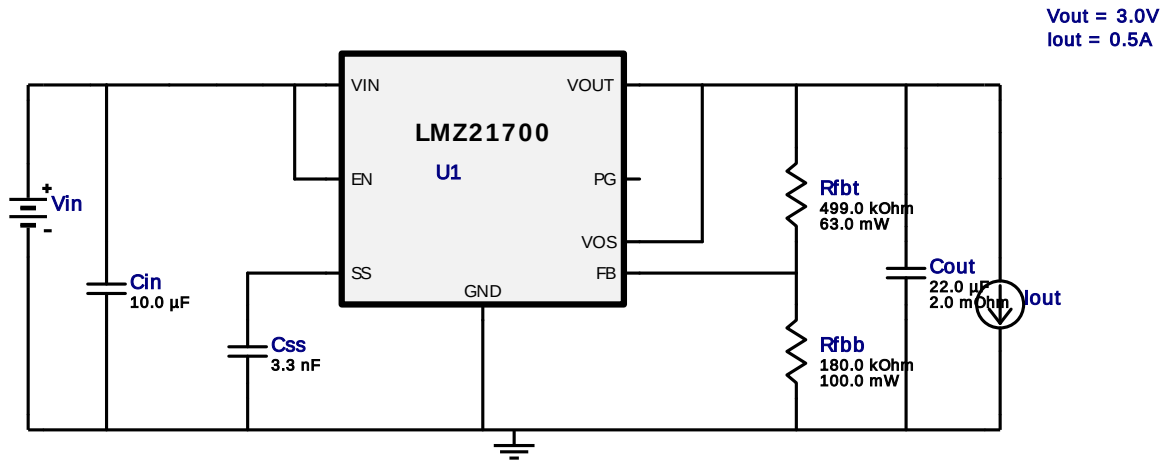
WEBENCH® Design Report

VinMin = 4.5V
VinMax = 5.5V
Vout = 3.0V
Iout = 0.5A

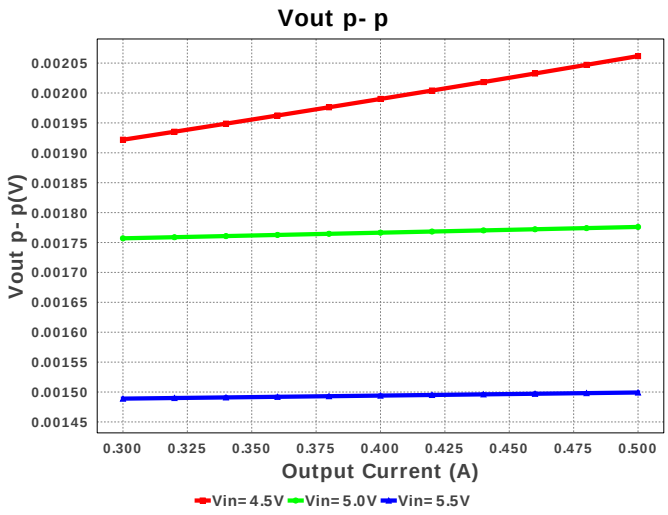
Device = LMZ21700SILR
Topology = Buck
Created = 7/19/16 5:48:15 AM
BOM Cost = $1.74
BOM Count = 6
Total Pd = 0.15W

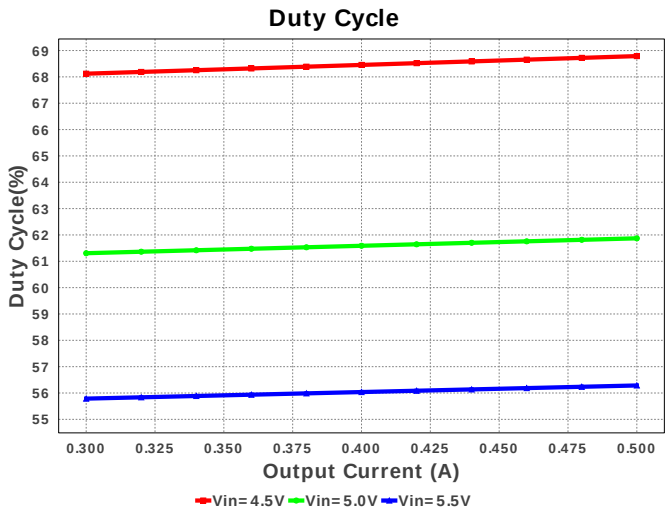
Design : 4742013/153 LMZ21700SILR
LMZ21700SILR 4.5V-5.5V to 3.00V @ 0.5A

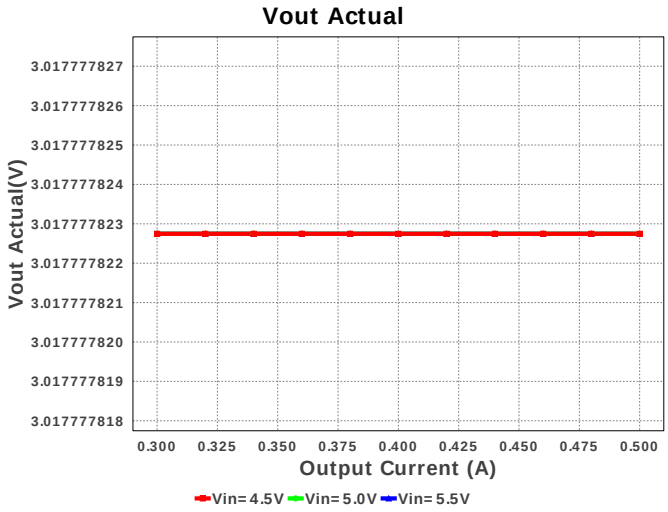


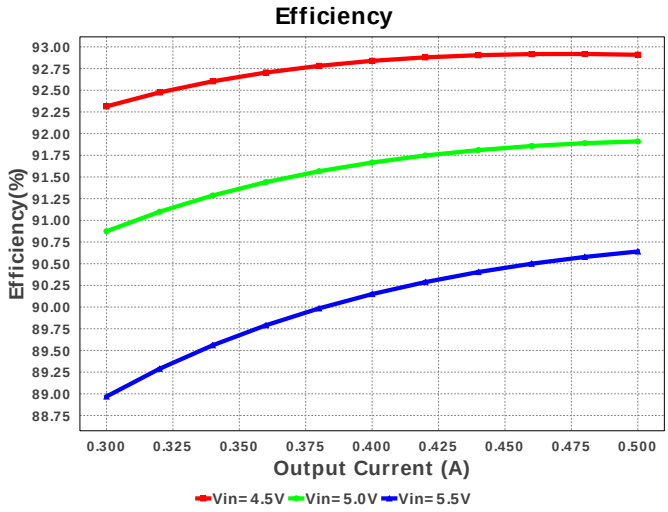
Electrical BOM

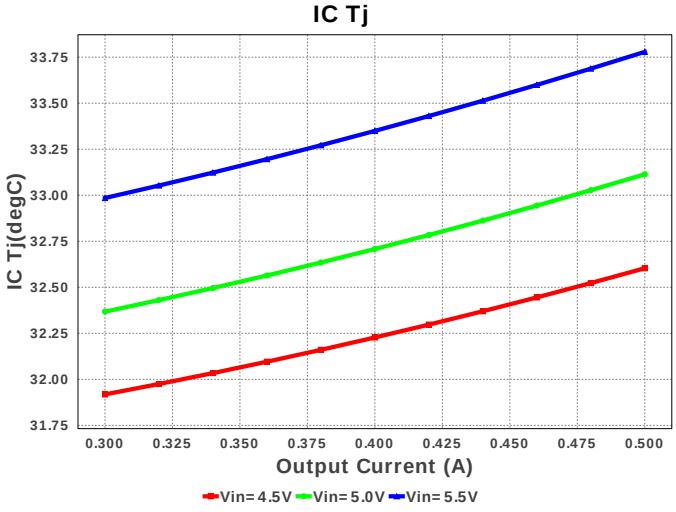
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Taiyo Yuden	LMK212BJ106KG-T Series= X5R	Cap= 10.0 uF VDC= 10.0 V IRMS= 0.0 A	1	$0.03	0805 7 mm²
2.	Cout	Taiyo Yuden	JMK212BJ226KG-T Series= X5R	Cap= 22.0 uF ESR= 2.0 mOhm VDC= 6.3 V IRMS= 0.0 A	1	$0.13	0805 7 mm²
3.	Css	MuRata	GRM033R61A332KA01D Series= X5R	Cap= 3.3 nF VDC= 10.0 V IRMS= 0.0 A	1	$0.01	0201 2 mm²
4.	Rfbb	Yageo America	RC0603FR-07180KL Series= ?	Res= 180.0 kOhm Power= 100.0 mW Tolerance= 1.0%	1	$0.01	0603 5 mm²
5.	Rfbt	Vishay-Dale	CRCW0402499KFKED Series= CRCW..e3	Res= 499.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
6.	U1	Texas Instruments	LMZ21700SILR	Switcher	1	$1.55	SIL0008B 14 mm²

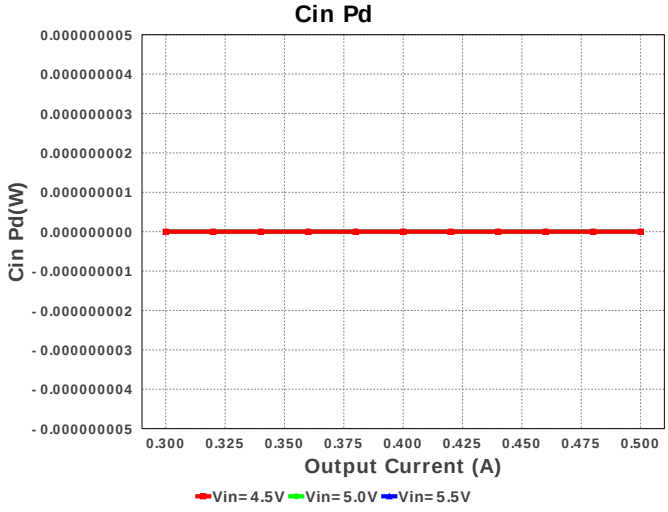


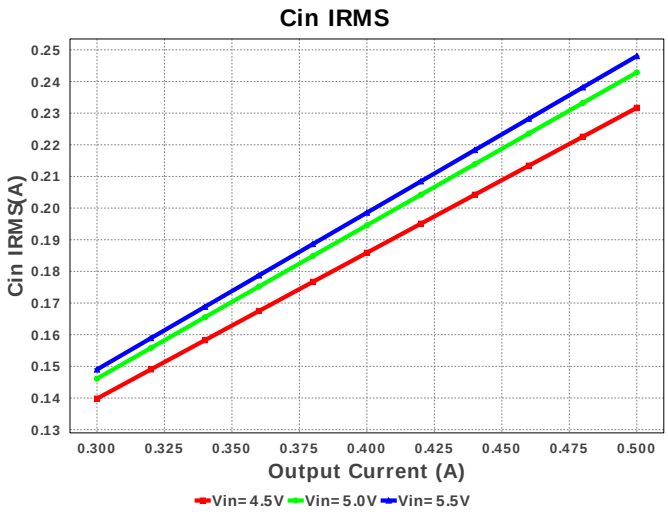


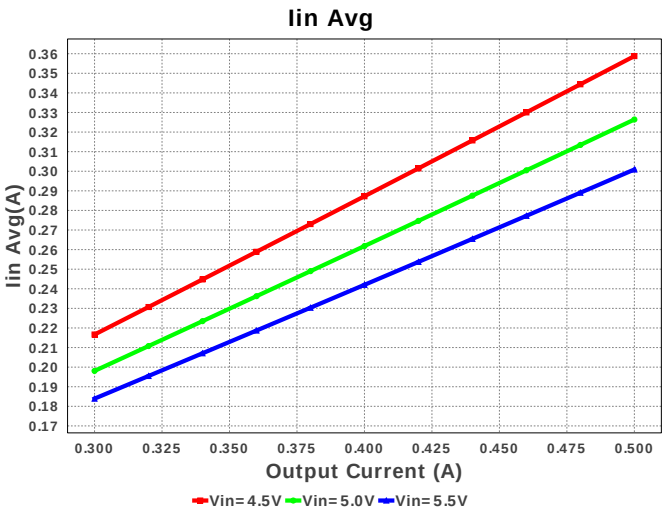


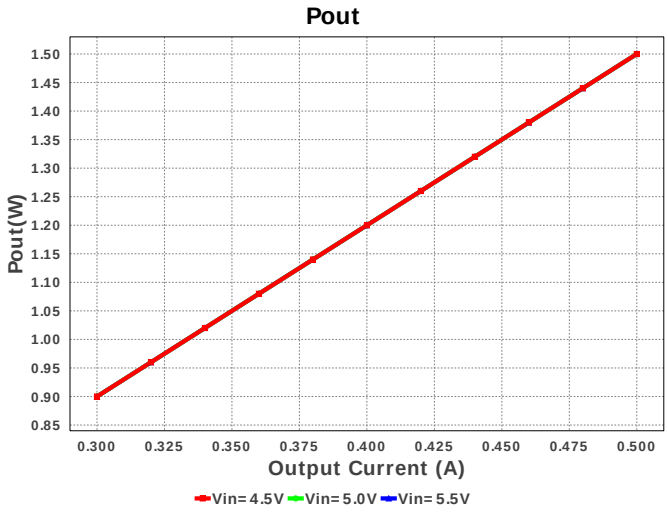


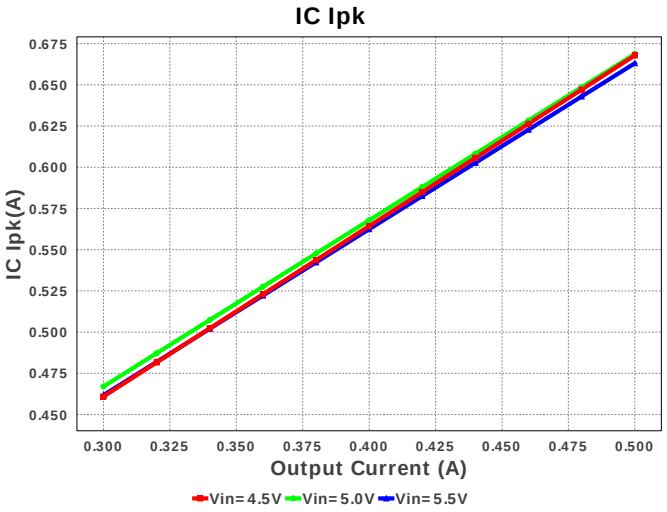


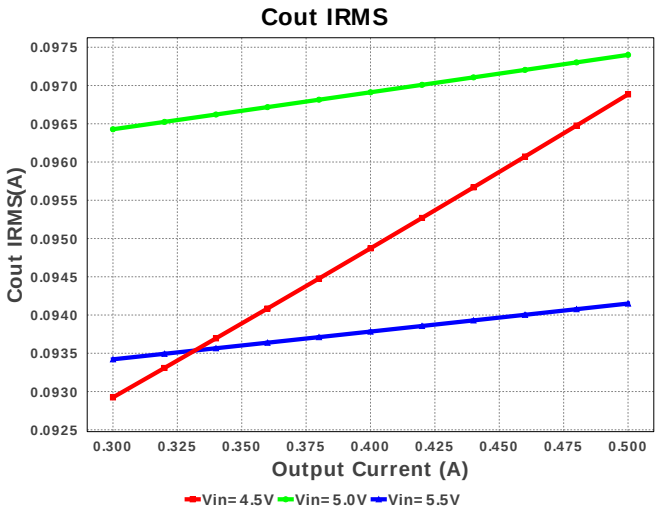


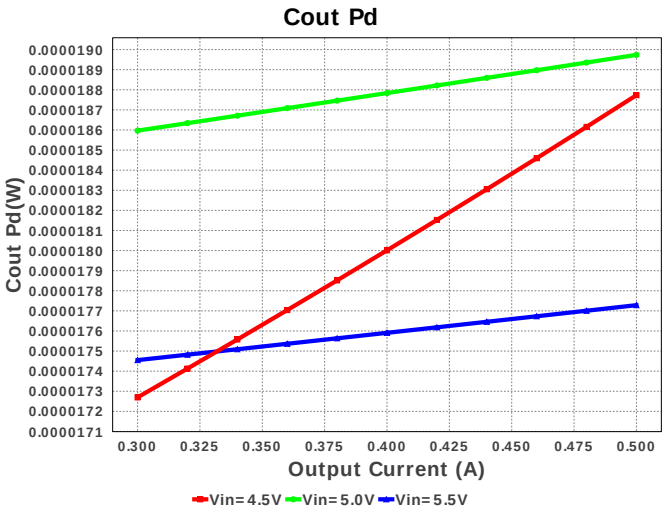


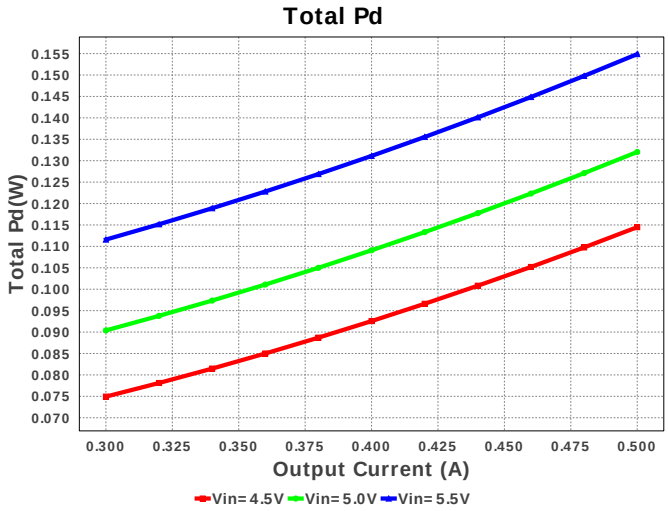


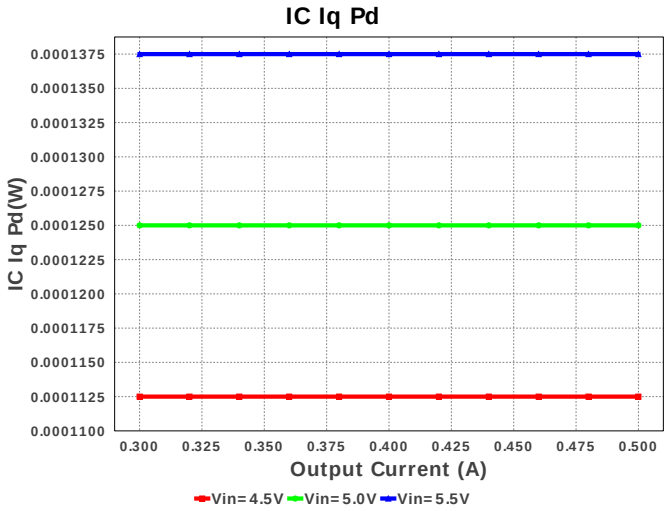


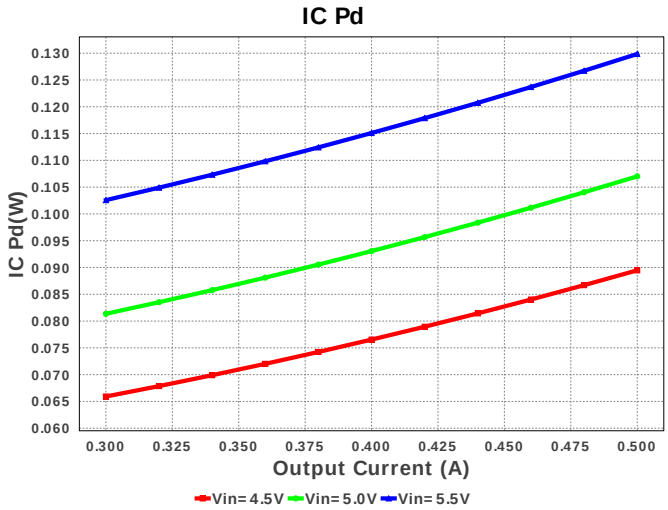












Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	248.016 mA	Current	Input capacitor RMS ripple current
2.	Cout IRMS	94.15 mA	Current	Output capacitor RMS ripple current
3.	IC Ipk	663.072 mA	Current	Peak switch current in IC
4.	Iin Avg	300.89 mA	Current	Average input current
5.	BOM Count	6	General	Total Design BOM count
6.	FootPrint	38.0 mm^2	General	Total Foot Print Area of BOM components
7.	Frequency	1.961 MHz	General	Switching frequency
8.	Pout	1.5 W	General	Total output power
9.	Total BOM	$1.74	General	Total BOM Cost
10.	Vout Actual	3.018 V	Op_Point	Vout Actual calculated based on selected voltage divider resistors
11.	Vout OP	3.0 V	Op_Point	Operational Output Voltage
12.	Duty Cycle	56.286 %	Op_point	Duty cycle
13.	Efficiency	90.641 %	Op_point	Steady state efficiency
14.	IC Tj	33.779 degC	Op_point	IC junction temperature
15.	ICThetaJA	29.1 degC/W	Op_point	IC junction-to-ambient thermal resistance
16.	IOUT_OP	500.0 mA	Op_point	Iout operating point
17.	VIN_OP	5.5 V	Op_point	Vin operating point
18.	Vout p-p	1.499 mV	Op_point	Peak-to-peak output ripple voltage
19.	Cin Pd	0.0 W	Power	Input capacitor power dissipation
20.	Cout Pd	17.728 µW	Power	Output capacitor power dissipation
21.	IC Iq Pd	137.5 µW	Power	IC Iq Pd
22.	IC Pd	129.854 mW	Power	IC power dissipation
23.	Total Pd	154.882 mW	Power	Total Power Dissipation
24.	Vout Tolerance	1.485 %		Vout Tolerance based on IC Tolerance (no load) and voltage divider resistors if applicable

Design Inputs

#	Name	Value	Description
1.	Iout	500.0 m	Maximum Output Current
2.	VinMax	5.5	Maximum input voltage

#	Name	Value	Description
3.	VinMin	4.5	Minimum input voltage
4.	Vout	3.0	Output Voltage
5.	base_pn	LMZ21700	Base Product Number
6.	source	DC	Input Source Type
7.	Ta	30.0	Ambient temperature

Design Assistance

1. Feature Highlights: DCS-Control(TM) Architecture with upto 3A output current, 3V to 17V Input Voltage Range, Adjustable output voltage from 0.9V to 6VOptional Softstart Capacitor for slow startup, Seamless Power Save Mode for Light Load Efficiency, Power Good Output, 100% Duty Cycle mode, Short Circuit Protection, Thermal Shutdown

2. **LMZ21700** Product Folder : http://www.ti.com/product/LMZ21700 : contains the data sheet and other resources.