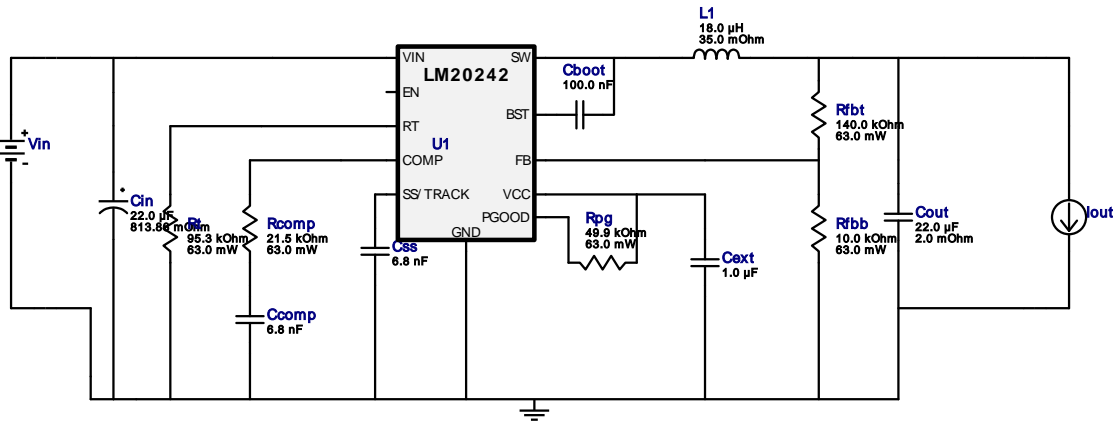

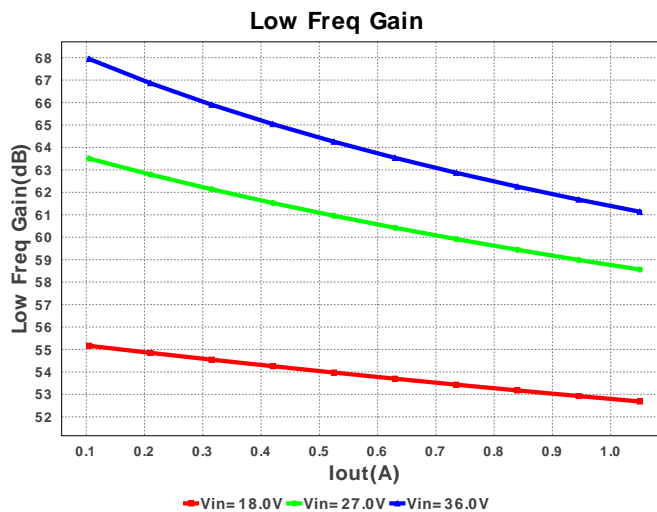
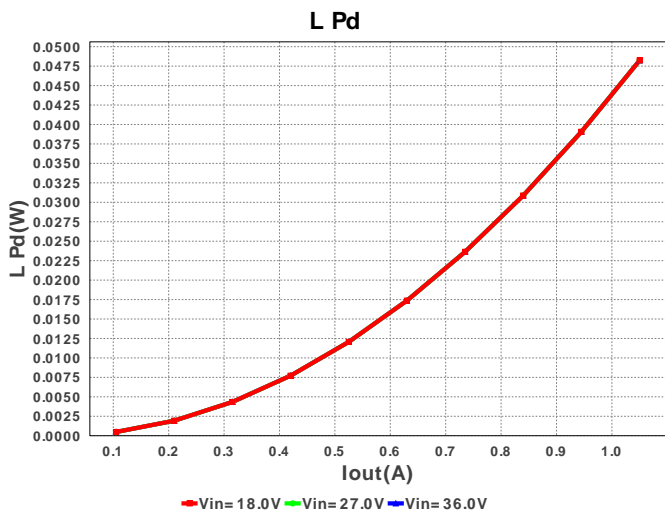
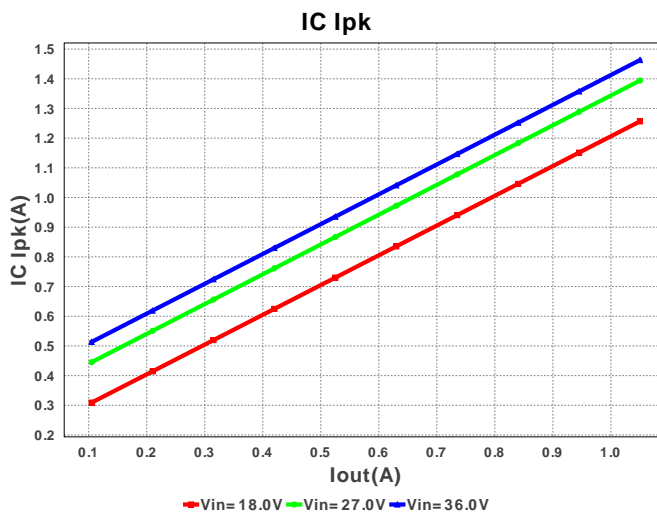
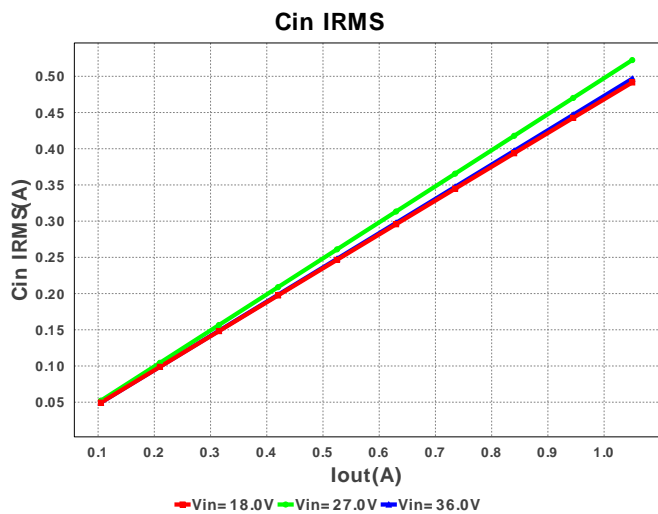
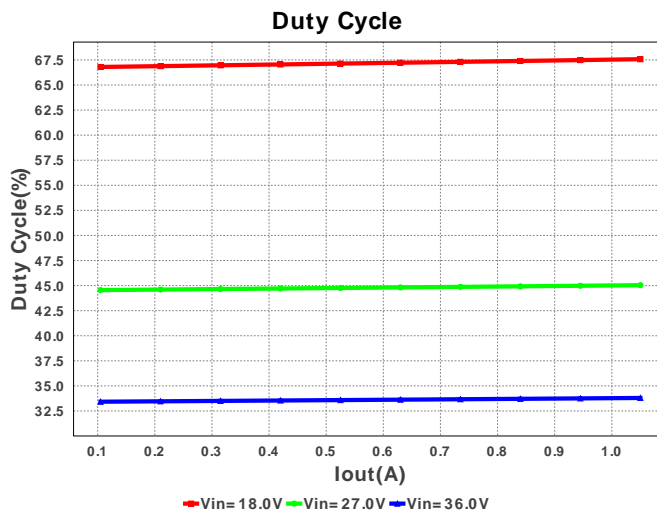
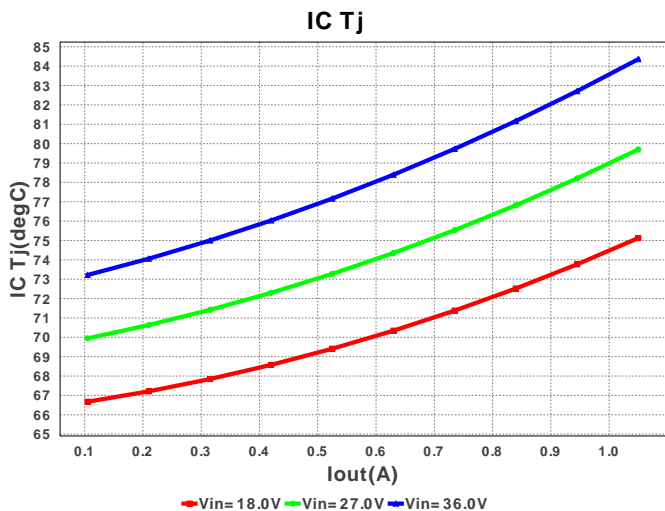


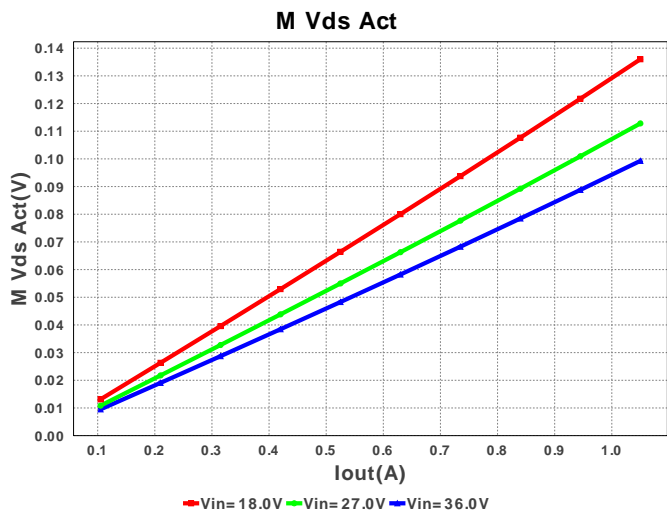
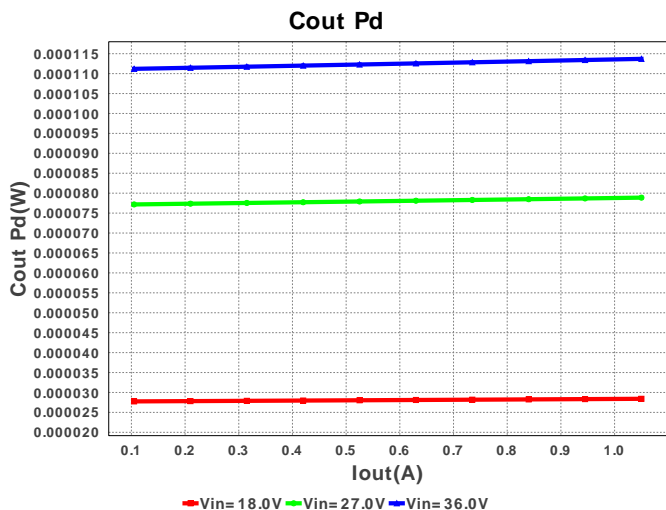
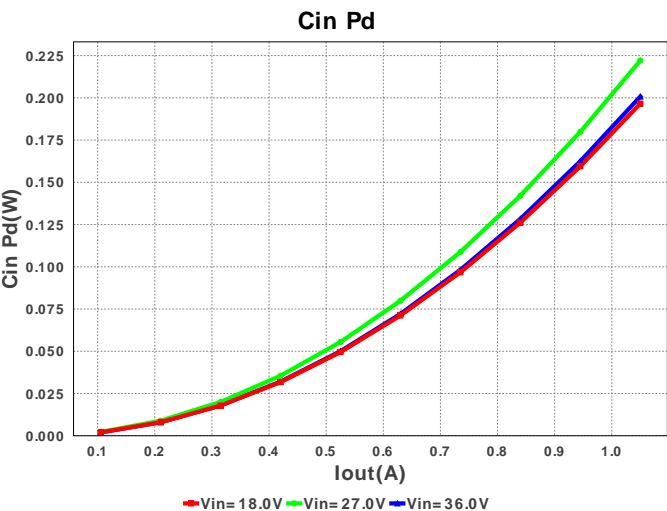
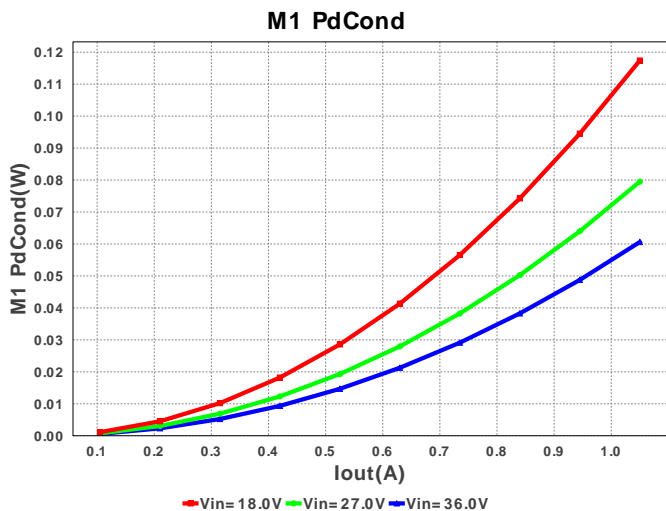
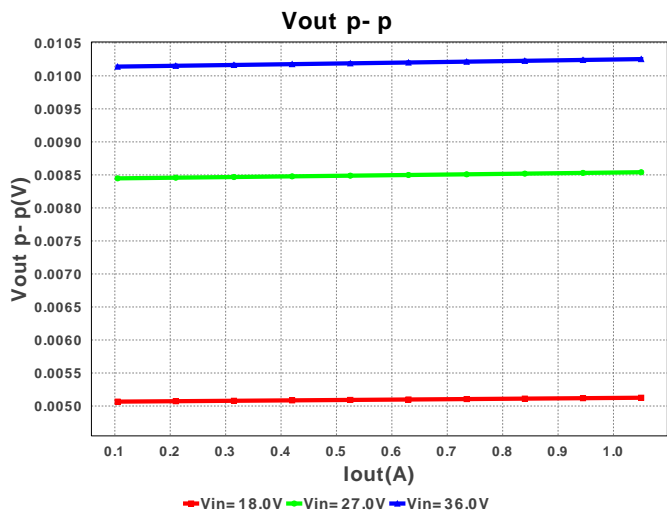
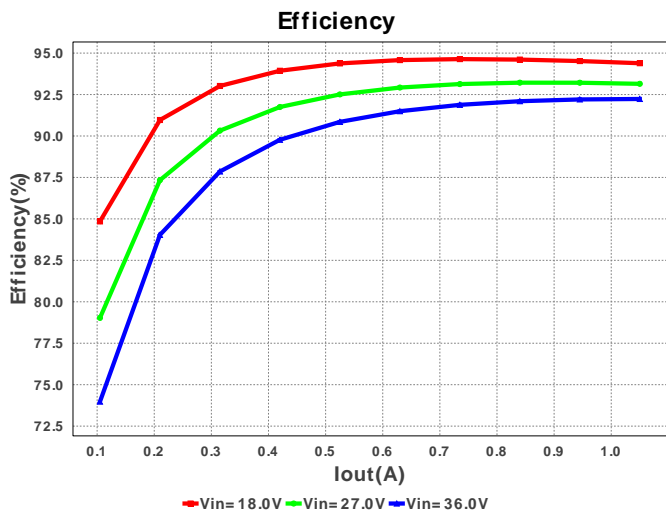
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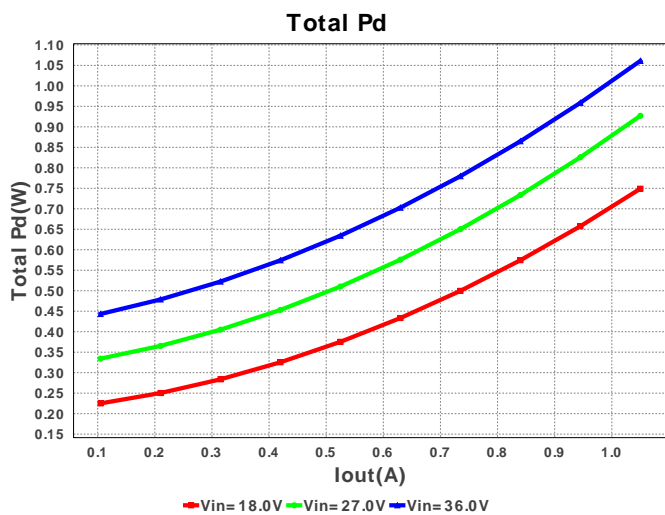
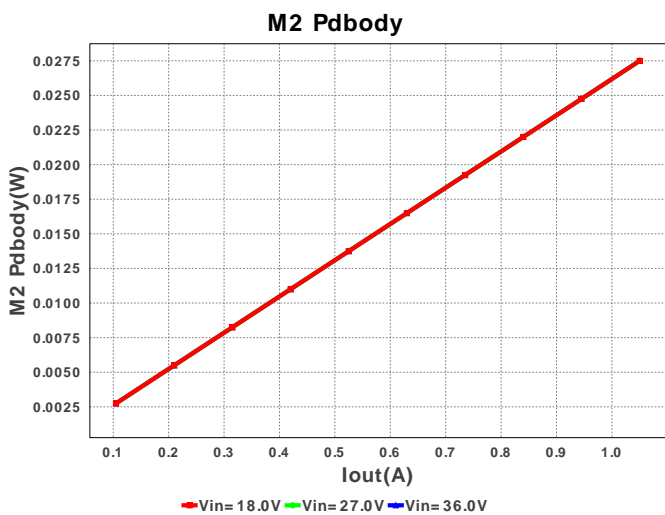
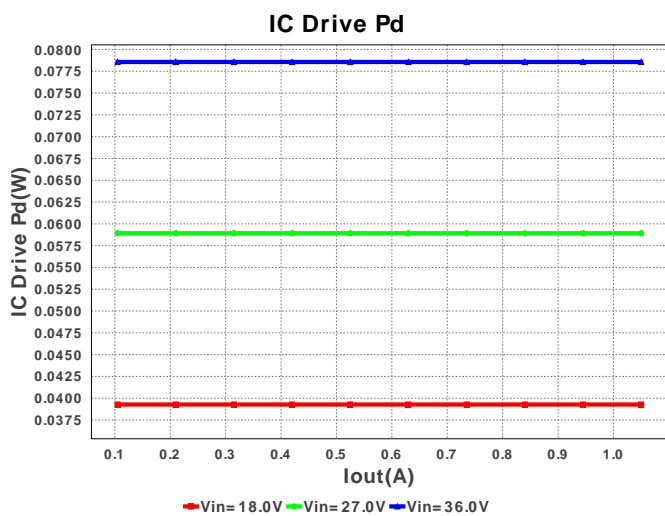
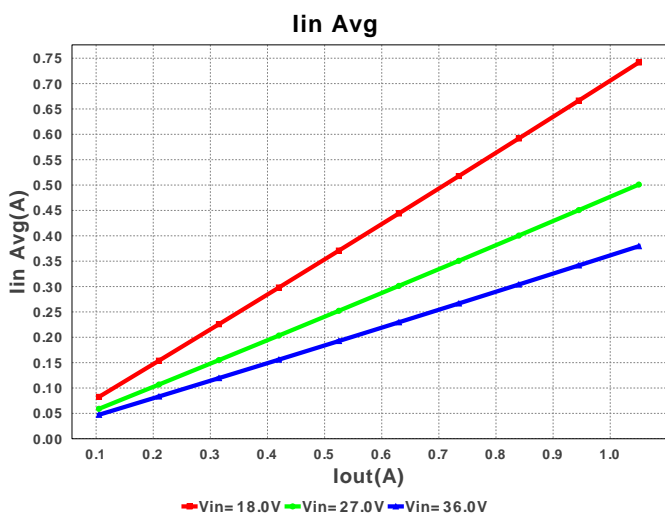
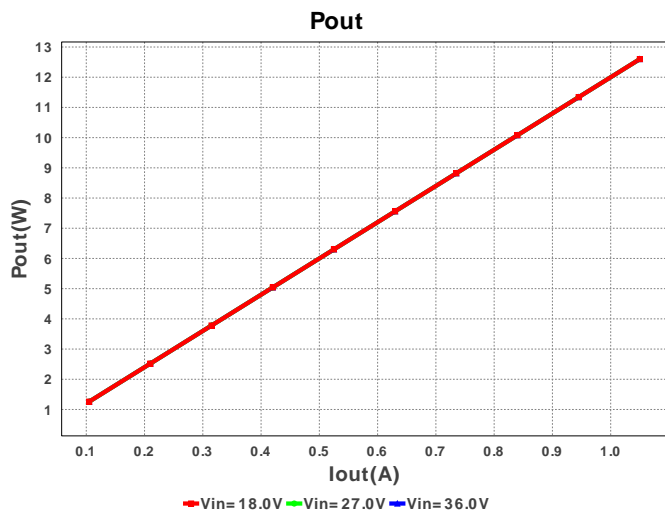
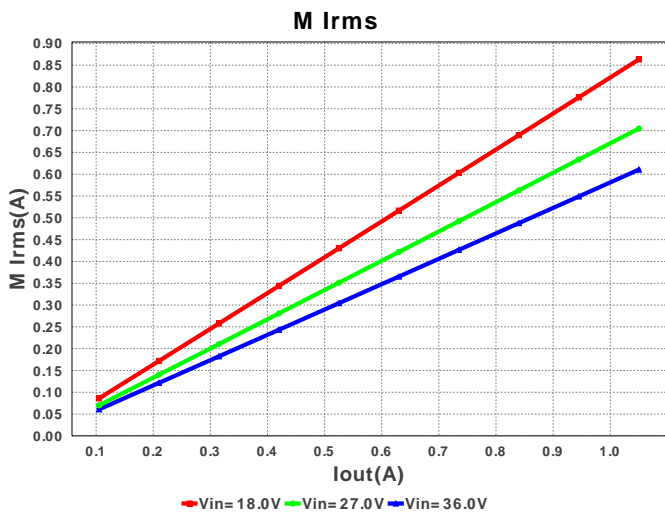
 Design : 4062649/1 LM20242MHX/NOPB
 LM20242MHX/NOPB 18.0V-36.0V to 12.0V @ 1.05A

Electrical BOM

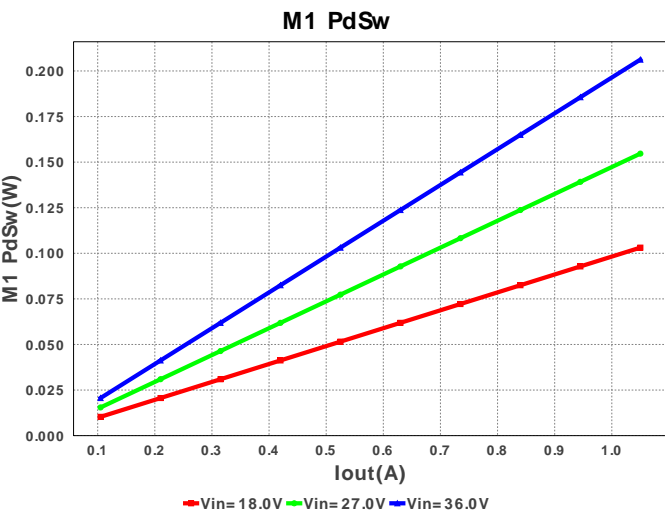
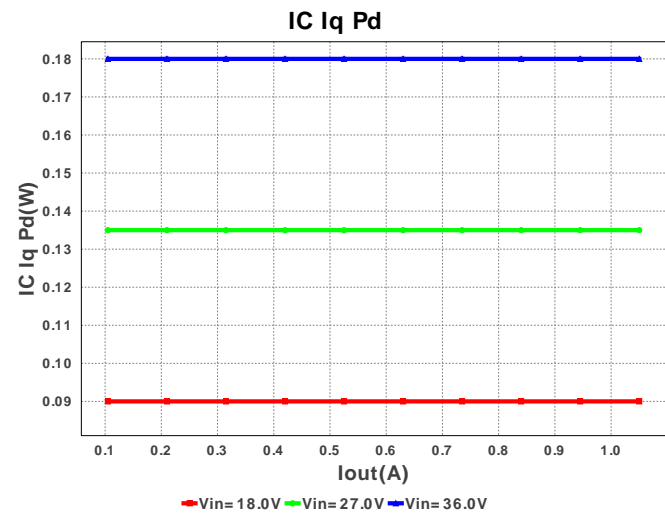
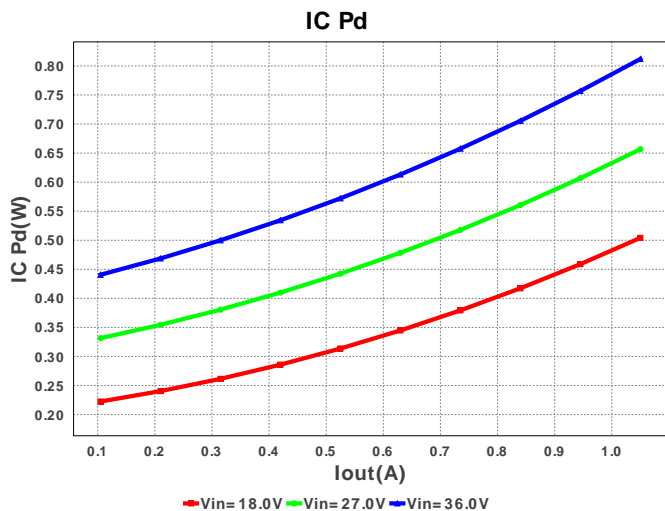
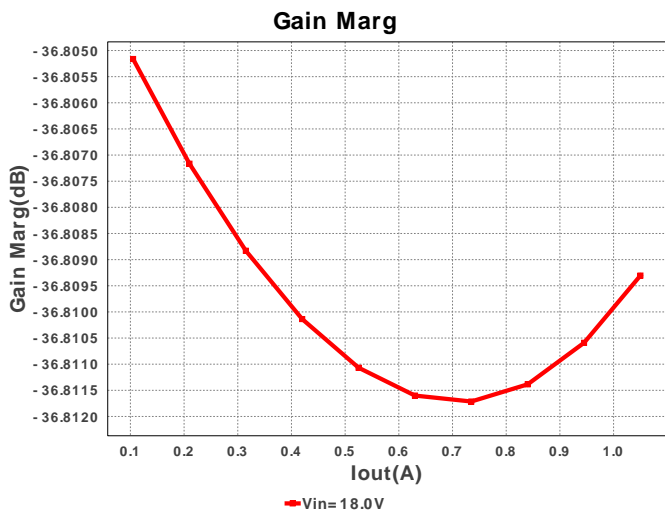
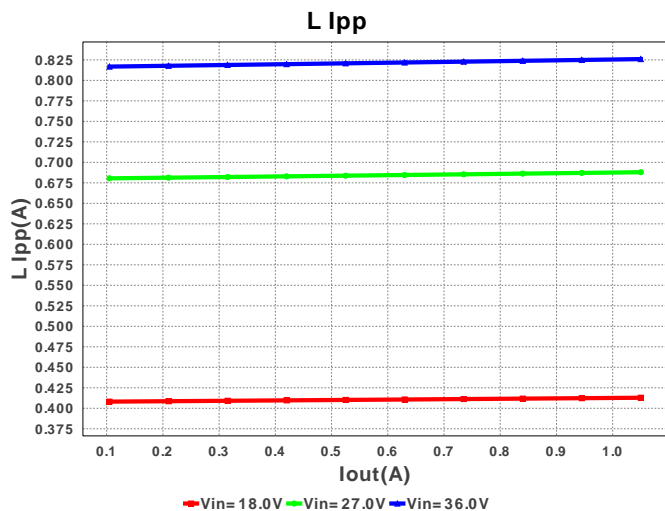
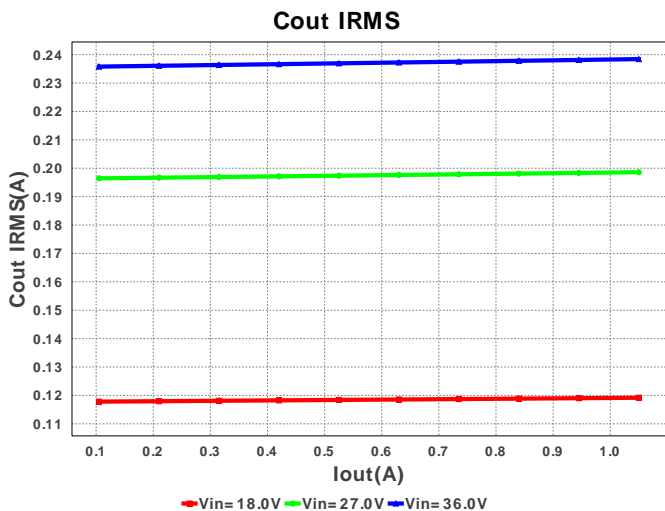
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
2.	Ccomp	Yageo America	CC0805KRX7R9BB682 Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
3.	Cext	MuRata	GRM155R61A105KE15D Series= X5R	Cap= 1.0 uF VDC= 10.0 V IRMS= 0.0 A	1	\$0.01	 0402 3mm2
4.	Cin	Panasonic	EEUED2D220 Series= 286	Cap= 22.0 uF ESR= 813.86 mOhm VDC= 200.0 V IRMS= 600.0 mA	1	\$0.19	 CAPP5-10X20 144mm ²
5.	Cout	MuRata	GRM32ER61E226KE15L Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 25.0 V IRMS= 3.67 A	1	\$0.28	 1210 15mm2
6.	Css	Yageo America	CC0805KRX7R9BB682 Series= X7R	Cap= 6.8 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7mm2
7.	L1	Bourns	SRR1210-180M	L= 18.0 uH DCR= 35.0 mOhm	1	\$0.44	 SRR1210 196mm ²
8.	Rcomp	Vishay-Dale	CRCW040221K5FKED Series= CRCW..e3	Res= 21.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
9.	Rfbb	Vishay-Dale	CRCW040210K0FKED Series= CRCW..e3	Res= 10.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2
10.	Rfbt	Vishay-Dale	CRCW0402140KFKED Series= CRCW..e3	Res= 140.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3mm2

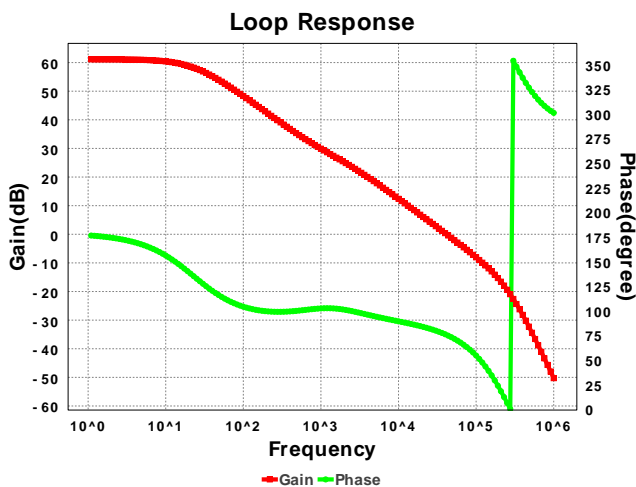
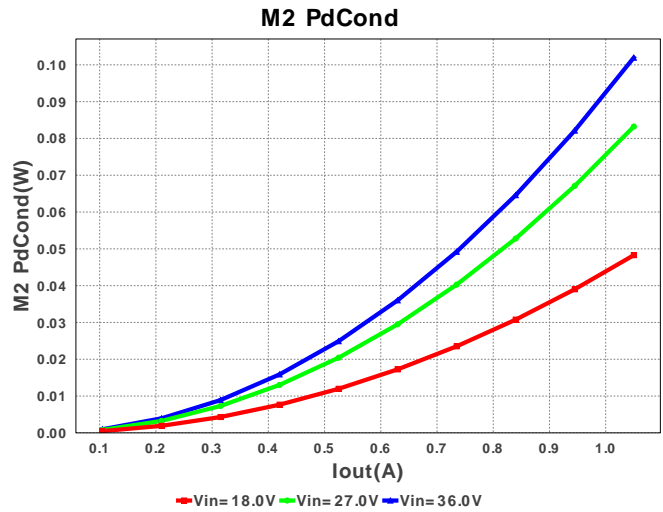
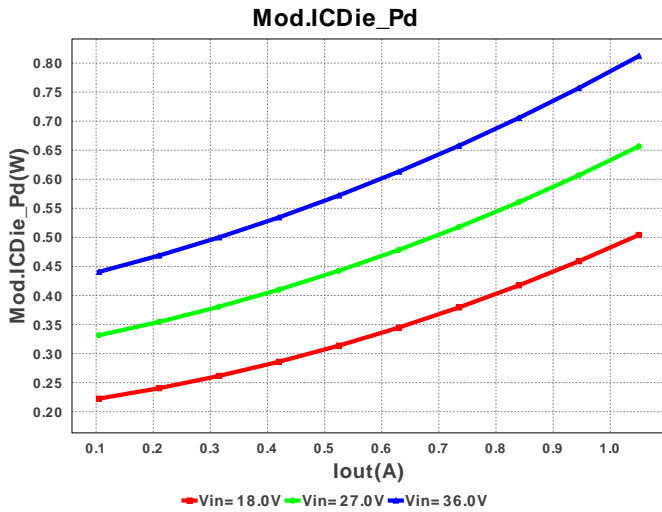
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11.	Rpg	Vishay-Dale	CRCW040249K9FKED Series= CRCW..e3	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3mm2
12.	Rt	Vishay-Dale	CRCW040295K3FKED Series= CRCW..e3	Res= 95.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3mm2
13.	U1	Texas Instruments	LM20242MHX/NOPB	Switcher	1	\$1.50	 MXA20A 71mm2











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	496.666 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	238.43 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.463 A	Current	Peak switch current in IC
4.	Iin Avg	379.47 mA	Current	Average input current
5.	L Ipp	825.947 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	610.413 mA	Current	MOSFET RMS current
7.	BOM Count	13	General	Total Design BOM count
8.	FootPrint	464.0 mm2	General	Total Foot Print Area of BOM components
9.	Frequency	545.576 kHz	General	Switching frequency
10.	IC Tolerance	12.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	99.282 mV	General	Voltage drop across the MosFET
12.	Pout	12.6 W	General	Total output power
13.	Total BOM	\$2.5	General	Total BOM Cost
14.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
15.	Cross Freq	41.653 kHz	Op_point	Bode plot crossover frequency
16.	Duty Cycle	33.796 %	Op_point	Duty cycle
17.	Efficiency	92.233 %	Op_point	Steady state efficiency
18.	IC Tj	84.359 degC	Op_point	IC junction temperature
19.	ICThetaJA	30.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
20.	IOUT_OP	1.05 A	Op_point	Iout operating point
21.	Phase Marg	76.358 deg	Op_point	Bode Plot Phase Margin
22.	VIN_OP	36.0 V	Op_point	Vin operating point
23.	Vout p-p	10.254 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	200.761 mW	Power	Input capacitor power dissipation
25.	Cout Pd	113.698 μW	Power	Output capacitor power dissipation
26.	IC Drive Pd	78.563 mW	Power	Driver power dissipation
27.	IC Iq Pd	180.0 mW	Power	IC Iq Pd
28.	IC Pd	811.968 mW	Power	IC power dissipation
29.	L Pd	48.234 mW	Power	Inductor power dissipation
30.	M1 PdCond	60.603 mW	Power	M1 MOSFET switching losses
31.	M1 PdSw	206.228 mW	Power	M1 MOSFET switching losses
32.	M2 PdCond	101.952 mW	Power	M2 MOSFET switching losses

#	Name	Value	Category	Description
33.	M2 Pdbody	27.497 mW	Power	Power dissipation through lower FET
34.	Total Pd	1.061 W	Power	Total Power Dissipation
35.	Low Freq Gain	61.137 dB	Unknown	Gain at 10Hz

Design Inputs

#	Name	Value	Description
1.	Iout	1.05 A	Maximum Output Current
2.	Iout1	1.05 Amps	Output Current #1
3.	VinMax	36.0 V	Maximum input voltage
4.	VinMin	18.0 V	Minimum input voltage
5.	Vout	12.0 V	Output Voltage
6.	Vout1	12.0 Volt	Output Voltage #1
7.	base_pn	LM20242	Texas Instruments Base Part Number
8.	source	DC	Input Source Type
9.	ta	60.0 degC	Ambient temperature

Design Assistance

1. LM20242 Product Folder : <http://www.ti.com/product/lm20242> : contains the data sheet and other resources.

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