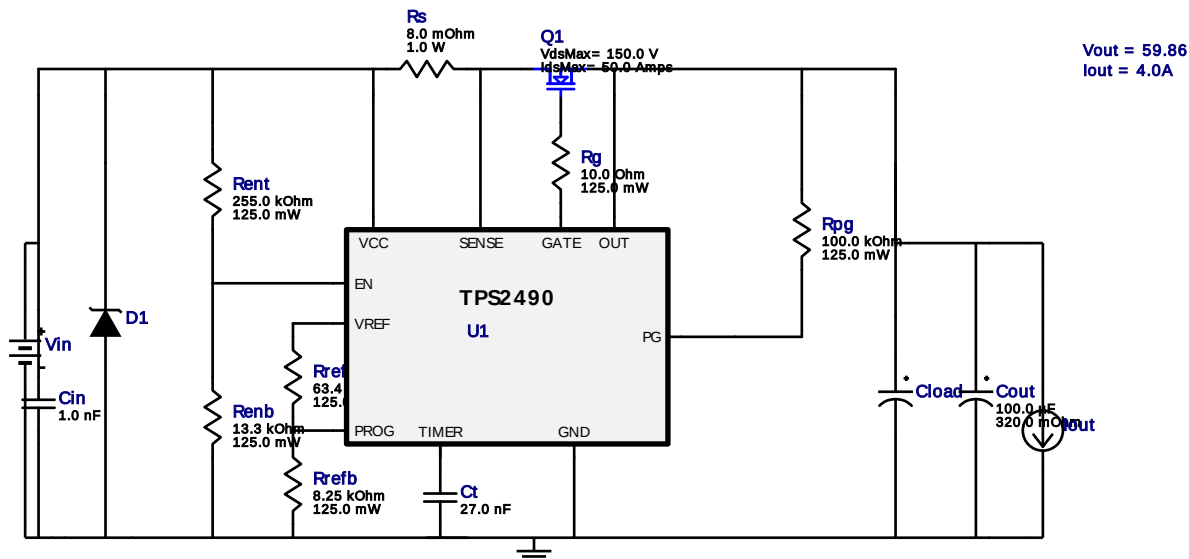


WEBENCH® Design Report

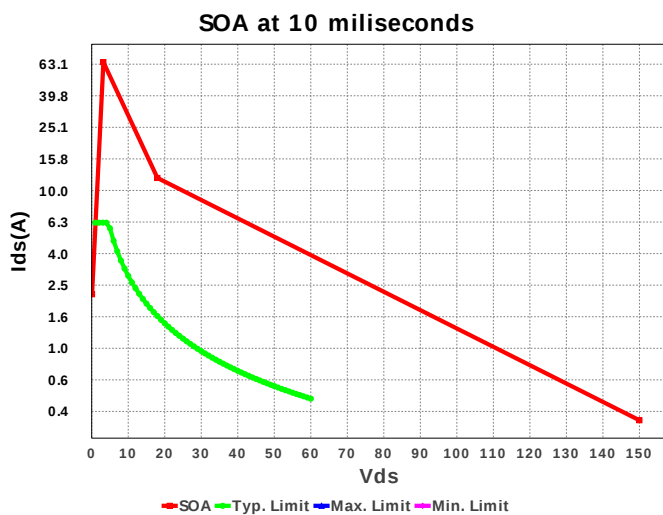
Design : 4807241/4 TPS2490DGSR
TPS2490DGSR 30.0V-60.0V to 59.86V @ 5.0A



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 mm ²
2.	Cout	Panasonic	EEV-FK1K101Q Series= FK	Cap= 100.0 uF ESR= 320.0 mOhm VDC= 80.0 V IRMS= 500.0 mA	1	\$0.45	SM_RADIAL_H13 264 mm ²
3.	Ct	MuRata	GRM155R61C273KA01D Series= X5R	Cap= 27.0 nF VDC= 16.0 V IRMS= 0.0 A	1	\$0.01	0402 3 mm ²
4.	D1	Littelfuse	5.0SMDJ70A	Zener	1	\$0.85	SMC 83 mm ²
5.	Q1	Infineon Technologies	BSC190N15NS3 G	VdsMax= 150.0 V IdsMax= 50.0 Amps	1	\$1.18	PG-TDSON-8 55 mm ²
6.	Renb	Panasonic	ERJ-6ENF1332V Series= ERJ-6E	Res= 13.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
7.	Rent	Panasonic	ERJ-6ENF2553V Series= ERJ-6E	Res= 255.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²
8.	Rg	Vishay-Dale	CRCW080510R0FKEA Series= CRCW..e3	Res= 10.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	0805 7 mm ²

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
9.	Rpg	Panasonic	ERJ-6ENF1003V Series= ERJ-6E	Res= 100.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
10.	Rrefb	Panasonic	ERJ-6ENF8251V Series= ERJ-6E	Res= 8.25 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
11.	Rref1	Panasonic	ERJ-6ENF6342V Series= ERJ-6E	Res= 63.4 kOhm Power= 125.0 mW Tolerance= 1.0%	1	\$0.01	 0805 7 mm ²
12.	Rs	Susumu Co Ltd	PRL1632-R008-F-T1 Series= PRL1632	Res= 8.0 mOhm Power= 1.0 W Tolerance= 1.0%	1	\$0.19	 0612 11 mm ²
13.	U1	Texas Instruments	TPS2490DGSR	Switcher	1	\$1.20	 MUB10A 24 mm ²



Operating Values

#	Name	Value	Category	Description
1.	BOM Count	13	General	Total Design BOM count
2.	FootPrint	483.0 mm ²	General	Total Foot Print Area of BOM components
3.	Pout	299.278 W	General	Total output power
4.	Total BOM	\$3.95	General	Total BOM Cost
5.	Q TjOp	56.099 degC	Op_Point	Q TjOp
6.	Vout OP	59.856 V	Op_Point	Operational Output Voltage
7.	Efficiency	99.75 %	Op_point	Steady state efficiency
8.	IOUT_OP	5.0 A	Op_point	Iout operating point
9.	VIN_OP	60.0 V	Op_point	Vin operating point
10.	IC Pd	27.0 mW	Power	IC power dissipation
11.	Q1 Pd	521.978 mW	Power	Q1 Power Dissipation
12.	Total Pd	27.0 mW	Power	Total Power Dissipation
13.	Total Pd	748.978 mW	Power	Total Power Dissipation
14.	Calculated FET Plim	28.786 W		Calculated FET Power Limit
15.	Calculated Voff	25.216 V		Calculated Voff
16.	Calculated Von	27.233 V		Calculated Von
17.	Calculated Vprog	460.572 mV		Calculated Vprog
18.	Charge Time	6.253 ms		Charge Time
19.	Turn on time	3.145 ms		Turn on 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	60.0	Maximum input voltage
5.	VinMin	30.0	Minimum input voltage
6.	base_pn	TPS2490	Base Product 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 TPS2490 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=GoFET power limit may have been derated by: 100.0.

2. **TPS2490 Product Folder** : <http://www.ti.com/product/tps2490> : 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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