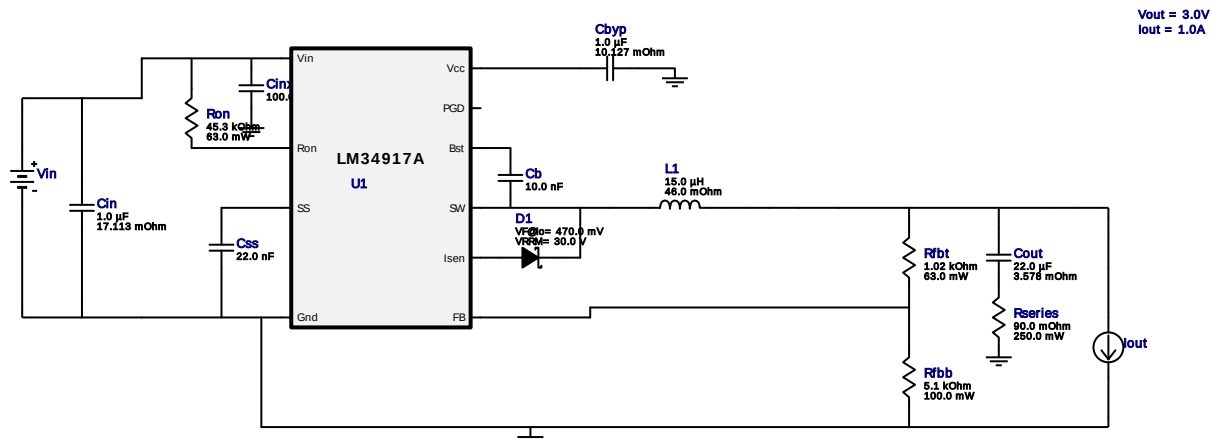


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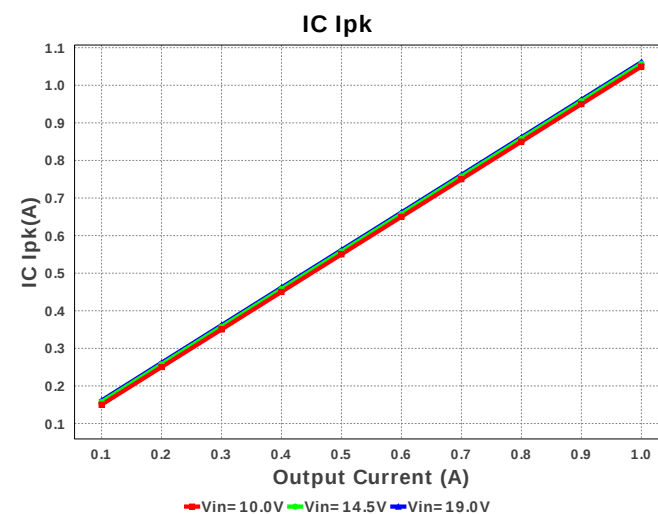
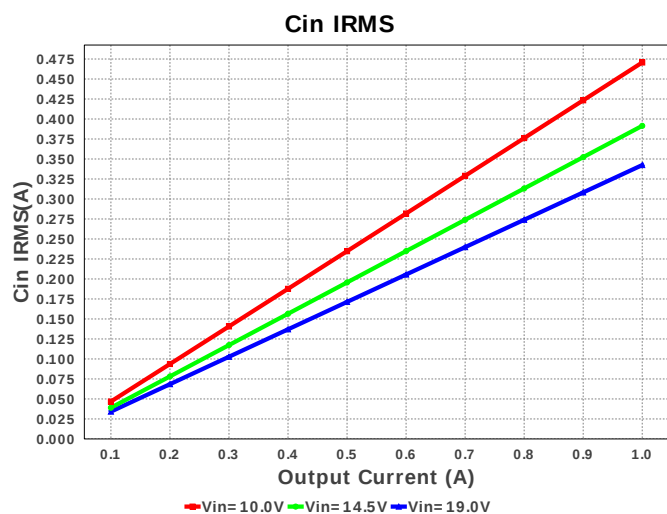
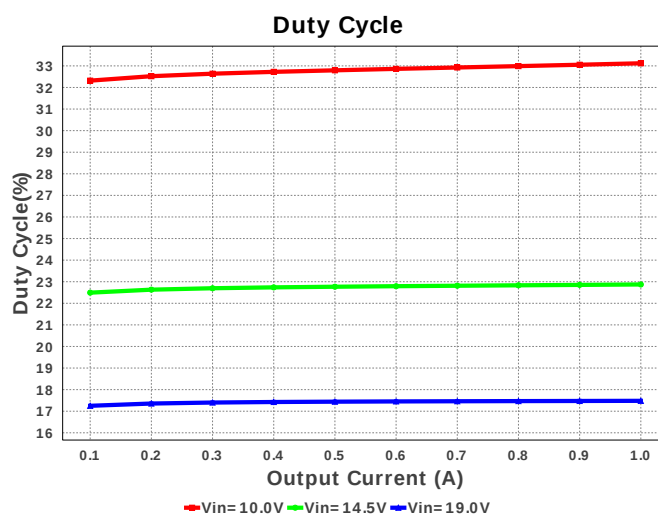
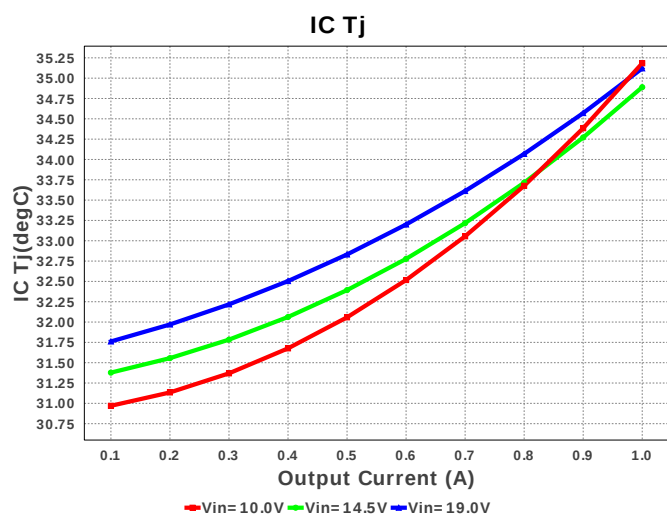
Design : 4728729/20 LM34917ATL/NOPB
LM34917ATL/NOPB 10.0V-19.0V to 3.00V @ 1.0A

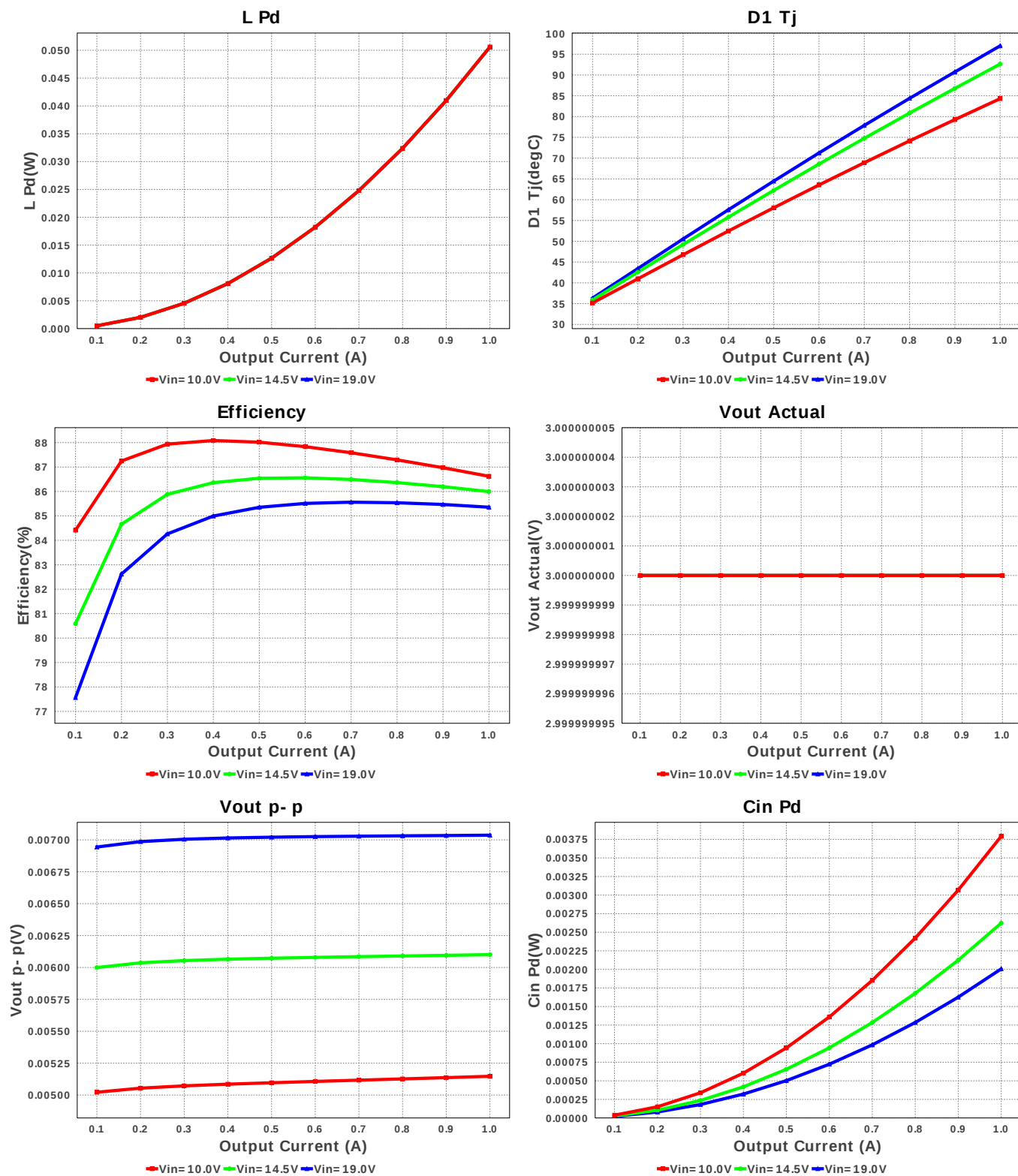


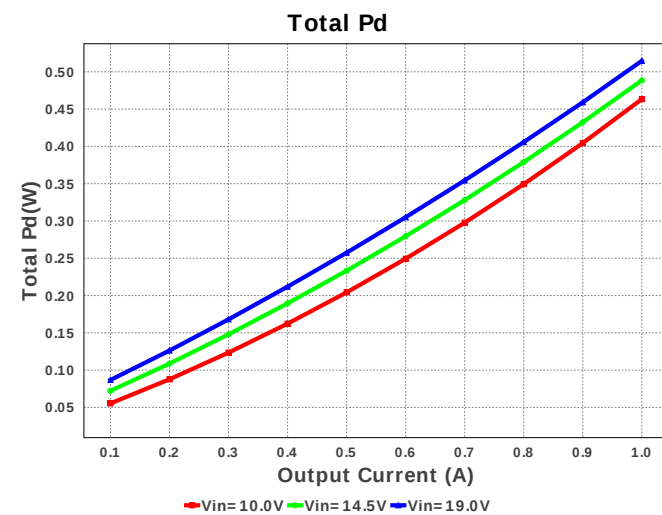
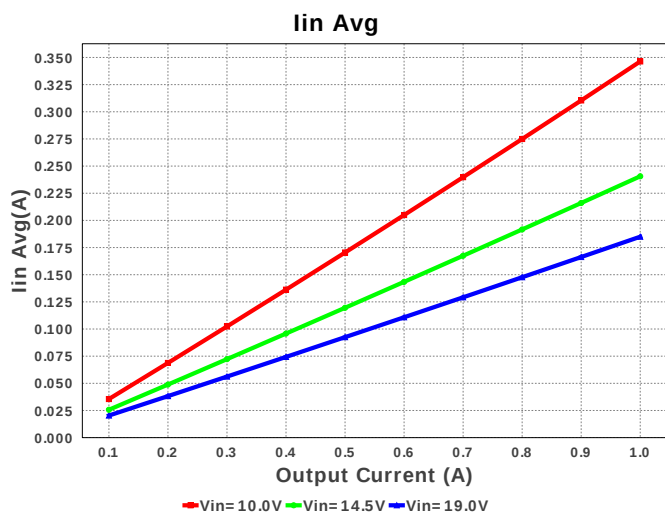
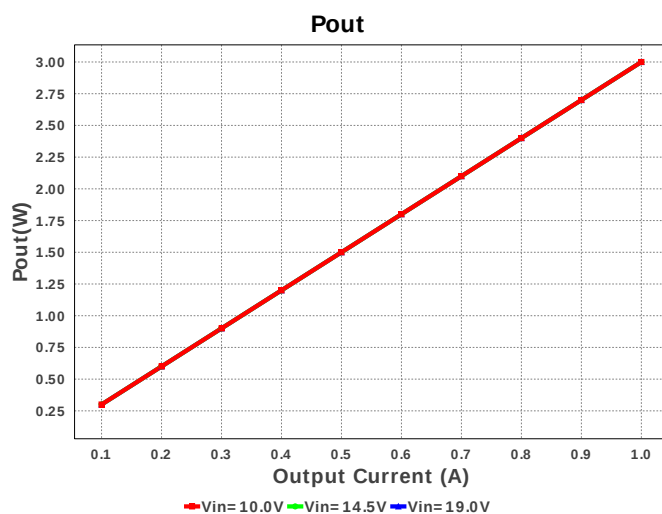
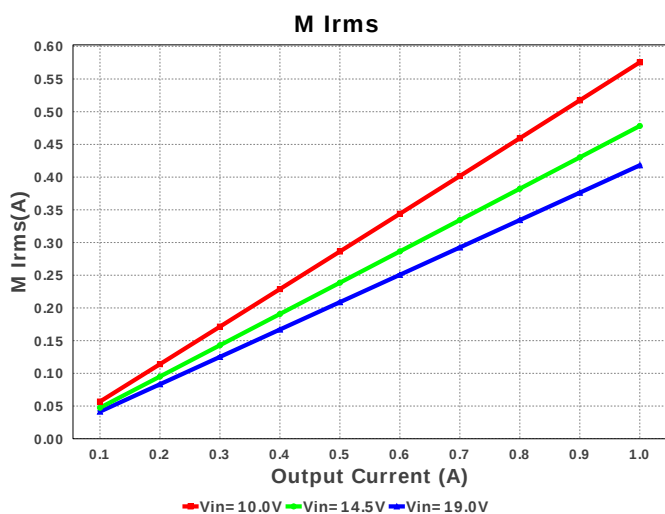
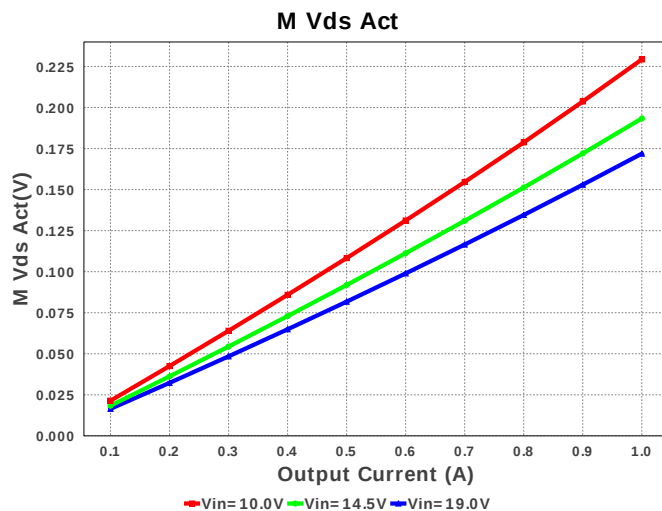
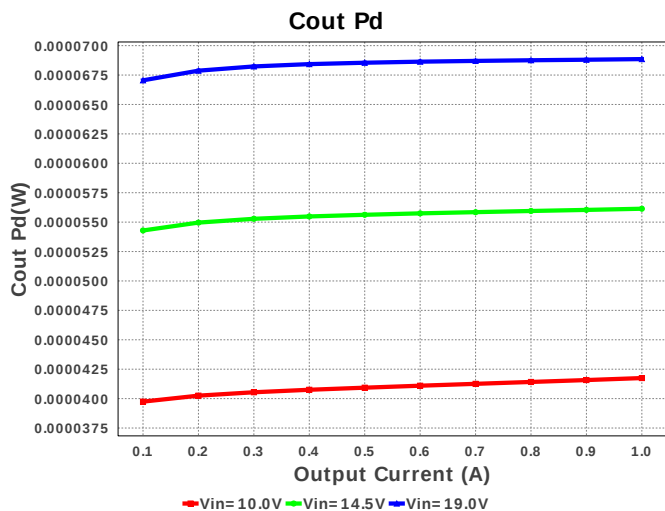
Electrical BOM

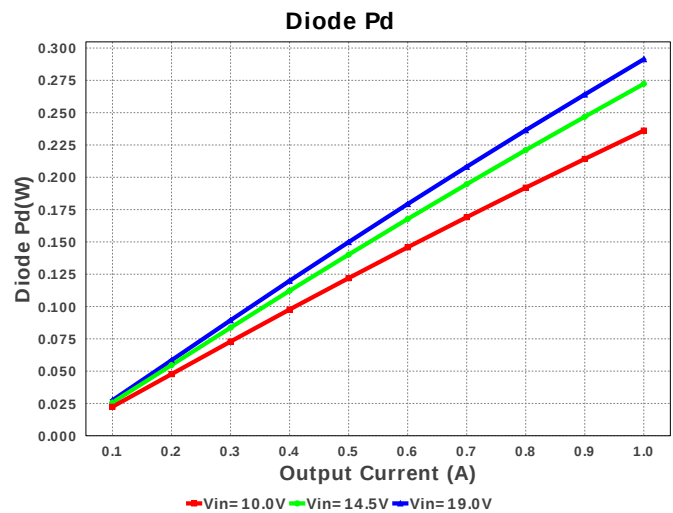
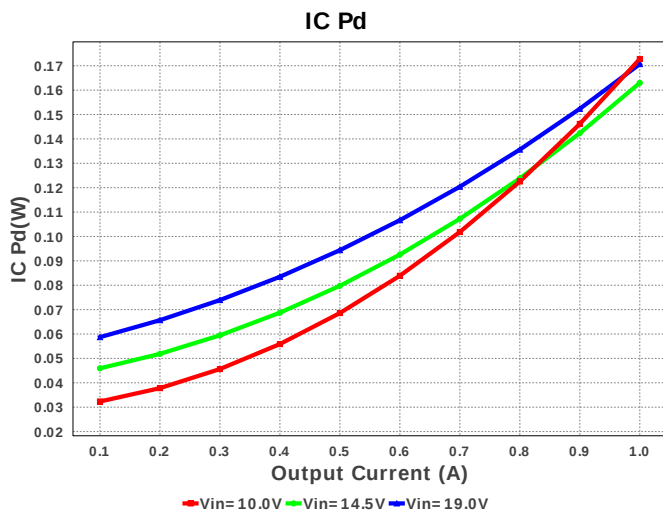
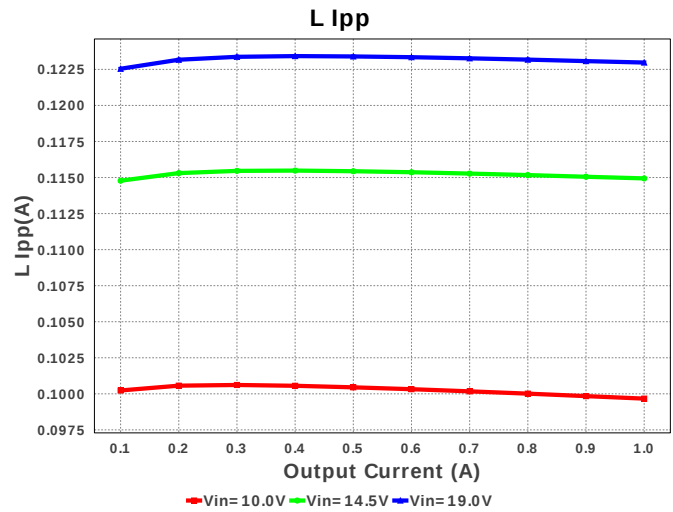
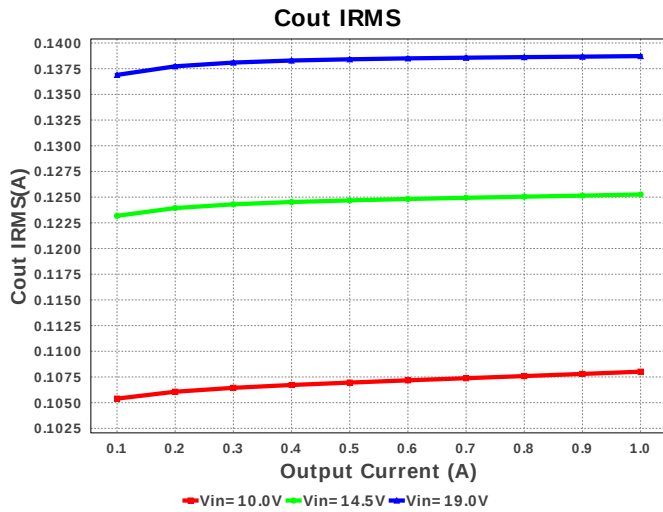
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cb	MuRata	GRM033R60J103KA01D Series= X5R	Cap= 10.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
2.	Cbst	MuRata	GRM033C80J223KE01D Series= X6S	Cap= 22.0 nF VDC= 6.3 V IRMS= 0.0 A	1	\$0.01	0201 2 mm ²
3.	Cbyp	MuRata	GRM188R61C105KA93D Series= X5R	Cap= 1.0 uF ESR= 10.127 mOhm VDC= 16.0 V IRMS= 994.63 mA	1	\$0.01	0603 5 mm ²
4.	Cin	MuRata	GRM188R61E105KA12D Series= X5R	Cap= 1.0 uF ESR= 17.113 mOhm VDC= 25.0 V IRMS= 979.39 mA	1	\$0.01	0603 5 mm ²
5.	Cinx	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
6.	Cout	MuRata	GRM21BC80G226ME39L Series= X6S	Cap= 22.0 uF ESR= 3.578 mOhm VDC= 4.0 V IRMS= 3.29633 A	1	\$0.04	0805 7 mm ²
7.	Css	MuRata	GRM155R61C223KA01D Series= X5R	Cap= 22.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
8.	Cvcc	MuRata	GRM21BR71E104KA01L Series= X7R	Cap= 100.0 nF VDC= 25.0 V IRMS= 0.0 A	1	\$0.01	0805 7 mm ²
9.	D1	ON Semiconductor	MBR130T1G	VF@Io= 470.0 mV VRRM= 30.0 V	1	\$0.09	SOD-123 13 mm ²
10.	L1	Bourns	SRU8043-150Y	L= 15.0 uH DCR= 46.0 mOhm	1	\$0.33	SRU8043 100 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rfbb	Yageo America	RC0603FR-075K1L Series= ?	Res= 5.1 kOhm Power= 100.0 mW Tolerance= 1.0%	1	\$0.01	0603 5 mm ²
12.	Rfbt	Vishay-Dale	CRCW04021K02FKED Series= CRCW..e3	Res= 1.02 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
13.	Ron	Vishay-Dale	CRCW040245K3FKED Series= CRCW..e3	Res= 45.3 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
14.	Rseries	Bourns	CRM0805-FW-R090ELF Series= ?	Res= 90.0 mOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.10	0805 7 mm ²
15.	U1	Texas Instruments	LM34917ATL/NOPB	Switcher	1	\$1.35	TLA12UNA 0 mm ²









Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	342.401 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	138.724 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	1.238 A	Current	Peak switch current in IC
4.	Iin Avg	184.98 mA	Current	Average input current
5.	L Ipp	475.39 mA	Current	Peak-to-peak inductor ripple current
6.	M Irms	418.103 mA	Current	MOSFET RMS current
7.	BOM Count	15	General	Total Design BOM count
8.	FootPrint	192.0 mm ²	General	Total Foot Print Area of BOM components
9.	Frequency	388.021 kHz	General	Switching frequency
10.	IC Tolerance	50.0 mV	General	IC Feedback Tolerance
11.	M Vds Act	171.882 mV	General	Voltage drop across the MosFET
12.	Pout	3.0 W	General	Total output power
13.	Total BOM	\$2.01	General	Total BOM Cost
14.	D1 Tj	97.01 degC	Op_Point	D1 junction temperature
15.	Vout Actual	3.0 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
16.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
17.	Duty Cycle	17.481 %	Op_point	Duty cycle
18.	Efficiency	85.356 %	Op_point	Steady state efficiency
19.	IC Tj	35.12 degC	Op_point	IC junction temperature
20.	ICThetaJA	30.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	1.0 A	Op_point	Iout operating point
22.	VIN_OP	19.0 V	Op_point	Vin operating point
23.	Vout p-p	49.822 mV	Op_point	Peak-to-peak output ripple voltage
24.	Cin Pd	2.006 mW	Power	Input capacitor power dissipation
25.	Cout Pd	68.856 μ W	Power	Output capacitor power dissipation
26.	Diode Pd	291.348 mW	Power	Diode power dissipation
27.	IC Pd	170.678 mW	Power	IC power dissipation
28.	L Pd	50.6 mW	Power	Inductor power dissipation
29.	Total Pd	514.681 mW	Power	Total Power Dissipation
30.	Vout Tolerance	2.343 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	1.0	Maximum Output Current
2.	VinMax	19.0	Maximum input voltage
3.	VinMin	10.0	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	LM34917A	Texas Instruments Base Part Number
6.	source	DC	Input Source Type
7.	ta	30.0	Ambient temperature

Design Assistance

1. For a Constant On Time device to be stable, we need to provide a ripple at the feedback comparator. There are various methods to implement the ripple. Depending on the circuit complexity vs. the allowable ripple, we have three options to choose from. The simplest option, 'Low Complexity', would require only a high ESR cap at the output. This means that the BOM count will be small, but the output voltage ripple will be quite large. The 'Optimal Solution' would require a feed-forward cap in parallel with the upper feedback resistor to AC couple the ripple to the feedback node. This increases the BOM count slightly, but now we have more control over the output voltage ripple. If the output voltage requirement is very tight, then the best option is to go for the 'Low Output Ripple' solution. In this option we can go with very low ESR output caps and have very good control over the output voltage ripple.

2. LM34917A Product Folder : <http://www.ti.com/product/LM34917A> : contains the data sheet and other resources.

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You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

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