efficiency	79.189 %	Op_point	Steady state efficiency
16.	IC Tj	69.651 degC	Op_point	IC junction temperature
17.	IOUT_OP	2.0 A	Op_point	Iout operating point
18.	M1 Tj	32.906 degC	Op_point	M1 MOSFET junction temperature
19.	M2 Tj	32.177 degC	Op_point	M2 MOSFET junction temperature
20.	VIN_OP	22.0 V	Op_point	Vin operating point
21.	Vout p-p	1.747 mV	Op_point	Peak-to-peak output ripple voltage
22.	Cin Pd	1.166 mW	Power	Input capacitor power dissipation
23.	Cout Pd	2.604 mW	Power	Output capacitor power dissipation
24.	IC Pd	421.366 mW	Power	IC power dissipation
25.	L Pd	110.0 mW	Power	Inductor power dissipation
26.	M1 Pd	52.801 mW	Power	M1 MOSFET total power dissipation
27.	M1 PdCond	2.119 mW	Power	M1 MOSFET conduction losses
28.	M1 PdSw	50.682 mW	Power	M1 MOSFET switching losses
29.	M2 Pd	42.795 mW	Power	M2 MOSFET total power dissipation
30.	M2 PdCond	22.35 mW	Power	M2 MOSFET conduction losses
31.	M2 PdSw	20.446 mW	Power	M2 MOSFET switching losses
32.	Total Pd	630.723 mW	Power	Total Power Dissipation
33.	Vout Tolerance	833.333 m%		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	12.0	Minimum input voltage
4.	Vout	1.2	Output Voltage
5.	base_pn	TPS51216	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature
1.	Vout Sch	1.2	Output voltage selected

Design Assistance

1. **TPS51216** Product Folder : <http://www.ti.com/product/tps51216> : contains the data sheet and other resources.

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