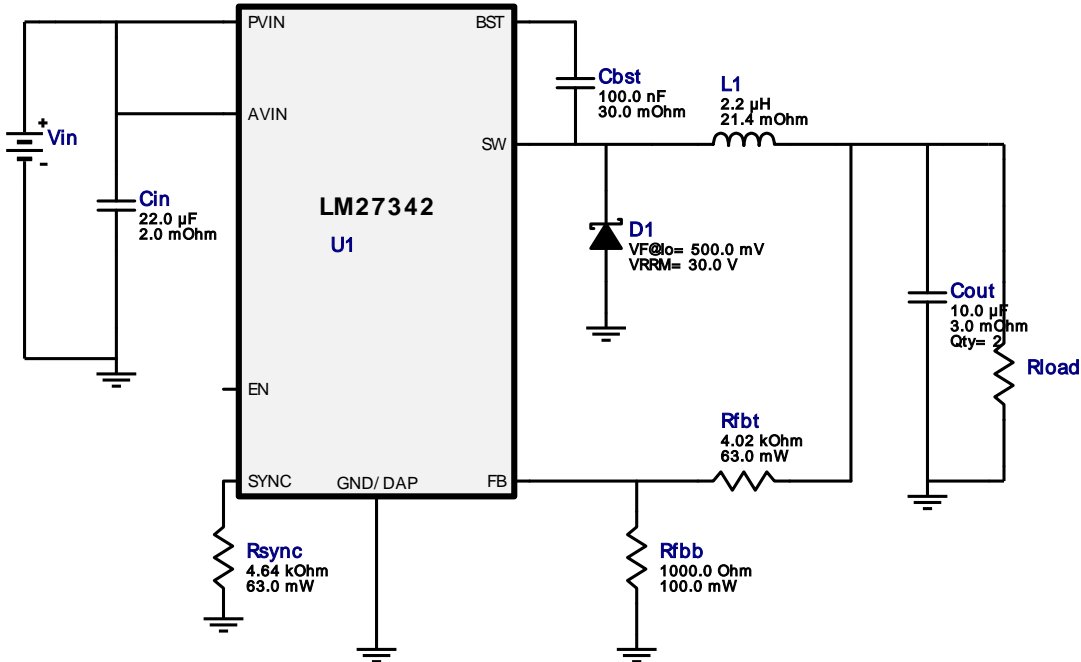


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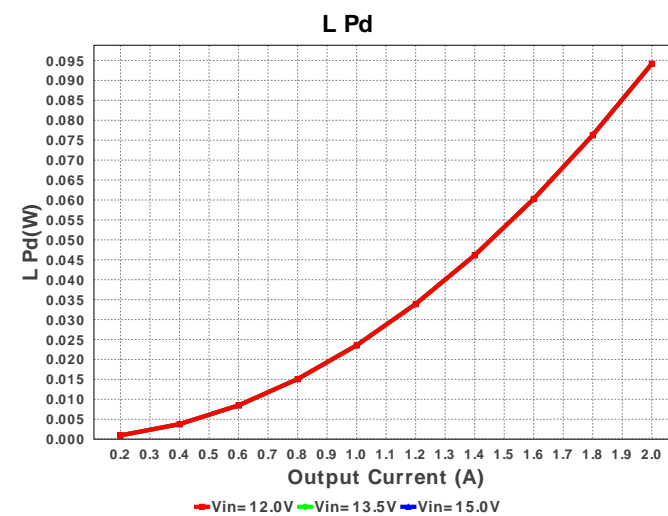
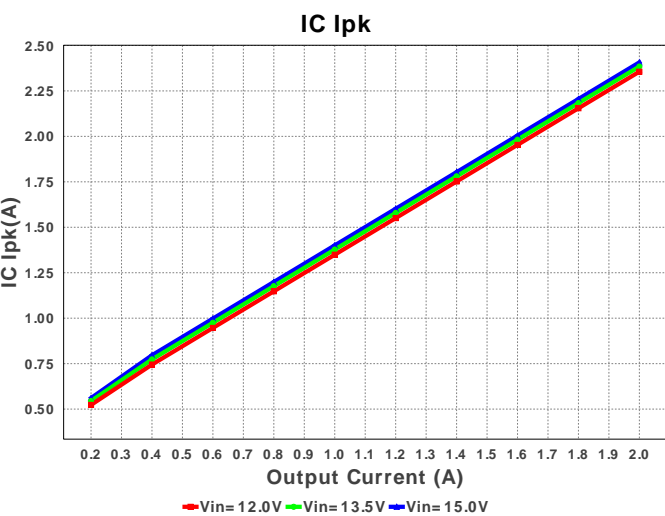
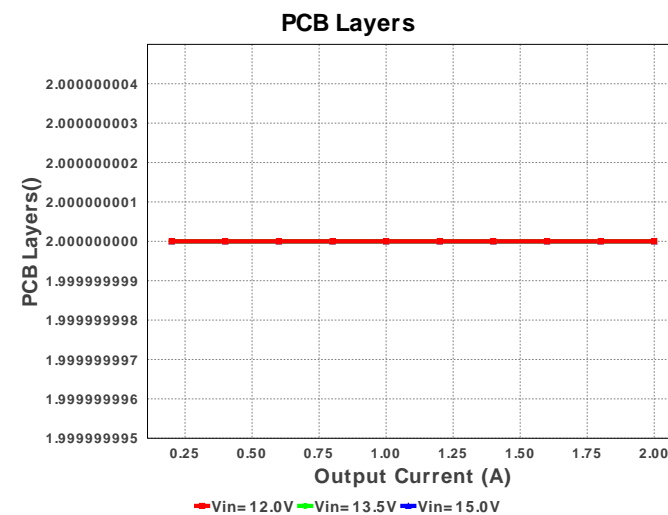
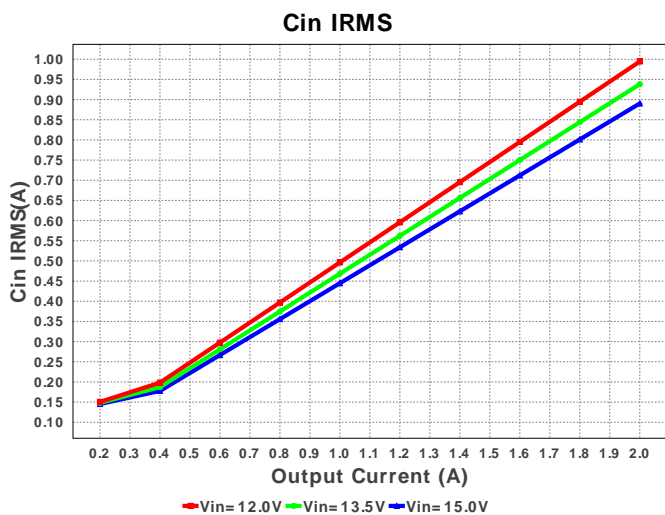
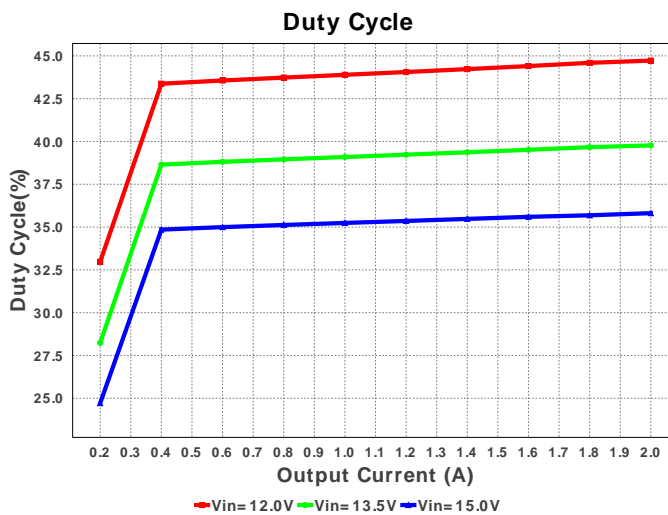
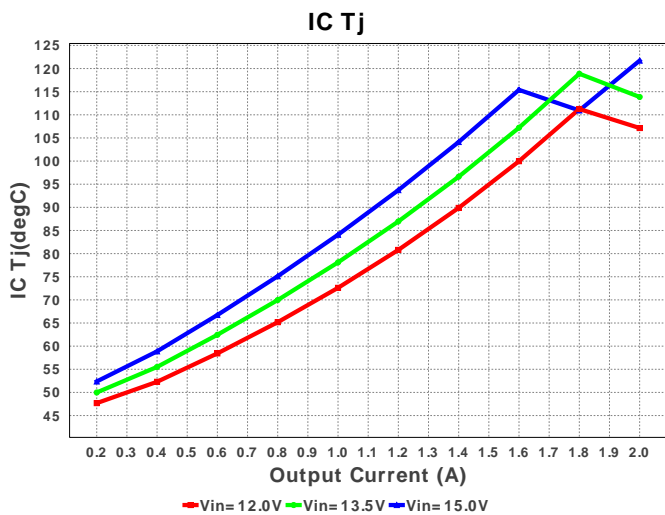
 Design : 4389239/1 LM27342MY/NOPB
 LM27342MY/NOPB 12.0V-15.0V to 5.00V @ 2.0A

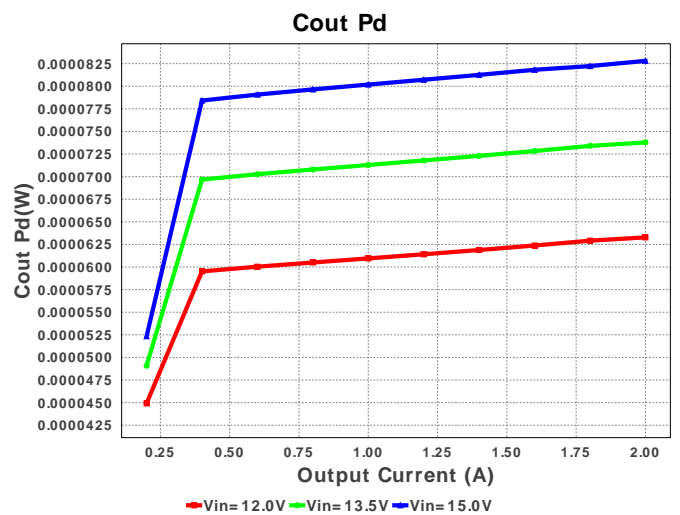
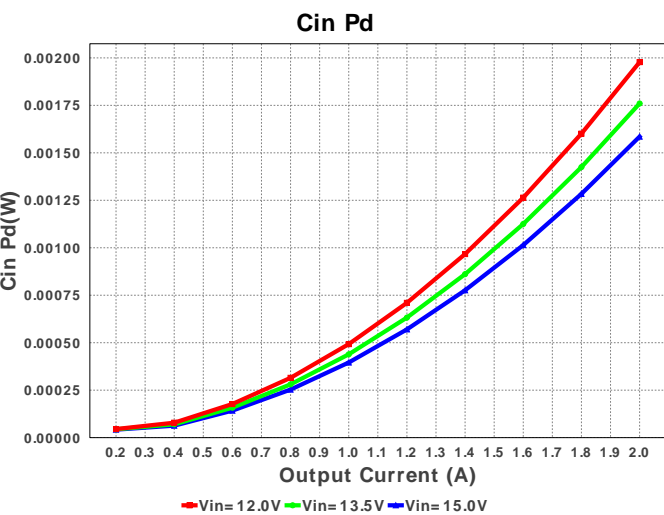
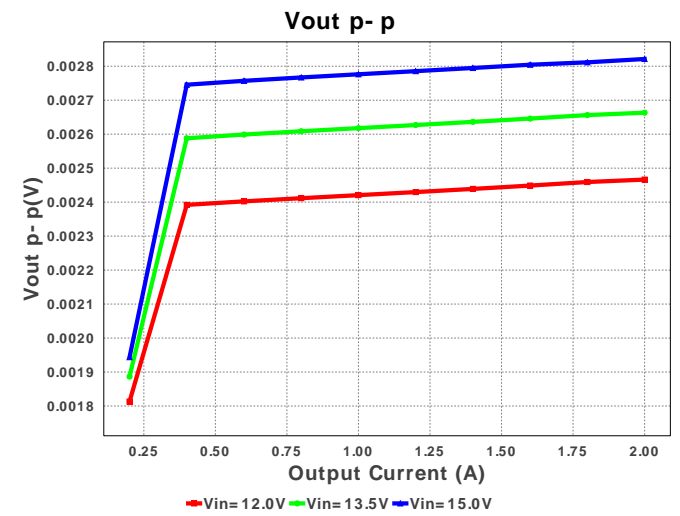
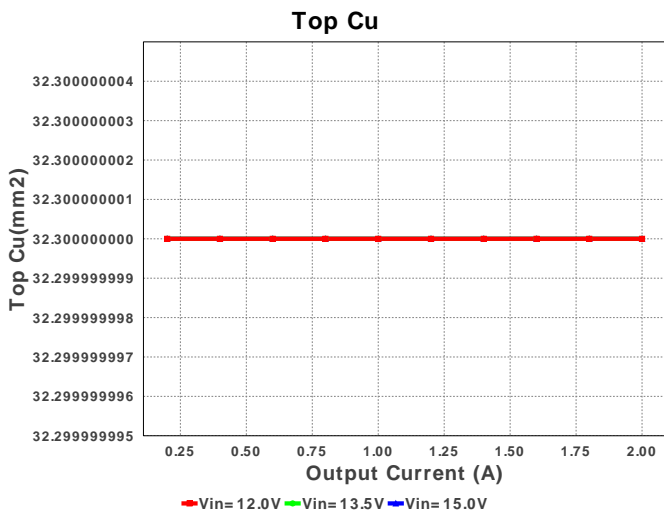
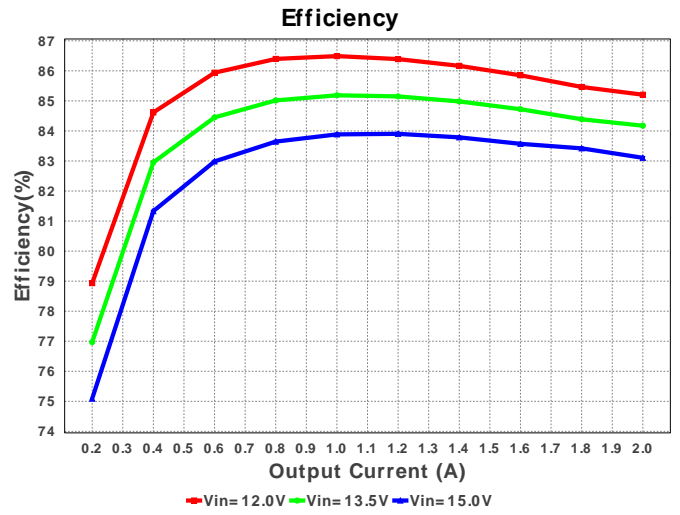
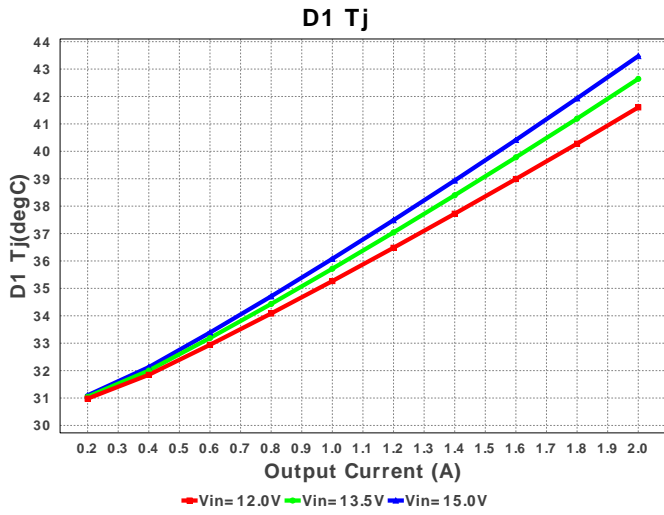
 VinMin = 12.0V
 VinMax = 15.0V

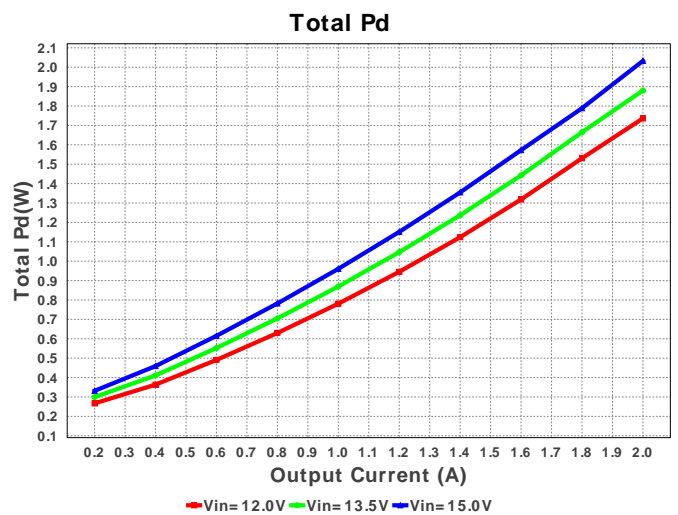
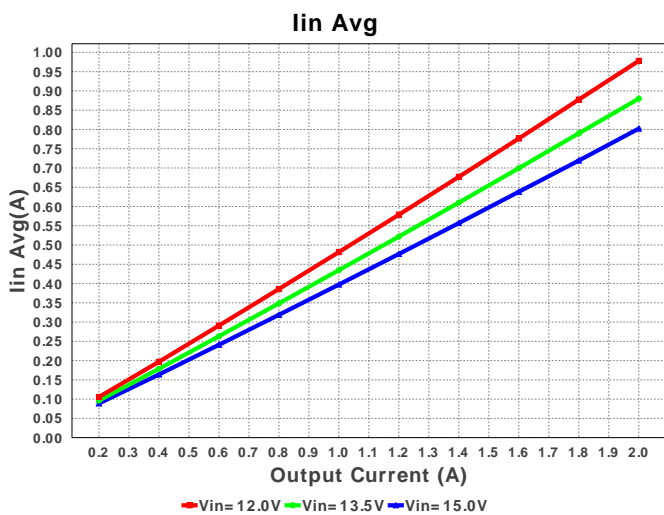
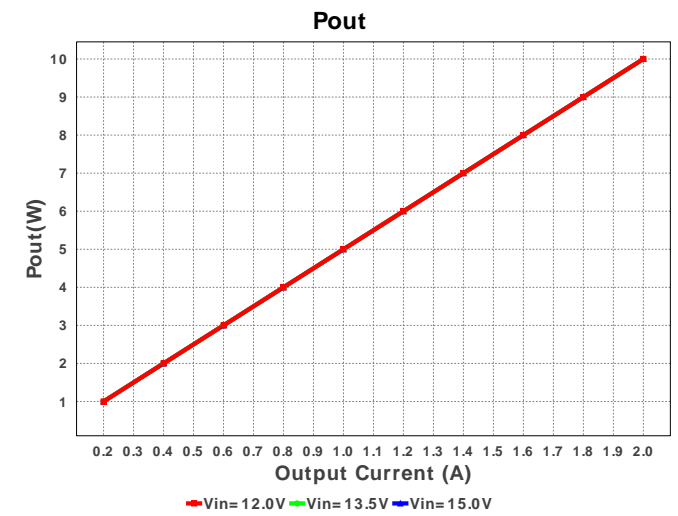
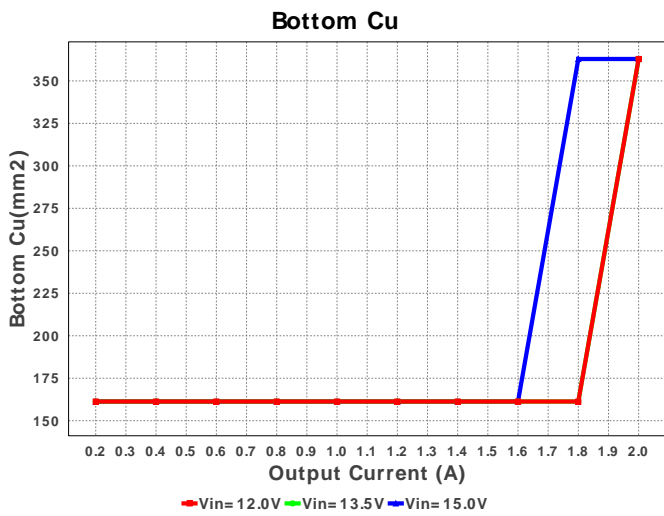
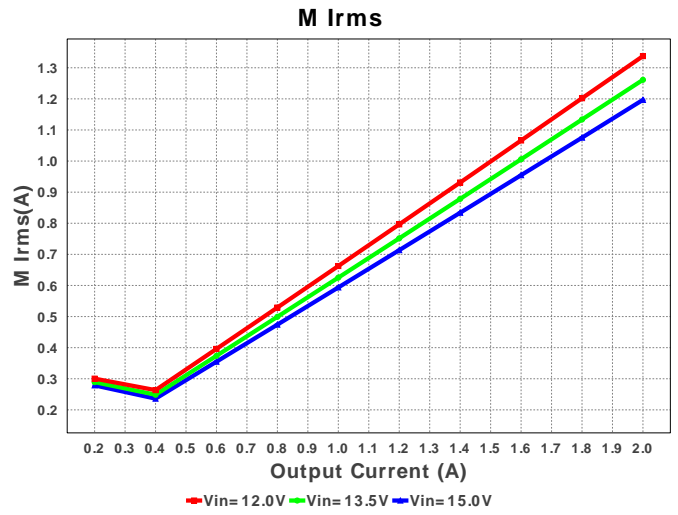
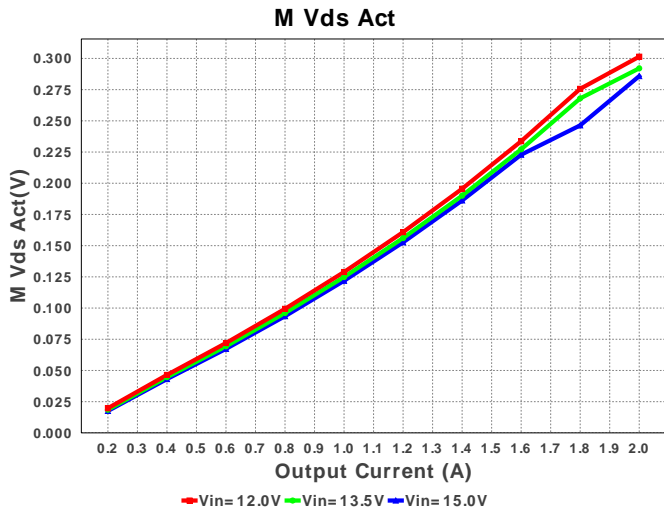
 Vout = 5.0V
 Iout = 2.0A

Electrical BOM

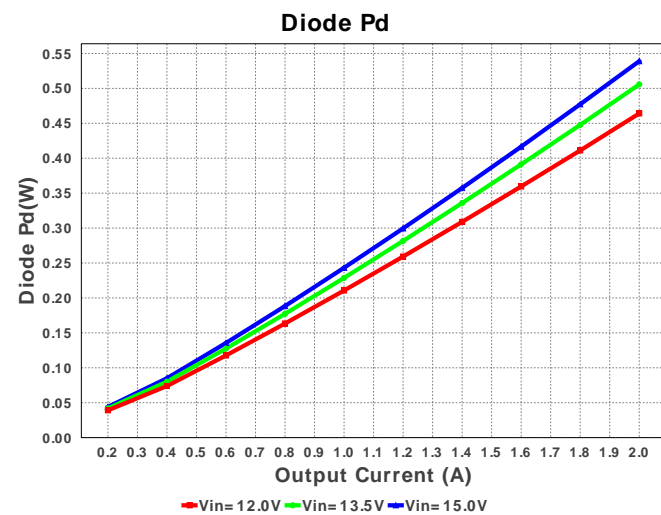
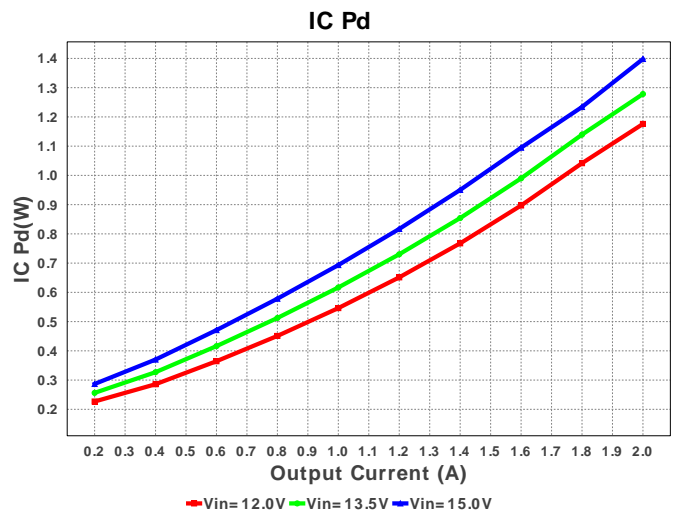
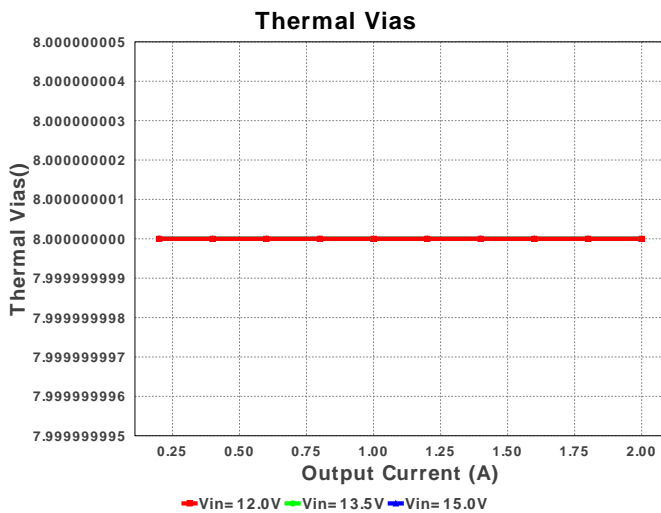
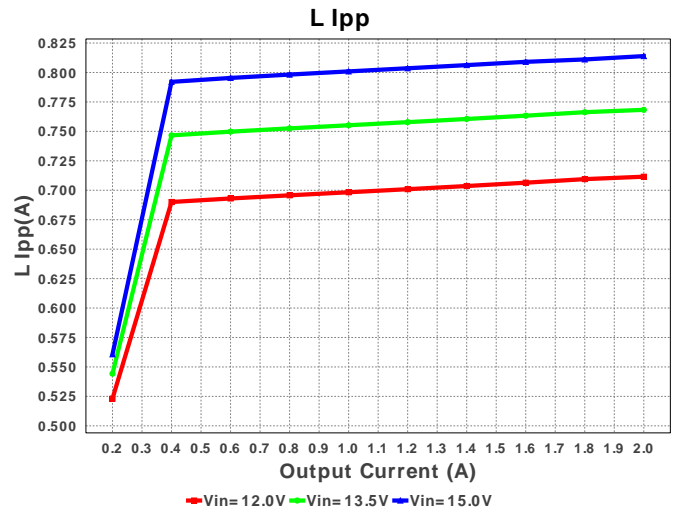
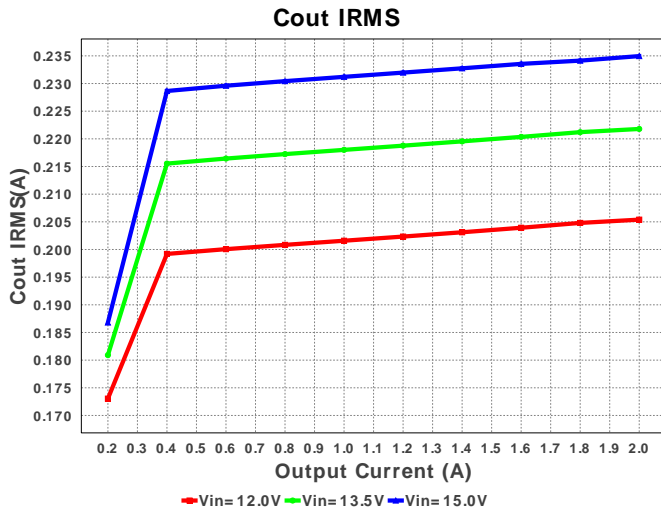
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM188R71C104KA01D Series= X7R	Cap= 100.0 nF ESR= 30.0 mOhm VDC= 16.0 V IRMS= 1.7 A	1	\$0.01	0603 5 mm ²
2.	Cin	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.16	1210 15 mm ²
3.	Cout	Kemet	C0805C106K8PACTU Series= X5R	Cap= 10.0 uF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 11.43 A	2	\$0.04	0805 7 mm ²
4.	D1	Diodes Inc.	B230A-13-F	VF@Io= 500.0 mV VRRM= 30.0 V	1	\$0.09	SMA 37 mm ²
5.	L1	Coilcraft	XFL4020-222MEB	L= 2.2 uH DCR= 21.4 mOhm	1	\$0.55	XFL4020 25 mm ²
6.	Rfbb	Vishay-Dale	CRCW06031K00FKEA Series= CRCW..e3	Res= 1000.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	0603 5 mm ²
7.	Rfcb	Vishay-Dale	CRCW04024K02FKED Series= CRCW..e3	Res= 4.02 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
8.	Rsync	Vishay-Dale	CRCW04024K64FKED Series= CRCW..e3	Res= 4.64 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
9.	U1	Texas Instruments	LM27342MY/NOPB	Switcher	1	\$1.20	MUC10A 24 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Bottom Cu	362.9 mm ²	Board_Layout	Recommended minimum area of bottom layer copper connected to DAP
2.	PCB Layers	2.0	Board_Layout	Recommended number of PCB layers for the necessary IC Thermal Resistance
3.	Thermal Vias	8.0	Board_Layout	Recommended number of 10 mil thermal vias under the IC
4.	Top Cu	32.3 mm ²	Board_Layout	Recommended minimum area of top layer copper connected to DAP
5.	Cin IRMS	890.175 mA	Current	Input capacitor RMS ripple current
6.	Cout IRMS	234.194 mA	Current	Output capacitor RMS ripple current
7.	IC Ipk	2.406 A	Current	Peak switch current in IC
8.	Iin Avg	798.78 mA	Current	Average input current
9.	L Ipp	811.27 mA	Current	Peak-to-peak inductor ripple current

#	Name	Value	Category	Description
10.	M1 Irms	1.195 A	Current	Q Iavg
11.	BOM Count	10	General	Total Design BOM count
12.	FootPrint	130.0 mm ²	General	Total Foot Print Area of BOM components
13.	Frequency	2.0 MHz	General	Switching frequency
14.	IC Tolerance	10.0 mV	General	IC Feedback Tolerance
15.	M Vds Act	251.729 mV	General	Voltage drop across the MosFET
16.	Pout	10.0 W	General	Total output power
17.	Total BOM	\$2.12	General	Total BOM Cost
18.	D1 Tj	43.227 degC	Op_Point	D1 junction temperature
19.	Vout OP	5.0 V	Op_Point	Operational Output Voltage
20.	Duty Cycle	35.696 %	Op_point	Duty cycle
21.	Efficiency	83.461 %	Op_point	Steady state efficiency
22.	IC Tj	91.056 degC	Op_point	IC junction temperature
23.	ICThetaJA	45.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
24.	IOUT_OP	2.0 A	Op_point	Iout operating point
25.	VIN_OP	15.0 V	Op_point	Vin operating point
26.	Vout Act	5.02 V	Op_point	Achieved Vout with feedback resistor pair
27.	Vout p-p	2.812 mV	Op_point	Peak-to-peak output ripple voltage
28.	Cin Pd	1.585 mW	Power	Input capacitor power dissipation
29.	Cout Pd	82.27 µW	Power	Output capacitor power dissipation
30.	Diode Pd	529.078 mW	Power	Diode power dissipation
31.	IC Pd	1.357 W	Power	IC power dissipation
32.	L Pd	94.16 mW	Power	Inductor power dissipation
33.	Total Pd	1.982 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	Iout1	2.0	Output Current #1
3.	VinMax	15.0	Maximum input voltage
4.	VinMin	12.0	Minimum input voltage
5.	Vout	5.0	Output Voltage
6.	Vout1	5.0	Output Voltage #1
7.	base_pn	LM27342	Base Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature

Design Assistance

1. **LM27342** Product Folder : <http://www.ti.com/product/LM27342> : contains the data sheet and other resources.

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