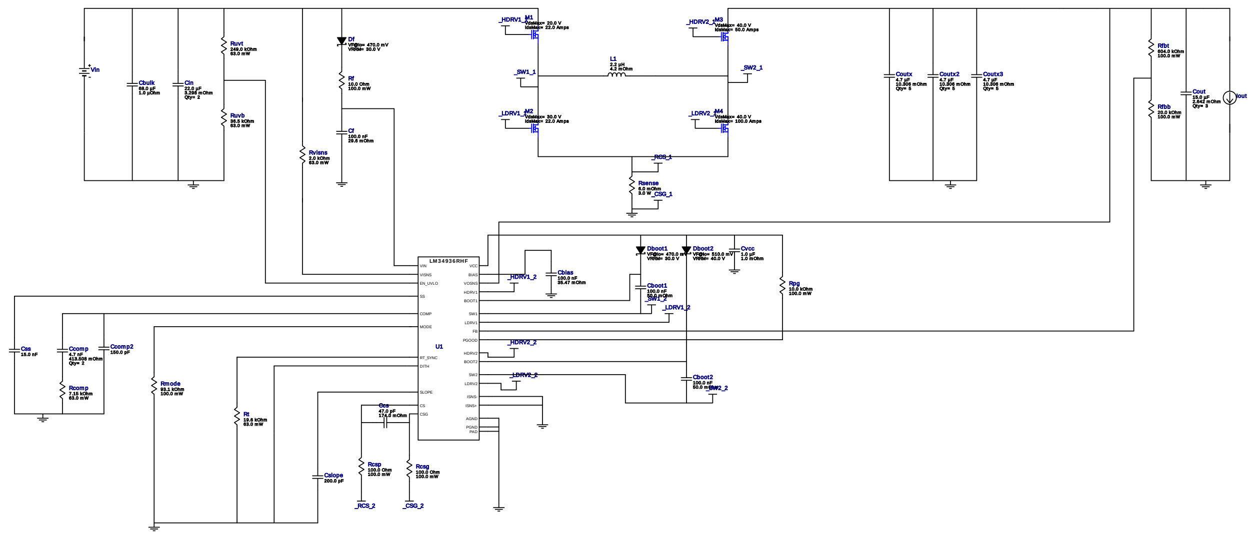
WEBENCH® Design Report

VinMin = 10.0V
VinMax = 15.0V
Vout = 25.0V
Iout = 5.0A

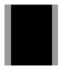
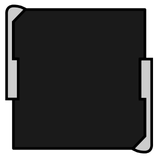
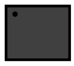
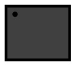
Device = LM34936RHFR
Topology = Buck_Boost
Created = 2025-09-17 15:03:00.982
BOM Cost = NA
BOM Count = 54
Total Pd = 8.87W

Design : 7 LM34936RHFR
LM34936RHFR 10V-15V to 25.00V @ 5A

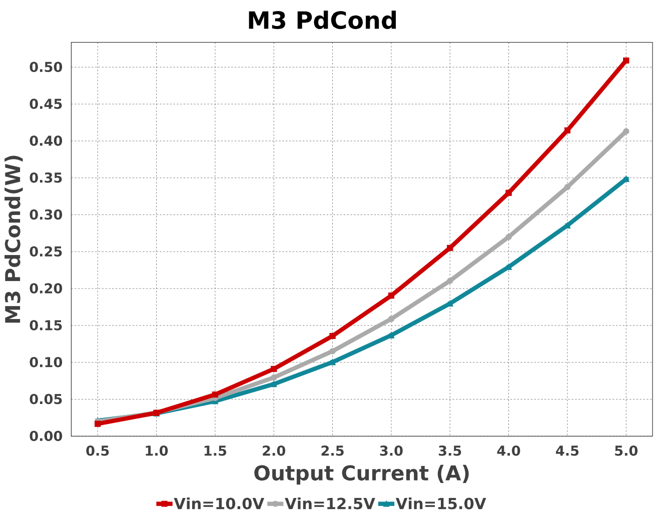


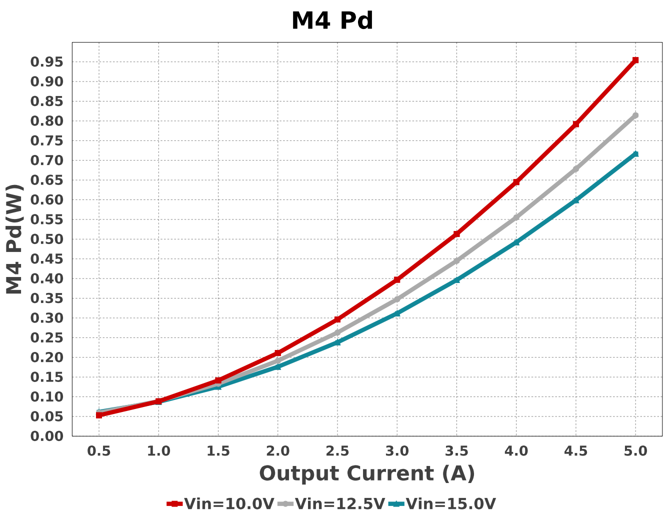
Electrical BOM

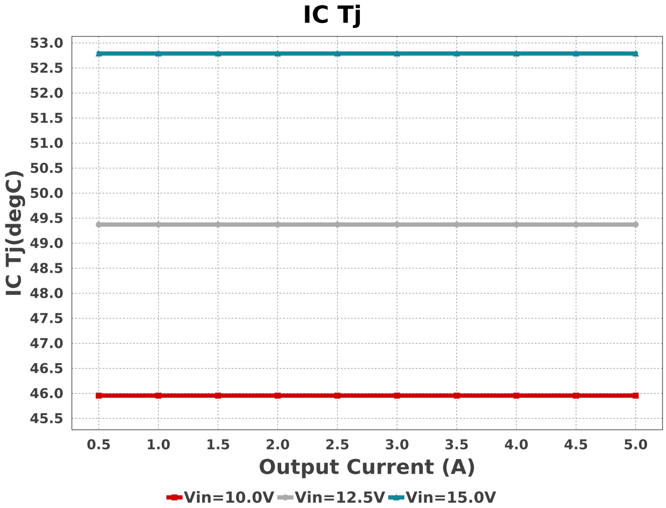
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cbias	Kemet	C0805C104M5RACTU Series= X7R	Cap= 100.0 nF ESR= 35.47 mOhm VDC= 50.0 V IRMS= 1.64 A	1	$0.01	0805 7 mm²
Cboot1	AVX	06033C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 50.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm²
Cboot2	AVX	06033C104KAT2A Series= X7R	Cap= 100.0 nF ESR= 50.0 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm²
Cbulk	CUSTOM	CUSTOM Series= ?	Cap= 68.0 uF ESR= 1.0 uOhm VDC= 21.429 V	1	NA	CUSTOM 0 mm²
Ccomp	TDK	CGA2B2X7R1H472K050BA Series= X7R	Cap= 4.7 nF ESR= 413.51 mOhm VDC= 50.0 V IRMS= 330.88 mA	2	$0.01	0402 3 mm²
Ccomp2	Taiyo Yuden	UMK105CG151JV-F Series= C0G/NP0	Cap= 150.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
Ccs	AVX	06035A470JAT2A Series= C0G/NP0	Cap= 47.0 pF ESR= 174.0 mOhm VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm²
Cf	TDK	CGA3E2X7R1H104K080AA Series= X7R	Cap= 100.0 nF ESR= 29.6 mOhm VDC= 50.0 V IRMS= 971.99 mA	1	$0.01	0603 5 mm²
Cin	Taiyo Yuden	MSAST32MSB7226KPNB25 Series= X7R	Cap= 22.0 uF ESR= 3.298 mOhm VDC= 25.0 V IRMS= 3.7481 A	2	$0.18	1210 15 mm²

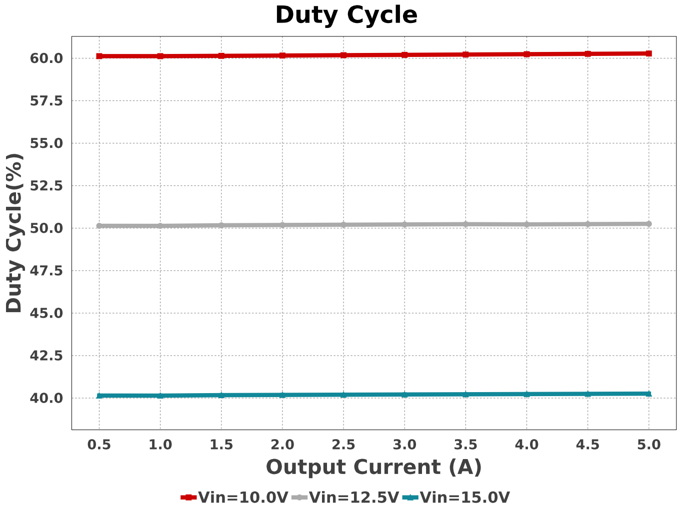
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cout	TDK	C5750X7S2A156M250KB Series= X7S	Cap= 15.0 uF ESR= 2.642 mOhm VDC= 100.0 V IRMS= 5.6162 A	3	$1.13	 2220_280 54 mm^2
Coutx	Taiyo Yuden	MSASU21GBB5475KTNA01 Series= X5R	Cap= 4.7 uF ESR= 10.306 mOhm VDC= 50.0 V IRMS= 2.1789 A	5	$0.09	0805 7 mm^2
Coutx2	Taiyo Yuden	MSASU21GBB5475KTNA01 Series= X5R	Cap= 4.7 uF ESR= 10.306 mOhm VDC= 50.0 V IRMS= 2.1789 A	5	$0.09	0805 7 mm^2
Coutx3	Taiyo Yuden	MSASU21GBB5475KTNA01 Series= X5R	Cap= 4.7 uF ESR= 10.306 mOhm VDC= 50.0 V IRMS= 2.1789 A	5	$0.09	0805 7 mm^2
Cslope	Samsung Electro-Mechanics	CL10C201JB8NNNC Series= C0G/NP0	Cap= 200.0 pF VDC= 50.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm^2
Css	Kemet	C0603C153J3GACTU Series= C0G/NP0	Cap= 15.0 nF VDC= 25.0 V IRMS= 0.0 A	1	$0.09	0603 5 mm^2
Cvcc	Taiyo Yuden	EMK107B7105KA-T Series= X7R	Cap= 1.0 uF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0603 5 mm^2
Dboot1	Torex USA Corporation	XBS053V15R-G	VF@Io= 470.0 mV VRRM= 30.0 V	1	$0.15	SOD-523 5 mm^2
Dboot2	Comchip Technology	CDBK0540-HF	VF@Io= 510.0 mV VRRM= 40.0 V	1	$0.07	SOD-123F 12 mm^2
Df	Torex USA Corporation	XBS053V15R-G	VF@Io= 470.0 mV VRRM= 30.0 V	1	$0.15	SOD-523 5 mm^2
L1	Bourns	SRP1270-2R2M	L= 2.2 µH 4.2 mOhm	1	$0.83	 SRP1270 246 mm^2
M1	Texas Instruments	CSD15571Q2	VdsMax= 20.0 V IdsMax= 22.0 Amps	1	$0.12	DQK0006C 9 mm^2
M2	Texas Instruments	CSD17571Q2	VdsMax= 30.0 V IdsMax= 22.0 Amps	1	$0.12	DQK0006C 9 mm^2
M3	Texas Instruments	CSD18514Q5A	VdsMax= 40.0 V IdsMax= 50.0 Amps	1	$0.28	 TRANS_NexFET_Q5A 55 mm^2
M4	Texas Instruments	CSD18511Q5A	VdsMax= 40.0 V IdsMax= 100.0 Amps	1	$0.40	 TRANS_NexFET_Q5A 55 mm^2
Rcomp	Vishay-Dale	CRCW04027K15FKED Series= CRCW..e3	Res= 7.15 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rcsg	Vishay-Dale	CRCW0603100RFKEA Series= CRCW..e3	Res= 100.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rcsp	Vishay-Dale	CRCW0603100RFKEA Series= CRCW..e3	Res= 100.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2

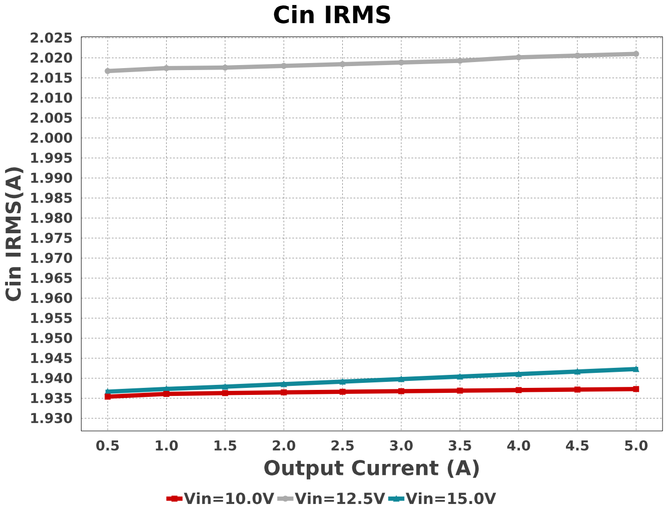
Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Rf	Yageo	RC0603FR-0710RL Series= ?	Res= 10.0 Ohm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rfbb	Yageo	RC0603FR-0720KL Series= ?	Res= 20.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rfbt	Yageo	RC0603FR-07604KL Series= ?	Res= 604.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rmode	Yageo	RC0603FR-0793K1L Series= ?	Res= 93.1 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rpg	Yageo	RC0603FR-0710KL Series= ?	Res= 10.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm^2
Rsense	Vishay-Dale	WSR36L000FEA Series= WSR	Res= 6.0 mOhm Power= 3.0 W Tolerance= 1.0%	1	$0.72	4527 122 mm^2
Rt	Vishay-Dale	CRCW040219K6FKED Series= CRCW..e3	Res= 19.6 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Ruvb	Yageo	AC0402FR-0736K5L Series= ?	Res= 36.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Ruvt	Vishay-Dale	CRCW0402249KFKED Series= CRCW..e3	Res= 249.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
Rvisns	Vishay-Dale	CRCW04022K00FKED Series= CRCW..e3	Res= 2.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
U1	Texas Instruments	LM34936RHFR	Switcher	1	$2.76	RHF0028A 42 mm^2

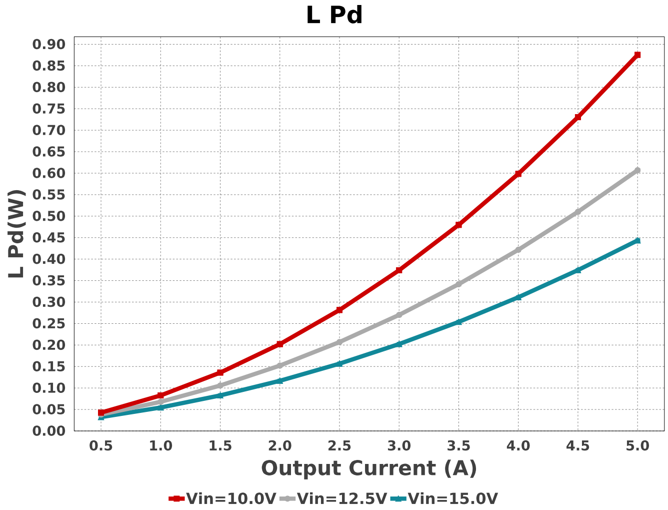


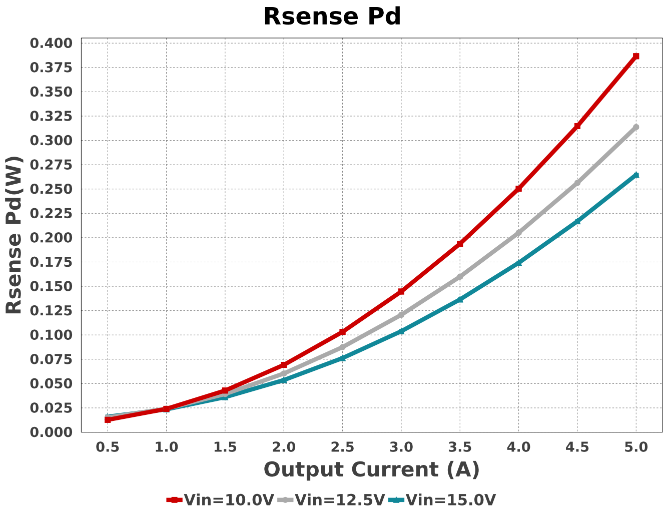


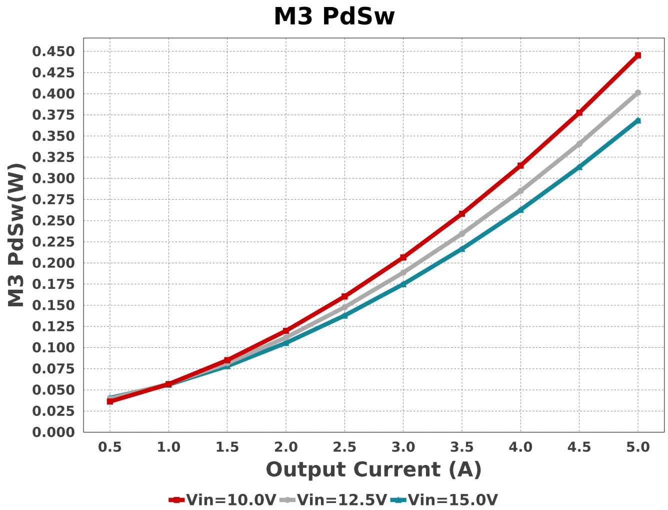

IC Tj
IC Tj(degC)
53.0
52.5
52.0
51.5
51.0
50.5
50.0
49.5
49.0
48.5
48.0
47.5
47.0
46.5
46.0
45.5
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

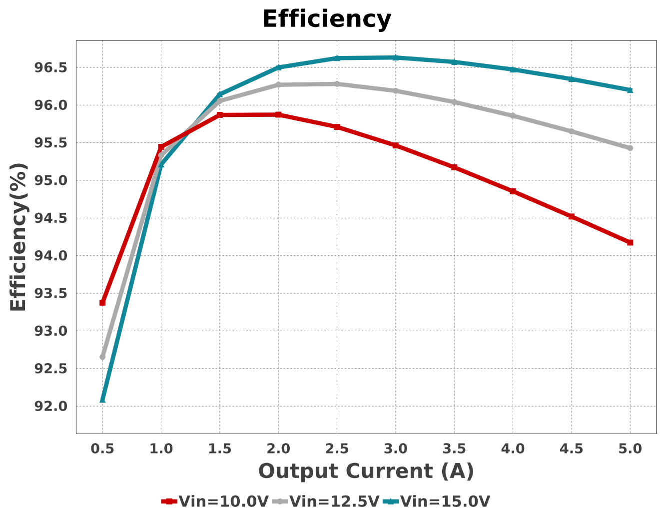

Duty Cycle
Duty Cycle(%)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

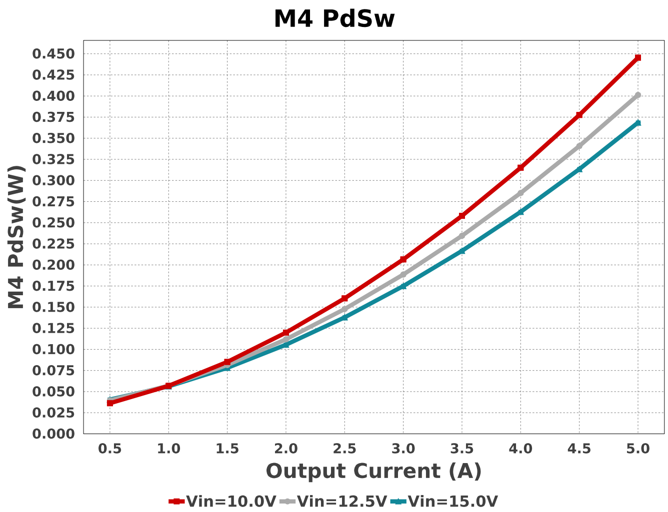

Cin IRMS
Cin IRMS(A)
2.025
2.020
2.015
2.010
2.005
2.000
1.995
1.990
1.985
1.980
1.975
1.970
1.965
1.960
1.955
1.950
1.945
1.940
1.935
1.930
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

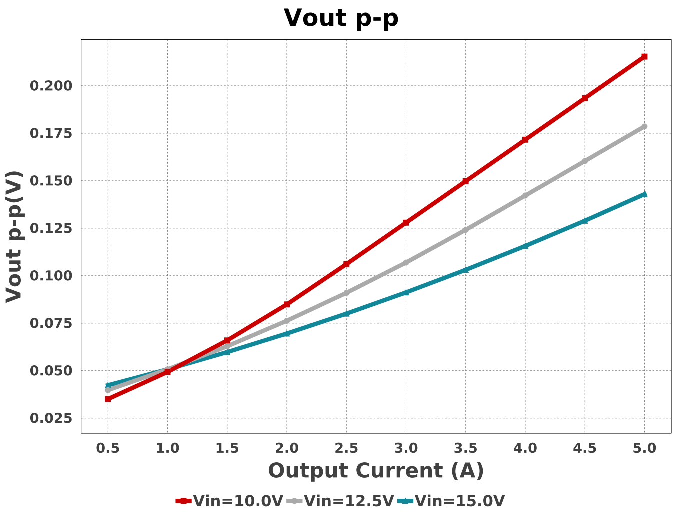

L Pd
L Pd(W)
0.90
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

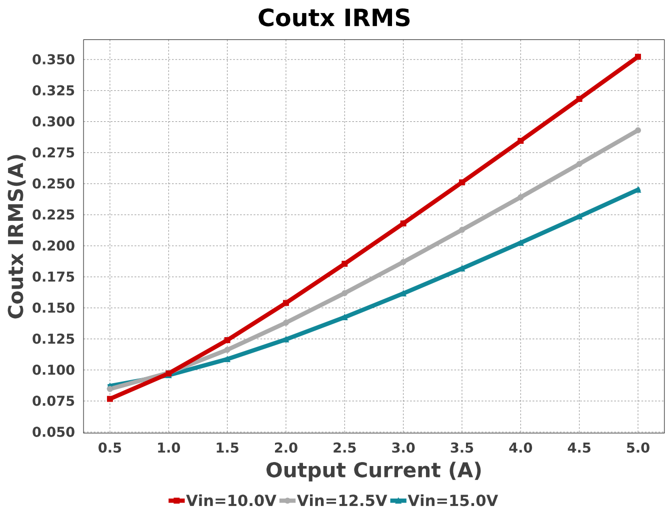

Rsense Pd
Rsense Pd(W)
0.400
0.375
0.350
0.325
0.300
0.275
0.250
0.225
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

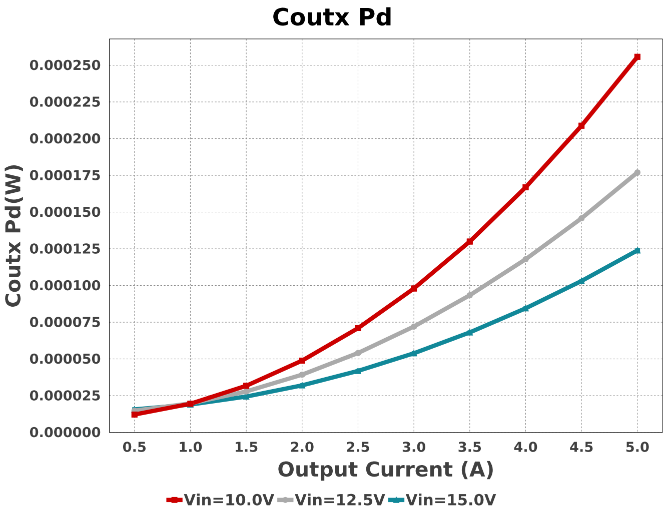

M3 PdSw
M3 PdSw(W)
0.450
0.425
0.400
0.375
0.350
0.325
0.300
0.275
0.250
0.225
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

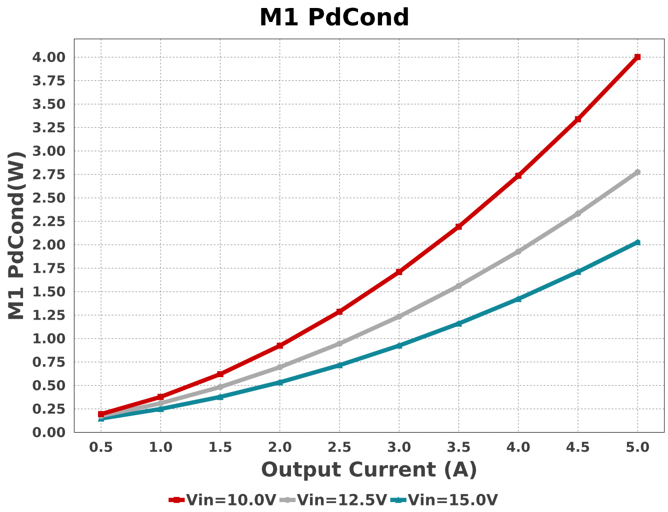

Efficiency
Efficiency(%)
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

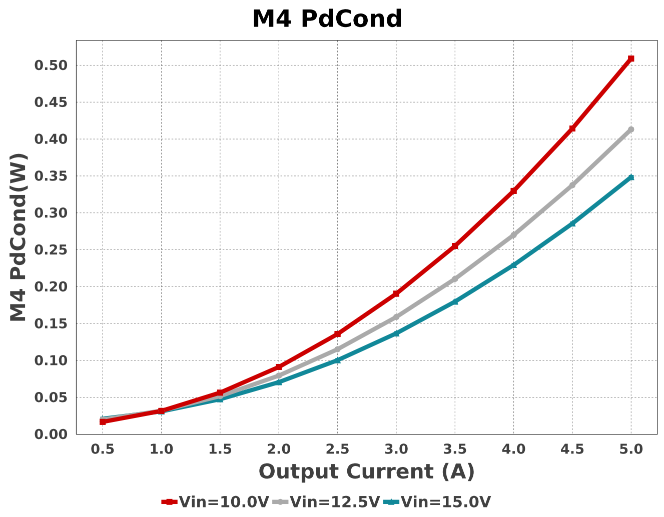

M4 PdSw
M4 PdSw(W)
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

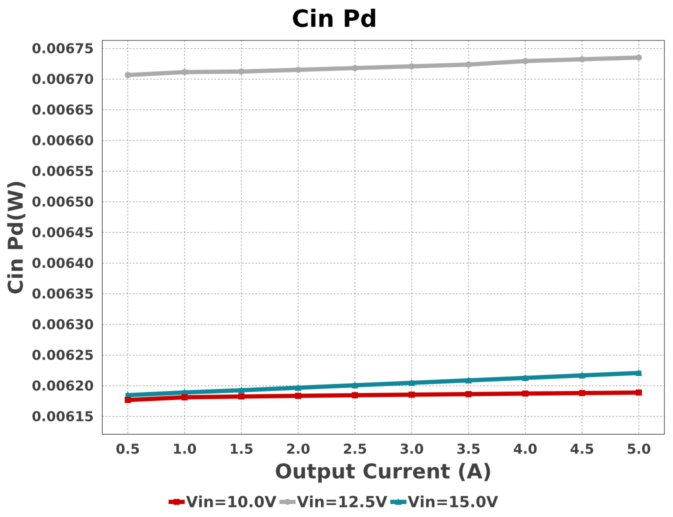

Vout p-p
Vout p-p(V)
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

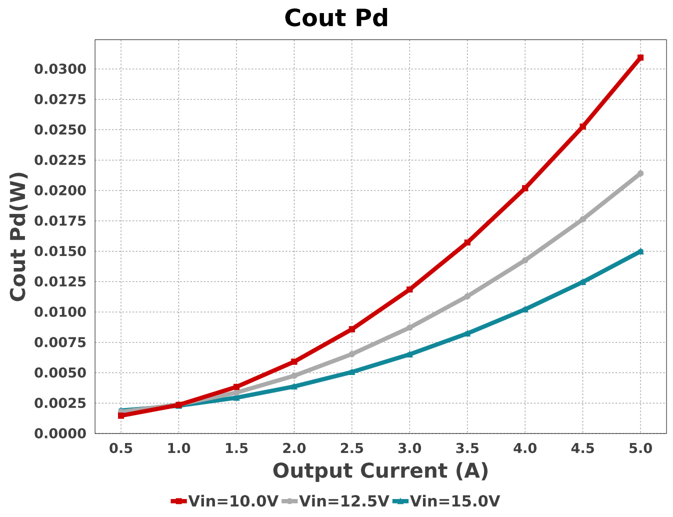

Coutx IRMS
Coutx IRMS(A)
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

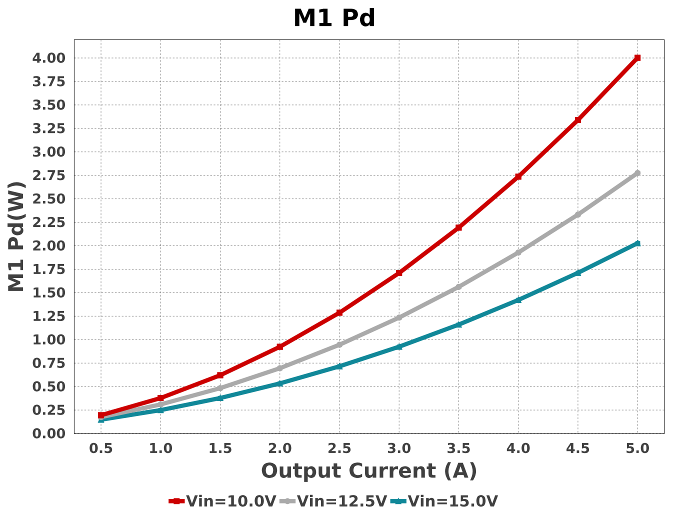

Coutx Pd
Coutx Pd(W)
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

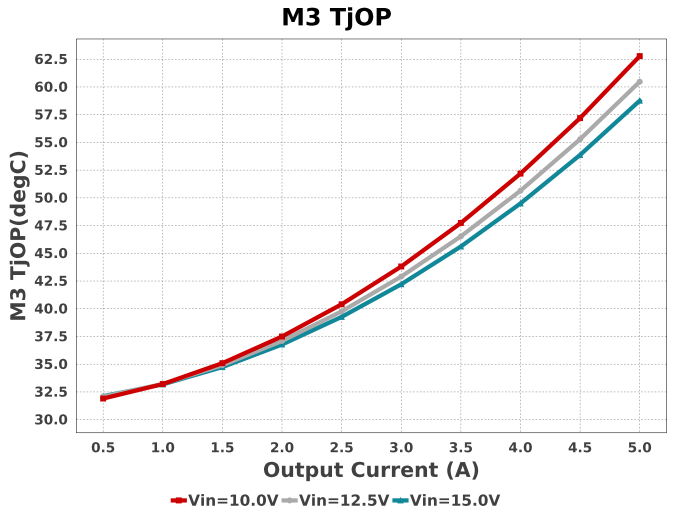

M1 PdCond
M1 PdCond(W)
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

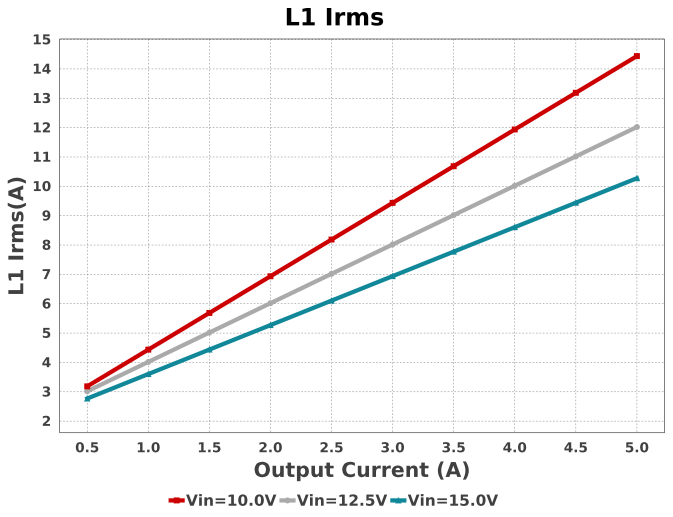

M4 PdCond
M4 PdCond(W)
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Output Current (A)
Vin=10.0V
Vin=12.5V
Vin=15.0V

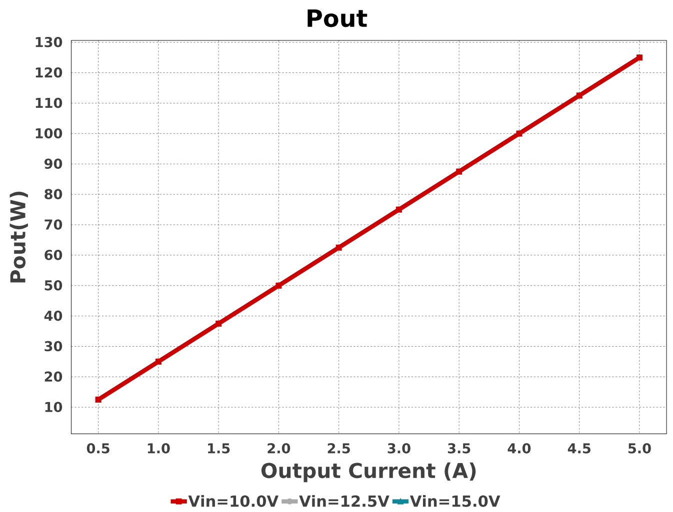

Cin Pd
Cin Pd(W)
0.00675
0.00670
0.00665
0.00660
0.00655
0.00650
0.00645
0.00640
0.00635
0.00630
0.00625
0.00620
0.00615
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Output Current (A)
Vin=10.0V
Vin=12.5V
Vin=15.0V

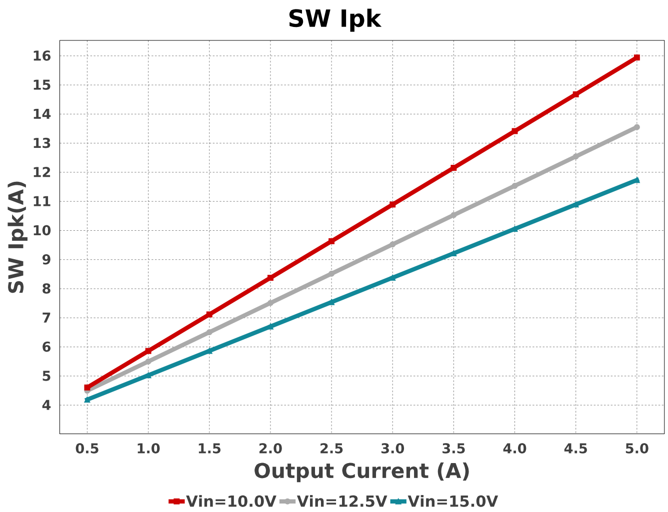

Cout Pd
Cout Pd(W)
0.0300
0.0275
0.0250
0.0225
0.0200
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Output Current (A)
Vin=10.0V
Vin=12.5V
Vin=15.0V

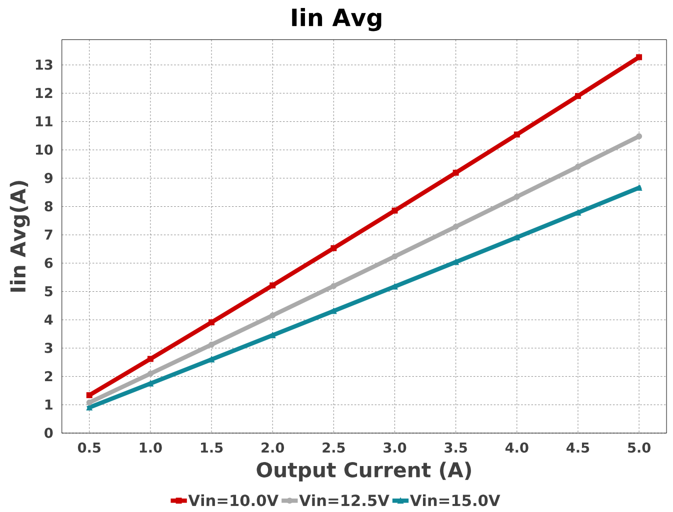

M1 Pd
M1 Pd(W)
4.00
3.75
3.50
3.25
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Output Current (A)
Vin=10.0V
Vin=12.5V
Vin=15.0V

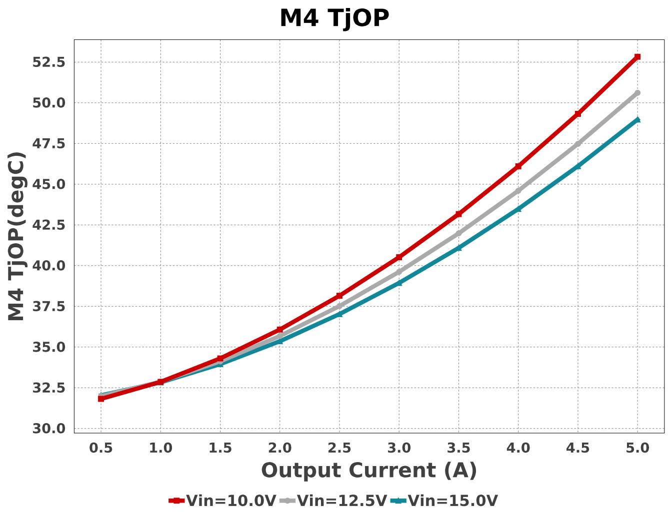

M3 TjOP
M3 TjOP(degC)
62.5
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
37.5
35.0
32.5
30.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Output Current (A)
Vin=10.0V
Vin=12.5V
Vin=15.0V

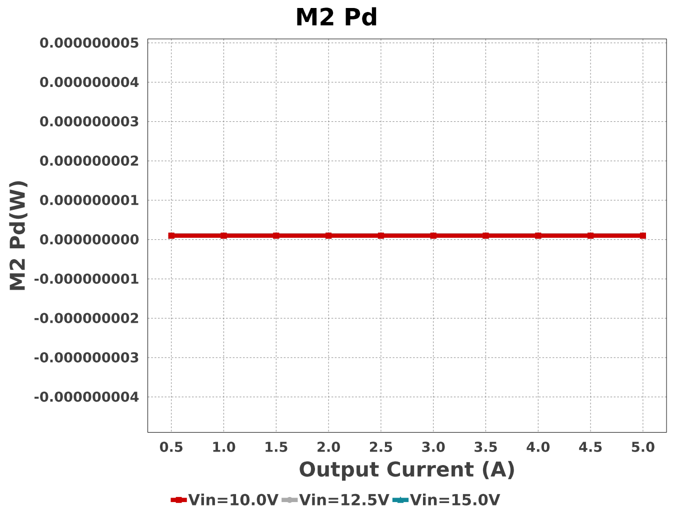

L1 Irms
L1 Irms(A)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
Output Current (A)
Vin=10.0V
Vin=12.5V
Vin=15.0V

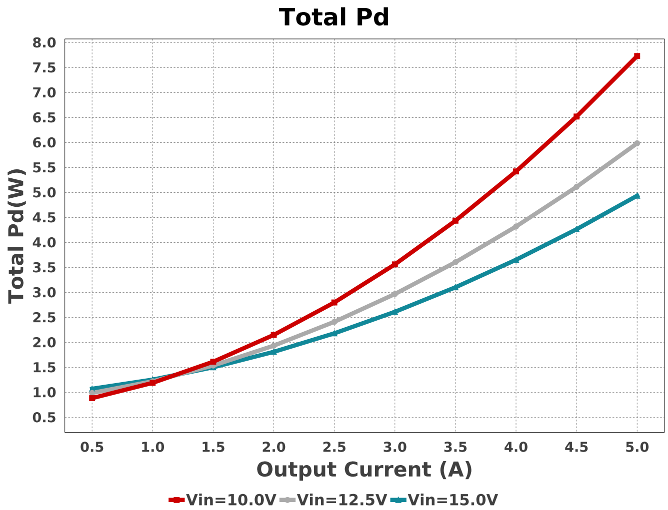

Pout
Pout(W)
130
120
110
100
90
80
70
60
50
40
30
20
10
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

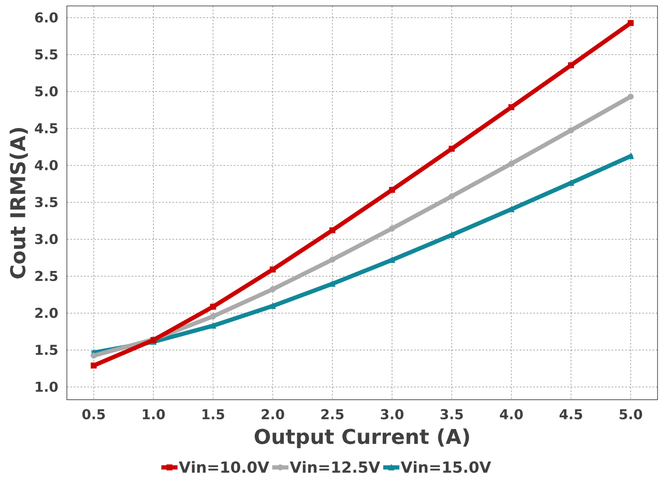

SW Ipk
SW Ipk(A)
16
15
14
13
12
11
10
9
8
7
6
5
4
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

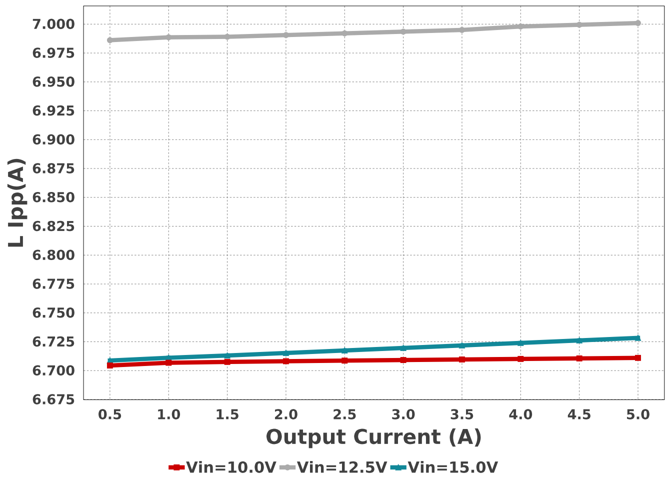

Iin Avg
Iin Avg(A)
13
12
11
10
9
8
7
6
5
4
3
2
1
0
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

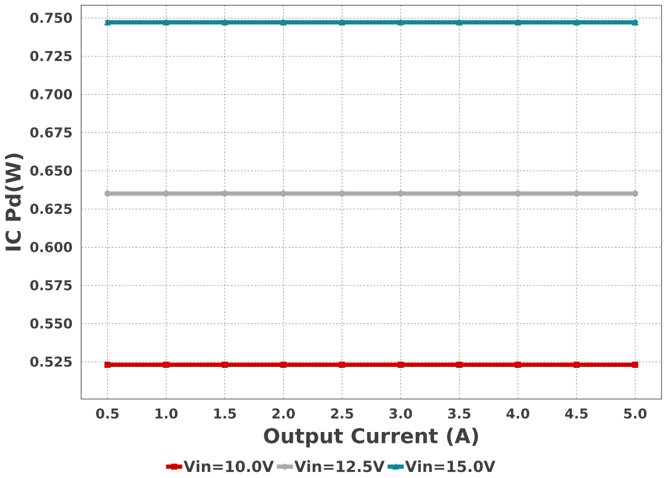

M4 TjOP
M4 TjOP(degC)
52.5
50.0
47.5
45.0
42.5
40.0
37.5
35.0
32.5
30.0
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

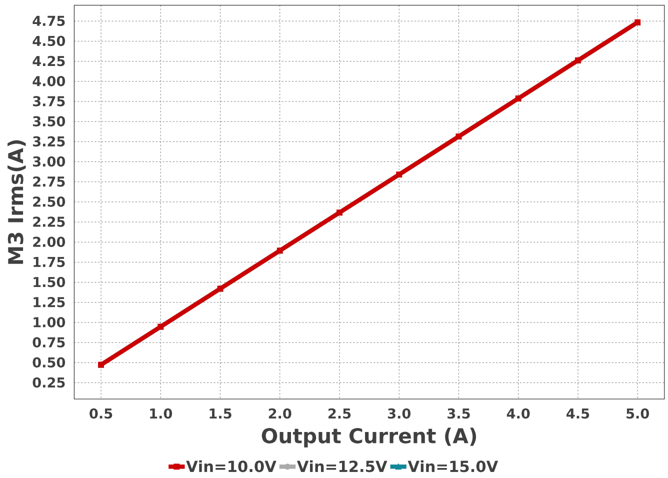

M2 Pd
M2 Pd(W)
0.000000005
0.000000004
0.000000003
0.000000002
0.000000001
0.000000000
-0.000000001
-0.000000002
-0.000000003
-0.000000004
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

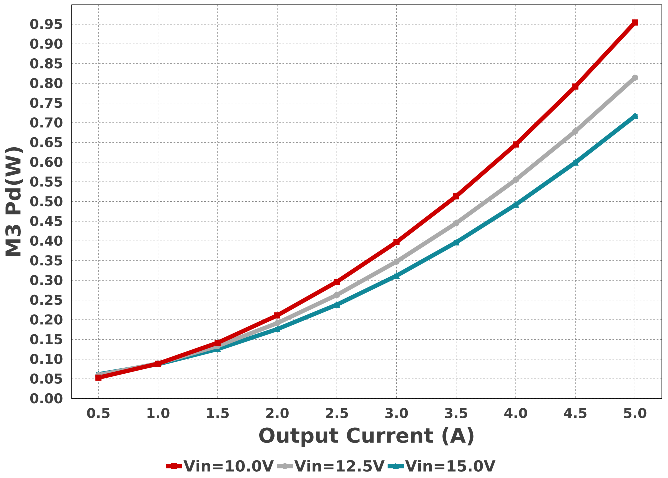

Total Pd
Total Pd(W)
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
Output Current (A)
Vin=10.0V Vin=12.5V Vin=15.0V

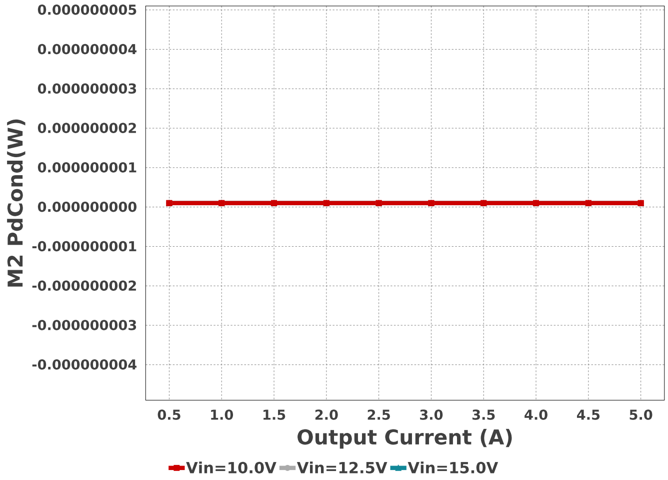
Cout IRMS


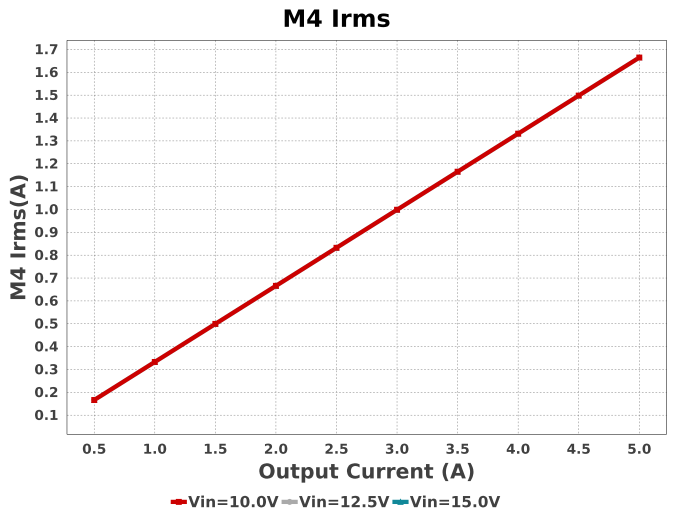
L Ipp


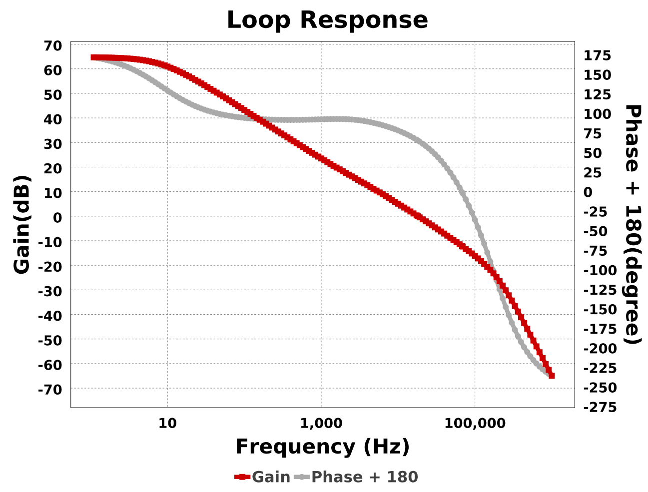
IC Pd


M3 Irms


M3 Pd


M2 PdCond






Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.934 A	Capacitor	Input capacitor RMS ripple current
2.	Cin Pd	6.169 mW	Capacitor	Input capacitor power dissipation
3.	Cout IRMS	6.011 A	Capacitor	Output capacitor RMS ripple current
4.	Cout Pd	31.821 mW	Capacitor	Output capacitor power dissipation
5.	Coutx IRMS	350.461 mA	Capacitor	Output capacitor_x RMS ripple current
6.	Coutx Pd	253.16 µW	Capacitor	Output capacitor_x power loss
7.	IC Pd	747.19 mW	IC	IC power dissipation
8.	IC Tj	52.789 degC	IC	IC junction temperature
9.	IC Tolerance	0.0 V	IC	IC Feedback Tolerance
10.	ICThetaJA	30.5 degC/W	IC	IC junction-to-ambient thermal resistance
11.	Iin Avg	13.387 A	IC	Average input current
12.	L Ipp	6.7 A	Inductor	Peak-to-peak inductor ripple current
13.	L Pd	875.06 mW	Inductor	Inductor power dissipation
14.	L1 Irms	14.434 A	Inductor	Inductor ripple current
15.	M1 Pd	4.0 W	Mosfet	M1 MOSFET total power dissipation
16.	M1 PdCond	4.0 W	Mosfet	M1 MOSFET conduction losses
17.	M2 Pd	100.0 pW	Mosfet	M2 MOSFET total power dissipation
18.	M2 PdCond	100.0 pW	Mosfet	M2 MOSFET conduction losses
19.	M3 Irms	4.994 A	Mosfet	MOSFET RMS ripple current
20.	M3 Pd	1.313 W	Mosfet	MOSFET power dissipation
21.	M3 PdCond	766.72 mW	Mosfet	M1 MOSFET conduction losses
22.	M3 PdSw	546.62 mW	Mosfet	M1 MOSFET switching losses
23.	M3 ThetaJA	50.0 degC/W	Mosfet	MOSFET junction-to-ambient thermal resistance
24.	M3 TjOP	69.347 degC	Mosfet	MOSFET junction temperature
25.	M4 Irms	2.3 A	Mosfet	MOSFET RMS ripple current
26.	M4 Pd	1.313 W	Mosfet	MOSFET power dissipation
27.	M4 PdCond	766.72 mW	Mosfet	M2 MOSFET conduction losses
28.	M4 PdSw	546.62 mW	Mosfet	M2 MOSFET switching losses
29.	M4 ThetaJA	50.0 degC/W	Mosfet	MOSFET junction-to-ambient thermal resistance
30.	M4 TjOP	58.42 degC	Mosfet	MOSFET junction temperature
31.	Cin Pd	6.169 mW	Power	Input capacitor power dissipation
32.	Cout Pd	31.821 mW	Power	Output capacitor power dissipation
33.	Coutx Pd	253.16 µW	Power	Output capacitor_x power loss
34.	IC Pd	747.19 mW	Power	IC power dissipation
35.	L Pd	875.06 mW	Power	Inductor power dissipation
36.	M1 Pd	4.0 W	Power	M1 MOSFET total power dissipation
37.	M1 PdCond	4.0 W	Power	M1 MOSFET conduction losses
38.	M2 Pd	100.0 pW	Power	M2 MOSFET total power dissipation
39.	M2 PdCond	100.0 pW	Power	M2 MOSFET conduction losses
40.	M3 Pd	1.313 W	Power	MOSFET power dissipation
41.	M3 PdCond	766.72 mW	Power	M1 MOSFET conduction losses
42.	M3 PdSw	546.62 mW	Power	M1 MOSFET switching losses
43.	M3 Rdson	7.9 mOhm	Power	Drain-Source On-resistance
44.	M4 Pd	1.313 W	Power	MOSFET power dissipation
45.	M4 PdCond	766.72 mW	Power	M2 MOSFET conduction losses
46.	M4 PdSw	546.62 mW	Power	M2 MOSFET switching losses
47.	M4 Rdson	3.5 mOhm	Power	Drain-Source On-resistance
48.	Rsense Pd	582.32 mW	Power	LED Current Rsns Power Dissipation
49.	Total Pd	8.87 W	Power	Total Power Dissipation
50.	Rsense Pd	582.32 mW	Resistor	LED Current Rsns Power Dissipation
51.	BOM Count	54	System Information	Total Design BOM count

#	Name	Value	Category	Description
52.	Cross Freq	18.099 kHz	System Information	Bode plot crossover frequency
53.	Duty Cycle	40.325 %	System Information	Duty cycle
54.	Efficiency	93.374 %	System Information	Steady state efficiency
55.	FootPrint	954.0 mm^2	System Information	Total Foot Print Area of BOM components
56.	Frequency	405.91 kHz	System Information	Switching frequency
57.	Gain Marg	-12.165 dB	System Information	Bode Plot Gain Margin
58.	Iout	5.0 A	System Information	Iout operating point
59.	Low Freq Gain	64.667 dB	System Information	Gain at 1Hz
60.	Mode	CCM	System Information	Conduction Mode
61.	Operating Topology	Boost	System Information	The current operating topology of the device
62.	Phase Marg	66.255 deg	System Information	Bode Plot Phase Margin
63.	Pout	125.0 W	System Information	Total output power
64.	SW Ipk	15.956 A	System Information	Peak switch current
65.	Total BOM	NA	System Information	Total BOM Cost
66.	Vin	10.0 V	System Information	Vin operating point
67.	Vout	25.0 V	System Information	Operational Output Voltage
68.	Vout Actual	24.96 V	System Information	Vout Actual calculated based on selected voltage divider resistors
69.	Vout Tolerance	1.956 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
70.	Vout p-p	143.29 mV	System Information	Peak-to-peak output ripple voltage

Design Inputs

Name	Value	Description
Iout	5.0	Maximum Output Current
SoftStart	2.0 ms	Soft Start Time (ms)
VinMax	15.0	Maximum input voltage
VinMin	10.0	Minimum input voltage
Vout	25.0	Output Voltage
base_pn	LM34936	Base Product Number
source	DC	Input Source Type
Ta	30.0	Ambient temperature
UserFsw	407.0 k	Customer Selected Frequency

WEBENCH® Assembly

Component Testing

Some published data on components in datasheets such as Capacitor ESR and Inductor DC resistance is based on conservative values that will guarantee that the components always exceed the specification. For design purposes it is usually better to work with typical values. Since this data is not always available it is a good practice to measure the Capacitance and ESR values of Cin and Cout, and the inductance and DC resistance of L1 before assembly of the board. Any large discrepancies in values should be electrically simulated in WEBENCH to check for instabilities and thermally simulated in WebTHERM to make sure critical temperatures are not exceeded.

Soldering Component to Board

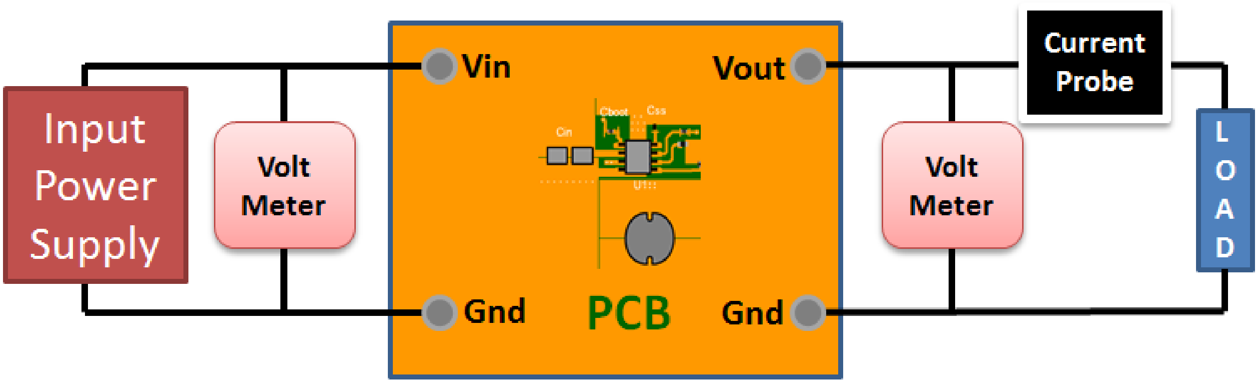
If board assembly is done in house it is best to tack down one terminal of a component on the board then solder the other terminal. For surface mount parts with large tabs, such as the DPAK, the tab on the back of the package should be pre-tinned with solder, then tacked into place by one of the pins. To solder the tab town to the board place the iron down on the board while resting against the tab, heating both surfaces simultaneously. Apply light pressure to the top of the plastic case until the solder flows around the part and the part is flush with the PCB. If the solder is not flowing around the board you may need a higher wattage iron (generally 25W to 30W is enough).

Initial Startup of Circuit

It is best to initially power up the board by setting the input supply voltage to the lowest operating input voltage 10.0V and set the input supply's current limit to zero. With the input supply off connect up the input supply to Vin and GND. Connect a digital volt meter and a load if needed to set the minimum Iout of the design from Vout and GND. Turn on the input supply and slowly turn up the current limit on the input supply. If the voltage starts to rise on the input supply continue increasing the input supply current limit while watching the output voltage. If the current increases on the input supply, but the voltage remains near zero, then there may be a short or a component misplaced on the board. Power down the board and visually inspect for solder bridges and recheck the diode and capacitor polarities. Once the power supply circuit is operational then more extensive testing may include full load testing, transient load and line tests to compare with simulation results.

Load Testing

The setup is the same as the initial startup, except that an additional digital voltmeter is connected between Vin and GND, a load is connected between Vout and GND and a current meter is connected in series between Vout and the load. The load must be able to handle at least rated output power + 50% (7.5 watts for this design). Ideally the load is supplied in the form of a variable load test unit. It can also be done in the form of suitably large power resistors. When using an oscilloscope to measure waveforms on the prototype board, the ground leads of the oscilloscope probes should be as short as possible and the area of the loop formed by the ground lead should be kept to a minimum. This will help reduce ground lead inductance and eliminate EMI noise that is not actually present in the circuit.

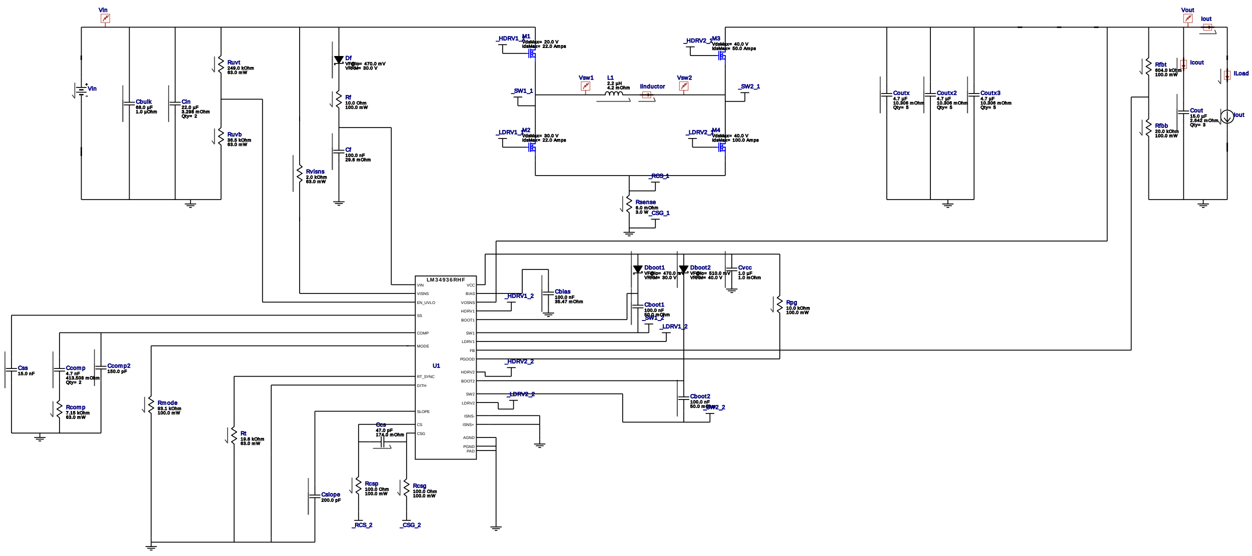


WEBENCH® Electrical Simulation Report

Design Id = 7

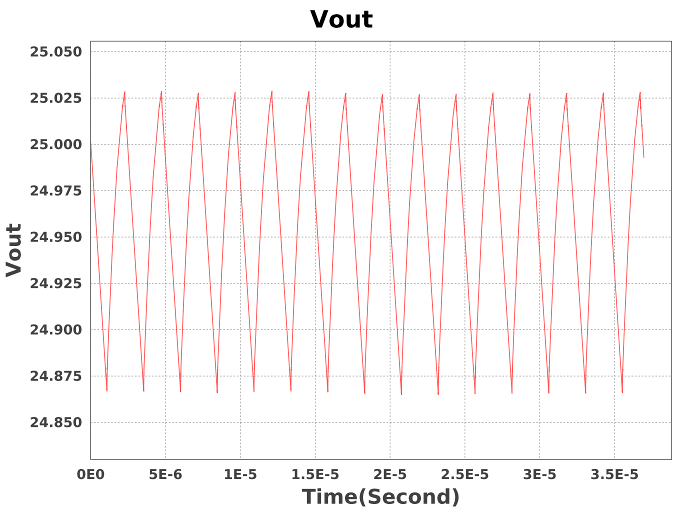
sim_id = 1

Simulation Type = Steady State



Simulation Parameters

#	Name	Parameter Name	Description	Values
1.	L1	IC	Initial Current	-11.764705882352942
2.	Cout	IC	no description	25.0
3.	Iout	I	Load Current	5.0 A



Design Assistance

1. Tip: Snubbers and/or gate resistors may be required to limit the SW1,2 node switching spikes below the IC and FET abs max ratings.
2. Tip: Slope Capacitor: smaller slope capacitors provide better transition region behavior.
3. Master key : 9E4EC3348F959DE15AFA9944345E8D62[v1]
4. **LM34936** Product Folder : http://www.ti.com/product/LM34936 : contains the data sheet and other resources.

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