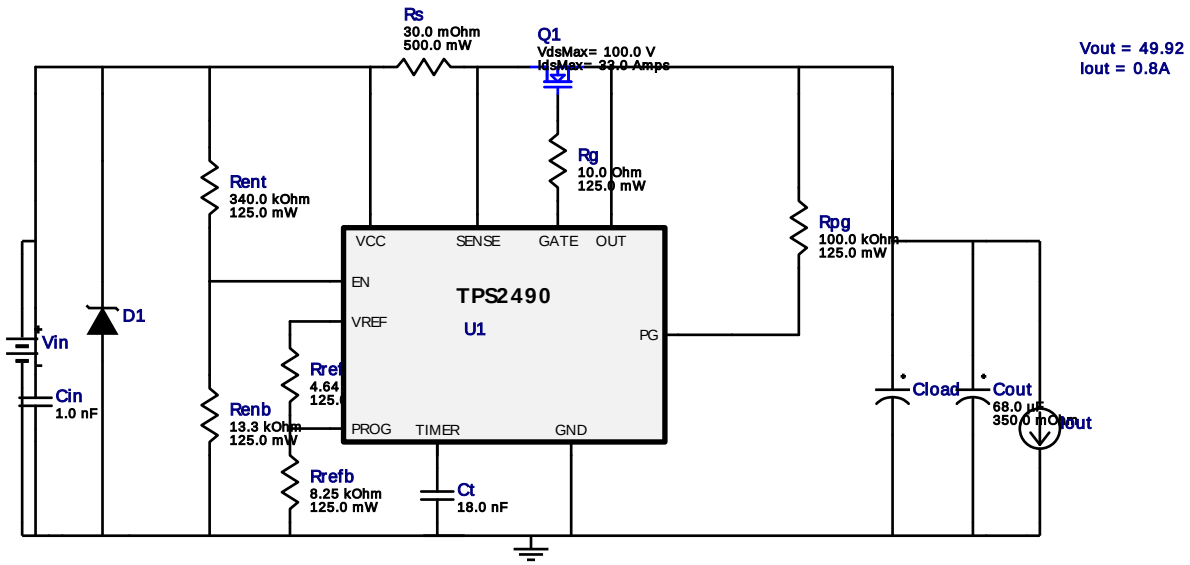
WEBENCH® Design Report

VinMin = 40.0V
VinMax = 50.0V
Vout = 50.0V
Iout = 0.8A

Device = TPS2490DGSR
Topology = Hotswap
Created = 8/21/16 8:38:08 AM
BOM Cost = $2.49
BOM Count = 13
Total Pd = 0.1W

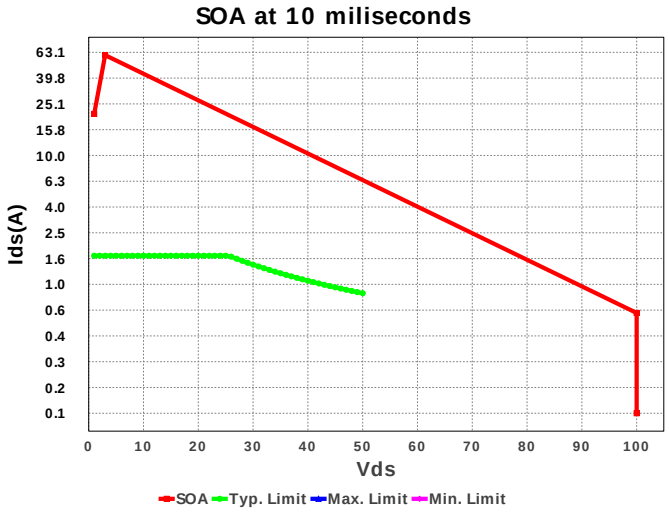
Design : 4009018/123 TPS2490DGSR
TPS2490DGSR 40.0V-50.0V to 49.92V @ 1.0A



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	GRM155R71C183KA01D Series= X7R	Cap= 18.0 nF VDC= 16.0 V IRMS= 0.0 A	1	$0.01	0402 3 mm²
4.	D1	Diodes Inc.	SMBJ70A-13-F	Zener	1	$0.10	SMB 44 mm²
5.	Q1	International Rectifier	IRF540NSPBF	VdsMax= 100.0 V IdsMax= 33.0 Amps	1	$0.80	DDPAK 210 mm²
6.	Renb	Panasonic	ERJ-6ENF1332V Series= ERJ-6E	Res= 13.3 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
7.	Rent	Panasonic	ERJ-6ENF3403V Series= ERJ-6E	Res= 340.0 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
8.	Rg	Vishay-Dale	CRCW080510R0FKEA Series= CRCW..e3	Res= 10.0 Ohm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²

#	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 mm²
10.	Rrefb	Panasonic	ERJ-6ENF8251V Series= ERJ-6E	Res= 8.25 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
11.	Rreft	Panasonic	ERJ-6ENF4641V Series= ERJ-6E	Res= 4.64 kOhm Power= 125.0 mW Tolerance= 1.0%	1	$0.01	0805 7 mm²
12.	Rs	Stackpole Electronics Inc	CSR1206FK30L0 Series= ?	Res= 30.0 mOhm Power= 500.0 mW Tolerance= 1.0%	1	$0.10	1206 11 mm²
13.	U1	Texas Instruments	TPS2490DGSR	Switcher	1	$1.20	MUB10A 24 mm²



Operating Values

#	Name	Value	Category	Description
1.	BOM Count	13	General	Total Design BOM count
2.	FootPrint	507.0 mm²	General	Total Foot Print Area of BOM components
3.	Pout	49.922 W	General	Total output power
4.	Total BOM	$2.49	General	Total BOM Cost
5.	Q TjOp	31.911 degC	Op_Point	Q TjOp
6.	Vout OP	49.922 V	Op_Point	Operational Output Voltage
7.	Efficiency	99.8 %	Op_point	Steady state efficiency
8.	IOUT_OP	1.0 A	Op_point	Iout operating point
9.	VIN_OP	50.0 V	Op_point	Vin operating point
10.	IC Pd	22.5 mW	Power	IC power dissipation
11.	Q1 Pd	47.768 mW	Power	Q1 Power Dissipation
12.	Total Pd	22.5 mW	Power	Total Power Dissipation
13.	Total Pd	100.268 mW	Power	Total Power Dissipation
14.	Calculated FET Plim	42.669 W		Calculated FET Power Limit
15.	Calculated Voff	33.205 V		Calculated Voff
16.	Calculated Von	35.861 V		Calculated Von
17.	Calculated Vprog	2.56 V		Calculated Vprog
18.	Charge Time	2.93 ms		Charge Time
19.	Turn on time	1.849 ms		Turn on time

Design Inputs

#	Name	Value	Description
1.	Iout	800.0 m	Maximum Output Current
2.	OVLO	70.0	OVLO nominal
3.	UVLO	20.0	UVLO nominal
4.	VinMax	50.0	Maximum input voltage
5.	VinMin	40.0	Minimum input voltage
6.	base_pn	TPS2490	Base Product Number
7.	currentLimit	1.0	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.