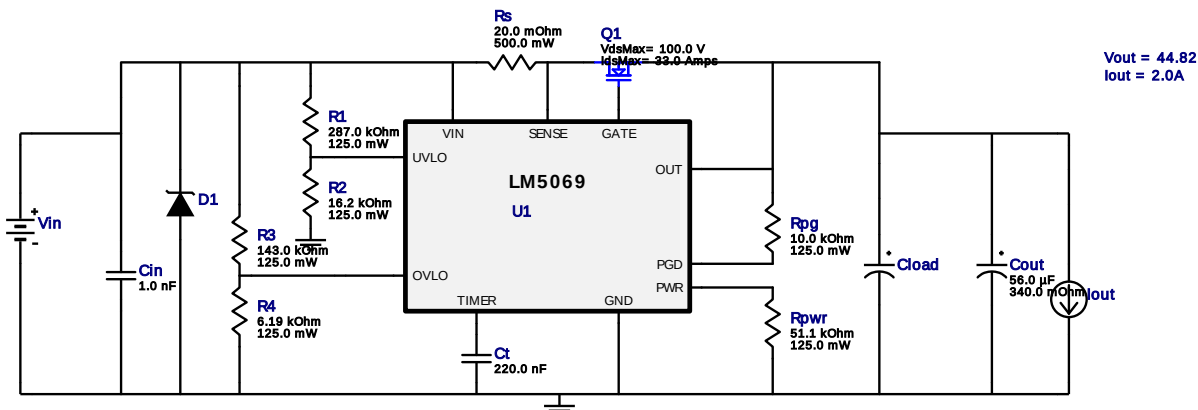
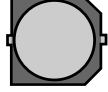


WEBENCH® Design Report

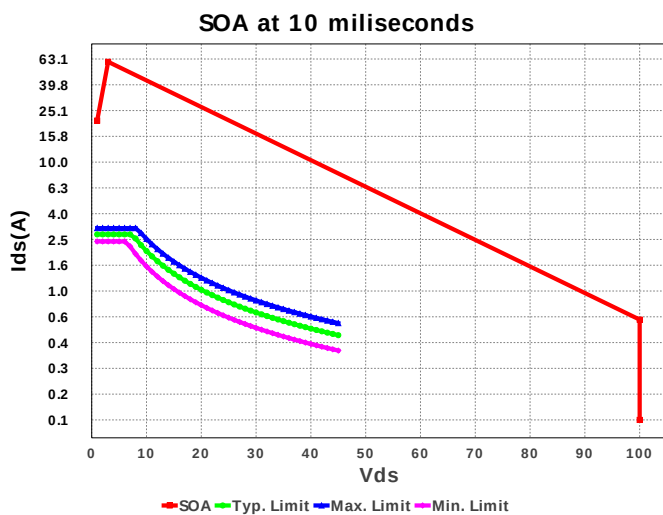
Design : 4009018/155 LM5069MM-2/NOPB
LM5069MM-2/NOPB 25.0V-45.0V to 44.82V @ 2.5A



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	MuRata	GRM155R72A102KA01D Series= X7R	Cap= 1.0 nF VDC= 100.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
2.	Cout	Nichicon	UUD1H560MNL1GS Series= uD	Cap= 56.0 uF ESR= 340.0 mOhm VDC= 50.0 V IRMS= 300.0 mA	1	\$0.20	 SM_RADIAL_8MM 113 mm ²
3.	Ct	MuRata	GRM155R71C224KA12D Series= X7R	Cap= 220.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm ²
4.	D1	Diodes Inc.	SMBJ54A-13-F	Zener	1	\$0.14	 SMB 44 mm ²
5.	Q1	International Rectifier	IRF540NSPBF	VdsMax= 100.0 V IdsMax= 33.0 Amps	1	\$0.80	 DDPAK 210 mm ²
6.	R1	Panasonic	ERJ-6ENF2873V Series= ERJ-6E	Res= 287.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
7.	R2	Panasonic	ERJ-6ENF1622V Series= ERJ-6E	Res= 16.2 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
8.	R3	Panasonic	ERJ-6ENF1433V Series= ERJ-6E	Res= 143.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
9.	R4	Panasonic	ERJ-6ENF6191V Series= ERJ-6E	Res= 6.19 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
10.	Rpg	Panasonic	ERJ-6ENF1002V Series= ERJ-6E	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rpwr	Panasonic	ERJ-6ENF5112V Series= ERJ-6E	Res= 51.1 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
12.	Rs	Stackpole Electronics Inc	CSR1206FK20L0 Series= ?	Res= 20.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.10	 1206 11 mm ²
13.	U1	Texas Instruments	LM5069MM-2/NOPB	Switcher	1	\$1.30	 MUB10A 24 mm ²



Operating Values

#	Name	Value	Category	Description
1.	Iin Avg	2.5 A	Current	Calculated typical current limit
2.	BOM Count	13	General	Total Design BOM count
3.	FootPrint	448.0 mm ²	General	Total Foot Print Area of BOM components
4.	Pout	112.044 W	General	Total output power
5.	Total BOM	\$2.62	General	Total BOM Cost
6.	Vout OP	44.818 V	Op_Point	Operational Output Voltage
7.	Efficiency	99.543 %	Op_point	Steady state efficiency
8.	IOUT_OP	2.5 A	Op_point	Iout operating point
9.	Ilimit Max Act	3.075 A	Op_point	Calculated maximum current limit
10.	Ilimit Min Act	2.425 A	Op_point	Calculated minimum current limit
11.	Ilimit Typ Act	2.75 A	Op_point	Calculated typical current limit
12.	Lower OVLO	57.251 V	Op_point	Lower OVLO (Overvoltage-Lockout) threshold
13.	Lower UVLO	46.79 V	Op_point	Lower UVLO (Undervoltage-Lockout) threshold
14.	Max FET Plim	25.346 W	Op_point	Resulting Max FET Power Limit
15.	Min FET Plim	15.534 W	Op_point	Resulting Min FET Power Limit
16.	T_insert	159.42 ms	Op_point	Typical Insertion Time
17.	T_start	2.068 s	Op_point	Typical Restart Time
18.	Typical FET Plim	20.44 W	Op_point	Resulting Typical FET Power Limit
19.	Upper OVLO	60.254 V	Op_point	Upper OVLO (Overvoltage-Lockout) threshold
20.	Upper UVLO	52.817 V	Op_point	Upper UVLO (Undervoltage-Lockout) threshold
21.	VIN_OP	45.0 V	Op_point	Vin operating point
22.	IC Pd	514.233 mW	Power	IC power dissipation
23.	M1 Pd	330.733 mW	Power	FET Power Dissipation
24.	Total Pd	514.233 mW	Power	Total Power Dissipation
25.	Fault time	6.65 ms		Fault Time

Design Inputs

#	Name	Value	Description
1.	Iout	2.0	Maximum Output Current
2.	OVLO	60.0	OVLO nominal
3.	UVLO	50.0	UVLO nominal
4.	VinMax	45.0	Maximum input voltage
5.	VinMin	25.0	Minimum input voltage
6.	base_pn	LM5069	Texas Instruments Base Part Number
7.	currentLimit	2.5	Current limit
8.	outputLoadCapacitance	1.0	Output Load capacitance
9.	source	DC	Input Source Type
10.	ta	30.0	Ambient temperature

Design Assistance

1. The LM5069 Webench Designer provides the design engineer with a fully functional HotSwap schematic for the positive voltage system. The created design calculates a complete BOM and the total cost of the BOM. Also, the Webench designer offers simulation to emulate the behavior of the device such as Power Sequence, Restart Sequence and Input Transients. To learn more about HotSwap devices and its applications, please refer to the following link: http://www.ti.com/analog/docs/analogtechdoc_hh.tsp?viewType=mostuseful&techDoc=1&rootFamilyId=64&familyId=420&docCategoryId=1&Input3=Go

2. LM5069 Product Folder : <http://www.ti.com/product/lm5069> : 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.

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