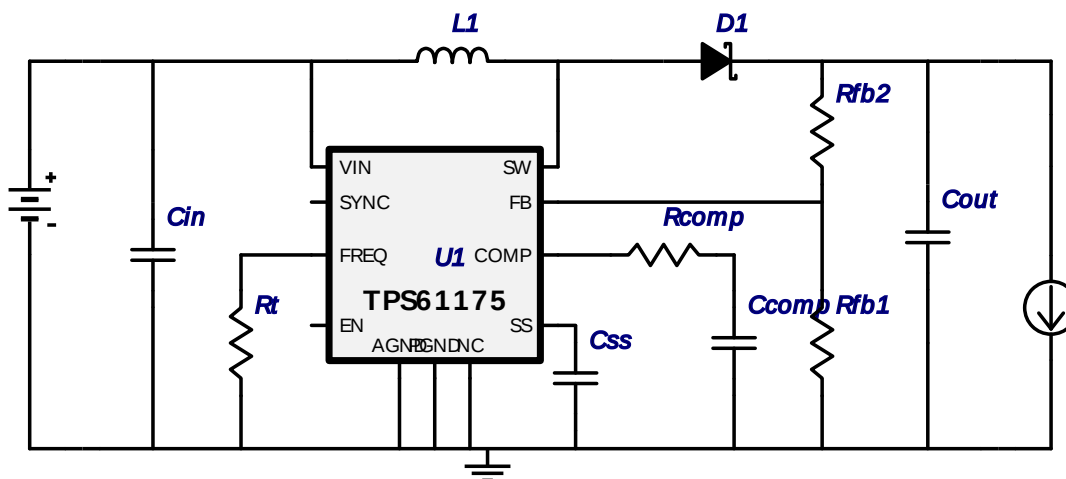


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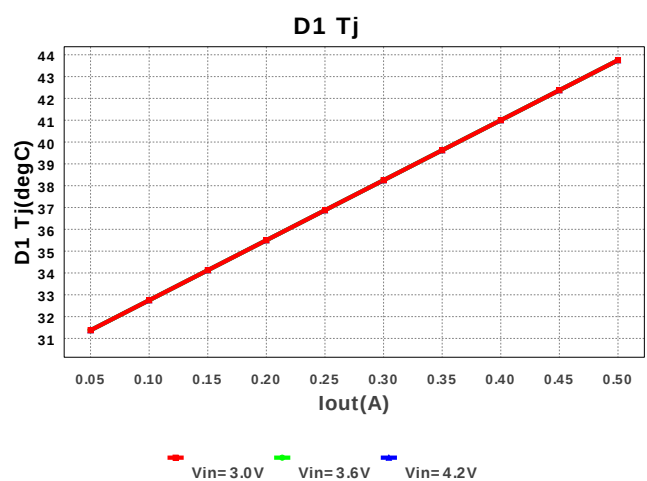
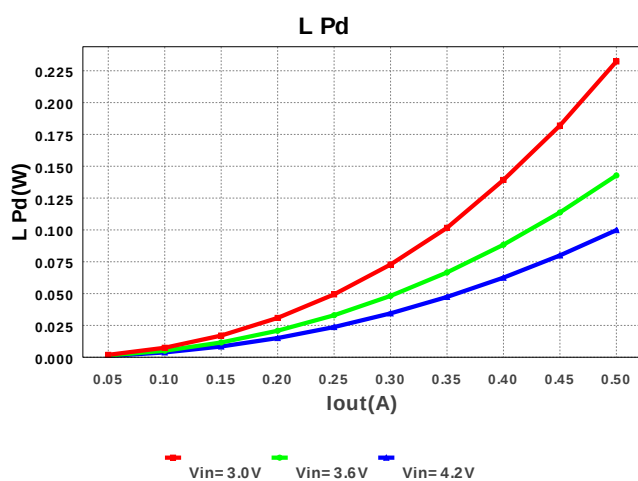
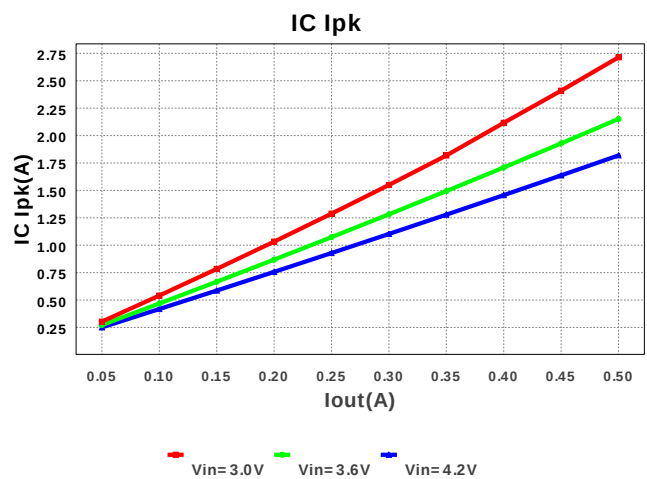
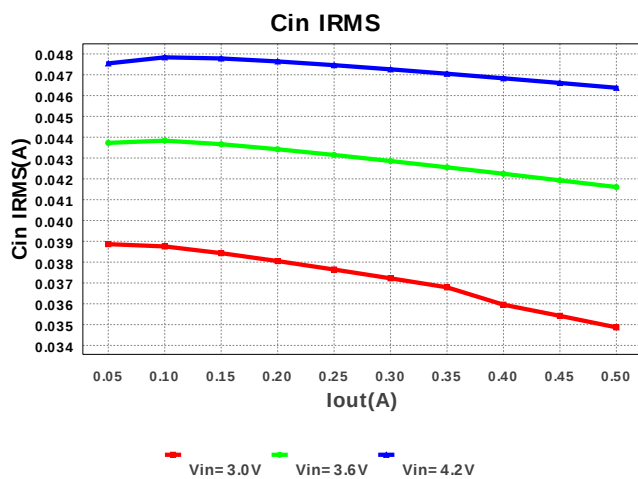
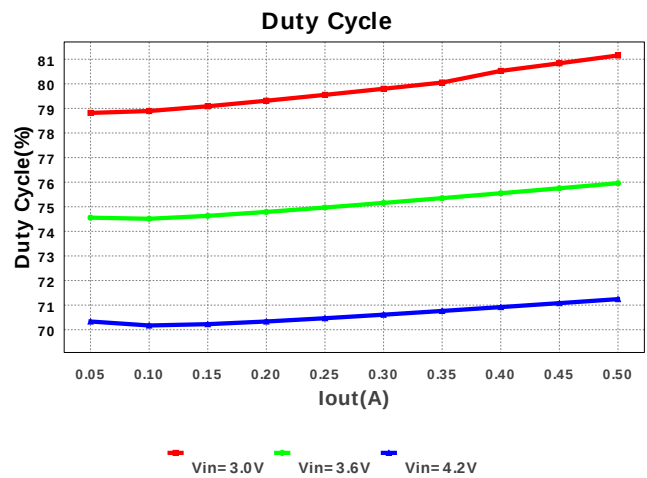
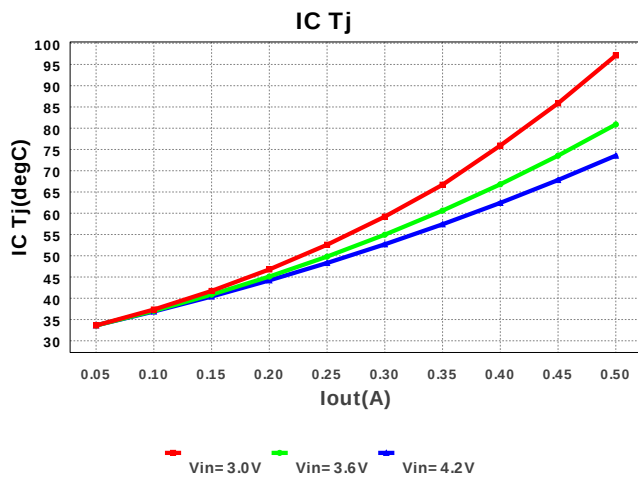
Design : 487676/7 TPS61175PWPR
TPS61175PWPR 3.0V-4.2V to 12.0V @ 0.5A

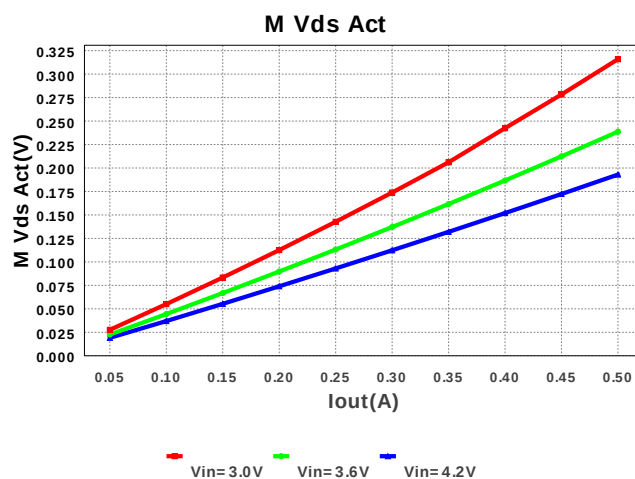
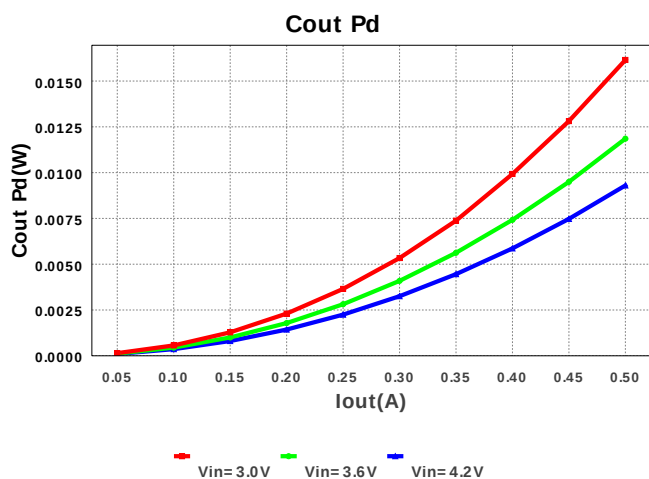
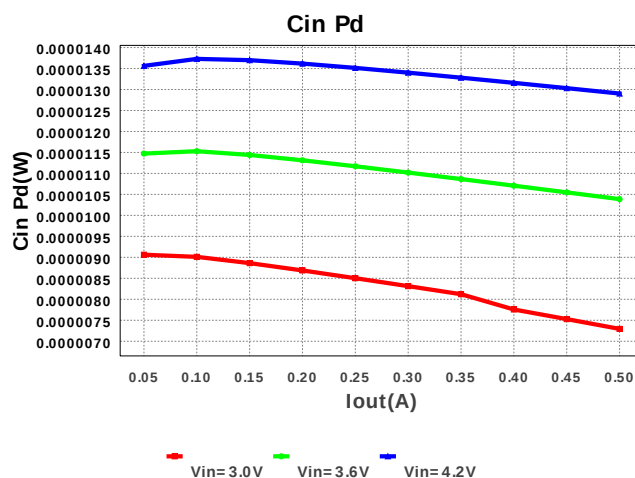
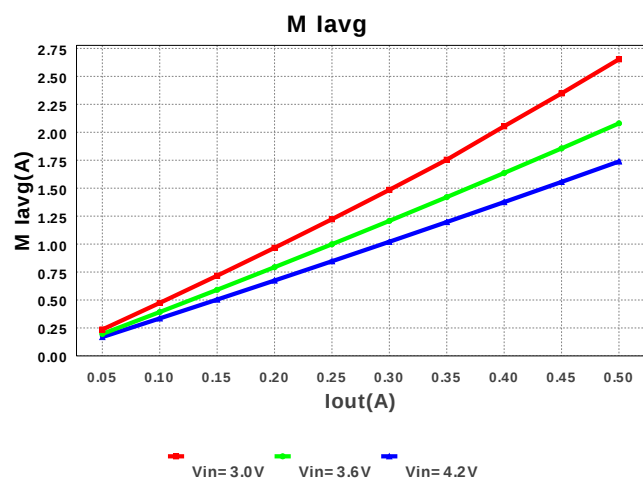
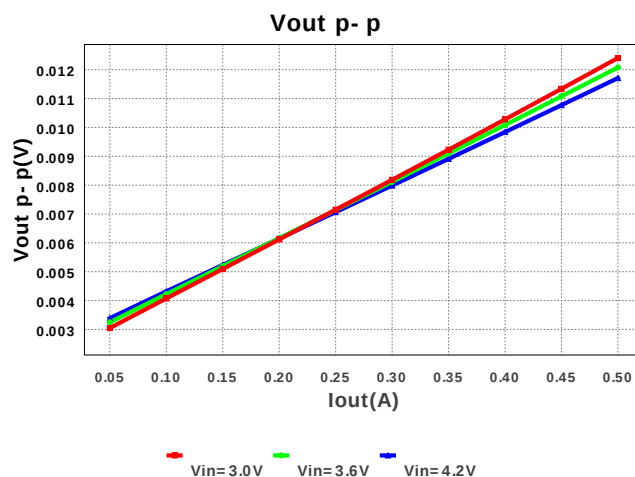
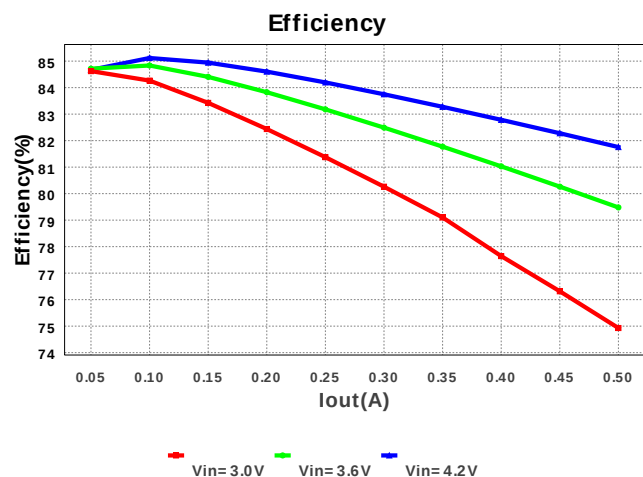


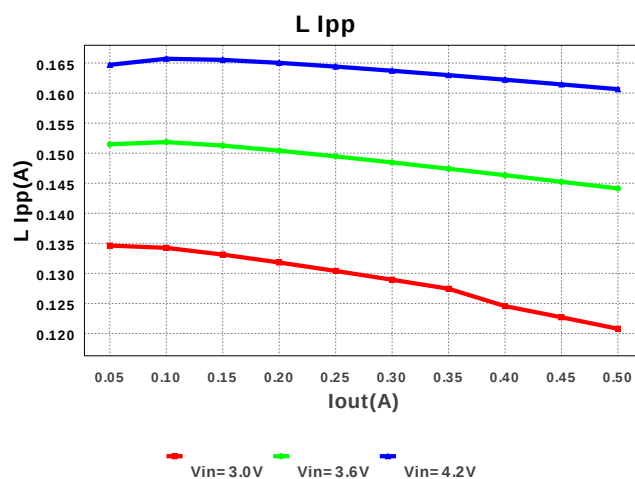
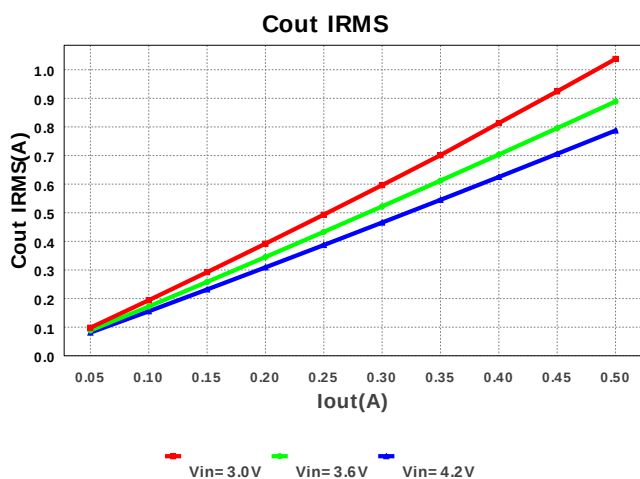
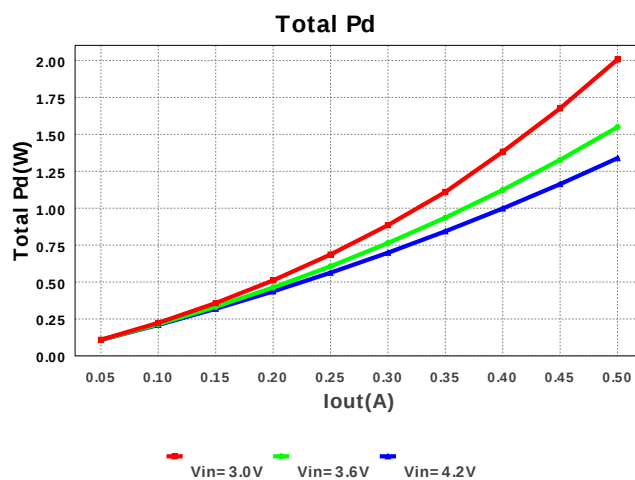
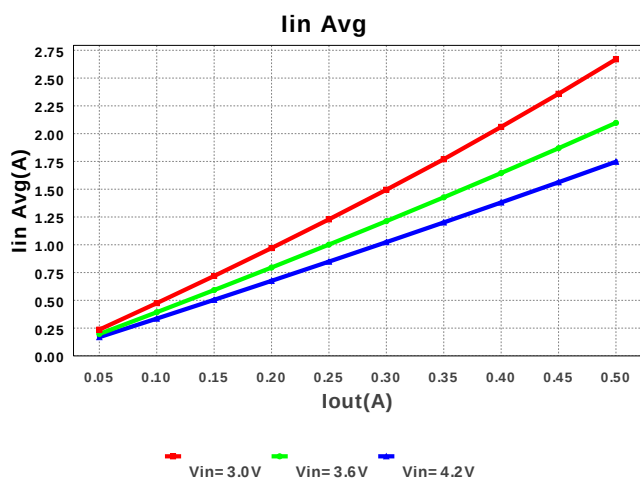
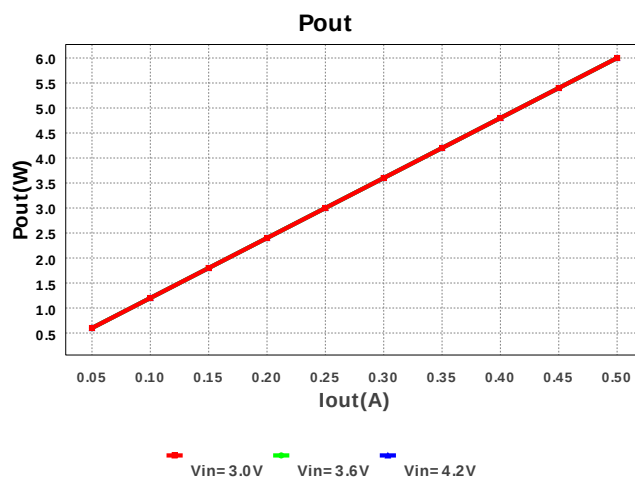
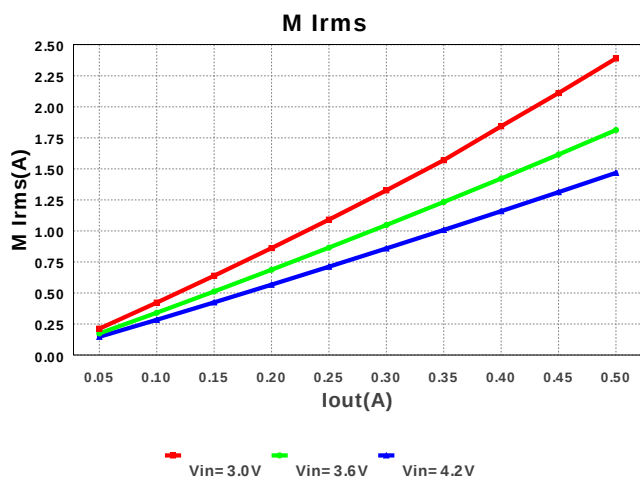
Electrical BOM

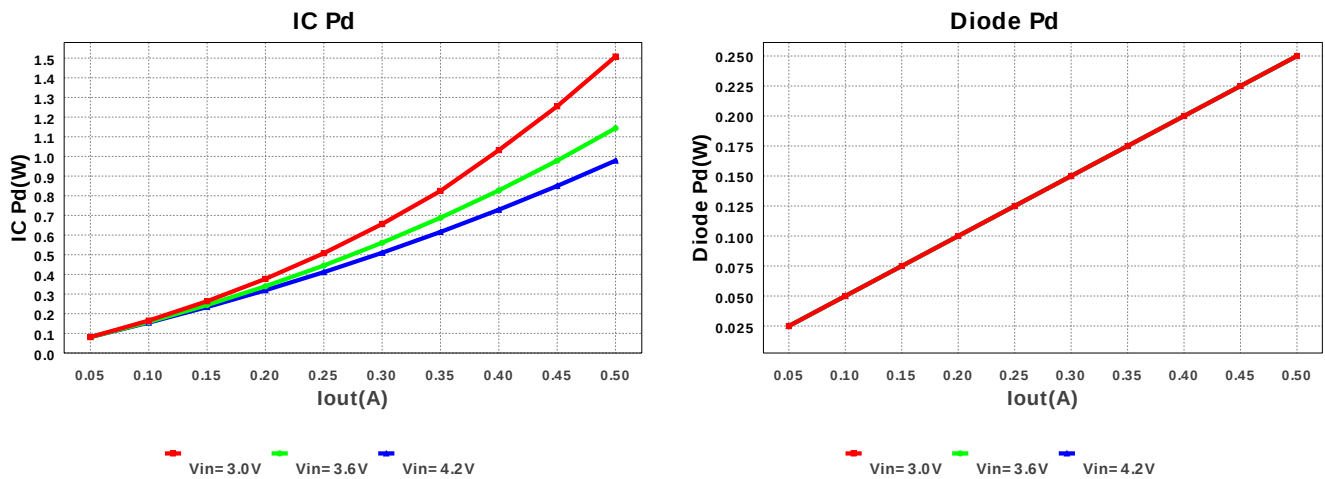
#	Name	Manufacturer	Part Number	Qty	Price	Properties	Footprint
1.	Ccomp	MuRata	GRM155R61A154KE19D Series= X5R	1	\$0.01	Cap= 150.0 nF VDC= 10.0 V IRMS= 0.0 A	 0402 8mm2
2.	Cin	Kemet	C0603C475K9PACTU Series= X5R	1	\$0.02	Cap= 4.7 µF ESR= 6.0 mOhm VDC= 6.3 V IRMS= 7.24 A	 0603 10mm2
3.	Cout	TDK	C3225X5R1E106K Series= X5R	1	\$0.15	Cap= 10.0 µF ESR= 15.0 mOhm VDC= 25.0 V IRMS= 3.0 A	 1210 23mm2
4.	Css	Taiyo Yuden	TMK212B7473KD-T Series= X7R	1	\$0.01	Cap= 47.0 nF VDC= 25.0 V IRMS= 0.0 A	 0805 13mm2
5.	D1	Vishay-Semiconductor	SS32-E3/57T	1	\$0.18	VF@Io= 500.0 mV VRRM= 20.0 V	 SMC 83mm2
6.	L1	Vishay Dale	IHLP2020	1	\$0.10	L= 6.8 µH DCR= 150.0 mOhm	CUSTOM 29mm2
7.	Rcomp	Vishay-Dale	CRCW04021K69FKED Series= CRCW..e3	1	\$0.01	Res= 1.69 kOhm Power= 63.0 mW Tolerance= 1.0%	 0402 8mm2
8.	Rfb1	Vishay-Dale	CRCW040216K2FKED Series= CRCW..e3	1	\$0.01	Res= 16.2 kOhm Power= 63.0 mW Tolerance= 1.0%	 0402 8mm2
9.	Rfb2	Vishay-Dale	CRCW0402143KFKED Series= CRCW..e3	1	\$0.01	Res= 143.0 kOhm Power= 63.0 mW Tolerance= 1.0%	 0402 8mm2
10.	Rt	Vishay-Dale	CRCW040284K5FKED Series= CRCW..e3	1	\$0.01	Res= 84.5 kOhm Power= 63.0 mW Tolerance= 1.0%	 0402 8mm2

#	Name	Manufacturer	Part Number	Qty	Price	Properties	Footprint
11. U1		Texas Instruments	TPS61175PWPR	1	\$1.80	Switcher	 R-PDSO-G14 46mm2









Operating Values

#	Name	Value	Category	Description
1.	BOM Count	11.0		Total Design BOM count
2.	Total BOM	\$2.31		Total BOM Cost
3.	Cin IRMS	28.391 m A	Current	Input capacitor RMS ripple current
4.	Cout IRMS	1.205 A	Current	Output capacitor RMS ripple current
5.	IC Ipk	3.451 A	Current	Peak switch current in IC
6.	Iin Avg	3.429 A	Current	Average input current
7.	L Ipp	98.35 m A	Current	Peak-to-peak inductor ripple current
8.	M Iavg	3.402 A	Current	MOSFET Average current
9.	M1 Irms	3.142 A	Current	Q Iavg
10.	FootPrint	267.0 mm2	General	Total Foot Print Area of BOM components
11.	Frequency	2.2 M Hz	General	Switching frequency
12.	IC Tolerance	20.0 m V	General	IC Feedback Tolerance
13.	M Vds Act	418.486 m V	General	Voltage drop across the MosFET
14.	Mode	CCM	General	Conduction Mode
15.	Pout	6.0 W	General	Total output power
16.	D1 Tj	43.75 degC	Op_Point	D1 junction temperature
17.	Vout OP	12.0 V	Op_Point	Operational Output Voltage
18.	Cross Freq	3.857 k Hz	Op_point	Bode plot crossover frequency
19.	Duty Cycle	85.302 %	Op_point	Duty cycle
20.	Efficiency	58.328 %	Op_point	Steady state efficiency
21.	IC Tj	131.375 degC	Op_point	IC junction temperature
22.	ICThetaJA	44.5 degC/W	Op_point	IC junction-to-ambient thermal resistance
23.	IOUT_OP	500.0 m A	Op_point	Iout operating point
24.	Phase Marg	83.191 deg	Op_point	Bode Plot Phase Margin
25.	VIN_OP	3.0 V	Op_point	Vin operating point
26.	Vout p-p	12.612 m V	Op_point	Peak-to-peak output ripple voltage
27.	Cin Pd	4.836 μ W	Power	Input capacitor power dissipation
28.	Cout Pd	21.765 m W	Power	Output capacitor power dissipation
29.	Diode Pd	250.0 m W	Power	Diode power dissipation
30.	IC Pd	2.278 W	Power	IC power dissipation
31.	L Pd	1.736 W	Power	Inductor power dissipation
32.	Total Pd	4.287 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 mA	Maximum Output Current
2.	Iout1	500.0 mAmps	Output Current #1
3.	VinMax	4.2 V	Maximum input voltage
4.	VinMin	3.0 V	Minimum input voltage
5.	Vout	12.0 V	Output Voltage
6.	Vout1	12.0 Volt	Output Voltage #1
7.	base_pn	TPS61175	National Based Product Number
8.	source	DC	Input Source Type
9.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. **TPS61175** Product Folder : <http://www.ti.com/product/tps61175> : contains the data sheet and other resources.

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