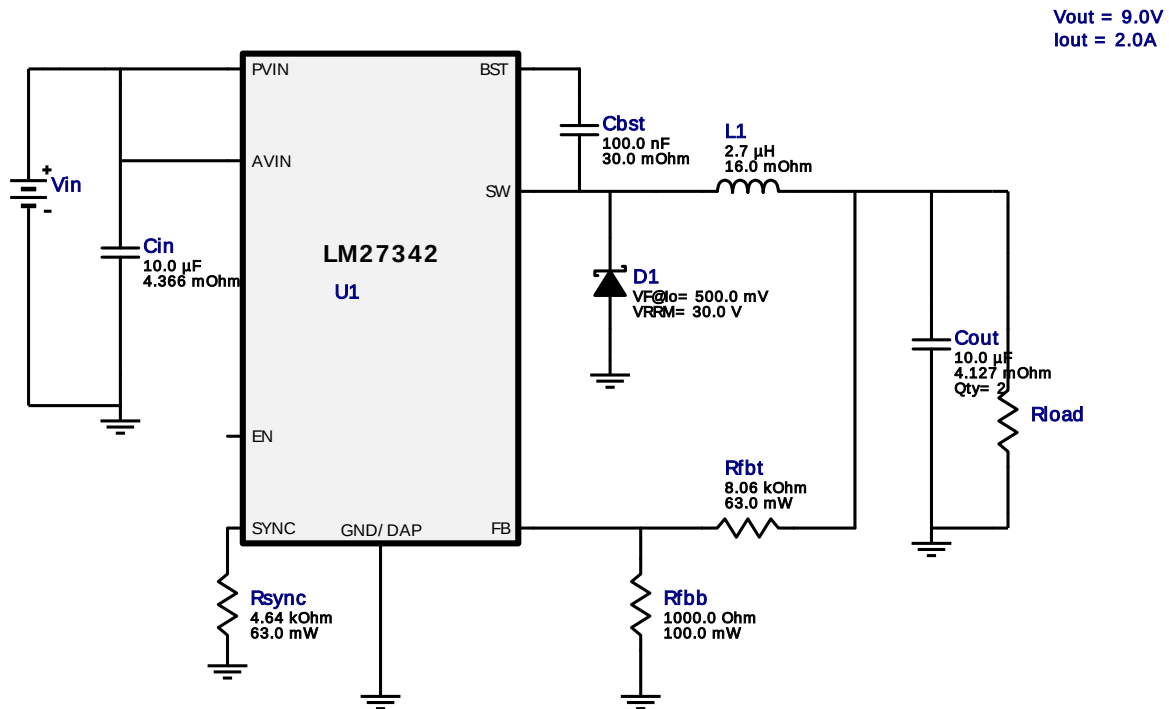


WEBENCH® Design Report

Design : 4801973/4 LM27342MY/NOPB
LM27342MY/NOPB 15.0V-18.0V to 9.00V @ 2.0A

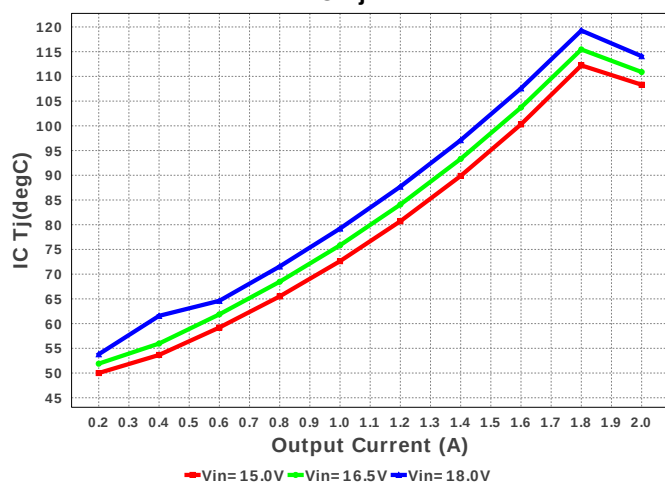


Electrical BOM

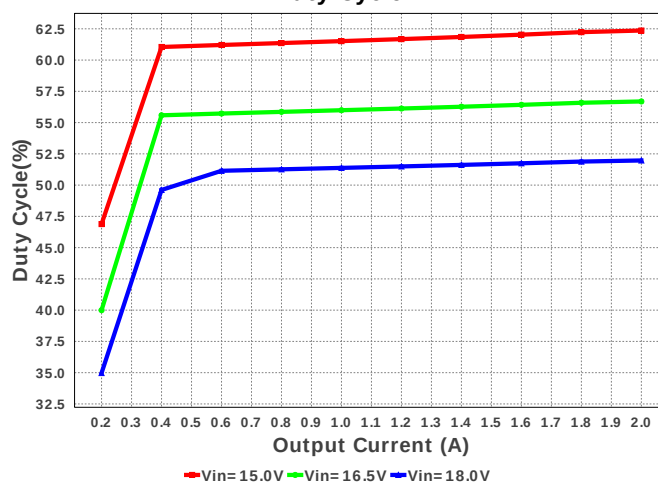
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbst	MuRata	GRM188R71C104KA01D Series= X7R	Cap= 100.0 nF ESR= 30.0 mOhm VDC= 16.0 V IRMS= 1.7 A	1	\$0.01	 0603 5 mm ²
2.	Cin	MuRata	GRM31CR71E106KA12L Series= X7R	Cap= 10.0 uF ESR= 4.366 mOhm VDC= 25.0 V IRMS= 2.8022 A	1	\$0.05	 1206_190 11 mm ²
3.	Cout	MuRata	GRM21BR61C106KE15L Series= X5R	Cap= 10.0 uF ESR= 4.127 mOhm VDC= 16.0 V IRMS= 2.46634 A	2	\$0.03	 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	Pulse Engineering	P1167.272NLT	L= 2.7 uH DCR= 16.0 mOhm	1	\$0.69	 P1167 91 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.	Rfbt	Vishay-Dale	CRCW04028K06FKED Series= CRCW..e3	Res= 8.06 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 mm²
9.	U1	Texas Instruments	LM27342MY/NOPB	Switcher	1	\$1.20	 MUC10A 24 mm²

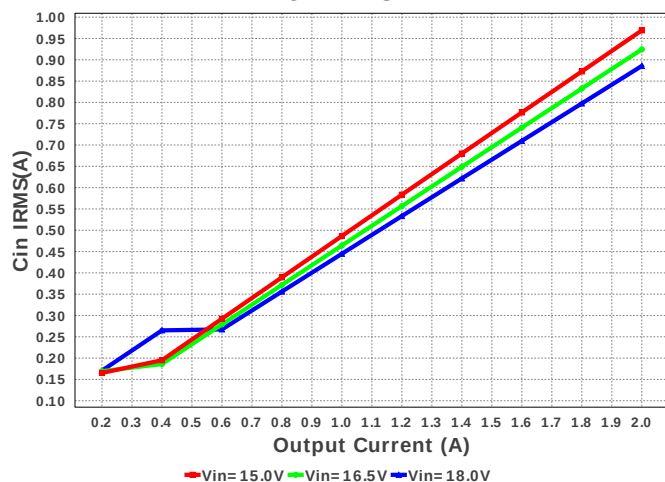
IC Tj



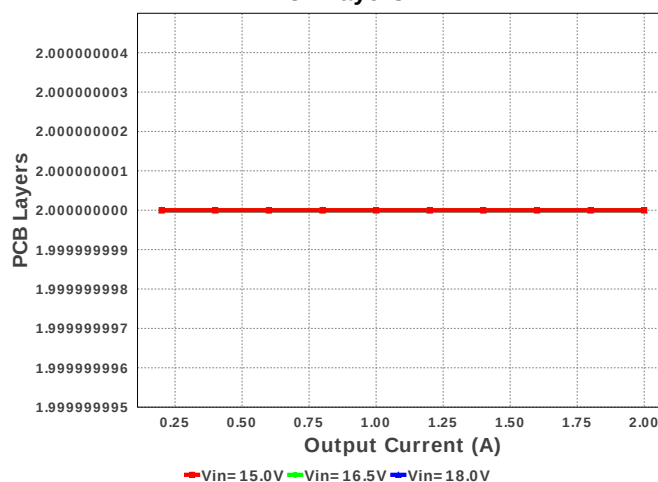
Duty Cycle

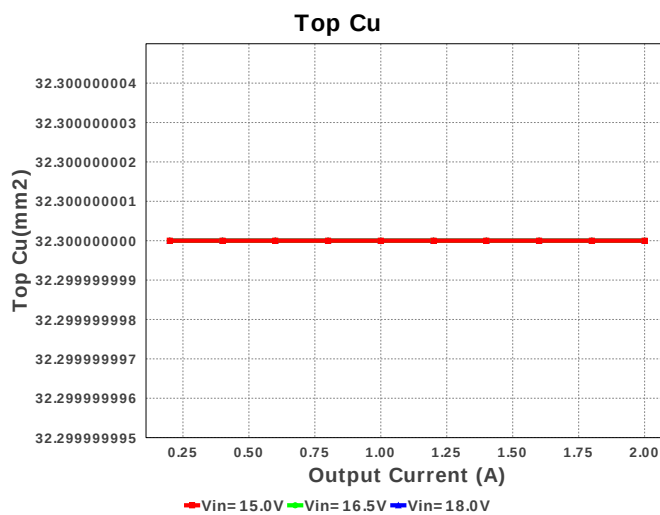
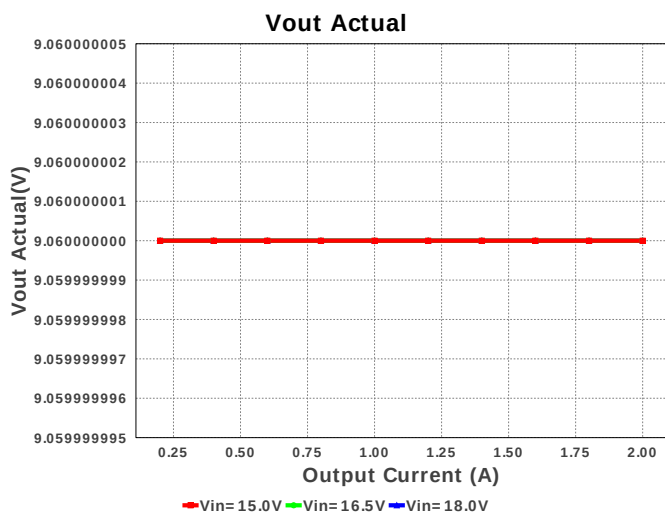
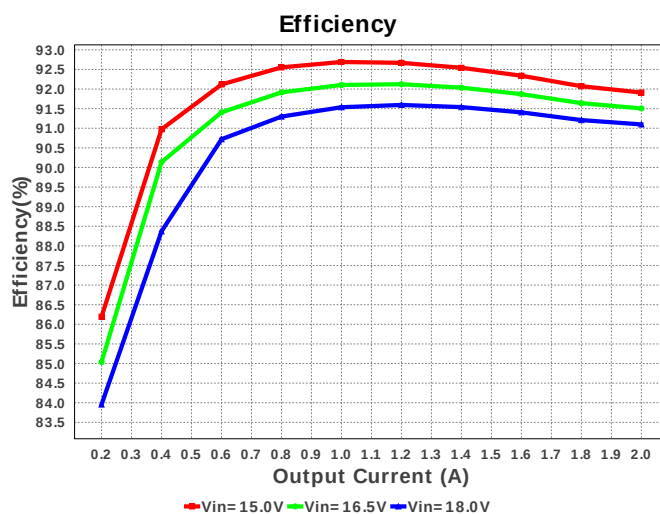
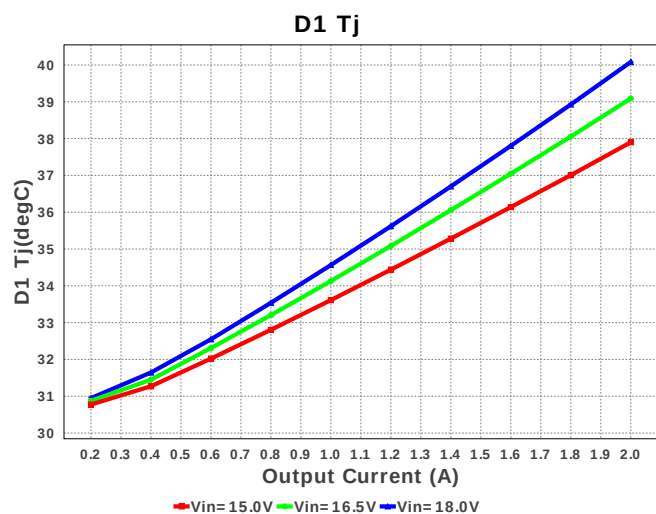
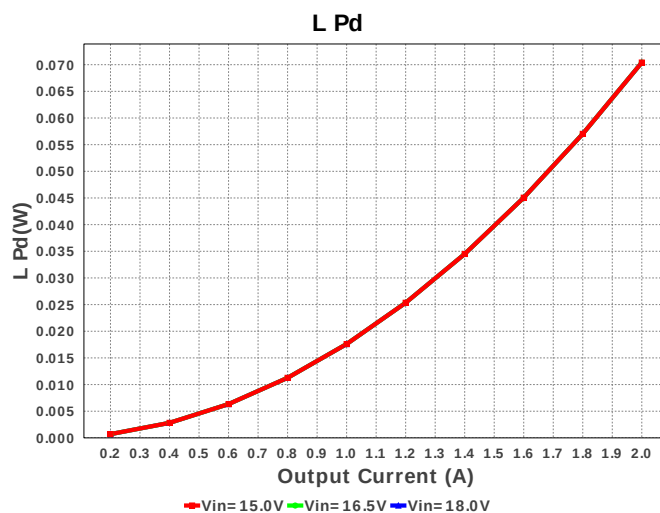
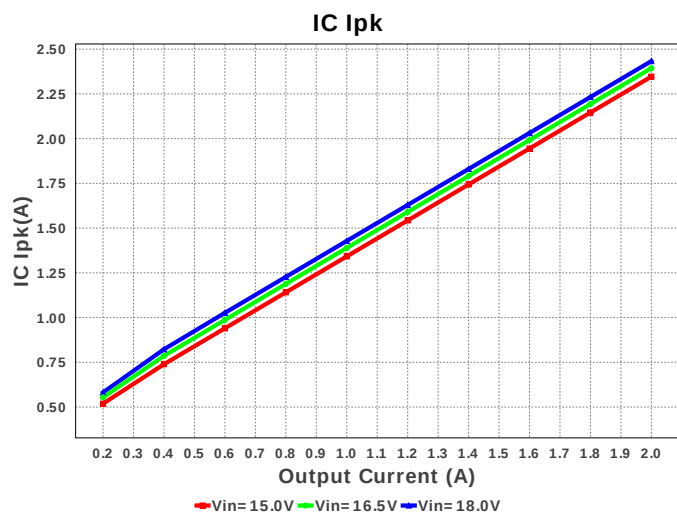


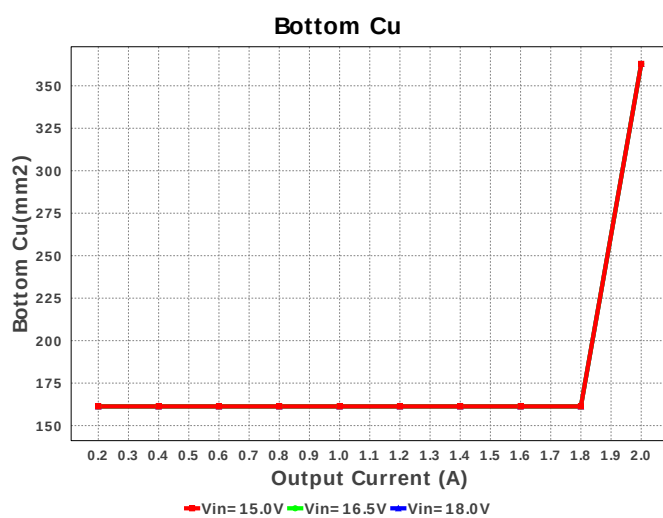
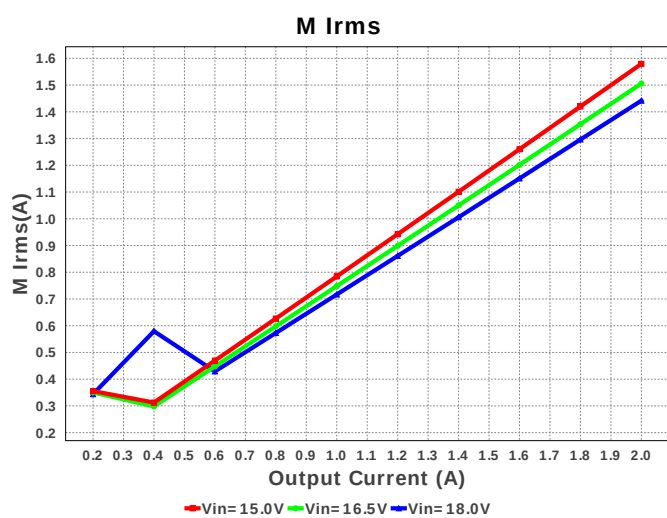
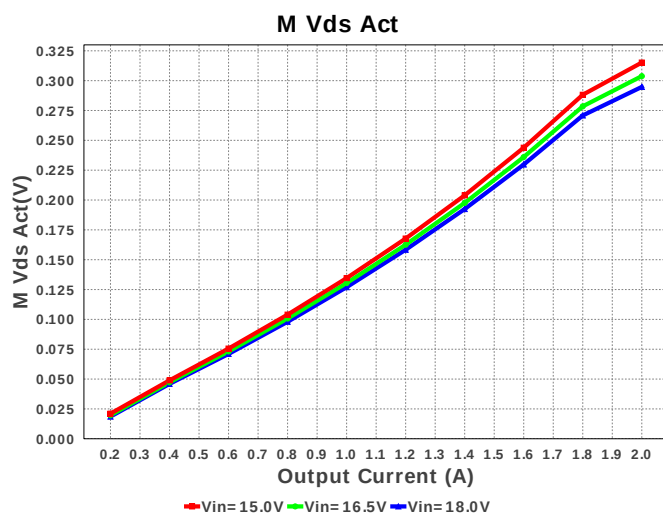
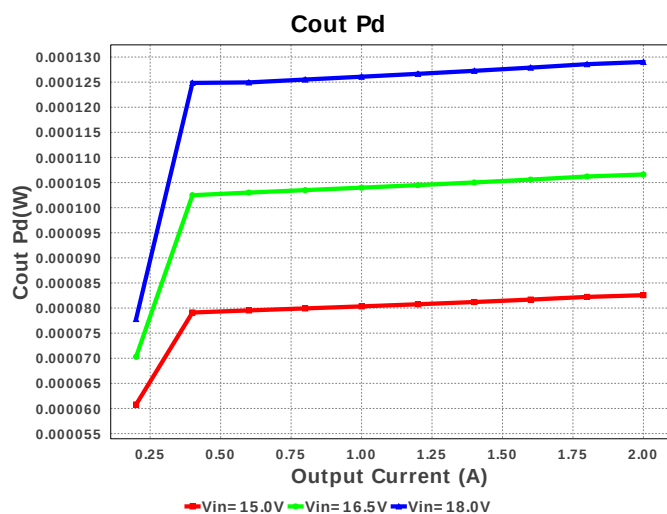
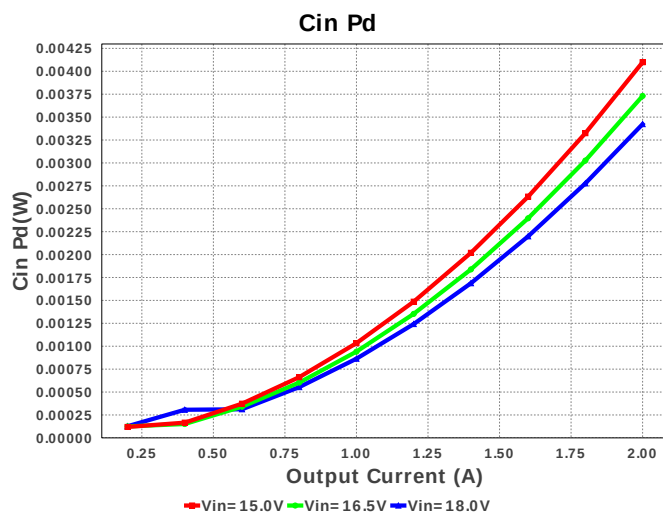
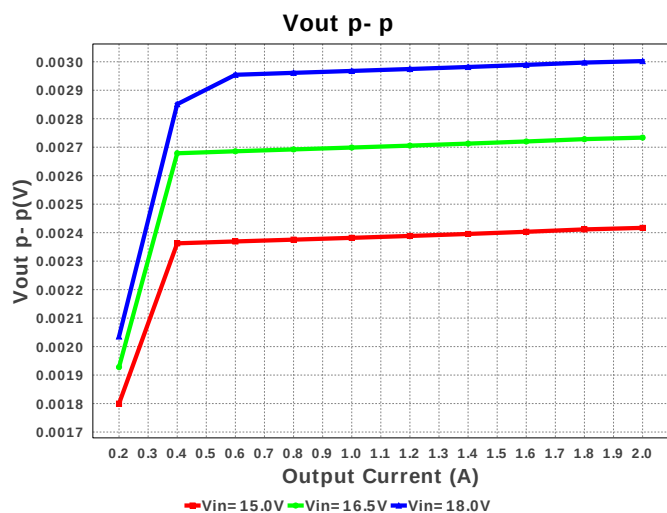
Cin IRMS

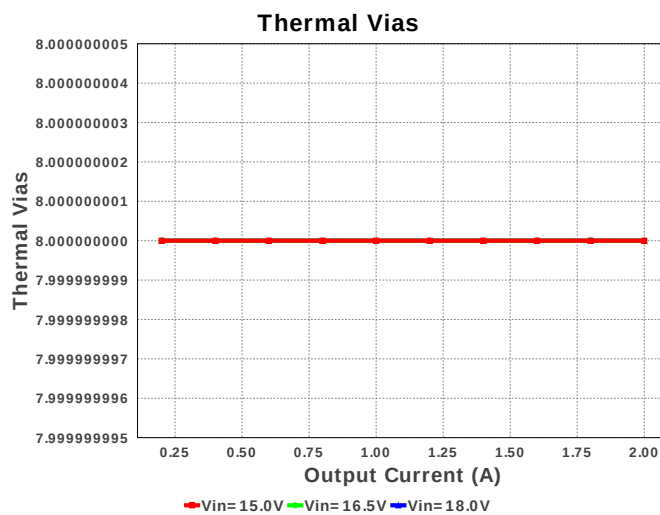
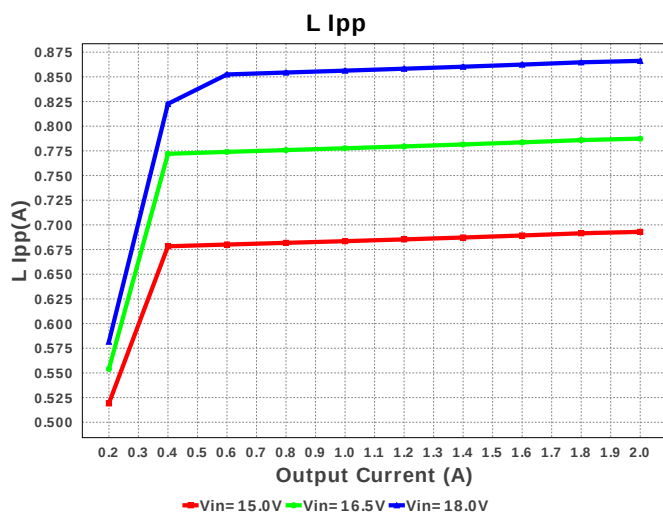
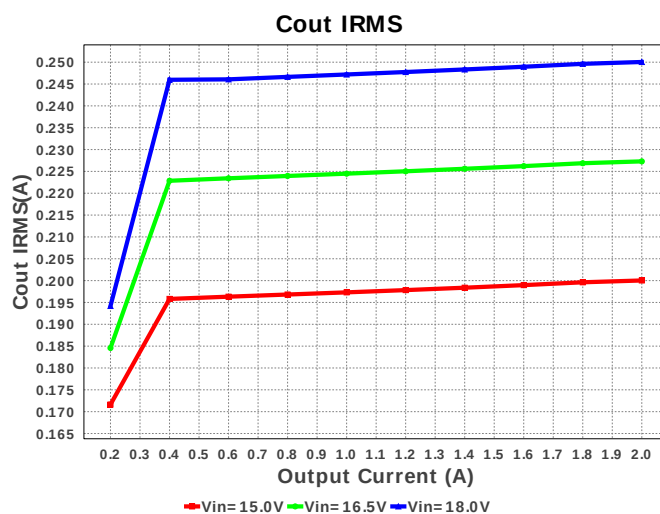
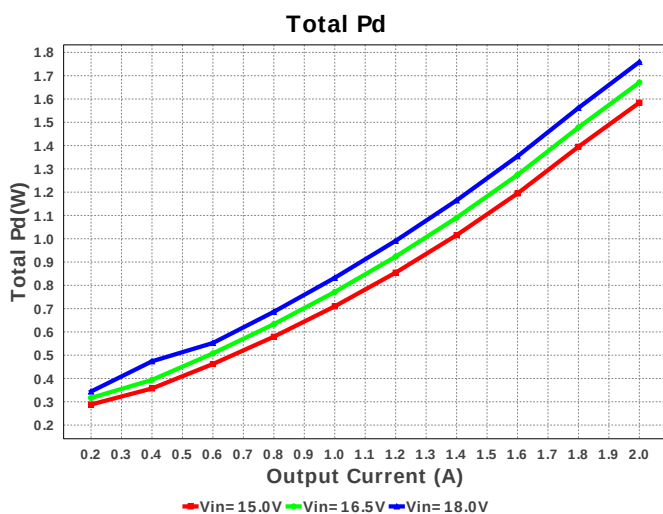
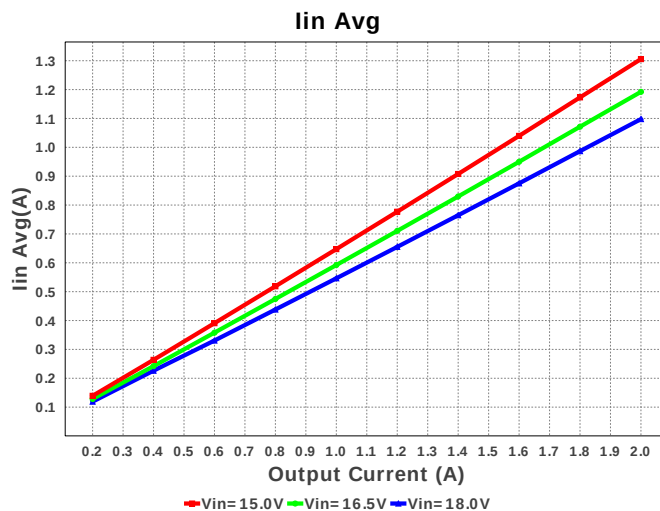
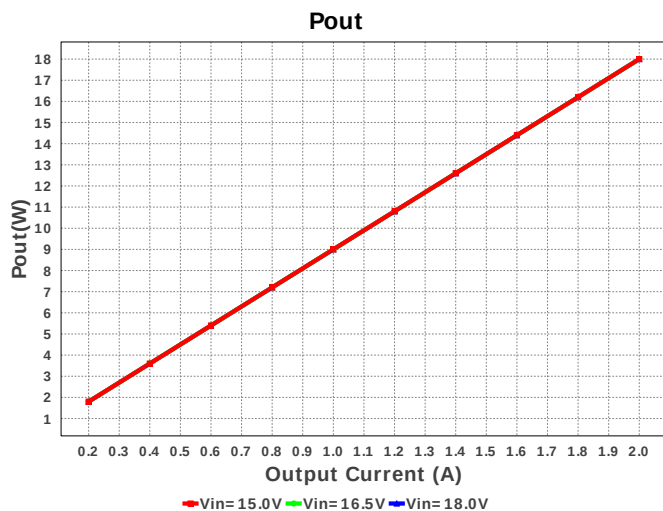


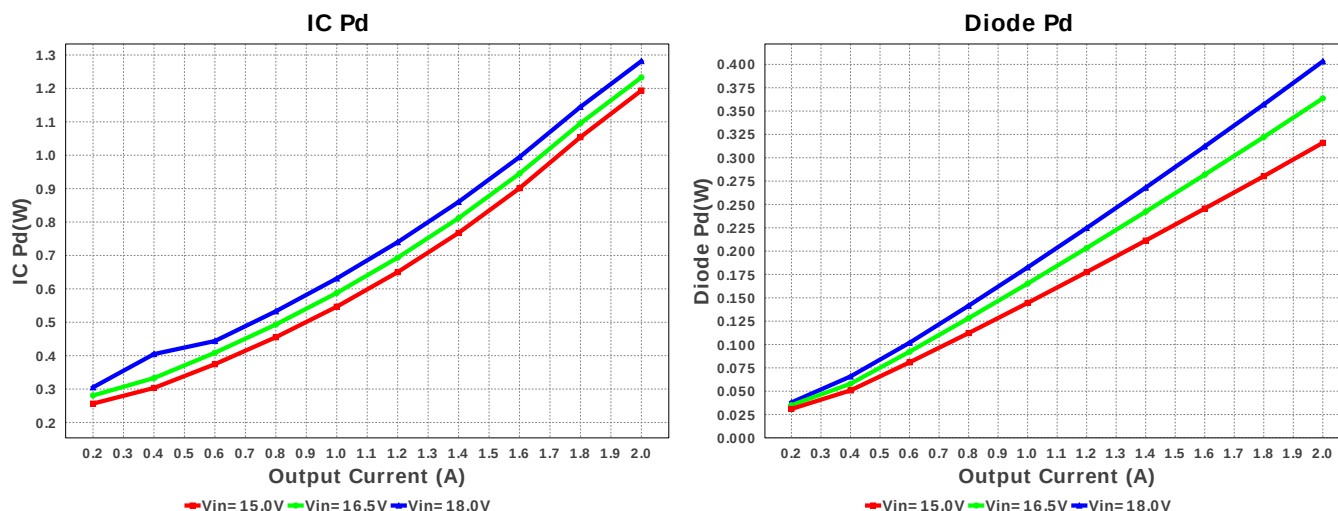
PCB Layers











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	886.509 mA	Current	Input capacitor RMS ripple current
6.	Cout IRMS	249.231 mA	Current	Output capacitor RMS ripple current
7.	IC IpK	2.432 A	Current	Peak switch current in IC
8.	Iin Avg	1.094 A	Current	Average input current
9.	L Ipp	863.36 mA	Current	Peak-to-peak inductor ripple current
10.	M1 Irms	1.439 A	Current	Q lavg
11.	BOM Count	10	General	Total Design BOM count
12.	FootPrint	192.0 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	260.771 mV	General	Voltage drop across the MosFET
16.	Mode	CCM	General	Conduction Mode
17.	Pout	18.0 W	General	Total output power
18.	Total BOM	\$2.13	General	Total BOM Cost
19.	D1 Tj	39.461 degC	Op_Point	D1 junction temperature
20.	Vout Actual	9.06 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
21.	Vout OP	9.0 V	Op_Point	Operational Output Voltage
22.	Duty Cycle	51.802 %	Op_point	Duty cycle
23.	Efficiency	91.442 %	Op_point	Steady state efficiency
24.	IC Tj	85.448 degC	Op_point	IC junction temperature
25.	ICThetaJA	45.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
26.	IOUT_OP	2.0 A	Op_point	Iout operating point
27.	VIN_OP	18.0 V	Op_point	Vin operating point
28.	Vout Act	9.06 V	Op_point	Achieved Vout with feedback resistor pair
29.	Vout p-p	2.992 mV	Op_point	Peak-to-peak output ripple voltage
30.	Cin Pd	3.431 mW	Power	Input capacitor power dissipation
31.	Cout Pd	128.177 μW	Power	Output capacitor power dissipation
32.	Diode Pd	378.442 mW	Power	Diode power dissipation
33.	IC Pd	1.232 W	Power	IC power dissipation
34.	L Pd	70.4 mW	Power	Inductor power dissipation
35.	Total Pd	1.685 W	Power	Total Power Dissipation
36.	Vout Tolerance	2.815 %		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	18.0	Maximum input voltage
3.	VinMin	15.0	Minimum input voltage
4.	Vout	9.0	Output Voltage
5.	base_pn	LM27342	Base Product Number
6.	source	DC	Input Source Type
7.	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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