

HW-732 LM2596HVS CC/CV Buck Module

These tests were conducted by [Gogo:Tronics](#) using common hobby grade and DIY equipment, voltages and currents were generally set/recorded to within 100mv and 10mA.

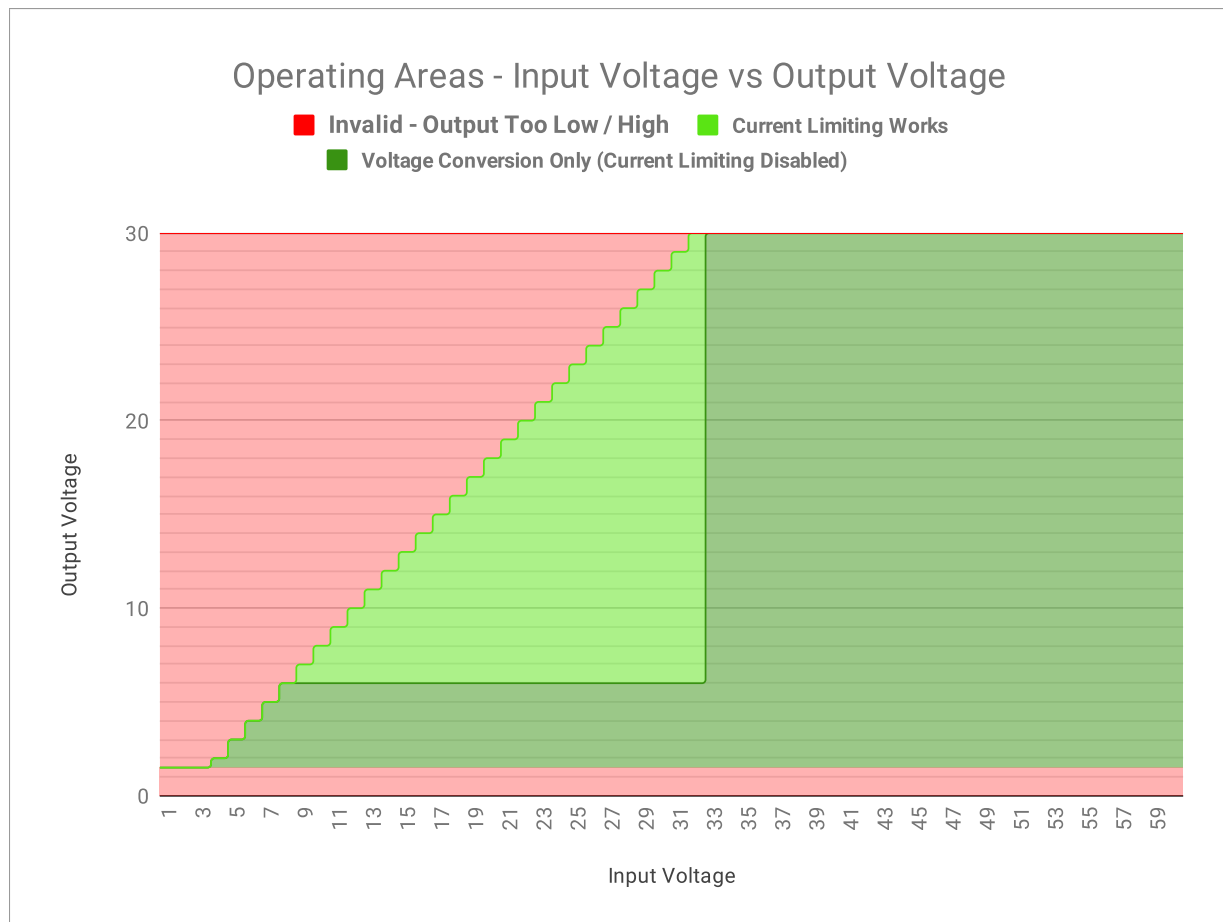
Input Range	5 to 60 Volts
Output Range	1.5 to 30 Volts
Max Continuous Current	2 Amps, See Next Page
Typical No Load Current	10mA
Min In-Out Headroom	2.0 Volts
Max Constant Dissipation	5.5 Watts
Typical Ripple	200 mVpp



Output Voltage	Best Tested Efficiency	Worst Tested Efficiency
1.5 Volts	54% at 10V Input, 0.5A Output	19% at 55V Input, 0.1A Output
3.3 Volts	66% at 28.8V Input, 1A Output	33% at 55V Input, 0.1A Output
5.0 Volts	72% at 16.8V Input, 1A Output	50% at 28.8V Input, 0.1A Output
9.0 Volts	79% at 16.8V Input, 1A Output	50% at 55V Input, 0.1A Output
12.0 Volts	82% at 16.8V Input, 0.5A Output	55% at 55V Input, 0.1A Output
15.0 Volts	85% at 22.2V Input, 1.5A Output	61% at 55V Input, 0.1A Output
21.0 Volts	88% at 24V Input, 0.5A Output	65% at 55V Input, 0.1A Output
28.0 Volts	89% at 32V Input, 0.5A Output	70% at 55V Input, 0.1A Output

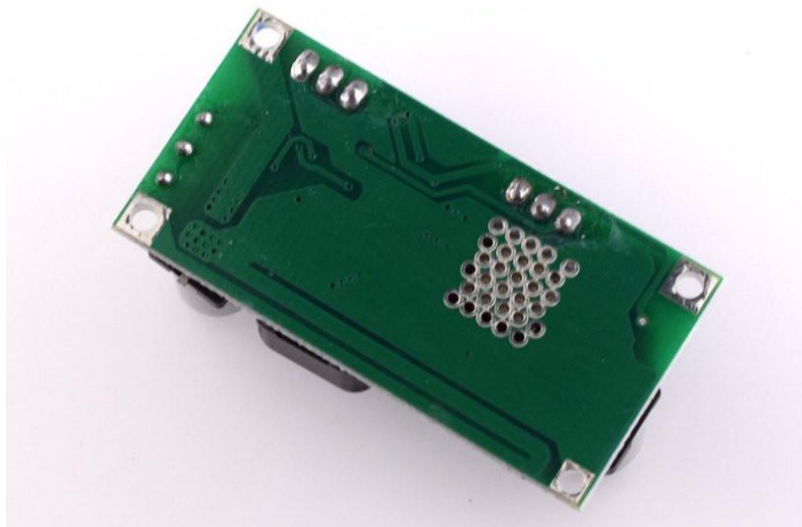
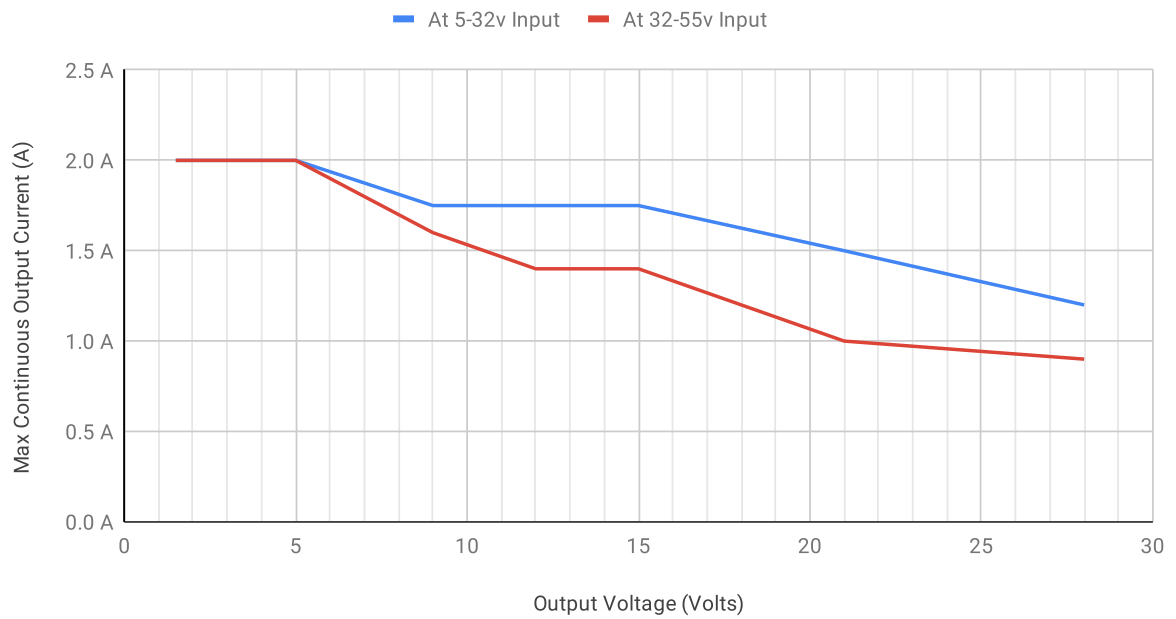
Notes/Comments

For current limiting, your input must be above 8v and below 32v and your output must be above 6v. See the Operating Areas chart, the bright green area is CV/CC mode, but the dark green area is CV only.



The chart below shows the maximum continuous output current for a given output voltage and current, short duration peaks above this limit may be possible up to 3A or even 4A but will quickly cause thermal shutdown.

Maximum Continuous Current At Different Output Voltages



In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input	0.00500	0.02500	1.5	0	0	0	0.02500
7.2v Input	0.00600	0.04320	1.5	0	0	0	0.04320
10.0v Input	0.00800	0.08000	1.5	0	0	0	0.08000
16.8v Input	0.00800	0.13440	1.5	0	0	0	0.13440
22.2v Input	0.00800	0.17760	1.5	0	0	0	0.17760
28.8v Input	0.00800	0.23040	1.5	0	0	0	0.23040
39.8v Input	0.00800	0.31840	1.5	0	0	0	0.31840
46.2v Input	0.00800	0.36960	1.5	0	0	0	0.36960
55.0v Input	0.00800	0.44000	1.5	0	0	0	0.44000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input	0.06100	0.30500	1.5	0.1	0.15	0.4918032787	0.15500
7.2v Input	0.04400	0.31680	1.5	0.1	0.15	0.4734848485	0.16680
10.0v Input	0.03500	0.35000	1.5	0.1	0.15	0.4285714286	0.20000
16.8v Input	0.02400	0.40320	1.5	0.1	0.15	0.3720238095	0.25320
22.2v Input	0.02000	0.44400	1.5	0.1	0.15	0.3378378378	0.29400
28.8v Input	0.01700	0.48960	1.5	0.1	0.15	0.306372549	0.33960
39.8v Input	0.01600	0.63680	1.5	0.1	0.15	0.2355527638	0.48680
46.2v Input	0.01500	0.69300	1.5	0.1	0.15	0.2164502165	0.54300
55.0v Input	0.01400	0.77000	1.5	0.1	0.15	0.1948051948	0.62000

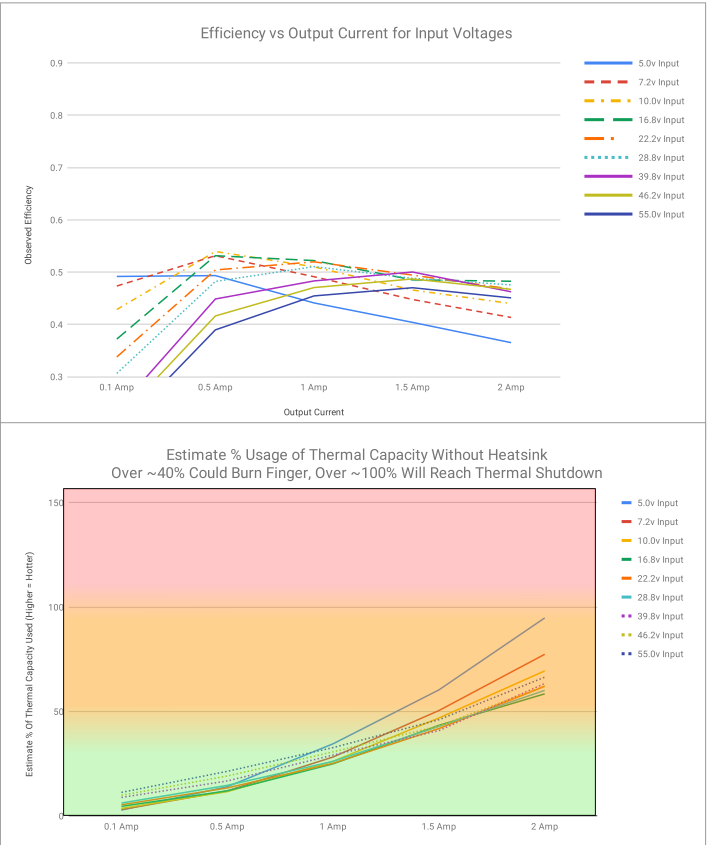
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input	0.30400	1.52000	1.5	0.5	0.75	0.4934210526	0.77000
7.2v Input	0.19600	1.41120	1.5	0.5	0.75	0.531462585	0.66120
10.0v Input	0.13900	1.39000	1.5	0.5	0.75	0.5395683453	0.64000
16.8v Input	0.08400	1.41120	1.5	0.5	0.75	0.531462585	0.66120
22.2v Input	0.06700	1.48740	1.5	0.5	0.75	0.5042355789	0.73740
28.8v Input	0.05400	1.55520	1.5	0.5	0.75	0.4822530864	0.80520
39.8v Input	0.04200	1.67160	1.5	0.5	0.75	0.4486719311	0.92160
46.2v Input	0.03900	1.80180	1.5	0.5	0.75	0.4162504163	1.05180
55.0v Input	0.03500	1.92500	1.5	0.5	0.75	0.3896103896	1.17500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input	0.68000	3.40000	1.5	1	1.5	0.4411754706	1.90000
7.2v Input	0.42400	3.05280	1.5	1	1.5	0.4913522013	1.55280
10.0v Input	0.29400	2.94000	1.5	1	1.5	0.5102040816	1.44000
16.8v Input	0.17100	2.87280	1.5	1	1.5	0.52213868	1.37280
22.2v Input	0.13000	2.86800	1.5	1	1.5	0.5197505198	1.38800
28.8v Input	0.10200	2.93760	1.5	1	1.5	0.510620915	1.43760
39.8v Input	0.07800	3.10440	1.5	1	1.5	0.4831851566	1.60440
46.2v Input	0.06900	3.18780	1.5	1	1.5	0.4705439488	1.68780
55.0v Input	0.06000	3.30000	1.5	1	1.5	0.4545454545	1.80000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input	1.11400	5.57000	1.5	1.5	2.25	0.4039497307	3.32000
7.2v Input	0.69800	5.02560	1.5	1.5	2.25	0.44770777364	2.77560
10.0v Input	0.48300	4.83000	1.5	1.5	2.25	0.4658385093	2.58000
16.8v Input	0.27600	4.63680	1.5	1.5	2.25	0.4852484472	2.36800
22.2v Input	0.20500	4.55100	1.5	1.5	2.25	0.4943968359	2.30100
28.8v Input	0.16000	4.60800	1.5	1.5	2.25	0.48828125	2.35800
39.8v Input	0.11300	4.49740	1.5	1.5	2.25	0.5002890559	2.24740
46.2v Input	0.10000	4.62000	1.5	1.5	2.25	0.487012987	2.37000
55.0v Input	0.08700	4.78500	1.5	1.5	2.25	0.4702194357	2.53500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input	1.64300	8.21500	1.5	2	3	0.365185636	5.21500
7.2v Input	1.00800	7.25760	1.5	2	3	0.4133597884	4.25760
10.0v Input	0.68200	6.82000	1.5	2	3	0.4398826979	3.82000
16.8v Input	0.37000	6.21600	1.5	2	3	0.4826254826	3.21600
22.2v Input	0.28900	6.41580	1.5	2	3	0.4675956233	3.41580
28.8v Input	0.21900	6.30720	1.5	2	3	0.4756468798	3.30720
39.8v Input	0.16300	6.48740	1.5	2	3	0.4624348738	3.48740
46.2v Input	0.13900	6.42180	1.5	2	3	0.4671587405	3.42180
55.0v Input	0.12100	6.65500	1.5	2	3	0.4507888805	3.65500

In the tables above, red coloured rows are likely to cause a thermal shutdown after a short time, orange coloured rows are getting pretty close and could cause a shutdown in higher ambient temperatures.



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In V	In I	In P	Out V	Out I	Out P	Note	Efficiency	Lost Watts
5.0v Input	0.01700	0.08500	3.3	0	0		0	0.08500
7.2v Input	0.01400	0.10080	3.3	0	0		0	0.10080
10.0v Input	0.01200	0.12000	3.3	0	0		0	0.12000
16.8v Input	0.01100	0.18480	3.3	0	0		0	0.18480
22.2v Input	0.01100	0.24420	3.3	0	0		0	0.24420
28.8v Input	0.00800	0.23040	3.3	0	0		0	0.23040
39.8v Input	0.00800	0.31840	3.3	0	0		0	0.31840
46.2v Input	0.00800	0.36960	3.3	0	0		0	0.36960
55.0v Input	0.00800	0.44000	3.3	0	0		0	0.44000

In V	In I	In P	Out V	Out I	Out P	Note	Efficiency	Lost Watts
5.0v Input	0.11400	0.57000	3.3	0.1	0.33		0.5789473684	0.24000
7.2v Input	0.07700	0.55440	3.3	0.1	0.33		0.5952380952	0.22440
10.0v Input	0.05800	0.58000	3.3	0.1	0.33		0.5689655172	0.25000
16.8v Input	0.03500	0.58800	3.3	0.1	0.33		0.5612244898	0.25800
22.2v Input	0.03100	0.68820	3.3	0.1	0.33		0.4795117698	0.35820
28.8v Input	0.02700	0.77760	3.3	0.1	0.33		0.424382716	0.44760
39.8v Input	0.02200	0.87560	3.3	0.1	0.33		0.3768844221	0.54560
46.2v Input	0.02000	0.92400	3.3	0.1	0.33		0.3571428571	0.59400
55.0v Input	0.01800	0.99000	3.3	0.1	0.33		0.3333333333	0.66000

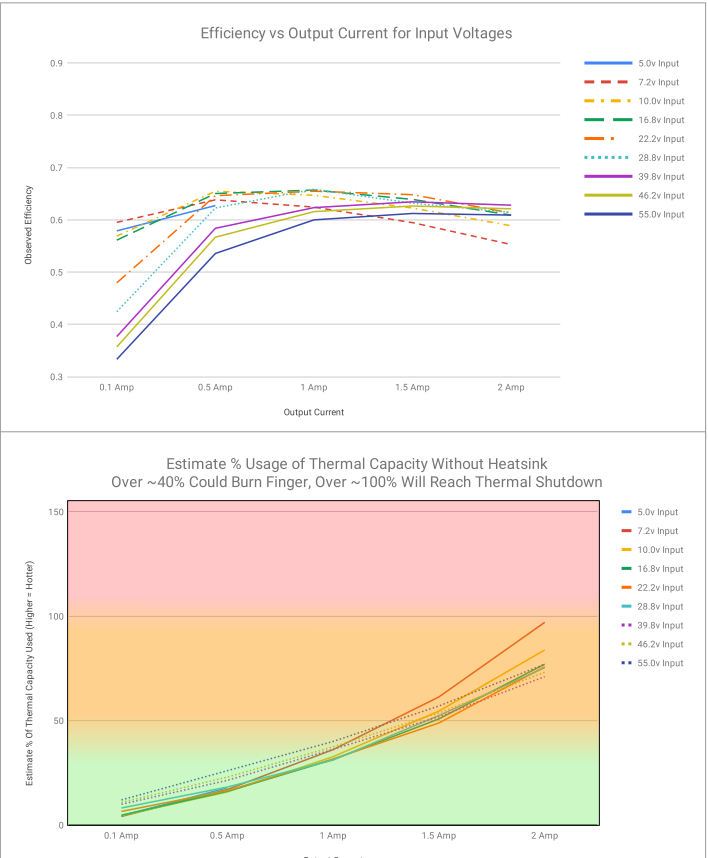
In V	In I	In P	Out V	Out I	Out P	Note	Efficiency	Lost Watts
5.0v Input	0.52600	2.63000	3.3	0.5	1.65		0.6273764259	0.98000
7.2v Input	0.35900	2.58480	3.3	0.5	1.65		0.6383472609	0.93480
10.0v Input	0.25200	2.52000	3.3	0.5	1.65		0.6547619048	0.87000
16.8v Input	0.15100	2.53680	3.3	0.5	1.65		0.6504257332	0.88680
22.2v Input	0.11500	2.55300	3.3	0.5	1.65		0.6462984724	0.90300
28.8v Input	0.09200	2.64960	3.3	0.5	1.65		0.6227355072	0.99960
39.8v Input	0.07100	2.82580	3.3	0.5	1.65		0.5839054427	1.17580
46.2v Input	0.06300	2.91060	3.3	0.5	1.65		0.566893424	1.26060
55.0v Input	0.05600	3.08000	3.3	0.5	1.65		0.5357142857	1.43000

In V	In I	In P	Out V	Out I	Out P	Note	Efficiency	Lost Watts
5.0v Input	0.00000	3.3	1	3.3			0.6244323342	1.98480
7.2v Input	0.73400	5.28480	3.3	1	3.3		0.6470588235	1.80000
10.0v Input	0.51000	5.10000	3.3	1	3.3		0.6569517439	1.72320
16.8v Input	0.29900	5.02320	3.3	1	3.3		0.6548398619	1.73940
22.2v Input	0.22700	5.03940	3.3	1	3.3		0.6585249042	1.71120
28.8v Input	0.17400	5.01120	3.3	1	3.3		0.6234178411	1.99340
39.8v Input	0.13300	5.29340	3.3	1	3.3		0.6157635468	2.05920
46.2v Input	0.11600	5.35920	3.3	1	3.3		0.6	2.20000
55.0v Input	0.10000	5.50000	3.3	1	3.3			

In V	In I	In P	Out V	Out I	Out P	Note	Efficiency	Lost Watts
5.0v Input	1.15600	8.32320	3.3	1.5	4.95		0.5947231834	3.37320
7.2v Input	0.79500	7.95000	3.3	1.5	4.95		0.6226415094	3.00000
16.8v Input	0.46100	7.74480	3.3	1.5	4.95		0.6391385187	2.79480
22.2v Input	0.34400	7.63680	3.3	1.5	4.95		0.648177247	2.68680
28.8v Input	0.27200	7.83360	3.3	1.5	4.95		0.6318933824	2.88360
39.8v Input	0.19600	7.80080	3.3	1.5	4.95		0.6345503025	2.85080
46.2v Input	0.17100	7.90020	3.3	1.5	4.95		0.626566416	2.95020
55.0v Input	0.14700	8.08500	3.3	1.5	4.95		0.612244898	3.13500

In V	In I	In P	Out V	Out I	Out P	Note	Efficiency	Lost Watts
5.0v Input	0.00000	3.3	2	6.6				
7.2v Input	1.65800	11.93760	3.3	2	6.6		0.5528749497	5.33760
10.0v Input	1.12100	11.21000	3.3	2	6.6		0.5887600357	4.61000
16.8v Input	0.64500	10.83600	3.3	2	6.6		0.6090808416	4.23600
22.2v Input	0.48500	10.76700	3.3	2	6.6		0.6129841181	4.16700
28.8v Input	0.37300	10.74240	3.3	2	6.6		0.6143878463	4.14240
39.8v Input	0.26400	10.50720	3.3	2	6.6		0.6281407035	3.90720
46.2v Input	0.23000	10.62600	3.3	2	6.6		0.6211180124	4.02600
55.0v Input	0.19700	10.83500	3.3	2	6.6		0.6081370558	4.23500

In the tables above, red coloured rows are likely to cause a thermal shutdown after a short time, orange coloured rows are getting pretty close and could cause a shutdown in higher ambient temperatures.



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In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	5	0	0		
7.2v Input	0.01500	0.10800	5	0	0	0	0.10800
10.0v Input	0.01300	0.13000	5	0	0	0	0.13000
16.8v Input	0.01200	0.20160	5	0	0	0	0.20160
22.2v Input	0.01200	0.26640	5	0	0	0	0.26640
28.8v Input	0.01200	0.34560	5	0	0	0	0.34560
39.8v Input	0.00800	0.31840	5	0	0	0	0.31840
46.2v Input	0.00800	0.36960	5	0	0	0	0.36960
55.0v Input	0.00800	0.44000	5	0	0	0	0.44000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	5	0.1	0.5		
7.2v Input	0.11100	0.79920	5	0.1	0.5	0.6256256256	0.29920
10.0v Input	0.08200	0.82000	5	0.1	0.5	0.6097560976	0.32000
16.8v Input	0.05100	0.85680	5	0.1	0.5	0.58356676	0.35680
22.2v Input	0.04100	0.91020	5	0.1	0.5	0.5493298176	0.41020
28.8v Input	0.03500	1.00800	5	0.1	0.5	0.496031746	0.50800
39.8v Input		0.00000	5	0.1	0.5		
46.2v Input		0.00000	5	0.1	0.5		
55.0v Input		0.00000	5	0.1	0.5		

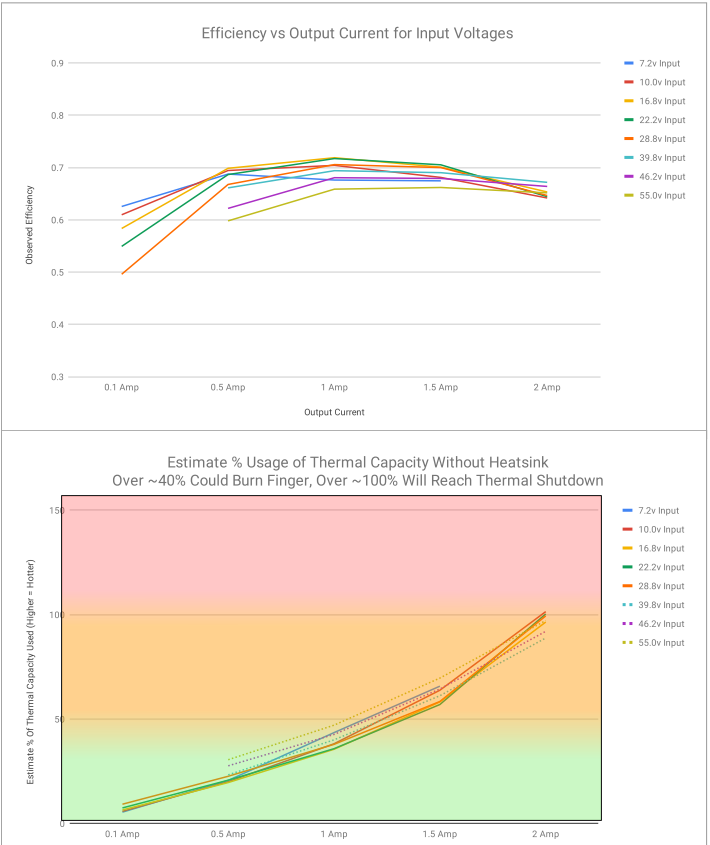
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	5	0.5	2.5		
7.2v Input	0.50500	3.63600	5	0.5	2.5	0.6875687569	1.13600
10.0v Input	0.36000	3.60000	5	0.5	2.5	0.6944444444	1.10000
16.8v Input	0.21300	3.57840	5	0.5	2.5	0.698636262	1.07840
22.2v Input	0.16400	3.64080	5	0.5	2.5	0.686662272	1.14080
28.8v Input	0.13000	3.74400	5	0.5	2.5	0.6677350427	1.24400
39.8v Input	0.09500	3.78100	5	0.5	2.5	0.6612007405	1.28100
46.2v Input	0.08700	4.01940	5	0.5	2.5	0.6219833806	1.51940
55.0v Input	0.07600	4.18000	5	0.5	2.5	0.5980861244	1.68000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	5	1	5		
7.2v Input	1.02700	7.39440	5	1	5	0.676187385	2.39440
10.0v Input	0.71000	7.10000	5	1	5	0.7042253521	2.10000
16.8v Input	0.41400	6.95520	5	1	5	0.7188865885	1.95520
22.2v Input	0.31400	6.97080	5	1	5	0.7172777873	1.97080
28.8v Input	0.24600	7.08480	5	1	5	0.705736224	2.08480
39.8v Input	0.18100	7.20380	5	1	5	0.6940781254	2.20380
46.2v Input	0.15900	7.34580	5	1	5	0.680661058	2.34580
55.0v Input	0.13800	7.59000	5	1	5	0.6587615283	2.59000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	5	1.5	7.5		
7.2v Input	1.54400	11.11680	5	1.5	7.5	0.6746545769	3.61680
10.0v Input	1.10100	11.01000	5	1.5	7.5	0.6811989101	3.51000
16.8v Input	0.63700	10.70160	5	1.5	7.5	0.7008297825	3.20160
22.2v Input	0.47900	10.63380	5	1.5	7.5	0.7052982001	3.13380
28.8v Input	0.37200	10.71360	5	1.5	7.5	0.7004448029	3.21360
39.8v Input	0.27300	10.86540	5	1.5	7.5	0.6902645094	3.36540
46.2v Input	0.23900	11.04180	5	1.5	7.5	0.6782370809	3.54180
55.0v Input	0.20600	11.33000	5	1.5	7.5	0.6619593998	3.83000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	5	2	10		
7.2v Input		0.00000	5	2	10		
10.0v Input	1.55800	15.58000	5	2	10	0.6418485237	5.58000
16.8v Input	0.91100	15.30480	5	2	10	0.6533897862	5.30480
22.2v Input	0.69900	15.51780	5	2	10	0.6444212453	5.51780
28.8v Input	0.53700	15.46560	5	2	10	0.646596317	5.46560
39.8v Input	0.37400	14.88520	5	2	10	0.6718082391	4.88520
46.2v Input	0.32600	15.06120	5	2	10	0.6639577192	5.06120
55.0v Input	0.27900	15.34500	5	2	10	0.651678071	5.34500

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In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	9	0	0		
7.2v Input		0.00000	9	0	0		
12.6v Input	0.01600	0.20160	9	0	0	0	0.20160
16.8v Input	0.01400	0.23520	9	0	0	0	0.23520
22.2v Input	0.01200	0.26640	9	0	0	0	0.26640
28.8v Input	0.01200	0.34560	9	0	0	0	0.34560
39.8v Input	0.00900	0.35820	9	0	0	0	0.35820
46.2v Input	0.00900	0.41580	9	0	0	0	0.41580
55.0v Input	0.00900	0.49500	9	0	0	0	0.49500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	9	0.1	0.9		
7.2v Input		0.00000	9	0.1	0.9		
12.6v Input	0.11000	1.38600	9	0.1	0.9	0.6493506494	0.48600
16.8v Input	0.08300	1.39440	9	0.1	0.9	0.6454388985	0.49440
22.2v Input	0.06600	1.46520	9	0.1	0.9	0.6142506143	0.56520
28.8v Input	0.05200	1.49760	9	0.1	0.9	0.6009615385	0.59760
39.8v Input	0.04100	1.63180	9	0.1	0.9	0.5515381787	0.73180
46.2v Input	0.03700	1.70940	9	0.1	0.9	0.5265005265	0.80940
55.0v Input	0.03300	1.81500	9	0.1	0.9	0.4958677686	0.91500

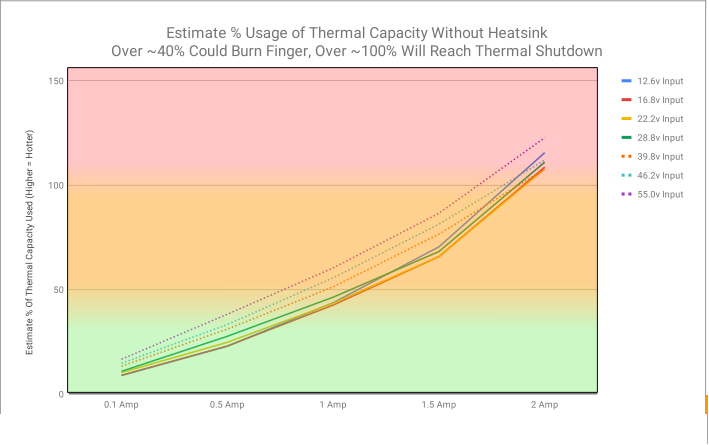
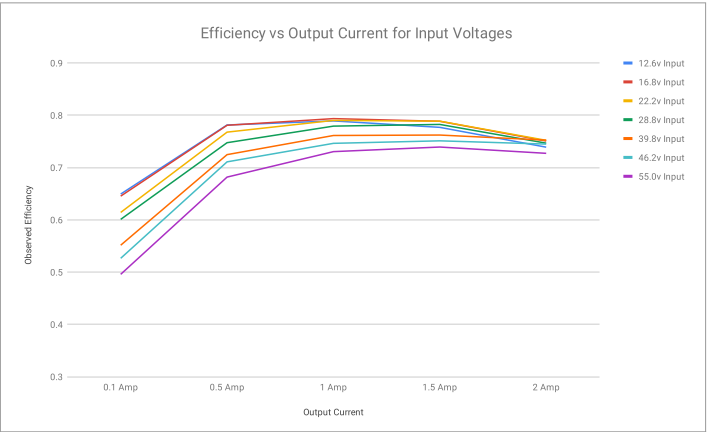
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	9	0.5	4.5		
7.2v Input		0.00000	9	0.5	4.5		
12.6v Input	0.45700	5.75820	9	0.5	4.5	0.7814942169	1.25820
16.8v Input	0.34300	5.76240	9	0.5	4.5	0.7809246147	1.26240
22.2v Input	0.26400	5.86080	9	0.5	4.5	0.7678132878	1.36080
28.8v Input	0.20900	6.01920	9	0.5	4.5	0.7476076555	1.51920
39.8v Input	0.15600	6.20880	9	0.5	4.5	0.7247777348	1.70880
46.2v Input	0.13700	6.32940	9	0.5	4.5	0.7109678643	1.82940
55.0v Input	0.12000	6.60000	9	0.5	4.5	0.6818181818	2.10000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	9	1	9		
7.2v Input		0.00000	9	1	9		
12.6v Input	0.90500	11.40300	9	1	9	0.7892659826	2.40300
16.8v Input	0.67500	11.34000	9	1	9	0.7936507937	2.34000
22.2v Input	0.51300	11.38860	9	1	9	0.7902639482	2.38860
28.8v Input	0.40100	11.54880	9	1	9	0.7793017456	2.54880
39.8v Input	0.29700	11.82060	9	1	9	0.7613826709	2.82060
46.2v Input	0.26100	12.05820	9	1	9	0.7463800567	3.05820
55.0v Input	0.22400	12.32000	9	1	9	0.7305194805	3.32000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	9	1.5	13.5		
7.2v Input		0.00000	9	1.5	13.5		
12.6v Input	1.37900	17.37540	9	1.5	13.5	0.7769605304	3.87540
16.8v Input	1.01900	17.11920	9	1.5	13.5	0.7885882518	3.61920
22.2v Input	0.77100	17.11620	9	1.5	13.5	0.7887264697	3.61620
28.8v Input	0.59900	17.25120	9	1.5	13.5	0.7825542571	3.75120
39.8v Input	0.44500	17.71100	9	1.5	13.5	0.7622381571	4.21100
46.2v Input	0.38900	17.97180	9	1.5	13.5	0.7511788437	4.47180
55.0v Input	0.33200	18.26000	9	1.5	13.5	0.73932092	4.76000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	9	2	18		
7.2v Input		0.00000	9	2	18		
12.6v Input	1.93300	24.35580	9	2	18	0.7390436775	6.35580
16.8v Input	1.42700	23.97360	9	2	18	0.7508259085	5.97360
22.2v Input	1.07800	23.93160	9	2	18	0.7521436093	5.93160
28.8v Input	0.83700	24.10560	9	2	18	0.7467144564	6.10560
39.8v Input	0.60100	23.91980	9	2	18	0.7525146531	5.91980
46.2v Input	0.52300	24.16260	9	2	18	0.7449529438	6.16260
55.0v Input	0.45000	24.75000	9	2	18	0.7272727273	6.75000

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In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	12	0	0		
7.2v Input		0.00000	12	0	0		
14.4v Input	0.01600	0.23040	12	0	0	0	0.23040
16.8v Input	0.01500	0.25200	12	0	0	0	0.25200
22.2v Input	0.01300	0.28860	12	0	0	0	0.28860
28.8v Input	0.01200	0.34560	12	0	0	0	0.34560
39.8v Input	0.00800	0.31840	12	0	0	0	0.31840
46.2v Input	0.00800	0.36960	12	0	0	0	0.36960
55.0v Input	0.00800	0.44000	12	0	0	0	0.44000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	12	0.1	1.2		
7.2v Input		0.00000	12	0.1	1.2		
14.4v Input	0.11500	1.65600	12	0.1	1.2	0.7246376812	0.45600
16.8v Input	0.09900	1.66320	12	0.1	1.2	0.7215007215	0.46320
22.2v Input	0.07700	1.70940	12	0.1	1.2	0.702000702	0.50940
28.8v Input	0.06100	1.75680	12	0.1	1.2	0.6830601093	0.55680
39.8v Input	0.04900	1.95020	12	0.1	1.2	0.6153215055	0.75020
46.2v Input	0.04500	2.07900	12	0.1	1.2	0.5772005772	0.87900
55.0v Input	0.04000	2.20000	12	0.1	1.2	0.5454545455	1.00000

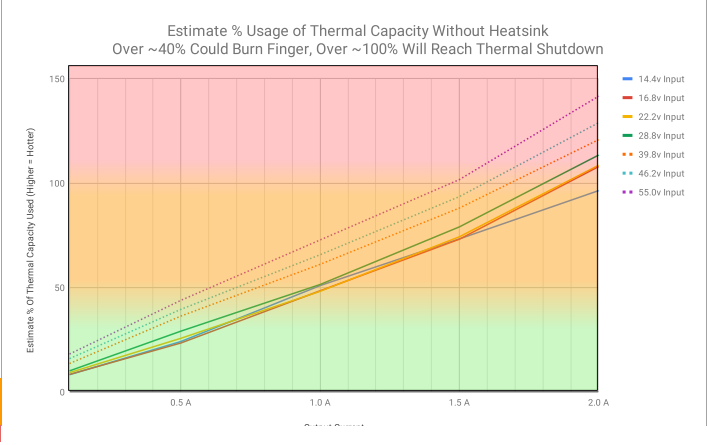
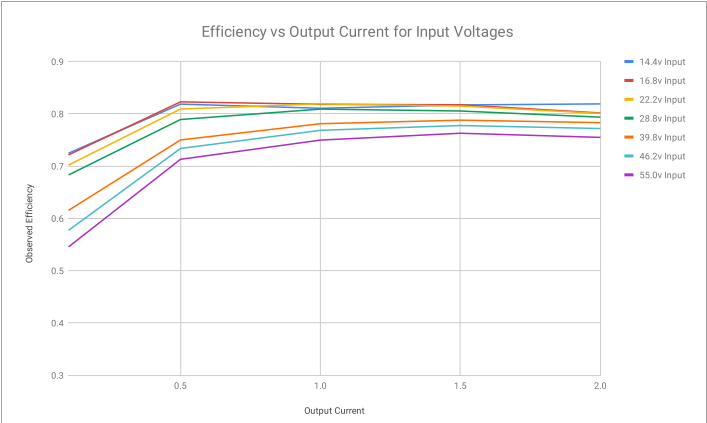
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	12	0.5	6		
7.2v Input		0.00000	12	0.5	6		
14.4v Input	0.50900	7.32960	12	0.5	6	0.8185985593	1.32960
16.8v Input	0.43400	7.29120	12	0.5	6	0.8229098091	1.29120
22.2v Input	0.33400	7.41480	12	0.5	6	0.809192426	1.41480
28.8v Input	0.26400	7.60320	12	0.5	6	0.7891414141	1.60320
39.8v Input	0.20100	7.99980	12	0.5	6	0.7500187505	1.99980
46.2v Input	0.17700	8.17740	12	0.5	6	0.7337295473	2.17740
55.0v Input	0.15300	8.41500	12	0.5	6	0.7130124777	2.41500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	12	1	12		
7.2v Input		0.00000	12	1	12		
14.4v Input	1.02800	14.80320	12	1	12	0.8106355383	2.80320
16.8v Input	0.87300	14.66640	12	1	12	0.8181966945	2.66640
22.2v Input	0.66000	14.65200	12	1	12	0.819000819	2.65200
28.8v Input	0.51500	14.83200	12	1	12	0.8090614887	2.83200
39.8v Input	0.38600	15.36280	12	1	12	0.7811076106	3.36280
46.2v Input	0.33800	15.61560	12	1	12	0.7684623069	3.61560
55.0v Input	0.29100	16.00500	12	1	12	0.7497656982	4.00500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	12	1.5	18		
7.2v Input		0.00000	12	1.5	18		
14.4v Input	1.53000	22.03200	12	1.5	18	0.8169934641	4.03200
16.8v Input	1.31100	22.02480	12	1.5	18	0.8172605427	4.02480
22.2v Input	0.99500	22.08900	12	1.5	18	0.814885237	4.08900
28.8v Input	0.77600	22.34880	12	1.5	18	0.8054123711	4.34880
39.8v Input	0.57400	22.84520	12	1.5	18	0.7879116639	4.84520
46.2v Input	0.50100	23.14620	12	1.5	18	0.7776654483	5.14620
55.0v Input	0.42900	23.59500	12	1.5	18	0.7628734901	5.59500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	12	2	24		
7.2v Input		0.00000	12	2	24		
14.4v Input	2.03500	28.30400	12	2	24	0.819000819	5.30400
16.8v Input	1.78200	29.93760	12	2	24	0.8016674683	5.93760
22.2v Input	1.35000	29.97000	12	2	24	0.8008008008	5.97000
28.8v Input	1.05000	30.24000	12	2	24	0.7936507937	6.24000
39.8v Input	0.77000	30.64600	12	2	24	0.7831364615	6.64600
46.2v Input	0.67300	31.09260	12	2	24	0.7718878447	7.09260
55.0v Input	0.57800	31.79000	12	2	24	0.7549543882	7.79000

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In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	15	0	0		
7.2v Input		0.00000	15	0	0		
14.4v Input		0.00000	15	0	0		
18.5v Input	0.01100	0.20350	15	0	0	0	0.20350
22.2v Input	0.01100	0.24420	15	0	0	0	0.24420
28.8v Input	0.01100	0.31680	15	0	0	0	0.31680
39.8v Input	0.01100	0.43780	15	0	0	0	0.43780
46.2v Input		0.00000	15	0	0		
55.0v Input		0.00000	15	0	0		

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	15	0.1	1.5		
7.2v Input		0.00000	15	0.1	1.5		
14.4v Input		0.00000	15	0.1	1.5		
18.5v Input	0.10800	1.99800	15	0.1	1.5	0.7507507508	0.49800
22.2v Input	0.09000	1.99800	15	0.1	1.5	0.7507507508	0.49800
28.8v Input	0.07200	2.07360	15	0.1	1.5	0.7233796296	0.57360
39.8v Input	0.05600	2.22880	15	0.1	1.5	0.6730078966	0.72880
46.2v Input	0.05000	2.31000	15	0.1	1.5	0.6493506494	0.81000
55.0v Input	0.04500	2.47500	15	0.1	1.5	0.6060606061	0.97500

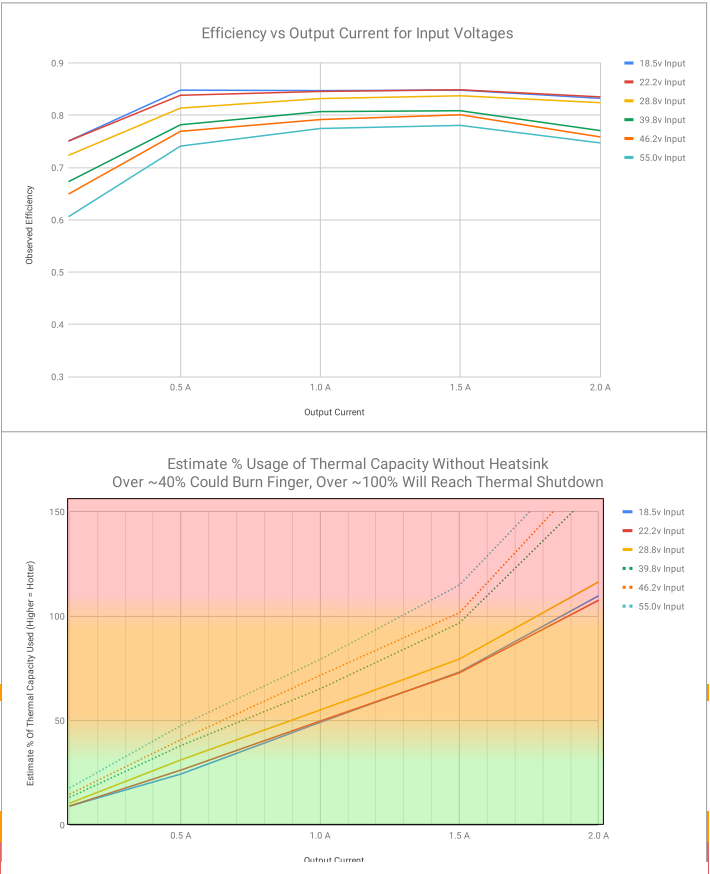
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	15	0.5	7.5		
7.2v Input		0.00000	15	0.5	7.5		
14.4v Input		0.00000	15	0.5	7.5		
18.5v Input	0.47800	8.84300	15	0.5	7.5	0.8481284632	1.34300
22.2v Input	0.40300	8.94660	15	0.5	7.5	0.8383072899	1.44660
28.8v Input	0.32000	9.21600	15	0.5	7.5	0.8138020833	1.71600
39.8v Input	0.24100	9.59180	15	0.5	7.5	0.7819178882	2.09180
46.2v Input	0.21100	9.74820	15	0.5	7.5	0.7693728073	2.24820
55.0v Input	0.18400	10.12000	15	0.5	7.5	0.7411067194	2.62000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	15	1	15		
7.2v Input		0.00000	15	1	15		
14.4v Input		0.00000	15	1	15		
18.5v Input	0.95700	17.70450	15	1	15	0.8472422266	2.70450
22.2v Input	0.79900	17.73780	15	1	15	0.8456516592	2.73780
28.8v Input	0.62600	18.02880	15	1	15	0.8320021299	3.02880
39.8v Input	0.46700	18.58660	15	1	15	0.8070330238	3.58660
46.2v Input	0.41000	18.94200	15	1	15	0.7918910358	3.94200
55.0v Input	0.35200	19.36000	15	1	15	0.7747933884	4.36000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	15	1.5	22.5		
7.2v Input		0.00000	15	1.5	22.5		
14.4v Input		0.00000	15	1.5	22.5		
18.5v Input	1.43400	26.52900	15	1.5	22.5	0.8481284632	4.02900
22.2v Input	1.19400	26.50680	15	1.5	22.5	0.8488387885	4.00680
28.8v Input	0.93300	26.87040	15	1.5	22.5	0.8373526259	4.37040
39.8v Input	0.69900	27.82020	15	1.5	22.5	0.8087648543	5.32020
46.2v Input	0.60800	28.08960	15	1.5	22.5	0.8010082023	5.58960
55.0v Input	0.52400	28.82000	15	1.5	22.5	0.7807078418	6.32000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
5.0v Input		0.00000	15	2	30		
7.2v Input		0.00000	15	2	30		
14.4v Input		0.00000	15	2	30		
18.5v Input	1.94800	36.03800	15	2	30	0.8324546312	6.03800
22.2v Input	1.61800	35.91960	15	2	30	0.8351986102	5.91960
28.8v Input	1.26400	36.40320	15	2	30	0.8241033755	6.40320
39.8v Input	0.97800	38.92440	15	2	30	0.7707247896	8.92440
46.2v Input	0.85600	39.54720	15	2	30	0.7585872072	9.54720
55.0v Input	0.73000	40.15000	15	2	30	0.7471980075	10.15000

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In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input		0.00000	21	0	0		
7.2v Input		0.00000	21	0	0		
8.4v Input		0.00000	21	0	0		
24.0v Input	0.01200	0.28800	21	0	0	0	0.28800
28.8v Input	0.01200	0.34560	21	0	0	0	0.34560
32.0v Input	0.01200	0.38400	21	0	0	0	0.38400
39.8v Input		0.00000	21	0	0		
46.2v Input		0.00000	21	0	0		
55.0v Input		0.00000	21	0	0		

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input		0.00000	21	0.1	2.1		
7.2v Input		0.00000	21	0.1	2.1		
8.4v Input		0.00000	21	0.1	2.1		
24.0v Input	0.11400	2.73600	21	0.1	2.1	0.7675438596	0.63600
28.8v Input	0.09800	2.62240	21	0.1	2.1	0.744047619	0.72240
32.0v Input	0.09000	2.88000	21	0.1	2.1	0.7291666667	0.78000
39.8v Input	0.07400	2.94520	21	0.1	2.1	0.7130245824	0.84520
46.2v Input	0.06700	3.09540	21	0.1	2.1	0.6784260516	0.99540
55.0v Input	0.05900	3.24500	21	0.1	2.1	0.6471494607	1.14500

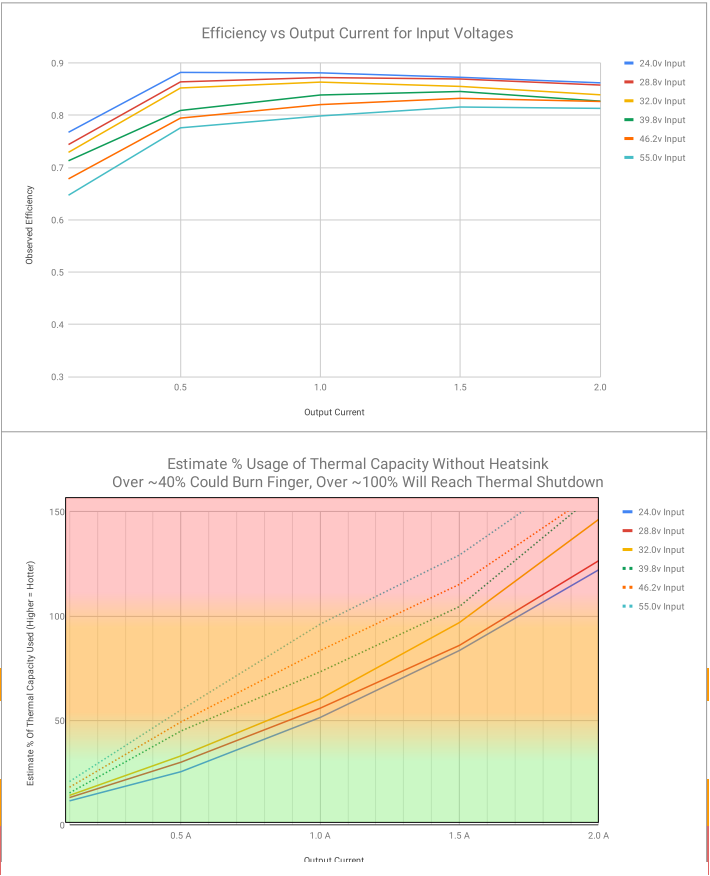
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input		0.00000	21	0.5	10.5		
7.2v Input		0.00000	21	0.5	10.5		
8.4v Input		0.00000	21	0.5	10.5		
24.0v Input	0.49600	11.90400	21	0.5	10.5	0.8820564516	1.40400
28.8v Input	0.42200	12.15360	21	0.5	10.5	0.8639415482	1.65360
32.0v Input	0.38500	12.32000	21	0.5	10.5	0.8522727273	1.82000
39.8v Input	0.32600	12.97480	21	0.5	10.5	0.8092610291	2.47480
46.2v Input	0.28600	13.21320	21	0.5	10.5	0.7946598856	2.71320
55.0v Input	0.24600	13.53000	21	0.5	10.5	0.7760532151	3.03000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input		0.00000	21	1	21		
7.2v Input		0.00000	21	1	21		
8.4v Input		0.00000	21	1	21		
24.0v Input	0.99300	23.83200	21	1	21	0.8811681772	2.83200
28.8v Input	0.83600	24.07680	21	1	21	0.8722089314	3.07680
32.0v Input	0.76000	24.32000	21	1	21	0.8634868421	3.32000
39.8v Input	0.62900	25.03420	21	1	21	0.8388524498	4.03420
46.2v Input	0.55400	25.59480	21	1	21	0.8204791598	4.59480
55.0v Input	0.47800	26.29000	21	1	21	0.7967828072	5.29000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input		0.00000	21	1.5	31.5		
7.2v Input		0.00000	21	1.5	31.5		
8.4v Input		0.00000	21	1.5	31.5		
24.0v Input	1.50400	36.09600	21	1.5	31.5	0.8726728723	4.59600
28.8v Input	1.25800	36.23040	21	1.5	31.5	0.8694356121	4.73040
32.0v Input	1.15100	36.83200	21	1.5	31.5	0.8562345786	5.33200
39.8v Input	0.93600	37.25280	21	1.5	31.5	0.8455740224	5.75280
46.2v Input	0.81900	37.83780	21	1.5	31.5	0.8325008325	6.33780
55.0v Input	0.70200	38.61000	21	1.5	31.5	0.8158508159	7.11000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input		0.00000	21	2	42		
7.2v Input		0.00000	21	2	42		
8.4v Input		0.00000	21	2	42		
24.0v Input	2.03000	48.72000	21	2	42	0.8620689655	6.72000
28.8v Input	1.70000	48.96000	21	2	42	0.8578431373	6.96000
32.0v Input	1.56400	50.04800	21	2	42	0.8391943734	8.04800
39.8v Input	1.27600	50.78480	21	2	42	0.8270191081	8.78480
46.2v Input	1.10000	50.82000	21	2	42	0.826446281	8.82000
55.0v Input	0.93900	51.64500	21	2	42	0.8132442637	9.64500

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In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input	0.01200	0.00000	28	0	0		
7.2v Input		0.00000	28	0	0		
14.4v Input		0.00000	28	0	0		
24.0v Input		0.00000	28	0	0		
28.8v Input		0.00000	28	0	0		
32.0v Input		0.38400	28	0	0	0	0.38400
39.8v Input		0.47760	28	0	0	0	0.47760
46.2v Input		0.55440	28	0	0	0	0.55440
55.0v Input		0.66000	28	0	0	0	0.66000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input	0.11000	0.00000	28	0.1	2.8		
7.2v Input		0.00000	28	0.1	2.8		
14.4v Input		0.00000	28	0.1	2.8		
24.0v Input		0.00000	28	0.1	2.8		
28.8v Input		0.00000	28	0.1	2.8		
32.0v Input		3.52000	28	0.1	2.8	0.7954545455	0.72000
39.8v Input		3.70140	28	0.1	2.8	0.7564705247	0.90140
46.2v Input		3.83460	28	0.1	2.8	0.7301935013	1.03460
55.0v Input		4.01500	28	0.1	2.8	0.697384807	1.21500

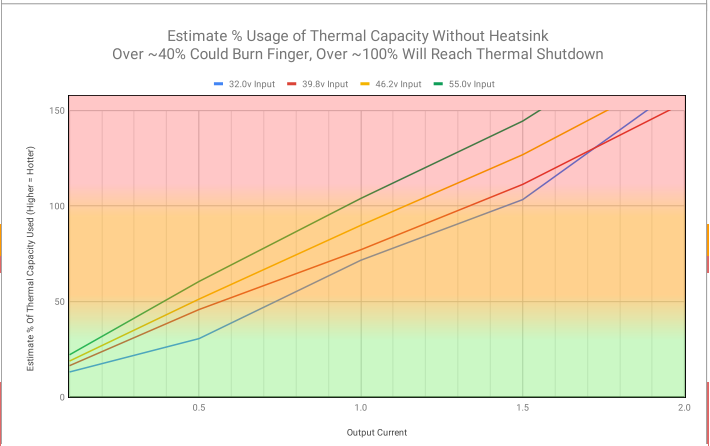
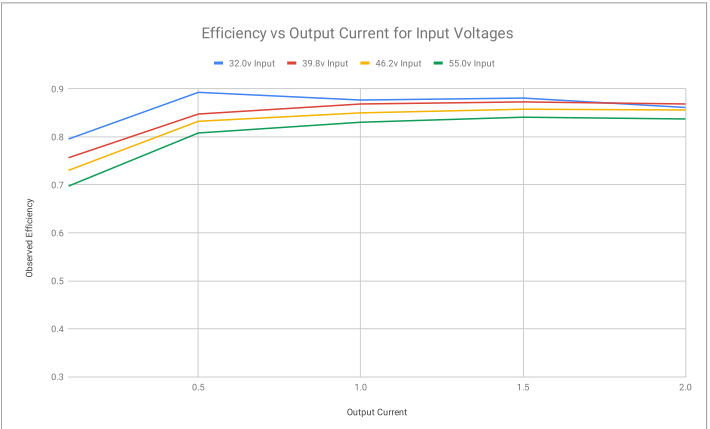
In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input	0.49000	0.00000	28	0.5	14		
7.2v Input		0.00000	28	0.5	14		
14.4v Input		0.00000	28	0.5	14		
24.0v Input		0.00000	28	0.5	14		
28.8v Input		0.00000	28	0.5	14		
32.0v Input		15.68000	28	0.5	14	0.8928571429	1.68000
39.8v Input		16.51700	28	0.5	14	0.8476115517	2.51700
46.2v Input		16.81680	28	0.5	14	0.8325008325	2.81680
55.0v Input		17.32500	28	0.5	14	0.8080808081	3.32500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input	0.99800	0.00000	28	1	28		
7.2v Input		0.00000	28	1	28		
14.4v Input		0.00000	28	1	28		
24.0v Input		0.00000	28	1	28		
28.8v Input		0.00000	28	1	28		
32.0v Input		31.93600	28	1	28	0.876753507	3.93600
39.8v Input		32.23800	28	1	28	0.868540232	4.23800
46.2v Input		32.94060	28	1	28	0.8500148753	4.94060
55.0v Input		33.71500	28	1	28	0.8304908794	5.71500

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input	1.49000	0.00000	28	1.5	42		
7.2v Input		0.00000	28	1.5	42		
14.4v Input		0.00000	28	1.5	42		
24.0v Input		0.00000	28	1.5	42		
28.8v Input		0.00000	28	1.5	42		
32.0v Input		47.68000	28	1.5	42	0.8808724832	5.68000
39.8v Input		48.11820	28	1.5	42	0.8728506054	6.11820
46.2v Input		48.97200	28	1.5	42	0.8576329331	6.97200
55.0v Input		49.94000	28	1.5	42	0.8410092111	7.94000

In V	In I	In P	Out V	Out I	Out P Note	Efficiency	Lost Watts
6.0v Input	2.03200	0.00000	28	2	56		
7.2v Input		0.00000	28	2	56		
14.4v Input		0.00000	28	2	56		
24.0v Input		0.00000	28	2	56		
28.8v Input		0.00000	28	2	56		
32.0v Input		65.02400	28	2	56	0.8612204724	9.02400
39.8v Input		64.47600	28	2	56	0.868540232	8.47600
46.2v Input		65.41920	28	2	56	0.8560178052	9.41920
55.0v Input		66.88000	28	2	56	0.8373205742	10.88000

In the tables above, red coloured rows are likely to cause a thermal shutdown after a short time, orange coloured rows are getting pretty close and could cause a shutdown in higher ambient temperatures.



All the data in the charts is derived from the tables on the left, the specific colour or style of lines in the charts is not representative of anything, just for readability.