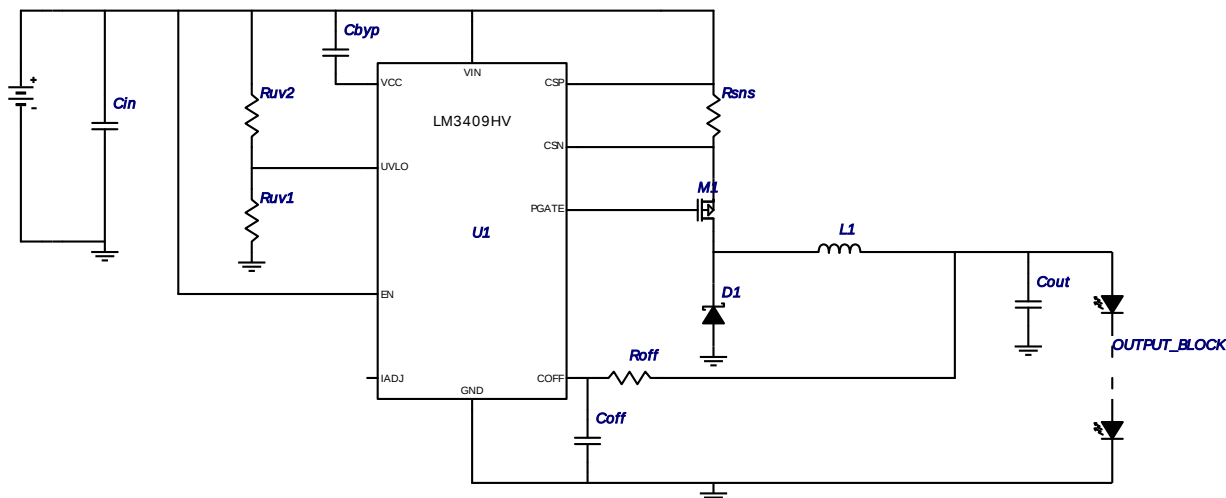


WEBENCH® Design Report

Design : 1225187/43 LM3409HVMY
LM3409HVMY 15.0V-30.0V to 14.0V @ 0.7A



Electrical BOM

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
1.	Cbyp	MuRata	GRM155R61A105KE15D Series= X5R	1	\$0.01	Cap= 1.0 μ F VDC= 10.0 V IRMS= 0.0 A	0402 8mm2
2.	Cin	TDK	C2012Y5V1H105Z Series= Y5V	1	\$0.02	Cap= 1.0 μ F ESR= 9.0 mOhm VDC= 50.0 V IRMS= 2.9 A	0805 13mm2
3.	Coff	Yageo America	CC0805KRX7R9BB471 Series= X7R	1	\$0.01	Cap= 470.0 pF VDC= 50.0 V IRMS= 0.0 A	0805 13mm2
4.	Cout	TDK	C2012Y5V1H105Z Series= Y5V	2	\$0.02	Cap= 1.0 μ F ESR= 9.0 mOhm VDC= 50.0 V IRMS= 2.9 A	0805 13mm2
5.	D1	Diodes Inc.	B140-13-F	1	\$0.06	VF@Io= 500.0 mV VRRM= 40.0 V	SMA 37mm2
6.	D_LED	CUSTOM	CUSTOM	10	\$0.00	LED	CUSTOM 0mm2
7.	L1	Bourns	SRR1260-271K	1	\$0.45	L= 270.0 μ H DCR= 450.0 mOhm	SRR1260 210mm2
8.	M1	Vishay-Siliconix	SI2319DS-T1-E3	1	\$0.28	VdsMax= -40.0 V IdsMax= -2.3 Amps	SOT-23 22mm2
9.	Roff	Vishay-Dale	CRCW040211K3FKED Series= CRCW..e3	1	\$0.01	Res= 11.3 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2
10.	Rsns	Panasonic	ERJ-8RQFR33V Series= 229	1	\$0.04	Res= 330.0 mOhm Power= 250.0 mW Tolerance= 1.0%	1206 19mm2

#	Name	Manufacturer	Part Number	Quantity	Price	Properties	Footprint
11.	Ruv1	Vishay-Dale	CRCW040216K5FKED Series= CRCW..e3	1	\$0.01	Res= 16.5 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2
12.	Ruv2	Vishay-Dale	CRCW040249K9FKED Series= CRCW..e3	1	\$0.01	Res= 49.9 kOhm Power= 63.0 mW Tolerance= 1.0%	0402 8mm2
13.	U1	Texas Instruments	LM3409HVMY	1	\$1.45	Switcher	 MUC10A 34mm2

Operating Values

#	Name	Value	Category	Description
1.	Cin IRMS	349.613 m A	Current	Input capacitor RMS ripple current
2.	Cout IRMS	7.686 m A	Current	Output capacitor RMS ripple current
3.	Iin Avg	368.31 m A	Current	Average input current
4.	L Ipp	26.627 m A	Current	Peak-to-peak inductor ripple current
5.	LED Iavg	700.0 m A	Current	LED Average Current
6.	LED Ipp	527.391 μ A	Current	LED Ripple Current
7.	SW Ipk	713.313 m A	Current	Peak switch current
8.	BOM Count	23.0	General	Total Design BOM count
9.	FootPrint	405.0 mm2	General	Total Foot Print Area of BOM components
10.	Frequency	1.02 M Hz	General	Switching frequency
11.	IC Tolerance	54.0 m V	General	IC Feedback Tolerance
12.	Mode	CCM	General	Conduction Mode
13.	Pout	9.8 W	General	Total output power
14.	Total BOM	\$0.0	General	Total BOM Cost
15.	D1 Tj	75.807 degC	Op_Point	D1 junction temperature
16.	Vout OP	14.0 V	Op_Point	Operational Output Voltage
17.	Duty Cycle	47.649 %	Op_point	Duty cycle
18.	Efficiency	88.694 %	Op_point	Steady state efficiency
19.	IC Tj	53.753 degC	Op_point	IC junction temperature
20.	ICThetaJA	50.0 degC/W	Op_point	IC junction-to-ambient thermal resistance
21.	IOUT_OP	700.0 m A	Op_point	Iout operating point
22.	LED Rd	800.0 m Ohm	Op_point	LED DynamicResistance
23.	LED Vf	14.0 V	Op_point	Total LED Forward Calculated Voltage
24.	M1 Tj	48.401 degC	Op_point	MOSFET junction temperature
25.	VIN_OP	30.0 V	Op_point	Vin operating point
26.	Cin Pd	1.1 m W	Power	Input capacitor power dissipation
27.	Cout Pd	265.866 n W	Power	Output capacitor power dissipation
28.	Diode Pd	183.229 m W	Power	Diode power dissipation
29.	IC Pd	475.05 m W	Power	IC power dissipation
30.	L Pd	275.625 m W	Power	Inductor power dissipation
31.	LED Pd	9.8 W	Power	LED Power Dissipation
32.	M1 PdCond	33.37 m W	Power	M1 MOSFET conduction losses
33.	M1 PdSw	119.186 m W	Power	M1 MOSFET switching losses
34.	Rsense Pd	161.7 m W	Power	LED Power Dissipation
35.	Total Pd	1.249 W	Power	Total Power Dissipation
36.	Toff	513.513 m us	Unknown	Fixed Off Time

Design Inputs

#	Name	Value	Description
1.	Iout	700.0 mA	Maximum Output Current
2.	Iout1	700.0 mAmps	Output Current #1
3.	VinMax	30.0 V	Maximum input voltage
4.	VinMin	15.0 V	Minimum input voltage
5.	Vout	14.0 V	Output Voltage
6.	Vout1	14.0 Volt	Output Voltage #1
7.	application	LED_DRIVER	LED Application
8.	base_pn	LM3409HV	Texas Instruments base part number
9.	LED_Architect	N	LED Architect Project
10.	ledparallel	2.0	Number of LED in parallel
11.	ledpartnumber	Custom	LED Part number
12.	ledseries	5.0	Number of LED in series
13.	line_fsw	60.0	AC Line Frequency
14.	source	DC	Input Source Type
15.	Ta	30.0 degC	Ambient temperature

Design Assistance

1. **LM3409HV** Product Folder : <http://www.ti.com/product/LM3409HV> : contains the data sheet and other resources.

Texas Instruments' WEBENCH simulation tools attempt to recreate the performance of a substantially equivalent physical implementation of the design. Simulations are created using Texas Instruments' published specifications as well as the published specifications of other device manufacturers. While Texas Instruments does update this information periodically, this information may not be current at the time the simulation is built. Texas Instruments does not warrant the accuracy or completeness of the specifications or any information contained therein. Texas Instruments does not warrant that any designs or recommended parts will meet the specifications you entered, will be suitable for your application or fit for any particular purpose, or will operate as shown in the simulation in a physical implementation. Texas Instruments does not warrant that the designs are production worthy.

You should completely validate and test your design implementation to confirm the system functionality for your application prior to production.

Use of Texas Instruments' WEBENCH simulation tools is subject to [Texas Instruments' Site Terms and Conditions of Use](#). Prototype boards based on WEBENCH created designs are provided AS IS without warranty of any kind for evaluation and testing purposes and are subject to the terms of the [Evaluation License Agreement](#).