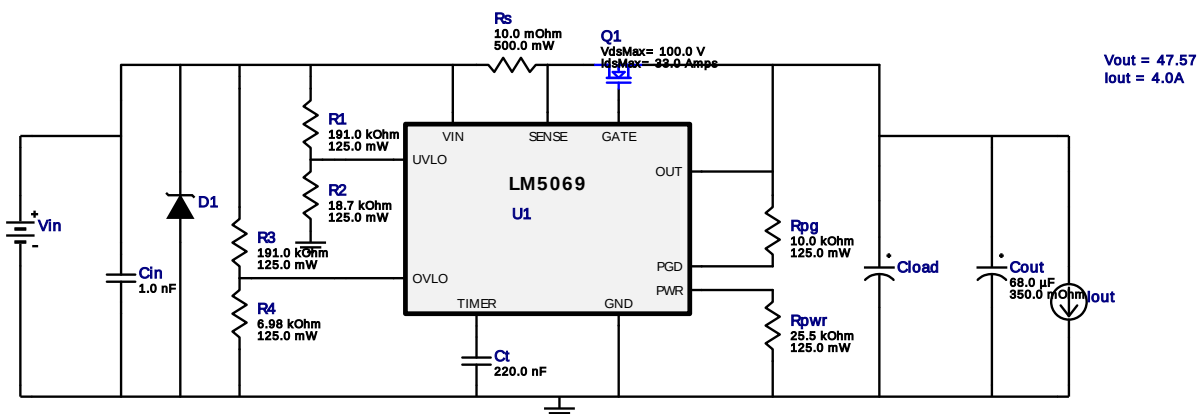
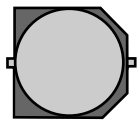
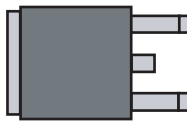


WEBENCH® Design Report

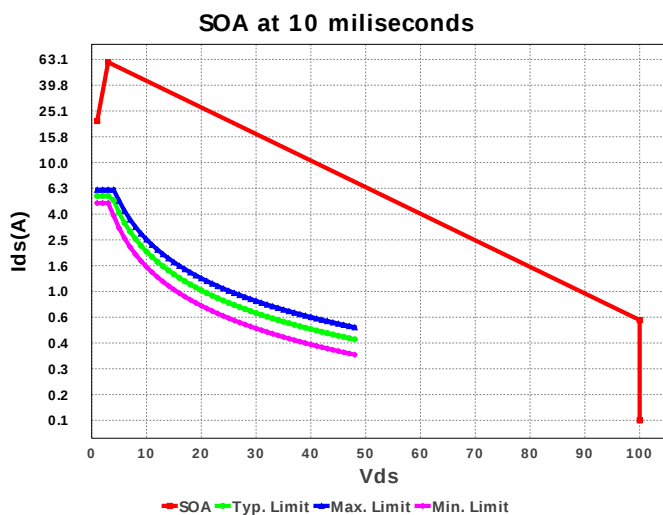
Design : 3496425/54 LM5069MM-2/NOPB
LM5069MM-2/NOPB 47.0V-48.0V to 47.57V @ 5.0A



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 mm²
2.	Cout	Panasonic	EEE-FK1J680UP Series= FK	Cap= 68.0 uF ESR= 350.0 mOhm VDC= 63.0 V IRMS= 400.0 mA	1	\$0.21	 SM_RADIAL_G 172 mm²
3.	Ct	MuRata	GRM155R71C224KA12D Series= X7R	Cap= 220.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	 0402 3 mm²
4.	D1	Littelfuse	5.0SMDJ54A	Zener	1	\$0.85	 SMC 83 mm²
5.	Q1	International Rectifier	IRF540NSPBF	VdsMax= 100.0 V IdsMax= 33.0 Amps	1	\$0.80	 DDPAK 210 mm²
6.	R1	Panasonic	ERJ-6ENF1913V Series= ERJ-6E	Res= 191.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
7.	R2	Panasonic	ERJ-6ENF1872V Series= ERJ-6E	Res= 18.7 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
8.	R3	Panasonic	ERJ-6ENF1913V Series= ERJ-6E	Res= 191.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
9.	R4	Panasonic	ERJ-6ENF6981V Series= ERJ-6E	Res= 6.98 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²
10.	Rpg	Panasonic	ERJ-6ENF1002V Series= ERJ-6E	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
11.	Rpwr	Panasonic	ERJ-6ENF2552V Series= ERJ-6E	Res= 25.5 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
12.	Rs	Stackpole Electronics Inc	CSR1206FK10L0 Series= ?	Res= 10.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	\$0.11	 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	5.0 A	Current	Calculated typical current limit
2.	BOM Count	13	General	Total Design BOM count
3.	FootPrint	546.0 mm ²	General	Total Foot Print Area of BOM components
4.	Pout	237.856 W	General	Total output power
5.	Total BOM	\$3.35	General	Total BOM Cost
6.	Vout OP	47.571 V	Op_point	Operational Output Voltage
7.	Efficiency	99.081 %	Op_point	Steady state efficiency
8.	IOUT_OP	5.0 A	Op_point	Iout operating point
9.	Ilimit Max Act	6.15 A	Op_point	Calculated maximum current limit
10.	Ilimit Min Act	4.85 A	Op_point	Calculated minimum current limit
11.	Ilimit Typ Act	5.5 A	Op_point	Calculated typical current limit
12.	Lower OVLO	66.899 V	Op_point	Lower OVLO (Overvoltage-Lockout) threshold
13.	Lower UVLO	28.035 V	Op_point	Lower UVLO (Undervoltage-Lockout) threshold
14.	Max FET Plim	25.296 W	Op_point	Resulting Max FET Power Limit
15.	Min FET Plim	15.504 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	20.4 W	Op_point	Resulting Typical FET Power Limit
19.	Upper OVLO	70.91 V	Op_point	Upper OVLO (Overvoltage-Lockout) threshold
20.	Upper UVLO	32.046 V	Op_point	Upper UVLO (Undervoltage-Lockout) threshold
21.	VIN_OP	48.0 V	Op_point	Vin operating point
22.	IC Pd	2.207 W	Power	IC power dissipation
23.	M1 Pd	1.894 W	Power	FET Power Dissipation
24.	Total Pd	2.207 W	Power	Total Power Dissipation
25.	Fault time	7.463 ms		Fault Time

Design Inputs

#	Name	Value	Description
1.	Iout	4.0	Maximum Output Current
2.	OVLO	70.0	OVLO nominal
3.	UVLO	30.0	UVLO nominal
4.	VinMax	48.0	Maximum input voltage
5.	VinMin	47.0	Minimum input voltage
6.	base_pn	LM5069	Base Product Number
7.	currentLimit	5.0	Current limit
8.	outputLoadCapacitance	1.0	Output Load capacitance
9.	source	DC	Input Source Type
10.	Ta	38.0	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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