TEXAS INSTRUMENTS

VinMin = 2.7V
VinMax = 3.9V
Vout = 1.2V
Iout = 0.35A

Device = TPS62262TDRVRQ1
Topology = Buck
Created = 2/11/16 3:51:28 PM
BOM Cost = $0.00
BOM Count = 4
Total Pd = 0.08W

WEBENCH® Design Report

Design : 4055510/220 TPS62262TDRVRQ1
TPS62262TDRVRQ1 2.7V-3.9V to 1.20V @ 0.35A

Vout = 1.2V
Iout = 0.35A
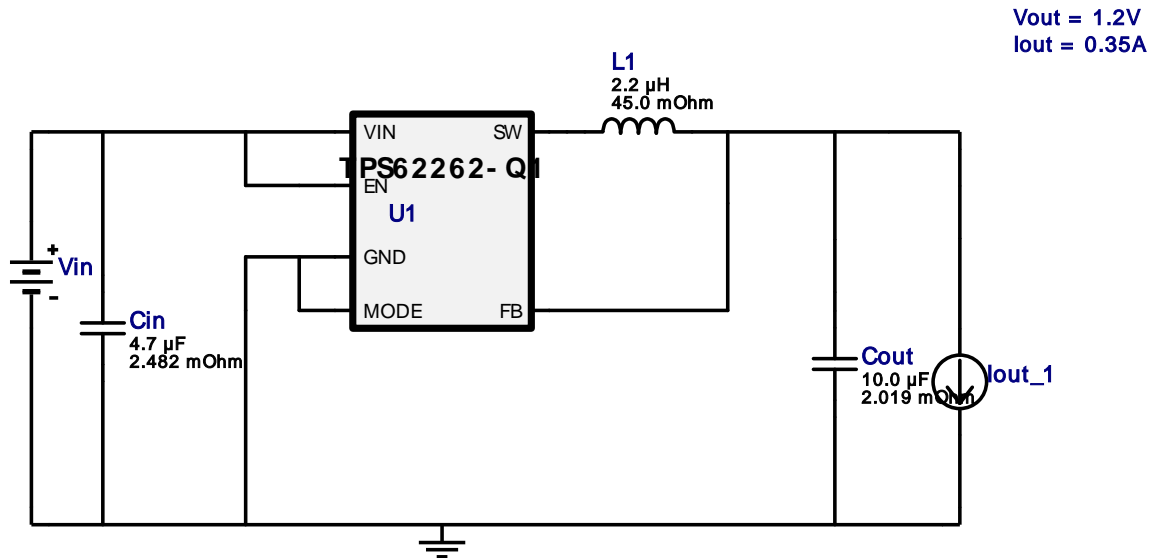
1. This regulator device is qualified for Automotive applications. All passives and other components selected in this design may not be qualified for Automotive applications. The user is required to verify that all components in the design meet the qualification and safety requirements for their specific application.View WEBENCH(R) Disclaimer.

My Comments

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	TDK	C5750X7R2A475M Series= X7R	Cap= 4.7 uF ESR= 2.482 mOhm VDC= 100.0 V IRMS= 0.0 A	1	NA	2220 54 mm^2
2.	Cout	TDK	C4532X7R1E106M Series= X7R	Cap= 10.0 uF ESR= 2.019 mOhm VDC= 25.0 V IRMS= 0.0 A	1	$0.43	1812 23 mm^2
3.	L1	Coilcraft	LPS6225-222MLB	L= 2.2 µH DCR= 45.0 mOhm	1	NA	LPS6225 64 mm^2
4.	U1	Texas Instruments	TPS62262TDRVRQ1	Switcher	1	$0.76	S-PWSON-N6 9 mm^2

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Efficiency

Chart for VinMin • Chart for VinMax

Loop

Total Gain • Total Phase
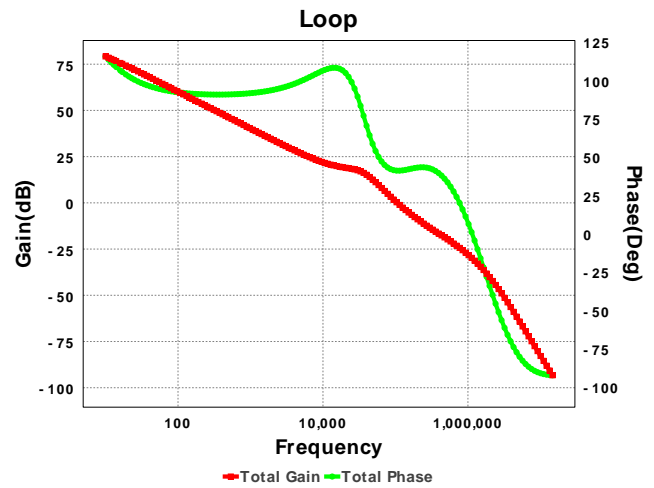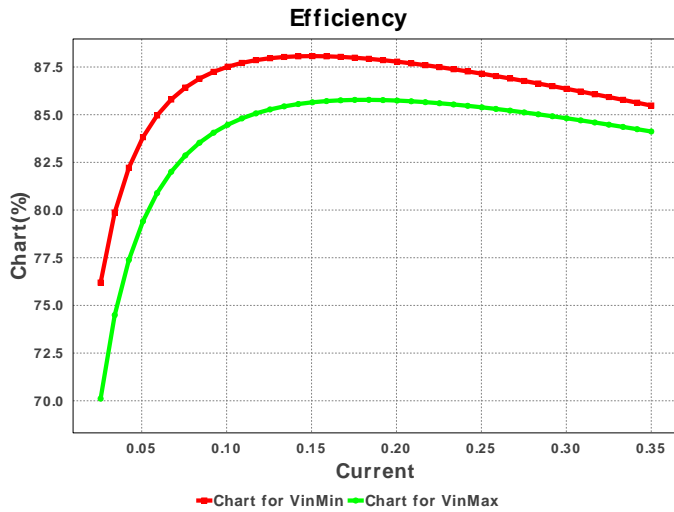
Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	180.0 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	57.0 mA	Current	Output capacitor RMS ripple current
3.	IC Irms	350.0 mA	Current	Calculated current across IC
4.	L Ipp Max	197.0 mA	Current	Inductor Peak to Peak Current calculated Max
5.	L Ipp Min	154.0 mA	Current	Inductor Peak to Peak Current calculated Min
6.	L1 Irms	350.0 mA	Current	Inductor ripple current
7.	BOM Count	4	General	Total Design BOM count
8.	FootPrint	150.0 mm^2	General	Total Foot Print Area of BOM components
9.	Frequency	2.25 MHz	General	Switching frequency
10.	IC Tolerance	6.0 mV	General	IC Feedback Tolerance
11.	Pout	420.0 mW	General	Total output power
12.	Total BOM	$0.0	General	Total BOM Cost
13.	Cin Vdrop	3.92 V	Op_Point	Calculated voltage across input cap
14.	Cout Vdrop	1.21 V	Op_Point	Calculated voltage across output capacitor
15.	ESR Zero Freq	6.92 MHz	Op_Point	ESR Zero Frequency
16.	IC Vdrop	3.92 V	Op_Point	Calculated voltage across IC
17.	LC Conner Freq	33.932 kHz	Op_Point	LC conner frequency
18.	Vout OP	1.2 V	Op_Point	Operational Output Voltage
19.	Cross Freq	105.644 kHz	Op_point	Bode plot crossover frequency
20.	Duty Cycle	33.8 %	Op_point	Duty cycle
21.	Efficiency	84.119 %	Op_point	Steady state efficiency
22.	Gain Marg	-30.265 dB	Op_point	Bode Plot Gain Margin
23.	IC Tj	109.0 degC	Op_point	IC junction temperature
24.	IOUT_OP	350.0 mA	Op_point	Iout operating point
25.	Phase Marg	41.994 deg	Op_point	Bode Plot Phase Margin
26.	VIN_OP	3.9 V	Op_point	Vin operating point
27.	Vout p-p	1.3 mV	Op_point	Peak-to-peak output ripple voltage
28.	Cin Pd	47.0 µW	Power	Input capacitor power dissipation
29.	Cout Pd	7.0 µW	Power	Output capacitor power dissipation
30.	IC Pd	78.0 mW	Power	IC power dissipation
31.	M1 Rdson Max	468.0 mOhm	Power	High side FET Rdson max
32.	M1 Rdson Min	383.0 mOhm	Power	High side FET Rdson min
33.	M2 Rdson Max	361.0 mOhm	Power	Low side FET Rdson Max
34.	M2 Rdson Min	240.0 mOhm	Power	Low side FET Rdson Min
35.	Total Pd	78.0 mW	Power	Total Power Dissipation
36.	Vout Tolerance	500.0 m%		Vout Tolerance based on IC Tolerance and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	350.0 m	Maximum Output Current
2.	VinMax	3.9	Maximum input voltage
3.	VinMin	2.7	Minimum input voltage
4.	Vout	1.2	Output Voltage
5.	base_pn	TPS62262-Q1	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	105.0	Ambient temperature

Design Assistance

1. The TPS62262-Q1 is qualified for Automotive applications. All passives and other components selected in this design may not be qualified for Automotive applications. The user is required to verify that all components in the design meet the qualification and safety requirements for their specific application

2. **TPS62262-Q1** Product Folder : http://www.ti.com/product/TPS62262%2DQ1 : contains the data sheet and other resources.