TEXAS INSTRUMENTS

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

Device = TPS22941DCKR
Topology = Load Switch
Created = 6/5/15 11:43:10 PM
BOM Cost = $0.37
Footprint = 19.0 mm^2
BOM Count = 2
Total Pd = 0.0W

WEBENCH$^®$ Design Report

Design : 3789752/4 TPS22941DCKR
Design 4 - TPS22941DCKR
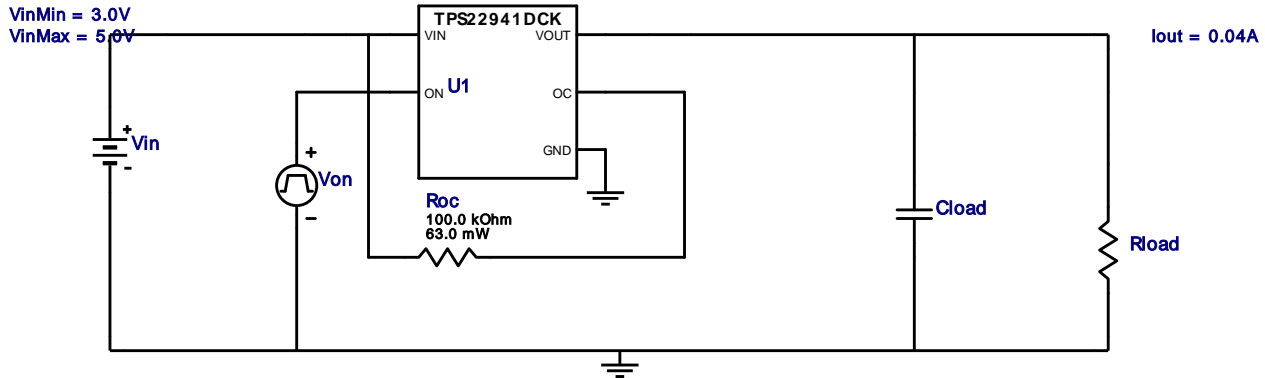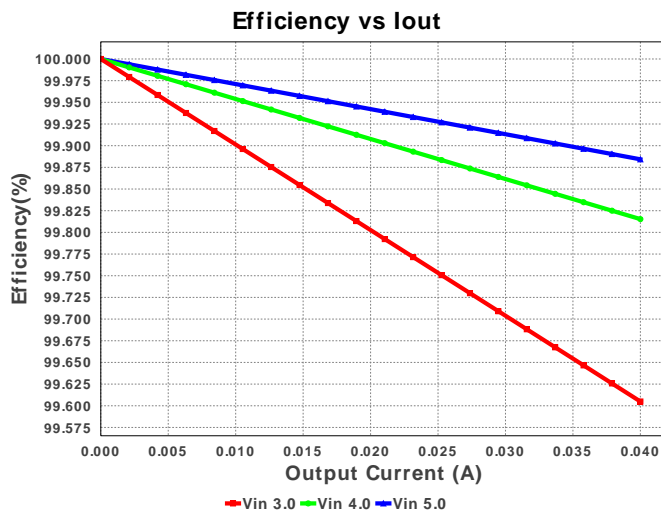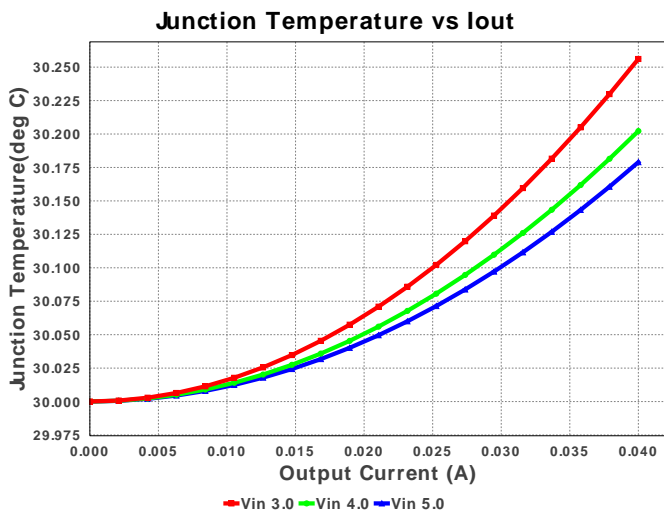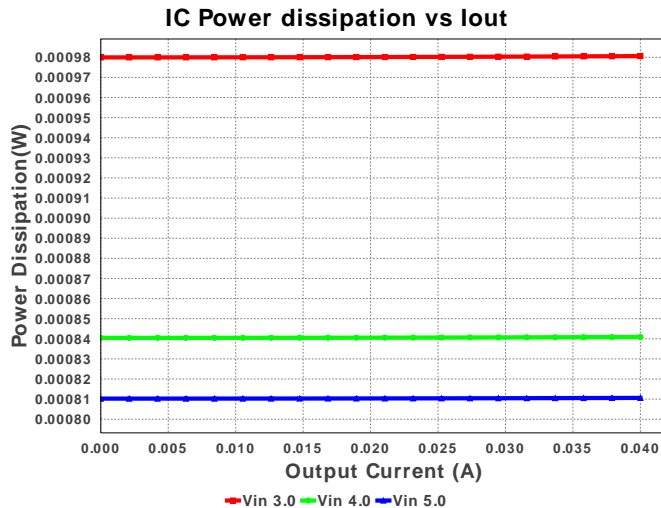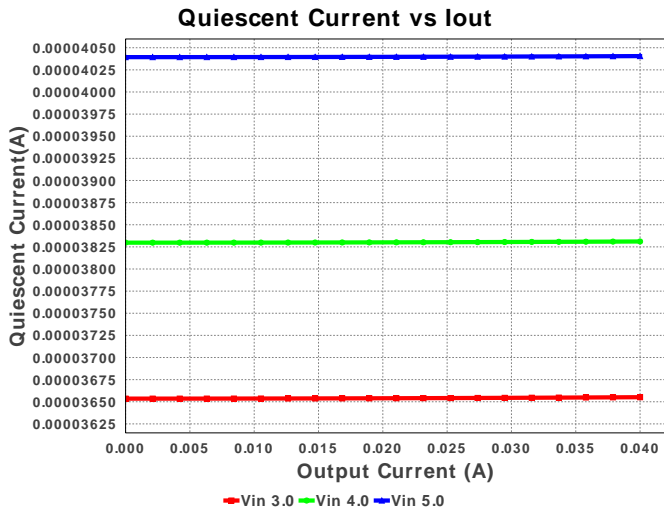

1. To limit the voltage drop on the input supply caused by transient in-rush currents when the switch turns on into a discharged load capacitor or a short circuit, it is generally recomended to have a capacitor of at least Cload*10 between VIN and GND.

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Roc	Vishay-Dale	CRCW0402100KFKED Series= CRCW..e3	Res= 100.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	$0.01	0402 3 mm^2
2.	U1	Texas Instruments	TPS22941DCKR	Switcher	1	$0.36	R-PDSO-G5 16 mm^2

Quiescent Current vs Iout

Vin 3.0 ■ Vin 4.0 ■ Vin 5.0

IC Power dissipation vs Iout

Vin 3.0 ■ Vin 4.0 ■ Vin 5.0

Junction Temperature vs Iout

Vin 3.0 ■ Vin 4.0 ■ Vin 5.0

Efficiency vs Iout

Vin 3.0 ■ Vin 4.0 ■ Vin 5.0
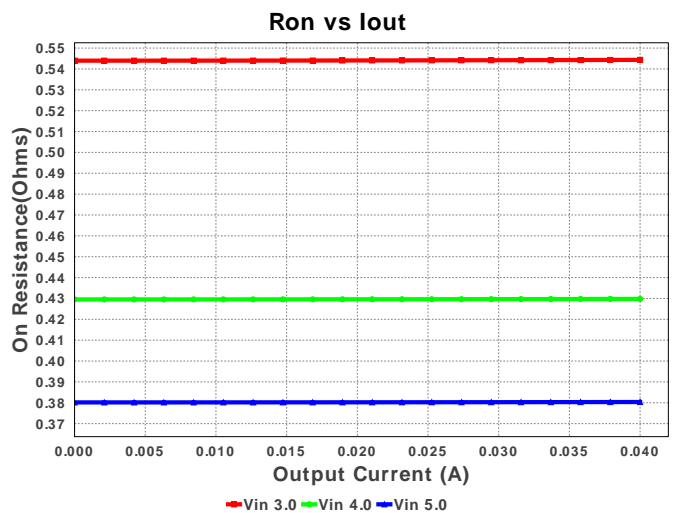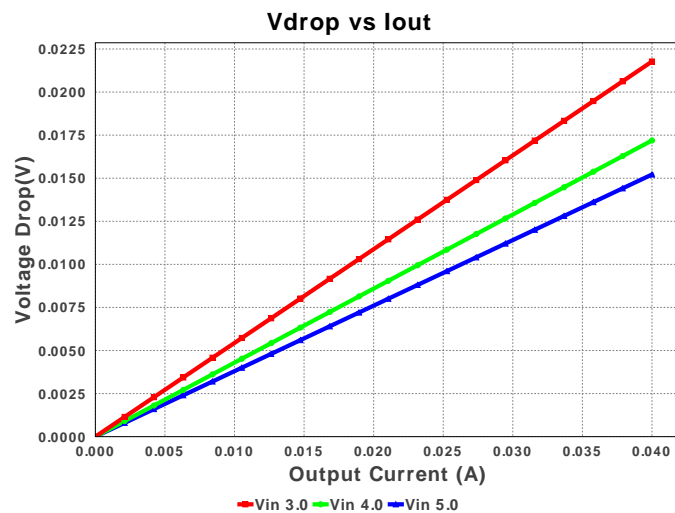
Operating Values

#	Name	Value	Category	Description
1.	BOM Count	2	General	Total Design BOM count
2.	FootPrint	19.0 mm²	General	Total Foot Print Area of BOM components
3.	Inrush Current	80.0 mA	General	User entered Inrush Current
4.	Pout	199.392 mW	General	Total output power
5.	Total BOM	$0.37	General	Total BOM Cost
6.	Cload Act	100.0 nF	Op_Point	Cload (Actual)
7.	Ron Act	380.172 mOhm	Op_Point	Ron (Actual)
8.	SlewRate Act	348.936 mV/us	Op_Point	Change in volt per unit time
9.	Tfall Act	22.329 µs	Op_Point	Fall time
10.	Trise Act	10.0 µs	Op_Point	Rise time
11.	Vdrop Act	15.207 mV	Op_Point	Voltage drop
12.	Efficiency	99.696 %	Op_point	Steady state efficiency
13.	IOUT_OP	40.0 mA	Op_point	Iout operating point
14.	VIN_OP	5.0 V	Op_point	Vin operating point
15.	Total Pd	810.243 µW	Power	Total Power Dissipation
16.	Actual Inrush Current	66.894 mA	Unknown	Calculated Inrush Current based on design conditions

Design Inputs

#	Name	Value	Description
1.	Iout	40.0 m	Maximum Output Current
2.	Iout	40.0 m	Maximum Output Current
3.	Iout1	40.0 m	Output Current #1
4.	VinMax	5.0	Maximum input voltage
5.	VinMin	3.0	Minimum input voltage
6.	Vout1	1.0 m	Output Voltage #1
7.	base_pn	TPS22941	Texas Instruments Base Part Number
8.	cload	100.0 m	Minimum load capacitance user requirement
9.	inrush_Current	80.0 m	Inrush current
10.	source	DC	Input Source Type
11.	ta	30.0	Ambient temperature

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#	Name	Value	Description
12.	vdrop_max	10.0	Maximum voltage drop user requirement

Design Assistance

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

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