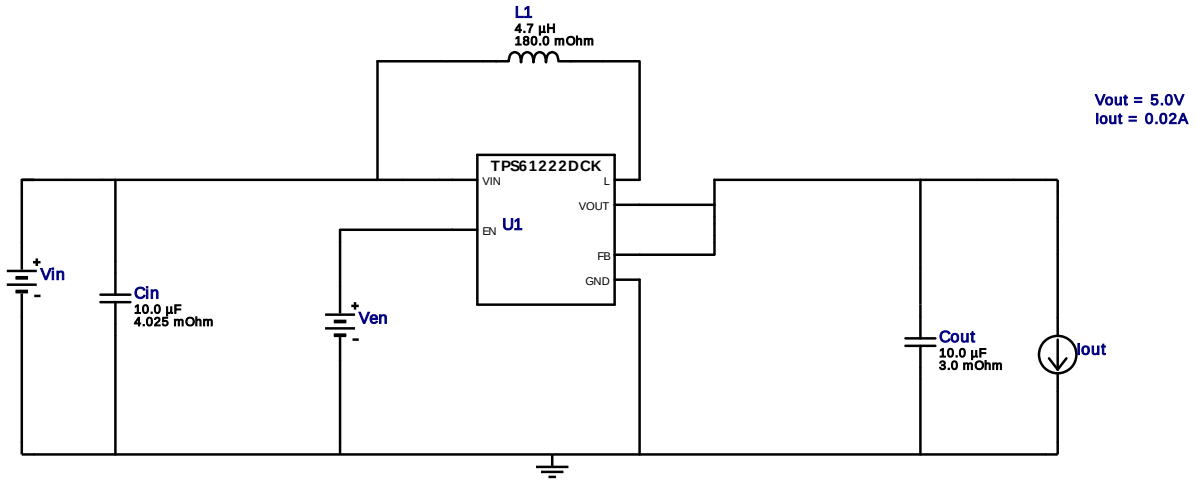
WEBENCH® Design Report

VinMin = 2.7V
VinMax = 4.2V
Vout = 5.0V
Iout = 0.02A

Device = TPS61222DCKR
Topology = Boost
Created = 2018-03-16 15:08:51.396
BOM Cost = $0.54
BOM Count = 4
Total Pd = 0.01W

Design : 5281144/8 TPS61222DCKR
TPS61222DCKR 2.7V-4.2V to 5.00V @ 0.017A

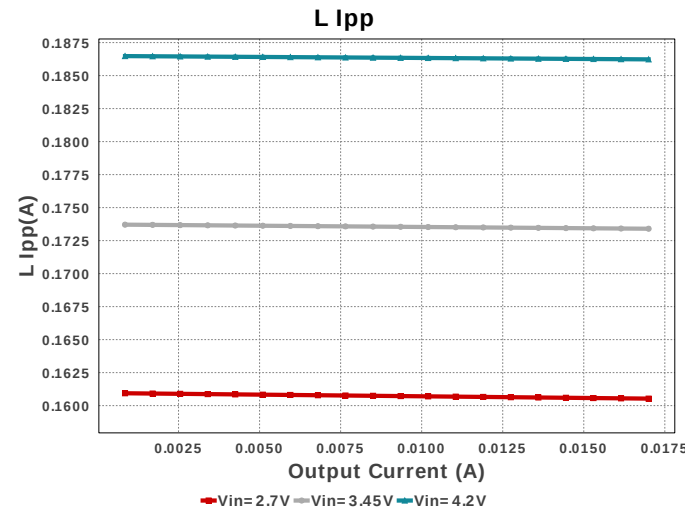


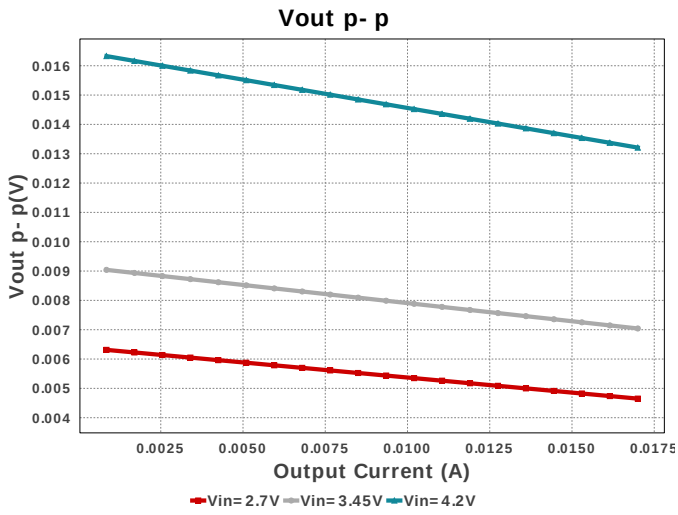
My Comments

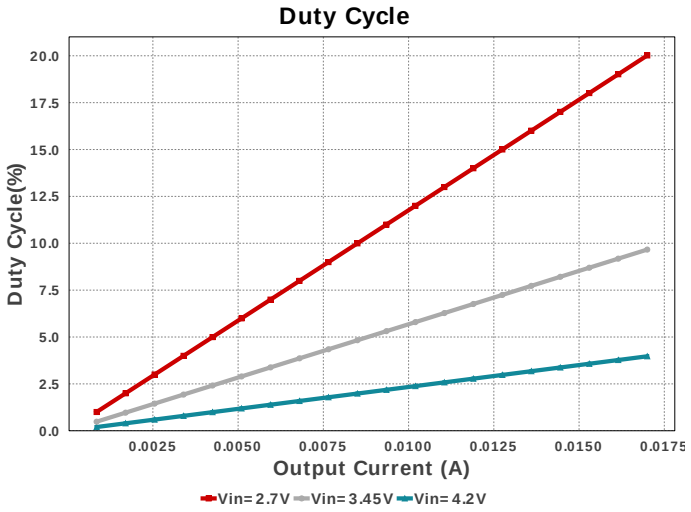
No comments

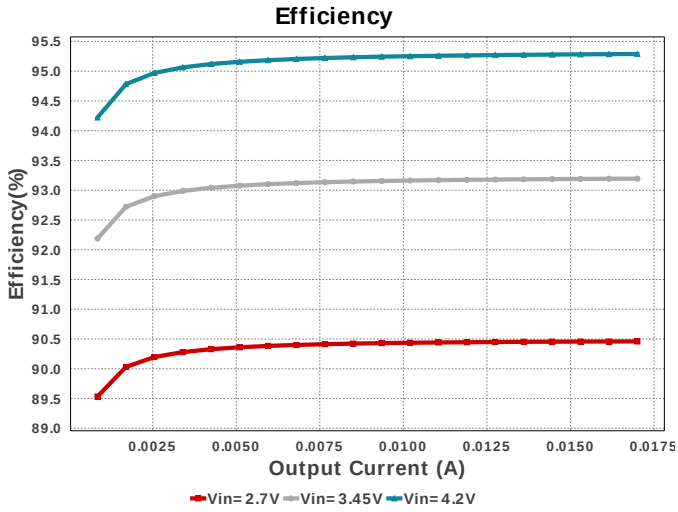
Electrical BOM

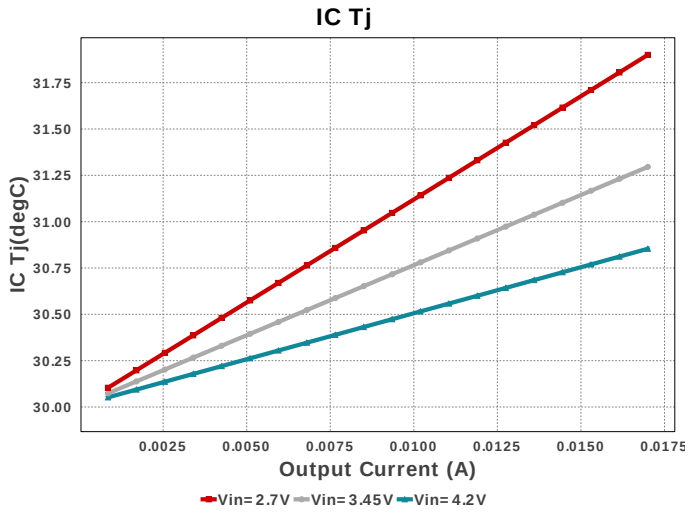
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM21BR60J106ME19L Series= X5R	Cap= 10.0 uF ESR= 4.025 mOhm VDC= 6.3 V IRMS= 2.6173 A	1	$0.02	0805 7 mm²
2.	Cout	Kemet	C0805C106K8PACTU Series= X5R	Cap= 10.0 uF ESR= 3.0 mOhm VDC= 10.0 V IRMS= 11.43 A	1	$0.02	0805 7 mm²
3.	L1	MuRata	LQM2HPN4R7MGCL	L= 4.7 µH DCR= 180.0 mOhm	1	$0.12	1008 10 mm²
4.	U1	Texas Instruments	TPS61222DCKR	Switcher	1	$0.38	DCK0006A 9 mm²

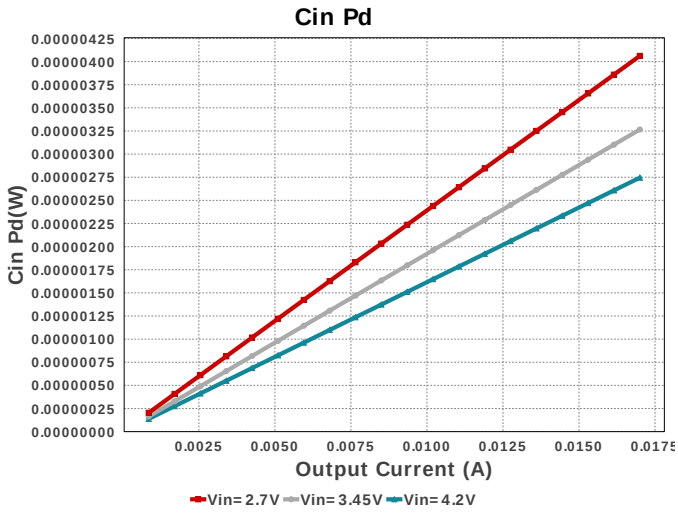




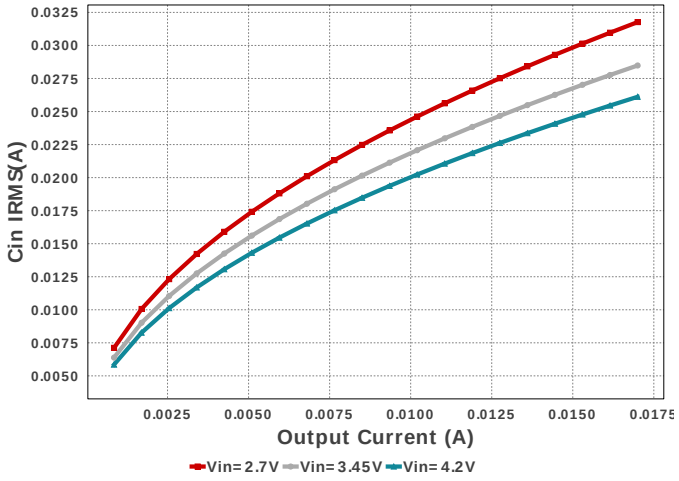




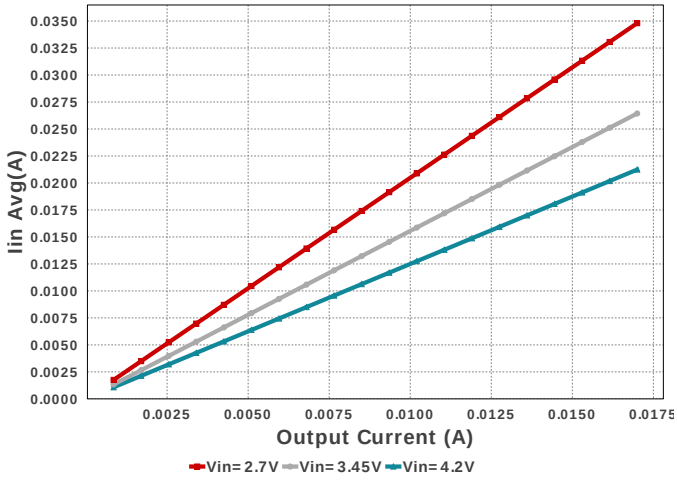




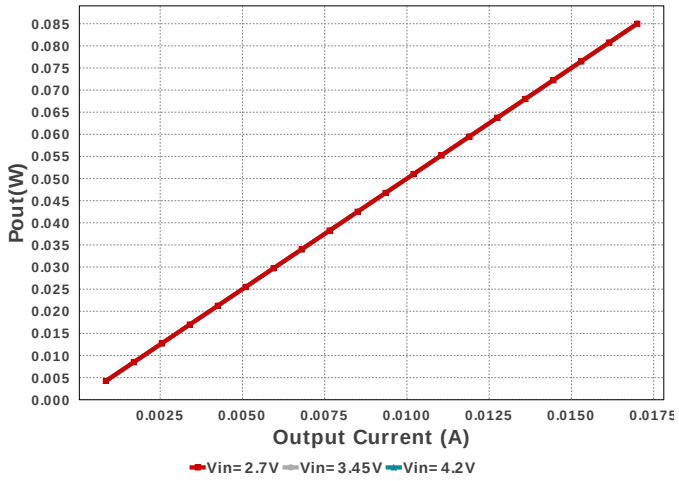
Cin IRMS



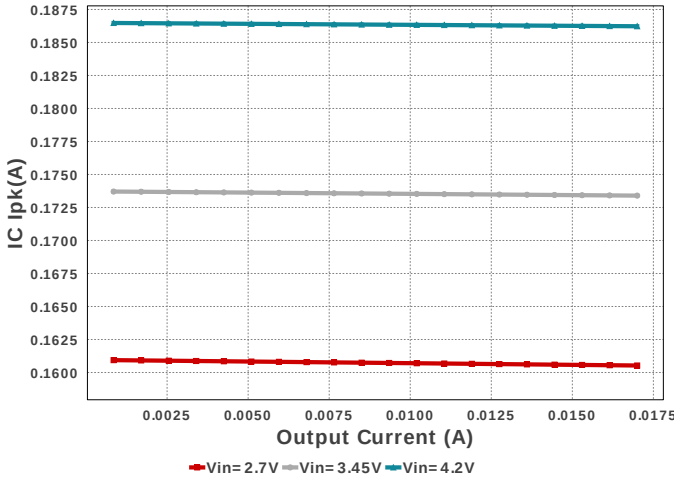
Iin Avg



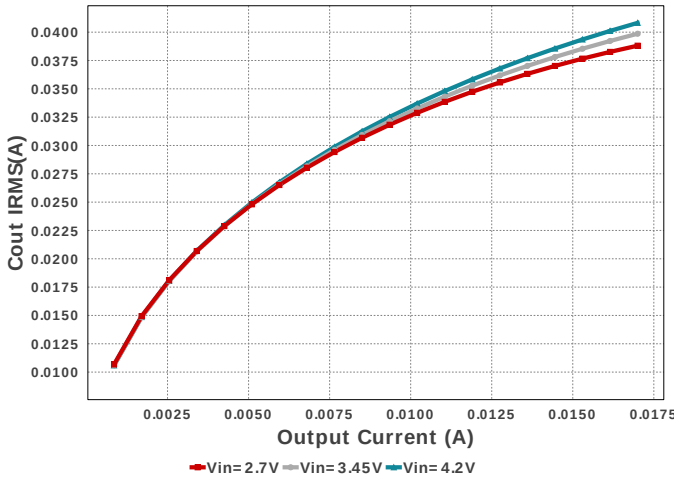
Pout



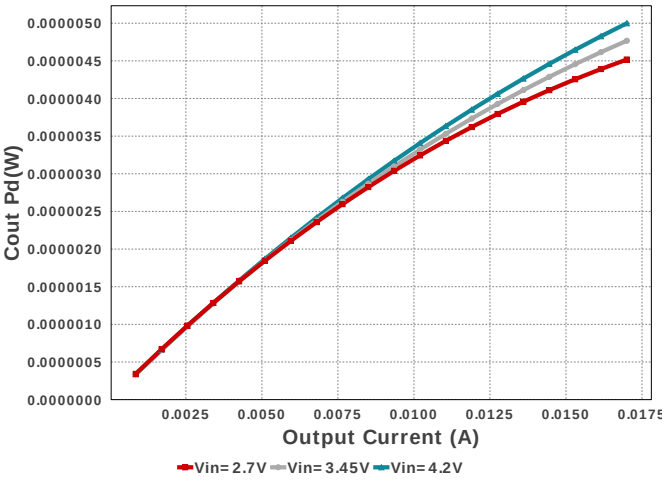
IC Ipk

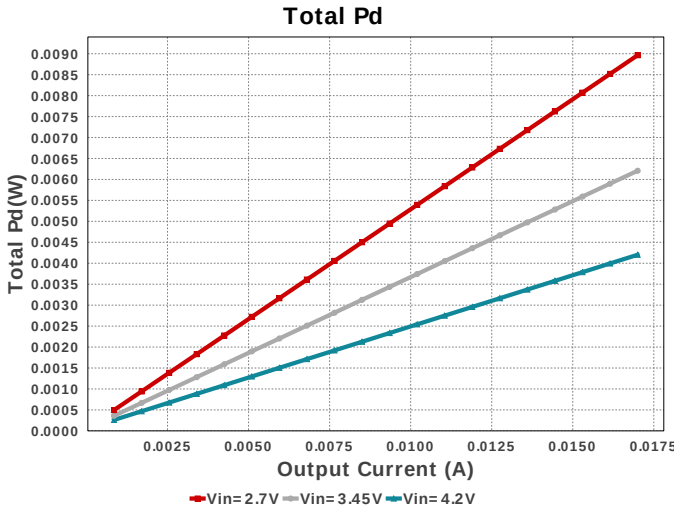


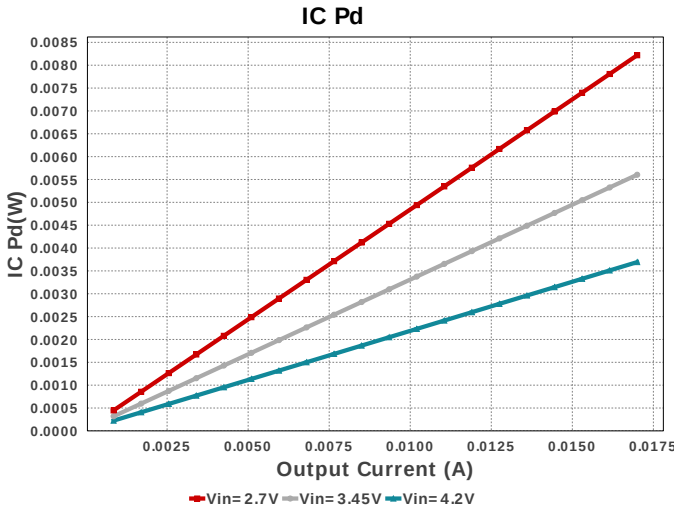
Cout IRMS

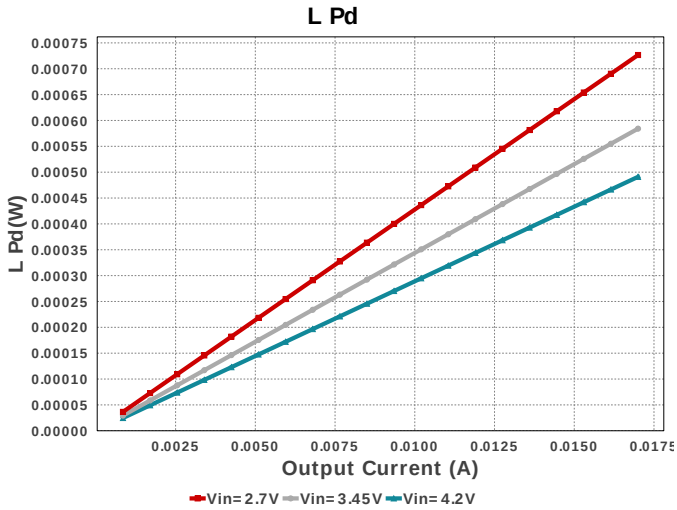


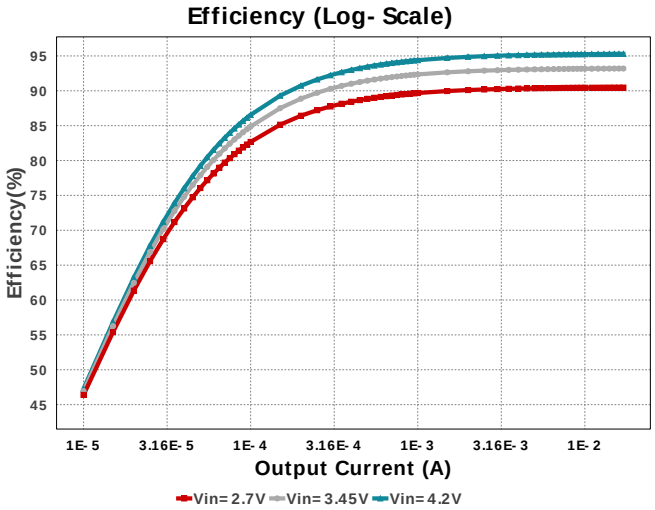
Cout Pd











Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	31.767 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	38.807 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	160.53 mA	Current	Peak switch current in IC
4.	Iin Avg	34.802 mA	Current	Average input current
5.	L Ipp	160.53 mA	Current	Peak-to-peak inductor ripple current
6.	BOM Count	4	General	Total Design BOM count
7.	FootPrint	33.0 mm^2	General	Total Foot Print Area of BOM components
8.	Frequency	700.977 kHz	General	Switching frequency
9.	Mode	BOOST PFM	General	PWM/PFM Mode
10.	Pout	85.0 mW	General	Total output power
11.	Total BOM	$0.54	General	Total BOM Cost
12.	Duty Cycle	20.018 %	Op Point	Duty cycle
13.	Efficiency	90.46 %	Op Point	Steady state efficiency
14.	IC Tj	31.9 degC	Op Point	IC junction temperature
15.	ICThetaJA	231.2 degC/W	Op Point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	17.0 mA	Op Point	Iout operating point
17.	VIN_OP	2.7 V	Op Point	Vin operating point
18.	Vout Tolerance	3.6 %	Op Point	Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable
19.	Vout p-p	4.65 mV	Op Point	Peak-to-peak output ripple voltage
20.	Cin Pd	4.062 µW	Power	Input capacitor power dissipation
21.	Cout Pd	4.518 µW	Power	Output capacitor power dissipation
22.	IC Pd	8.218 mW	Power	IC power dissipation
23.	L Pd	726.561 µW	Power	Inductor power dissipation
24.	Total Pd	8.964 mW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	17.0 m	Maximum Output Current
2.	VinMax	4.2	Maximum input voltage

#	Name	Value	Description
3.	VinMin	2.7	Minimum input voltage
4.	Vout	5.0	Output Voltage
5.	base_pn	TPS61222	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. **TPS61222** Product Folder : http://www.ti.com/product/TPS61222 : contains the data sheet and other resources.