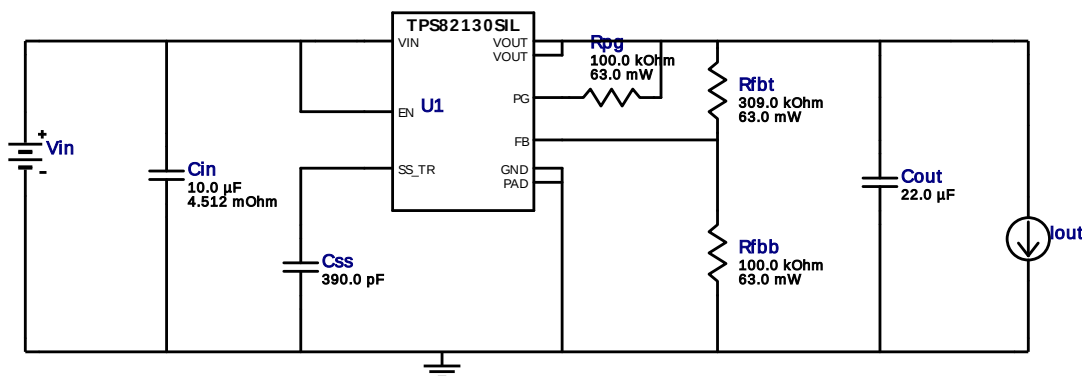


WEBENCH® Design Report

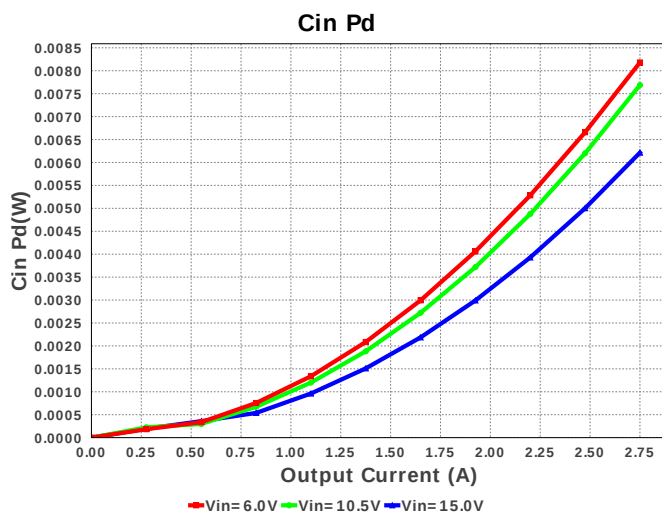
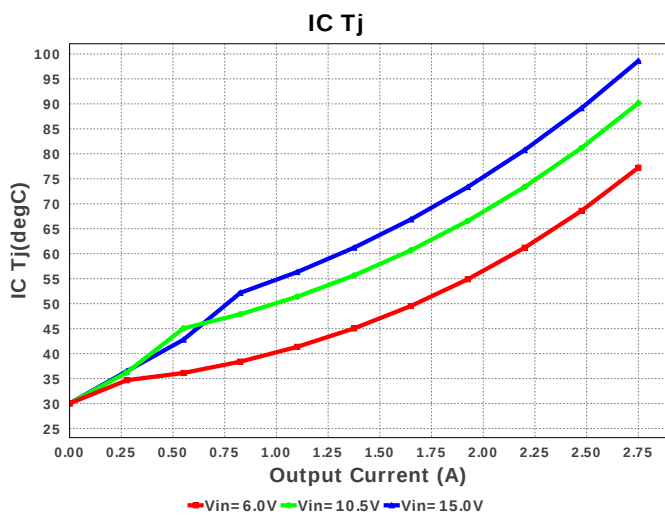
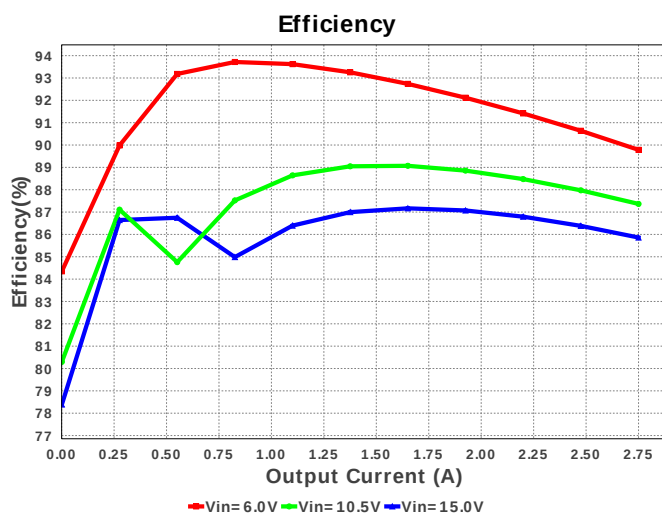
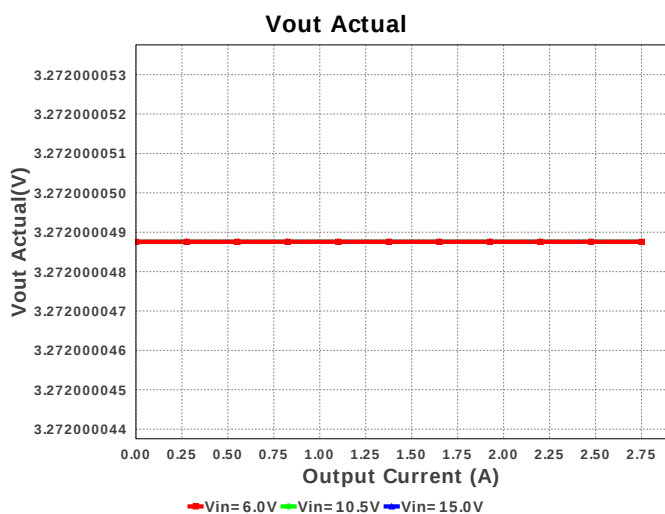
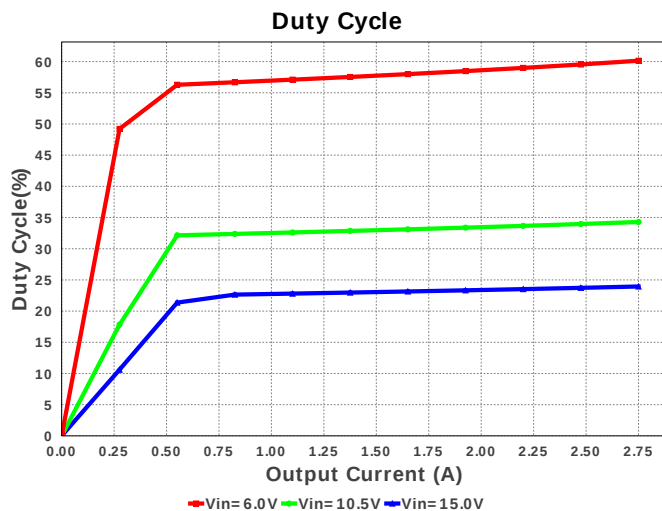
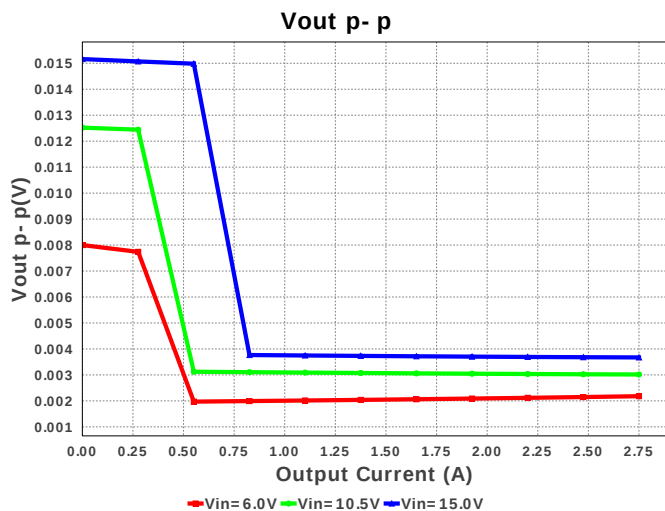
Design : 4737126/10 TPS82130SILR
TPS82130SILR 6.0V-15.0V to 3.30V @ 2.75A

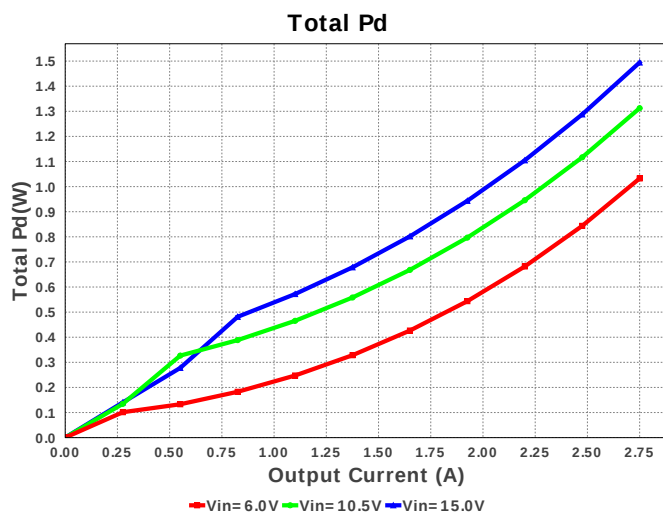
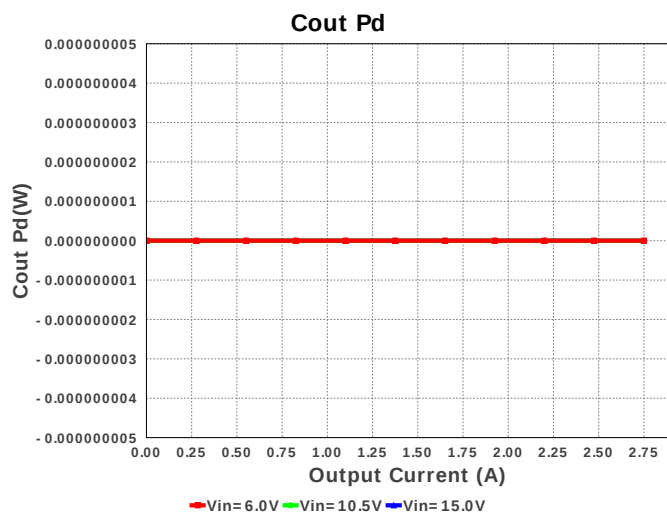
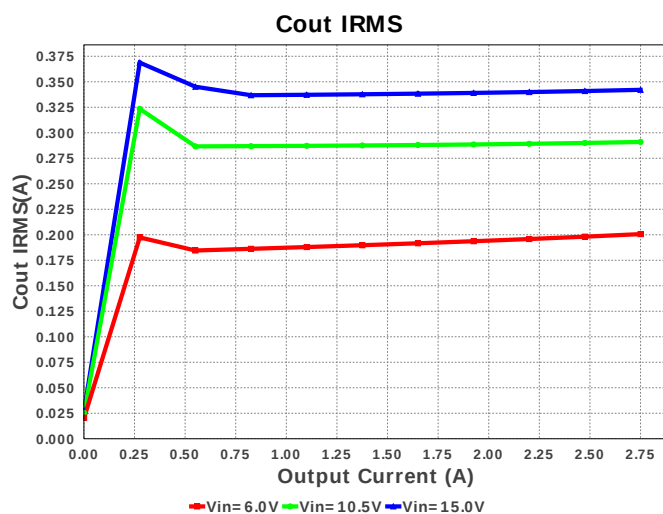
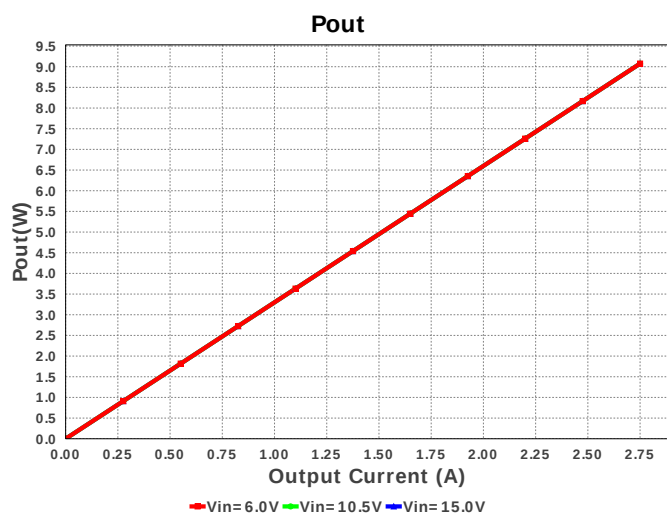
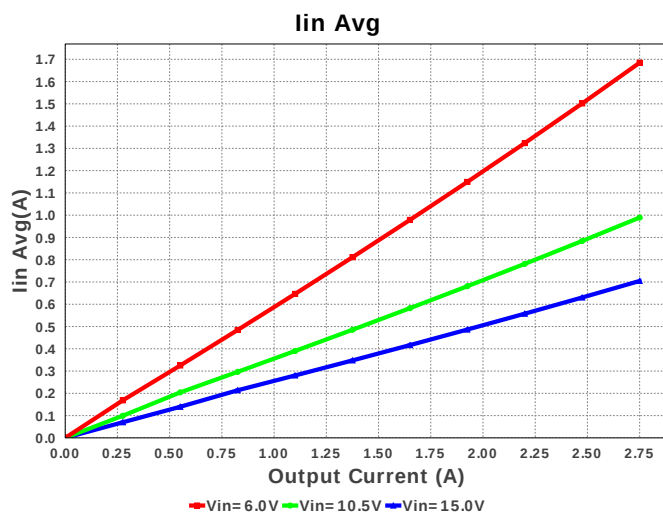
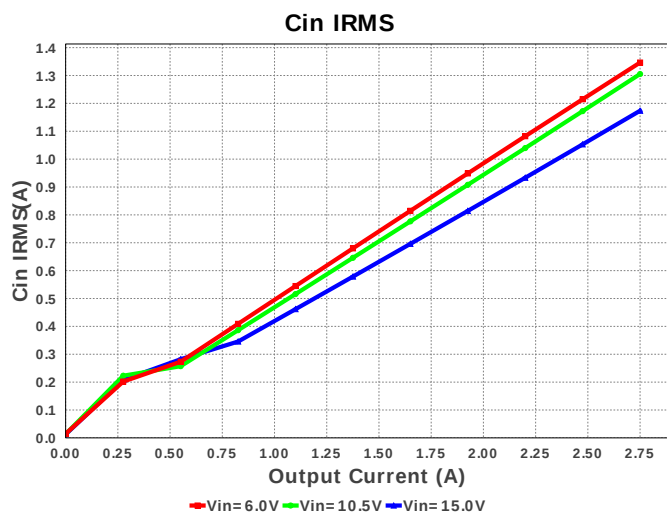
Vout = 3.3V
Iout = 2.75A

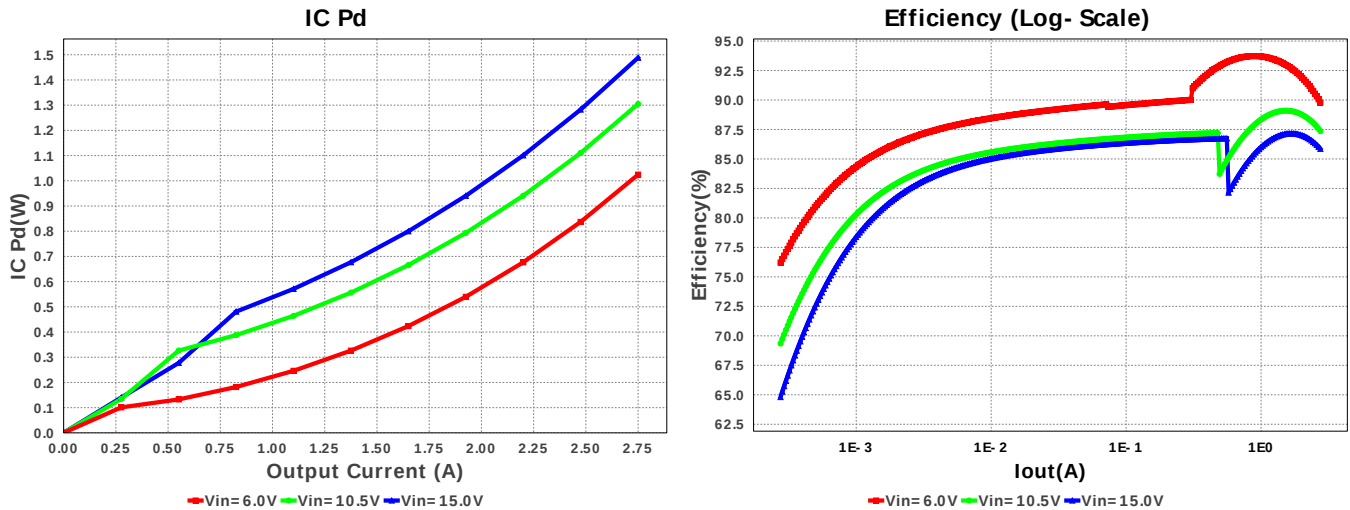


Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM31CR61E106KA12L Series= X5R	Cap= 10.0 uF ESR= 4.512 mOhm VDC= 25.0 V IRMS= 2.447 A	1	\$0.05	 1206_190 11 mm ²
2.	Cout	Taiyo Yuden	JMK212BJ226MG-T Series= X5R	Cap= 22.0 uF VDC= 6.3 V IRMS= 0.0 A	1	\$0.05	 0805 7 mm ²
3.	Css	Yageo America	CC0805KRX7R9BB391 Series= X7R	Cap= 390.0 pF VDC= 50.0 V IRMS= 0.0 A	1	\$0.01	 0805 7 mm ²
4.	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
5.	Rfbb	Vishay-Dale	CRCW0402309KFKED Series= CRCW..e3	Res= 309.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
6.	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
7.	U1	Texas Instruments	TPS82130SILR	Switcher	1	\$2.35	 SIL0008D_SMD 15 mm ²







Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	1.174 A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	342.11 mA	Current	Output capacitor RMS ripple current
3.	Iin Avg	704.63 mA	Current	Average input current
4.	BOM Count	7	General	Total Design BOM count
5.	FootPrint	49.0 mm ²	General	Total Foot Print Area of BOM components
6.	Frequency	2.149 MHz	General	Switching frequency
7.	Pout	9.075 W	General	Total output power
8.	Total BOM	\$2.49	General	Total BOM Cost
9.	ICThetaJA Effective	46.1 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
10.	Vout Actual	3.272 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	3.3 V	Op_Point	Operational Output Voltage
12.	Duty Cycle	23.947 %	Op_point	Duty cycle
13.	Efficiency	85.861 %	Op_point	Steady state efficiency
14.	IC Tj	98.606 degC	Op_point	IC junction temperature
15.	IOUT_OP	2.75 A	Op_point	Iout operating point
16.	VIN_OP	15.0 V	Op_point	Vin operating point
17.	Vout p-p	3.673 mV	Op_point	Peak-to-peak output ripple voltage
18.	Cin Pd	6.214 mW	Power	Input capacitor power dissipation
19.	Cout Pd	0.0 W	Power	Output capacitor power dissipation
20.	IC Pd	1.488 W	Power	IC power dissipation
21.	Total Pd	1.494 W	Power	Total Power Dissipation
22.	Vout Tolerance	4.445 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	2.75	Maximum Output Current
2.	SoftStart	0.194 ms	Soft Start Time (ms)
3.	VinMax	15.0	Maximum input voltage
4.	VinMin	6.0	Minimum input voltage
5.	Vout	3.3	Output Voltage
6.	base_pn	TPS82130	Texas Instruments Base Part Number
7.	source	DC	Input Source Type
8.	ta	30.0	Ambient temperature

Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with up to 3A output current, Power module with integrated inductor, 3V to 17V Input Voltage Range, Adjustable output voltage from 0.9V to 5V, Optional softstart capacitor for slow startup, Power Save Mode for light load efficiency, 100% duty cycle for lowest dropout, PG=Low when device is in shutdown through EN or Thermal Shutdown

2. TPS82130 Product Folder : <http://www.ti.com/product/TPS82130> : 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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