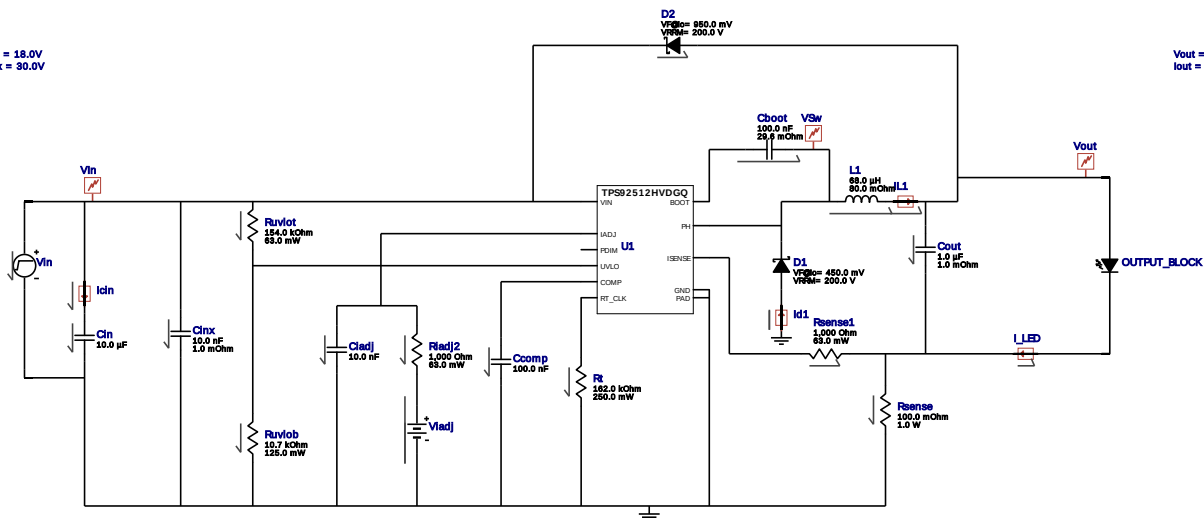


WEBENCH® Electrical Simulation Report

VinMin = 18.0V
VinMax = 30.0V

Vout = 3.2V
Iout = 2.0A

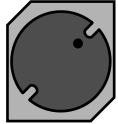


My Comments

No comments

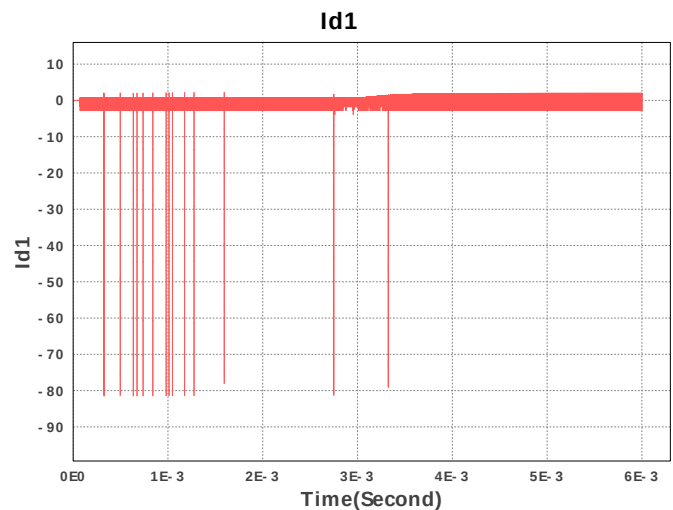
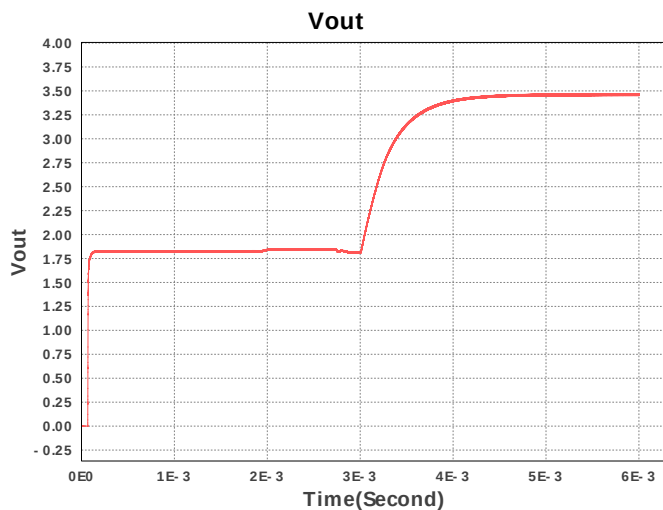
Electrical BOM

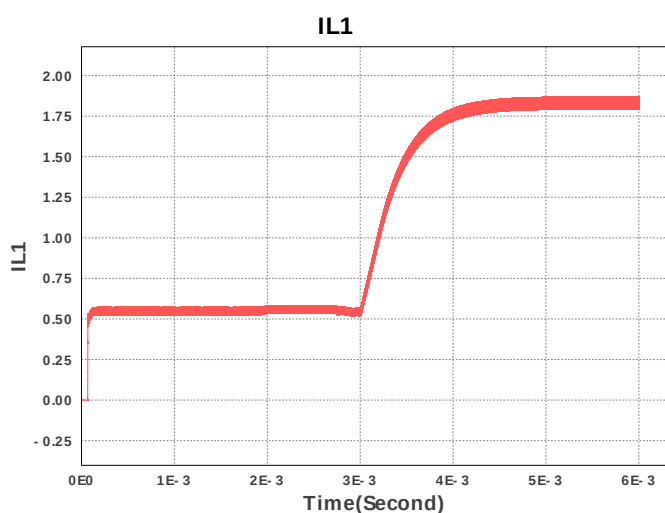
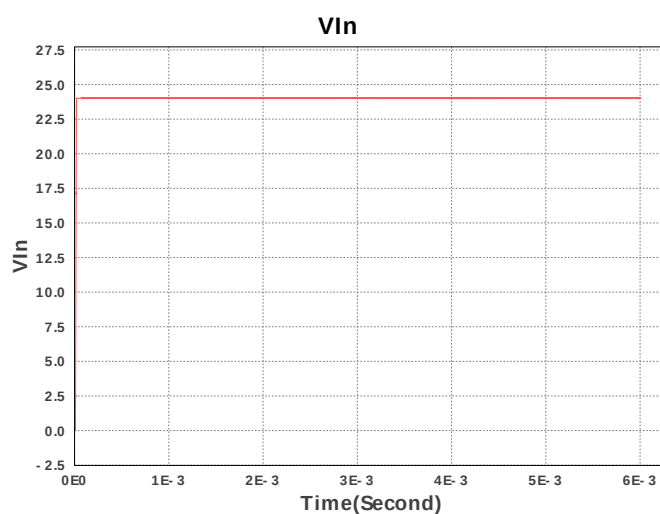
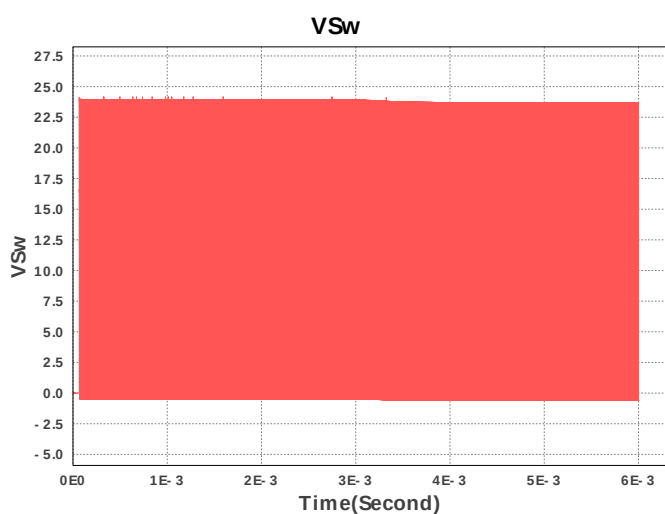
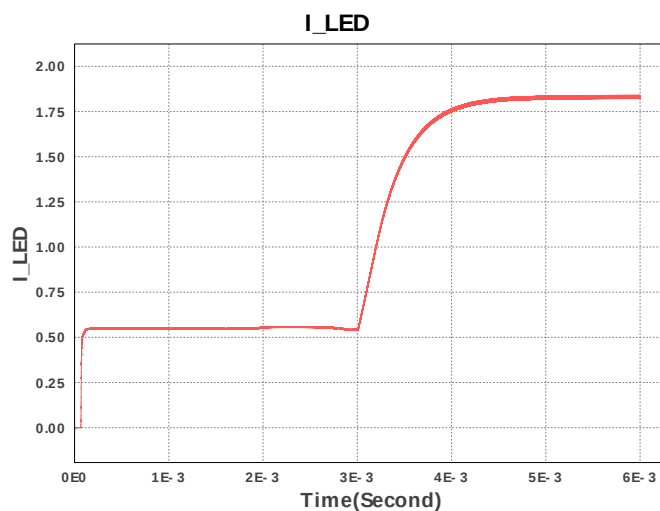
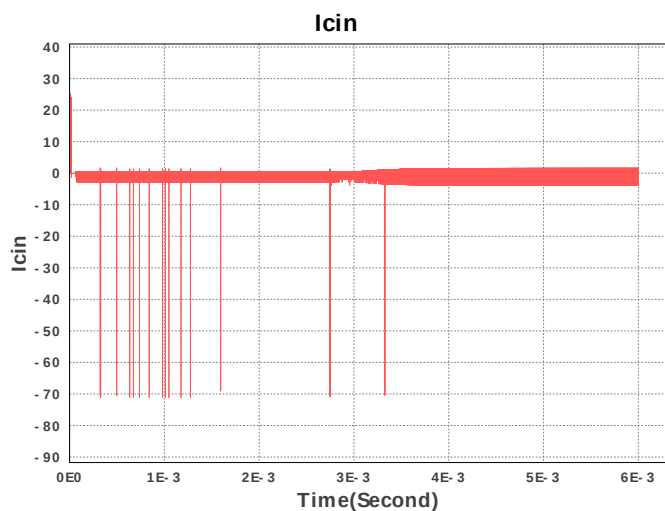
#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cboot	TDK	C1608X7R1H104K080AA Series= X7R	Cap= 100.0 nF ESR= 29.6 mOhm VDC= 50.0 V IRMS= 971.99 mA	1	\$0.01	 0603 5 mm ²
2.	Ccomp	TDK	CGA5L2C0G1H104J160AA Series= C0G/NP0	Cap= 100.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.15	 1206 11 mm ²
3.	Ciadj	TDK	CGA4C2C0G1H103J060AA Series= C0G/NP0	Cap= 10.0 nF VDC= 50.0 V IRMS= 0.0 A	1	\$0.07	 0805 7 mm ²
4.	Cin	MuRata	KCM55QR71J106KH01K Series= X7R	Cap= 10.0 µF VDC= 63.0 V IRMS= 0.0 A	1	\$1.97	 KCM55Q 59 mm ²
5.	Cinx	MuRata	GRM188R72A103KA01D Series= X7R	Cap= 10.0 nF ESR= 1.0 mOhm VDC= 100.0 V IRMS= 0.0 A	1	\$0.02	 0603 5 mm ²
6.	Cout	Taiyo Yuden	EMK107B7105KA-T Series= X7R	Cap= 1.0 µF ESR= 1.0 mOhm VDC= 16.0 V IRMS= 0.0 A	1	\$0.02	 0603 5 mm ²
7.	D1	CUSTOM	CUSTOM_DIODE_MD	VF@Io= 450.0 mV VRRM= 200.0 V	1	\$0.10	 SMC 65 mm ²
8.	D2	SMC Diode Solutions	SBRD10200TR	VF@Io= 950.0 mV VRRM= 200.0 V	1	\$0.12	 DPAK 102 mm ²
9.	D_LED	CUSTOM	CUSTOM	LED	1	NA	CUSTOM 0 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
10.	L1	CUSTOM	CUSTOM_INDUCTOR_MD	L= 68.0 μ H DCR= 80.0 mOhm	1	\$0.10	 SDR1105 111 mm ²
11.	Riadj2	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1,000 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
12.	Rsense	CUSTOM	CUSTOM_RESISTOR_MD Series= CUSTOM	Res= 100.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	\$0.10	 0805 13 mm ²
13.	Rsense1	Vishay-Dale	CRCW04021K00FKED Series= CRCW..e3	Res= 1,000 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
14.	Rt	Vishay-Dale	CMF50162K00FHEB Series= CMF50	Res= 162.0 kOhm Power= 250.0 mW Tolerance= 1.0%	1	\$0.31	 CMF50 46 mm ²
15.	Ruvlob	Panasonic	ERJ-6ENF1072V Series= ERJ-6E	Res= 10.7 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
16.	Ruvlot	Vishay-Dale	CRCW0402154KFKED Series= CRCW..e3	Res= 154.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
17.	U1	Texas Instruments	TPS92512HVDGQR	Switcher	1	\$0.50	 DGQ0010D_N 24 mm ²

Simulation Parameters

#	Name	Parameter Name	Description	Values
1.	Viadj	V	Input Voltage	1.1 V





Design Inputs

#	Name	Value	Description
1.	Iout	2.0 A	Maximum Output Current
2.	VinMax	30.0 V	Maximum input voltage
3.	VinMin	18.0 V	Minimum input voltage
4.	Vout	3.2 V	Output Voltage
5.	acFrequency	60.0 Hz	AC Frequency
6.	application	LED_DRIVER	LED Application
7.	base_pn	TPS92512HV	Base Product Number
8.	LED_Architect	N	LED Architect Project
9.	ledparallel	1.0	Number of LED in parallel
10.	ledpartnumber	Custom	LED Part number
11.	ledseries	1.0	Number of LED in series

#	Name	Value	Description
12.	line_fsw	60.0	AC Line Frequency
13.	source	DC	Input Source Type
14.	Ta	30.0 degC	Ambient temperature
15.	UserFsw	696.429 kHz	Customer Selected Frequency

Operating Values

#	Name	Value	Category	Description
1.	BOM Count	17		Total Design BOM count
2.	Total BOM	\$0.0		Total BOM Cost
3.	Cin IRMS	666.122 mA	Capacitor	Input capacitor RMS ripple current
4.	Cin Pd	443.72 μ W	Capacitor	Input capacitor power dissipation
5.	Cout IRMS	20.76 mA	Capacitor	Output capacitor RMS ripple current
6.	Cout Pd	430.99 nW	Capacitor	Output capacitor power dissipation
7.	D1 Pd	809.47 mW	Diode	Output Diode Power Dissipation
8.	IC Ipk	0.0 A	IC	Peak switch current in IC
9.	IC Pd	455.15 mW	IC	IC power dissipation
10.	IC Tj	60.358 degC	IC	IC junction temperature
11.	IC Tolerance	0.0 V	IC	IC Feedback Tolerance
12.	ICThetaJA	66.7 degC/W	IC	IC junction-to-ambient thermal resistance
13.	Iin Avg	268.52 mA	IC	Average input current
14.	L Ipp	71.915 mA	Inductor	Peak-to-peak inductor ripple current
15.	L Pd	390.44 mW	Inductor	Inductor power dissipation
16.	LED Ipp	24.15 mA	LED	LED Ripple Current
17.	LED Rd	800.0 mOhm	LED	LED DynamicResistance
18.	Cin Pd	443.72 μ W	Power	Input capacitor power dissipation
19.	Cout Pd	430.99 nW	Power	Output capacitor power dissipation
20.	D1 Pd	809.47 mW	Power	Output Diode Power Dissipation
21.	IC Pd	455.15 mW	Power	IC power dissipation
22.	L Pd	390.44 mW	Power	Inductor power dissipation
23.	Rsense Pd	400.0 mW	Power	LED Current Rsns Power Dissipation
24.	Total Pd	2.055 W	Power	Total Power Dissipation
25.	Rsense Pd	400.0 mW	Resistor	LED Current Rsns Power Dissipation
26.	Converter On Time	182.472 ns	System	Approximate Converter On Time
27.	Cross Freq	883.093 Hz	System Information	Bode plot crossover frequency
28.	Duty Cycle	12.708 %	System Information	Duty cycle
29.	Efficiency	74.486 %	System Information	Steady state efficiency
30.	FootPrint	568.0 mm ²	System Information	Total Foot Print Area of BOM components
31.	Frequency	696.429 kHz	System Information	Switching frequency
32.	Iout	2.0 A	System Information	Iout operating point
33.	Mode	CCM	System Information	Conduction Mode
34.	Phase Marg	89.55 deg	System Information	Bode Plot Phase Margin
35.	Pout	6.4 W	System Information	Total output power
36.	Start Voltage	18.471 V	System Information	Start Voltage with External UVLO Resistors
37.	Stop Voltage	17.578 V	System Information	Stop Voltage with External UVLO Resistors
38.	Vin	30.0 V	System Information	Vin operating point
39.	Vout	3.2 V	System Information	Operational Output Voltage

Design Assistance

1. **TPS92512HV** Product Folder : <http://www.ti.com/product/TPS92512HV> : contains the data sheet and other resources.

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