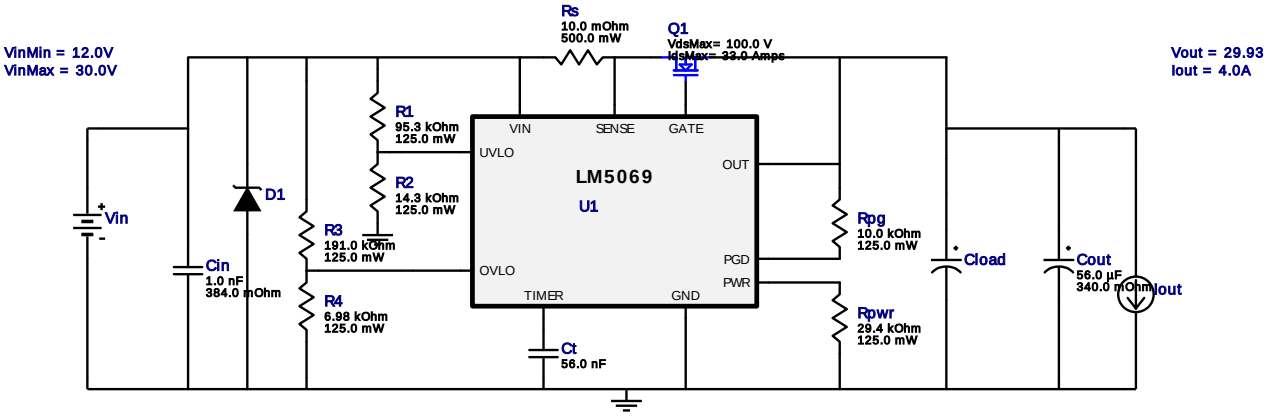
WEBENCH® Design Report

VinMin = 12.0V
VinMax = 30.0V
Vout = 30.0V
Iout = 4.0A

Device = LM5069MM-2/NOPB
Topology = Hotswap
Created = 7/7/15 11:43:37 PM
BOM Cost = $2.81
Footprint = 294.0 mm²
BOM Count = 13
Total Pd = 0.41W

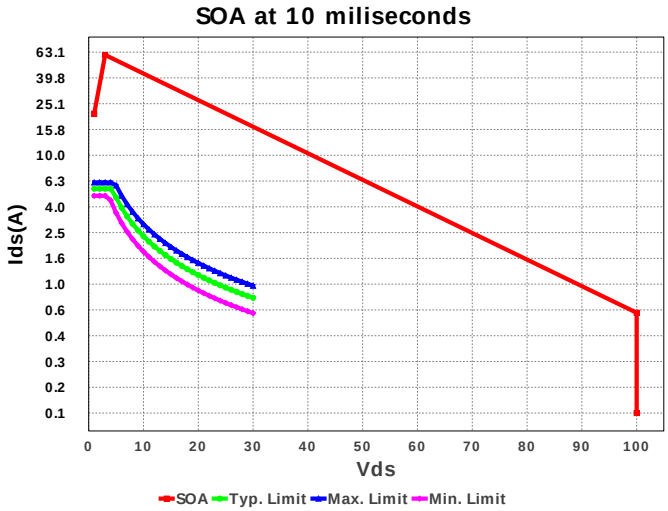
Design : 1836019/8 LM5069MM-2/NOPB
LM5069MM-2/NOPB 12.0V-30.0V to 29.93V @ 5.0A



Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cin	Kemet	C0805C102K5RACTU Series= X7R	Cap= 1.0 nF ESR= 384.0 mOhm VDC= 50.0 V IRMS= 214.0 mA	1	$0.01	0805 7 mm²
2.	Cout	Nichicon	UUD1V560MCL1GS Series= uD	Cap= 56.0 uF ESR= 340.0 mOhm VDC= 35.0 V IRMS= 280.0 mA	1	$0.11	SM_RADIAL_6.3BMM 80 mm²
3.	Ct	MuRata	GRM155R71C563KA88D Series= X7R	Cap= 56.0 nF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
4.	D1	Diodes Inc.	SMBJ36A-13-F	Zener	1	$0.12	SMB 44 mm²
5.	Q1	International Rectifier	IRF540NLPBF	VdsMax= 100.0 V IdsMax= 33.0 Amps	1	$0.92	TO-262 85 mm²
6.	R1	Panasonic	ERJ-6ENF9532V Series= 225	Res= 95.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
7.	R2	Panasonic	ERJ-6ENF1432V Series= 225	Res= 14.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
8.	R3	Panasonic	ERJ-6ENF1913V Series= 225	Res= 191.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
9.	R4	Panasonic	ERJ-6ENF6981V Series= 225	Res= 6.98 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
10.	Rpg	Panasonic	ERJ-6ENF1002V Series= 225	Res= 10.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
11.	Rpwr	Panasonic	ERJ-6ENF2942V Series= 225	Res= 29.4 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
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	$1.47	 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	294.0 mm^2	General	Total Foot Print Area of BOM components
4.	Pout	149.627 W	General	Total output power
5.	Total BOM	$2.81	General	Total BOM Cost
6.	Vout OP	29.925 V	Op_Point	Operational Output Voltage
7.	Efficiency	99.725 %	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	19.161 V	Op_point	Lower UVLO (Undervoltage-Lockout) threshold
14.	Max FET Plim	29.165 W	Op_point	Resulting Max FET Power Limit
15.	Min FET Plim	17.875 W	Op_point	Resulting Min FET Power Limit
16.	T_insert	40.58 ms	Op_point	Typical Insertion Time
17.	T_start	526.4 ms	Op_point	Typical Restart Time
18.	Typical FET Plim	23.52 W	Op_point	Resulting Typical FET Power Limit
19.	Upper OVLO	70.91 V	Op_point	Upper OVLO (Overvoltage-Lockout) threshold
20.	Upper UVLO	21.162 V	Op_point	Upper UVLO (Undervoltage-Lockout) threshold
21.	VIN_OP	30.0 V	Op_point	Vin operating point
22.	IC Pd	412.097 mW	Power	IC power dissipation
23.	M1 Pd	123.097 mW	Power	FET Power Dissipation
24.	Total Pd	412.097 mW	Power	Total Power Dissipation
25.	Fault time	2.555 ms	Unknown	Fault Time

Design Inputs

#	Name	Value	Description
1.	Iout	4.0	Maximum Output Current
2.	OVLO	70.0	OVLO nominal
3.	UVLO	20.0	UVLO nominal
4.	VinMax	30.0	Maximum input voltage
5.	VinMin	12.0	Minimum input voltage
6.	base_pn	LM5069	Texas Instruments Base Part Number
7.	currentLimit	5.0	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.