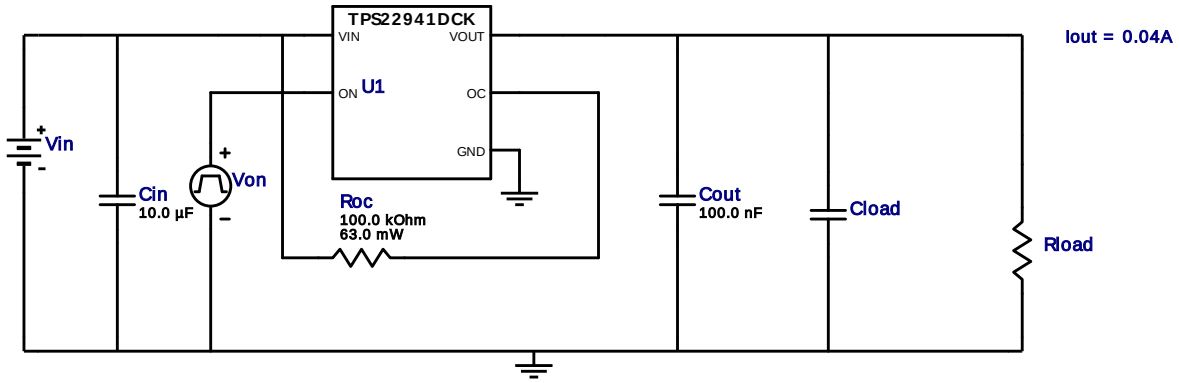
WEBENCH® Design Report

VinMin = 3.0V
VinMax = 5.0V
Vout = 5.0V
Iout = 0.04A

Device = TPS22941DCKR
Topology = Load Switch
Created = 9/22/16 7:24:35 PM
BOM Cost = $0.35
BOM Count = 4
Total Pd = 0.0W

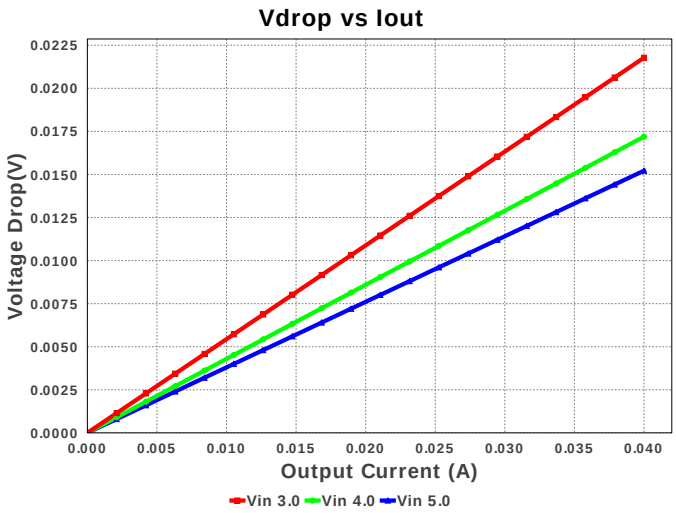
Design : 4799888/4 TPS22941DCKR
Design 4 - TPS22941DCKR

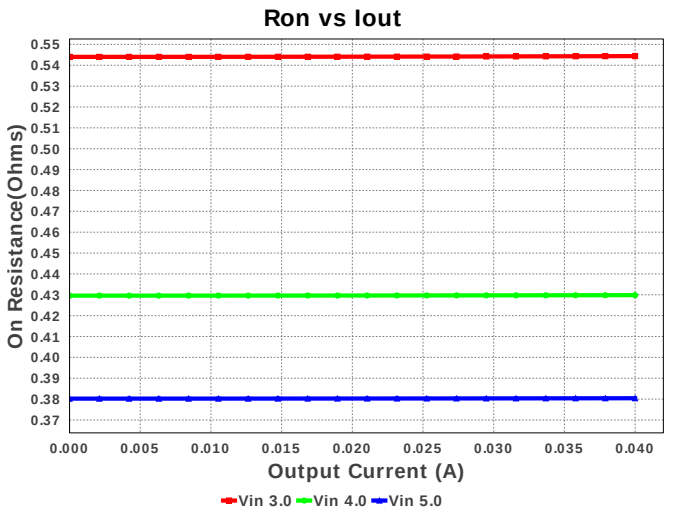


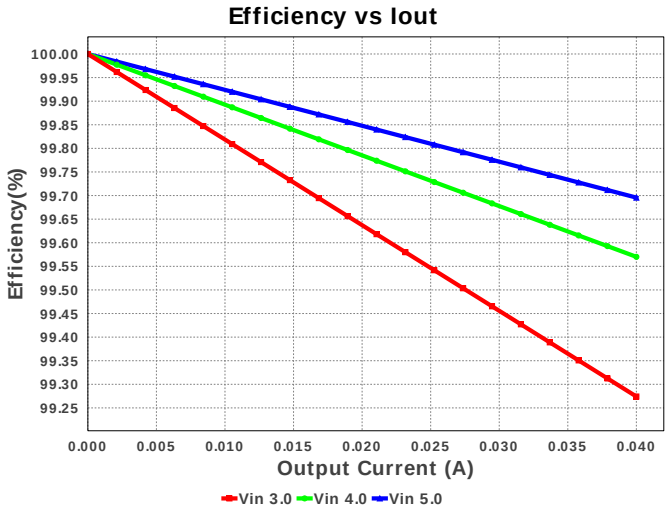
1. To limit the voltage drop on the input supply caused by transient in-rush currents when the switch turns on into a discharged load capacitor or a short circuit, it is generally recomended to have a capacitor of at least Cload*10 between VIN and GND.

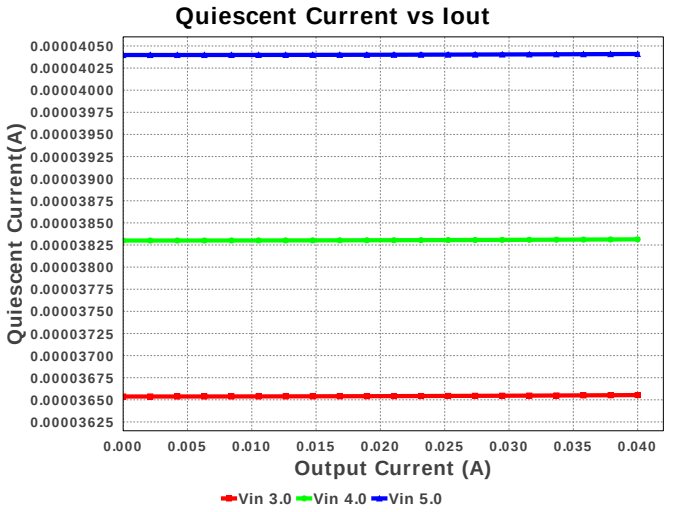
Electrical BOM

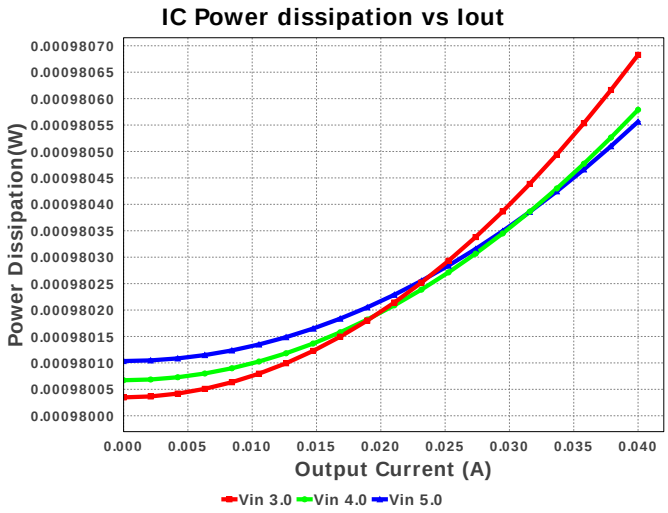
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Samsung Electro-Mechanics	CL10A106MQ8NNNC Series= X5R	Cap= 10.0 uF VDC= 6.3 V IRMS= 0.0 A	1	$0.03	0603 5 mm²
2.	Cout	MuRata	GRM155R60J104KA01D Series= X5R	Cap= 100.0 nF VDC= 6.3 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
3.	Roc	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm²
4.	U1	Texas Instruments	TPS22941DCKR	Switcher	1	$0.30	R-PDSO-G5 16 mm²

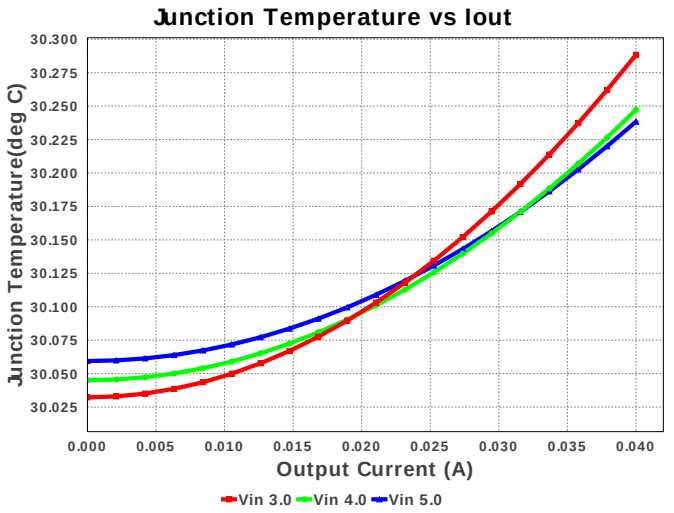












Operating Values

#	Name	Value	Category	Description
1.	BOM Count	4	General	Total Design BOM count
2.	FootPrint	27.0 mm^2	General	Total Foot Print Area of BOM components
3.	Inrush Current	80.0 mA	General	User entered Inrush Current
4.	Pout	199.391 mW	General	Total output power
5.	Total BOM	$0.35	General	Total BOM Cost
6.	Cload Act	200.0 nF	Op_Point	Cload (Actual)
7.	Ron Act	380.42 mOhm	Op_Point	Ron (Actual)
8.	SlewRate Act	398.783 mV/us	Op_Point	Change in volt per unit time
9.	Trise Act	10.0 µs	Op_Point	Rise time
10.	Vdrop Act	15.217 mV	Op_Point	Voltage drop

#	Name	Value	Category	Description
11.	DC Load Fall Time	54.763 µs	Op_point	Fall time calculated with the DC load attached. Considering only CLoad + Cout and RLoad
12.	DC Load Inrush Current	79.757 mA	Op_point	Inrush current calculated with the DC load connected
13.	Efficiency	99.696 %	Op_point	Steady state efficiency
14.	IC Tj	30.238 degC	Op_point	IC junction temperature
15.	IOUT_OP	40.0 mA	Op_point	Iout operating point
16.	No Load Fall Time	NaN s	Op_point	
17.	No Load Inrush Current	79.757 mA	Op_point	Inrush current calculated with the DC load not connected
18.	VIN_OP	5.0 V	Op_point	Vin operating point
19.	Total Pd	810.718 µW	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	Iout	40.0 m	Maximum Output Current
2.	Iout	40.0 m	Maximum Output Current
3.	VinMax	5.0	Maximum input voltage
4.	VinMin	3.0	Minimum input voltage
5.	base_pn	TPS22941	Base Product Number
6.	cload	100.0 n	Minimum load capacitance user requirement
7.	inrush_Current	80.0 m	Inrush current
8.	source	DC	Input Source Type
9.	Ta	30.0	Ambient temperature
10.	vdrop_max	200.0 m	Maximum voltage drop user requirement

Design Assistance

1. **TPS22941** Product Folder : http://www.ti.com/product/tps22941 : contains the data sheet and other resources.