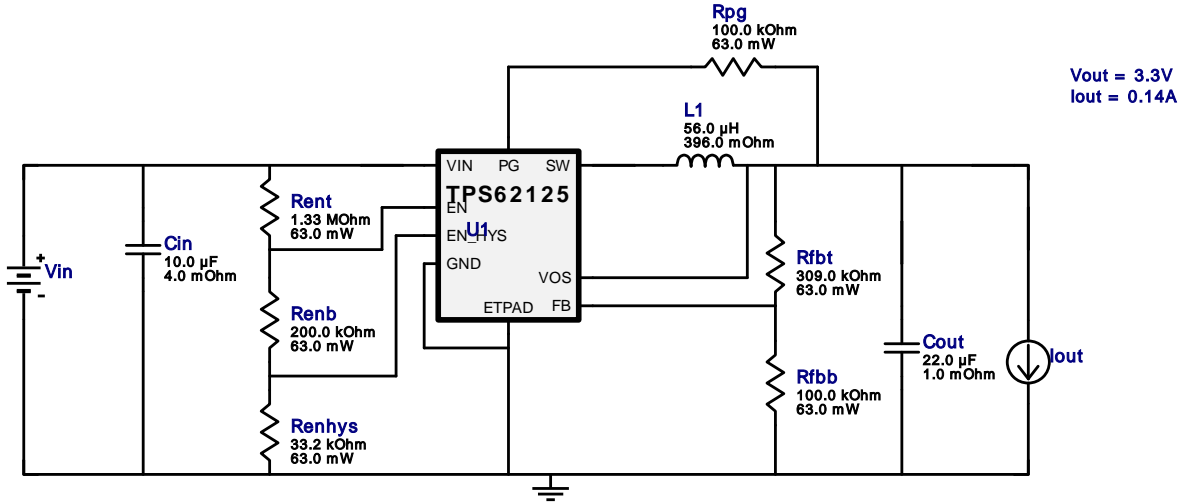


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 VinMax = 14.8V
 Vout = 3.3V
 Iout = 0.14A

Device = TPS62125DSGR
 Topology = Buck
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 BOM Cost = \$2.12
 BOM Count = 10
 Total Pd = 0.07W


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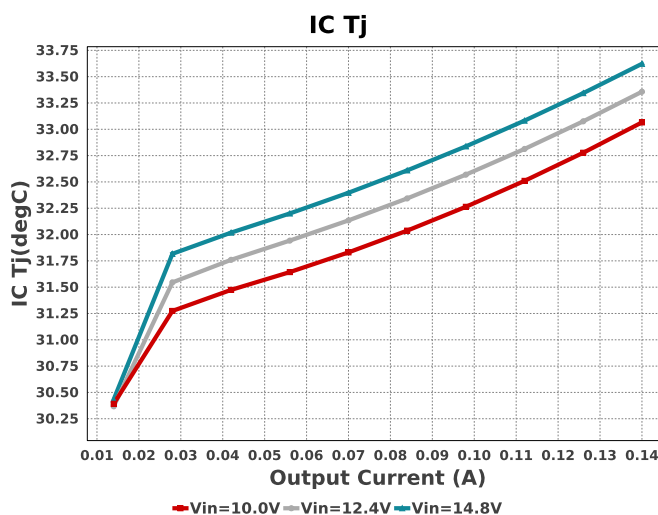
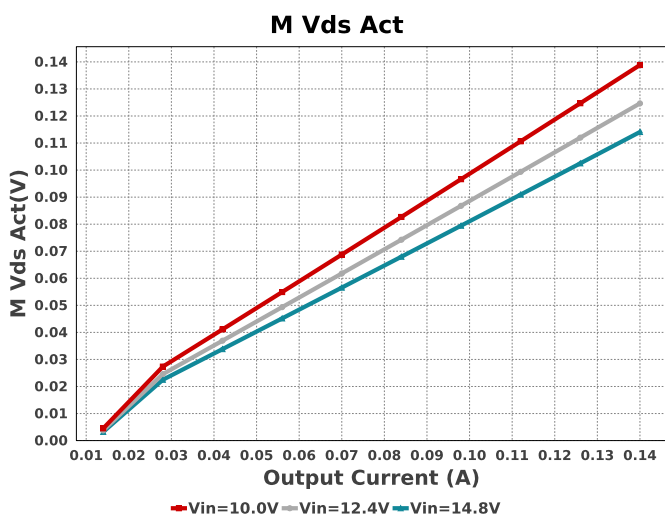
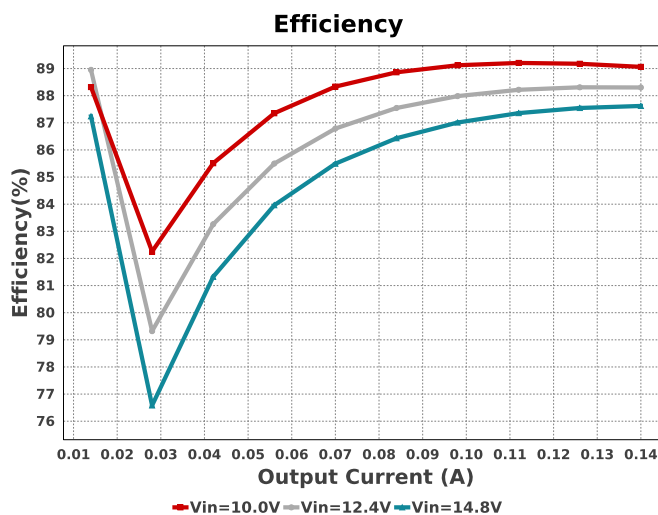
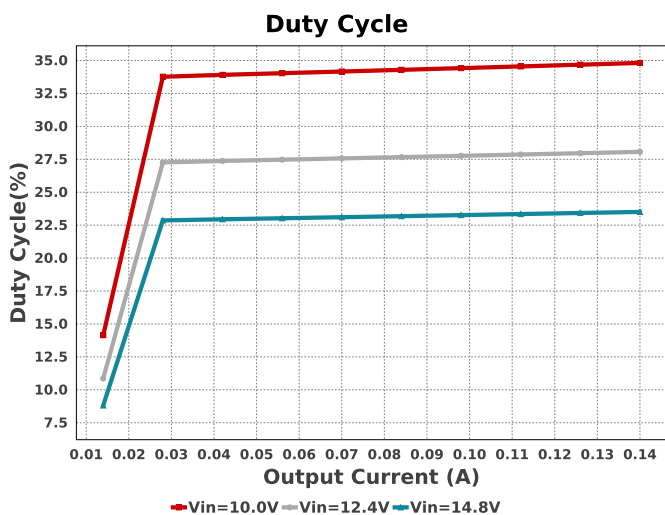
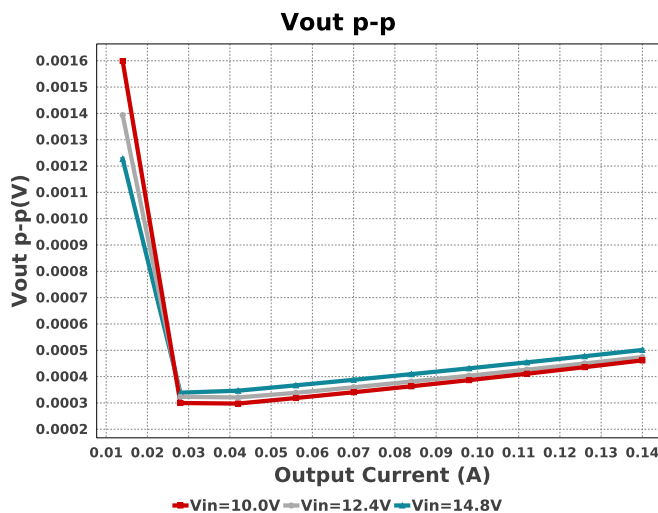
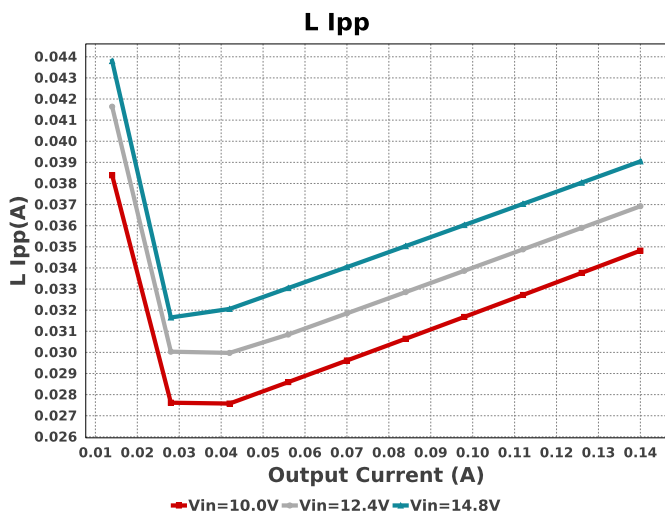
Design : 246 TPS62125DSGR
 TPS62125DSGR 10V-13V to 3.30V @ 0.14A

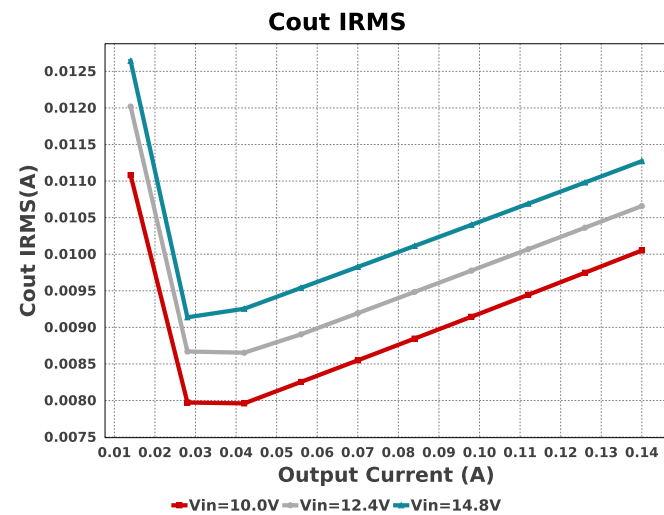
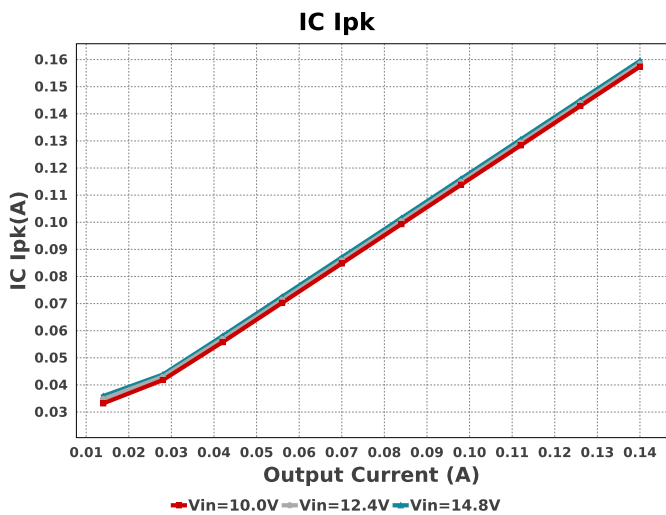
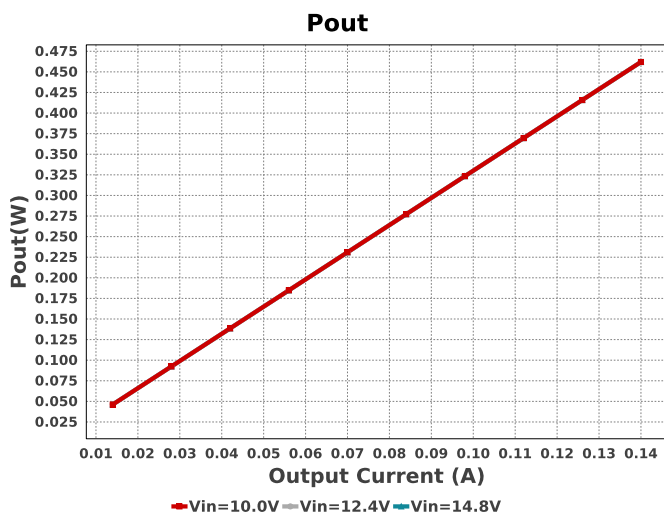
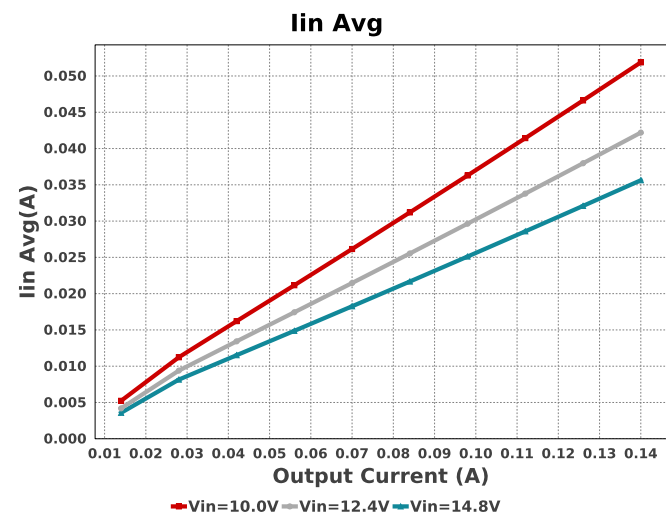
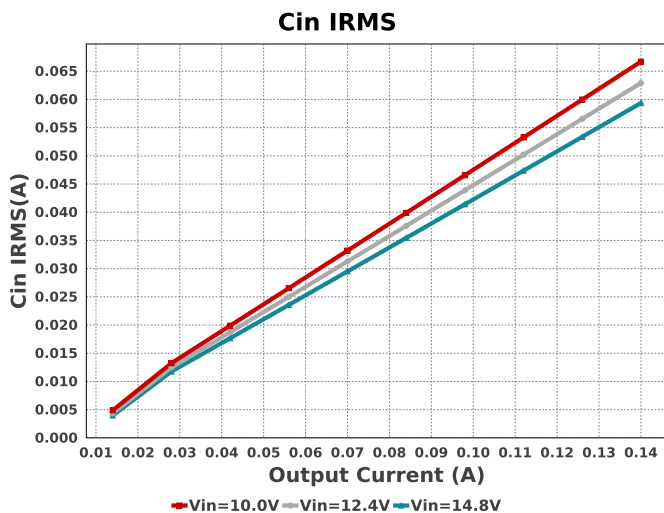
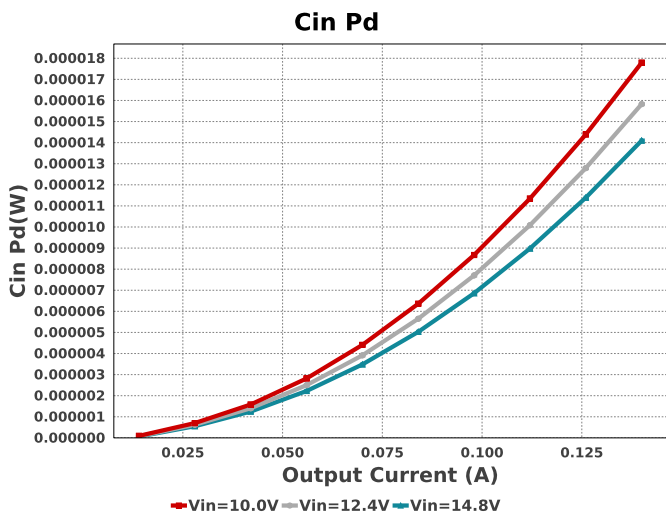


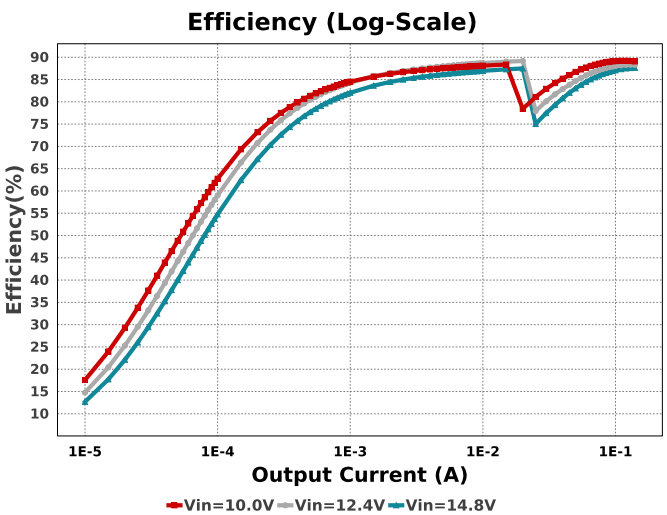
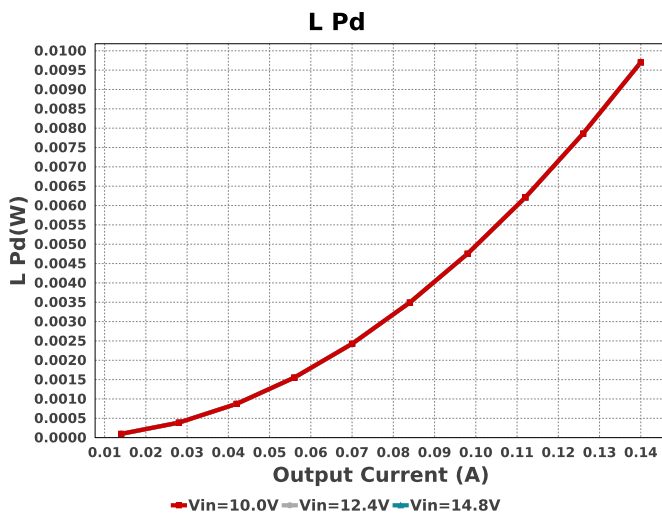
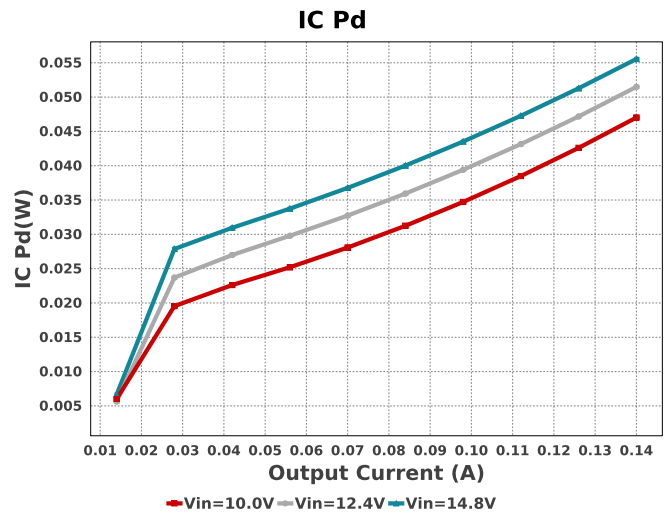
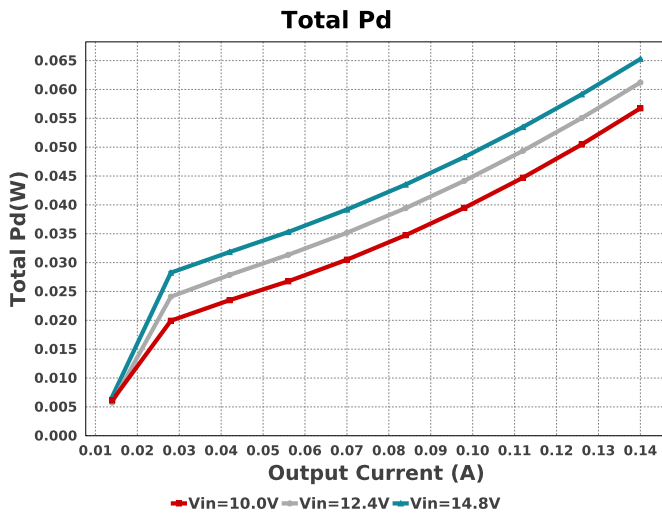
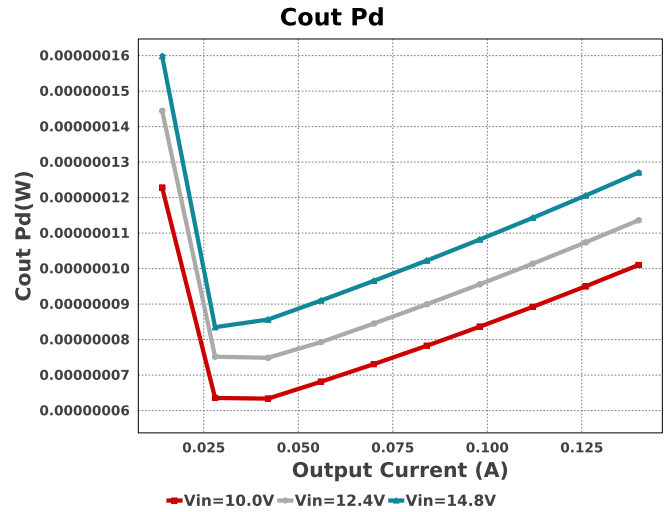
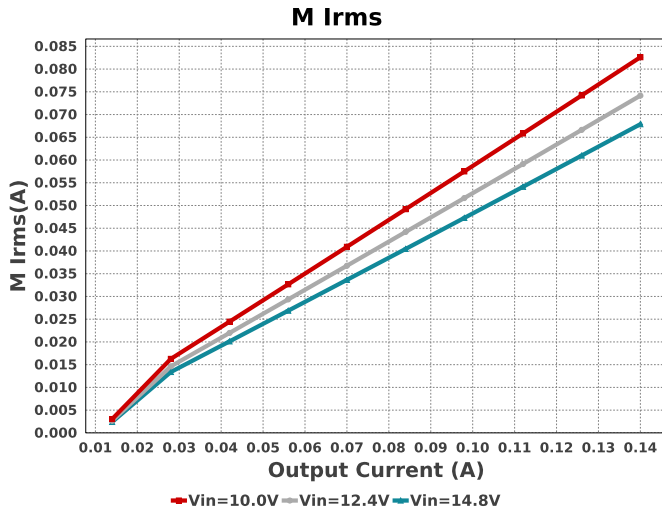
Electrical BOM

Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
Cin	MuRata	GRM21BR61E106MA73L Series= X5R	Cap= 10.0 uF ESR= 4.0 mOhm VDC= 25.0 V IRMS= 2.8 A	1	\$0.05	0805 7 mm ²
Cout	MuRata	GRM188R60J226MEA0D Series= X5R	Cap= 22.0 uF ESR= 1.0 mOhm VDC= 6.3 V IRMS= 6.0 A	1	\$0.05	0603 5 mm ²
L1	Würth Elektronik	74437349560	L= 56.0 uH 396.0 mOhm	1	\$1.55	 WE-LHMI_7050 74 mm ²
Renb	Vishay-Dale	CRCW0402200KFKED Series= CRCW..e3	Res= 200.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
Renhys	Vishay-Dale	CRCW040233K2FKED Series= CRCW..e3	Res= 33.2 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
Rent	Vishay-Dale	CRCW04021M33FKED Series= CRCW..e3	Res= 1.33 MOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
Rfbb	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
Rfbt	Vishay-Dale	CRCW0402309KFKED Series= CRCW..e3	Res= 309.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²
Rpg	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	0402 3 mm ²

Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
U1	Texas Instruments	TPS62125DSGR	Switcher	1	\$0.41	 S-PWSON-N8 10 mm ²







Operating Values

#	Name	Value	Category	Description
1.	BOM Count	10		Total Design BOM count
2.	Total BOM	\$2.117		Total BOM Cost
3.	Cin IRMS	59.365 mA	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	14.097 μ W	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	11.272 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	127.06 nW	Capacitor	Output capacitor power dissipation
7.	IC Ipk	159.524 mA	IC	Peak switch current in IC
8.	IC Pd	55.553 mW	IC	IC power dissipation
9.	IC Tj	33.622 degC	IC	IC junction temperature
10.	IC Tolerance	20.2 mV	IC	IC Feedback Tolerance
11.	ICThetaJA	65.2 degC/W	IC	IC junction-to-ambient thermal resistance

#	Name	Value	Category	Description
12.	Iin Avg	35.626 mA	IC	Average input current
13.	L Ipp	39.047 mA	Inductor	Peak-to-peak inductor ripple current
14.	L Pd	9.702 mW	Inductor	Inductor power dissipation
15.	M1 Irms	67.876 mA	Mosfet	Q lavg
16.	M Vds Act	114.085 mV	Mosfet	Voltage drop across the MosFET
17.	Cin Pd	14.097 μ W	Power	Input capacitor power dissipation
18.	Cout Pd	127.06 nW	Power	Output capacitor power dissipation
19.	IC Pd	55.553 mW	Power	IC power dissipation
20.	L Pd	9.702 mW	Power	Inductor power dissipation
21.	Total Pd	65.27 mW	Power	Total Power Dissipation
22.	Duty Cycle	23.506 %	System	Duty cycle
23.	Efficiency	87.621 %	System Information	Steady state efficiency
24.	FootPrint	113.0 mm ²	System Information	Total Foot Print Area of BOM components
25.	Frequency	1.236 MHz	System Information	Switching frequency
26.	Iout	140.0 mA	System Information	Iout operating point
27.	Mode	CCM	System Information	Conduction Mode
28.	Pout	462.0 mW	System Information	Total output power
29.	Vin	14.8 V	System Information	Vin operating point
30.	Vout	3.3 V	System Information	Operational Output Voltage
31.	Vout Actual	3.272 V	System Information	Vout Actual calculated based on selected voltage divider resistors
32.	Vout Tolerance	4.09 %	System Information	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
33.	Vout p-p	501.26 μ V	System Information	Peak-to-peak output ripple voltage

Design Inputs

Name	Value	Description
Iout	140.0 m	Maximum Output Current
VinMax	14.8	Maximum input voltage
VinMin	10.0	Minimum input voltage
Vout	3.3	Output Voltage
base_pn	TPS62125	Base Product Number
source	DC	Input Source Type
Ta	30.0	Ambient temperature

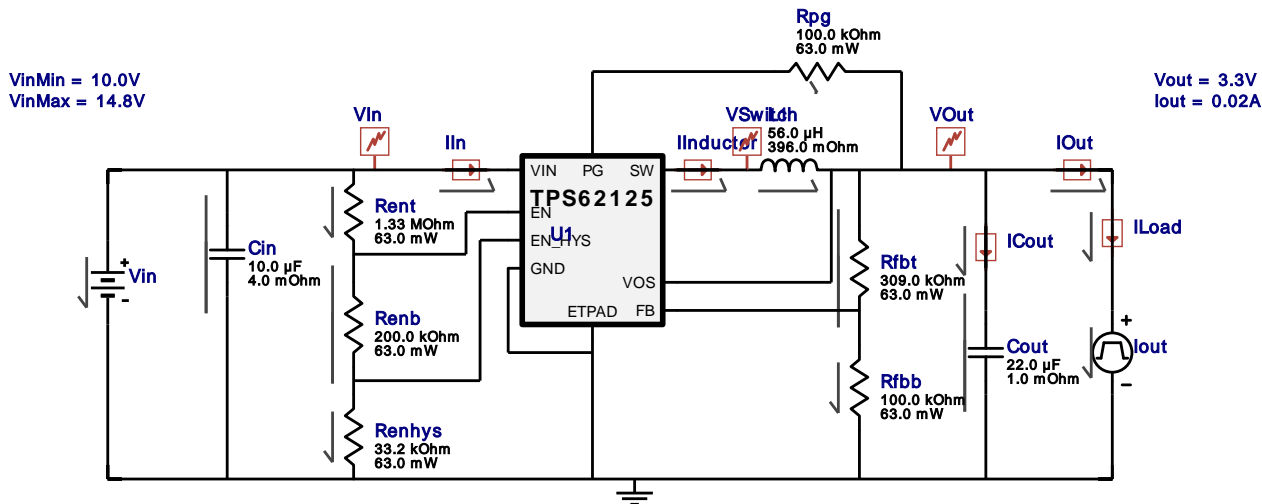
WEBENCH® Assembly

WEBENCH® Electrical Simulation Report

Design Id = 246

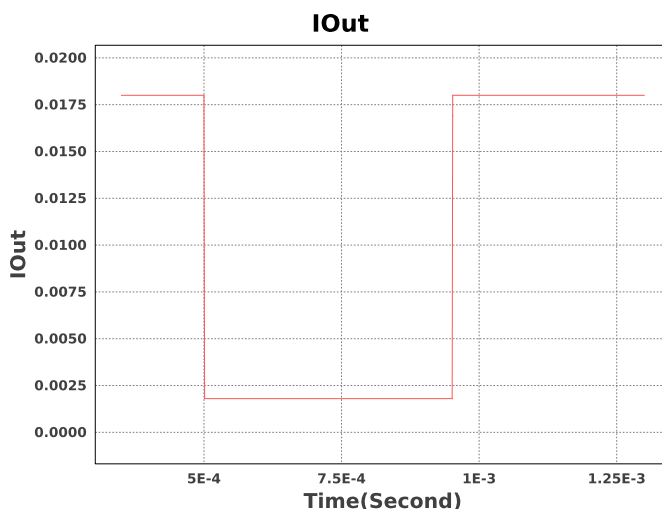
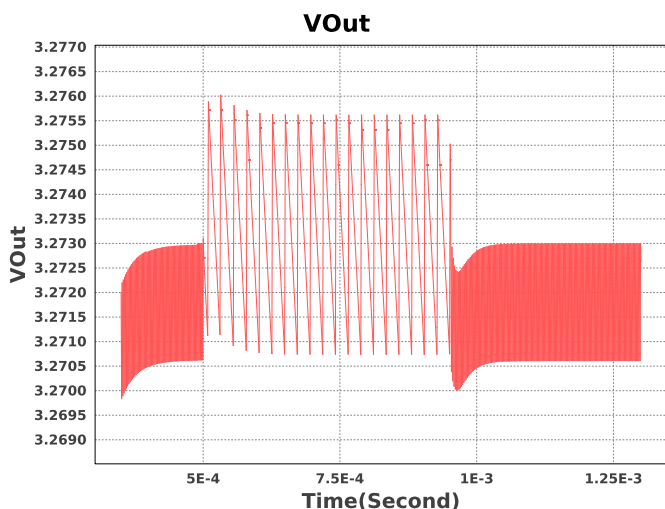
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Simulation Type = Load Transient



Simulation Parameters

#	Name	Parameter Name	Description	Values
1.	L1	IC	Initial Current	0.018 A
2.	Iout	signal_type	Signal Type	PULSE
		I1	Initial Load Current	0.018 A
		I2	Minimum Load Current	0.0018 A
		Td	Initial Time Delay	500u s
		Tf	Fall Time	1u s
		Tr	Rise Time	1u s
		Pw	Pulse Width	450u s



Design Assistance

1. Master key : 5F2E2B8ED6AFCBB0[v1]

2. **TPS62125** Product Folder : <http://www.ti.com/product/TPS62125> : contains the data sheet and other resources.

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