

# Solid State USB SPDT Switch

# USB-1SP2T-A44

## Typical Performance Data

TEST CONDITIONS: @Temperature = 0°C, Pin=8dBm

Frequency (MHz)	Insertion Loss		VSWR, Active Ports			VSWR, Internally Terminated Ports	
	(dB)		(:1)			(:1)	
	COM-1	COM-2	J1	J2	COM	J1	J2
100	0.64	0.65	1.06	1.06	1.07	1.05	1.05
500	0.79	0.79	1.07	1.07	1.08	1.04	1.05
1000	0.88	0.89	1.09	1.09	1.09	1.04	1.04
1500	0.95	0.95	1.10	1.10	1.12	1.04	1.04
2000	1.02	1.02	1.12	1.12	1.15	1.04	1.04
2500	1.07	1.07	1.15	1.15	1.19	1.04	1.04
3000	1.12	1.12	1.16	1.16	1.21	1.04	1.04
3500	1.15	1.15	1.16	1.17	1.22	1.04	1.05
4000	1.20	1.19	1.15	1.15	1.22	1.04	1.05
4500	1.23	1.22	1.15	1.14	1.21	1.06	1.06
5000	1.25	1.24	1.13	1.11	1.18	1.07	1.07
5500	1.29	1.27	1.09	1.07	1.14	1.08	1.07
6000	1.31	1.30	1.05	1.04	1.09	1.10	1.08
6500	1.33	1.32	1.06	1.06	1.04	1.11	1.09
7000	1.36	1.35	1.11	1.09	1.01	1.11	1.09
7500	1.42	1.40	1.15	1.13	1.03	1.11	1.08
8000	1.45	1.43	1.18	1.15	1.06	1.10	1.07
8500	1.47	1.44	1.20	1.16	1.08	1.10	1.06
9500	1.55	1.53	1.18	1.16	1.12	1.07	1.07
10500	1.64	1.63	1.17	1.21	1.18	1.08	1.13
11500	1.70	1.71	1.20	1.29	1.22	1.12	1.20
12500	1.78	1.81	1.23	1.34	1.21	1.15	1.25
13500	1.88	1.91	1.31	1.41	1.28	1.20	1.29
14500	1.97	1.97	1.34	1.40	1.30	1.21	1.28
15500	2.02	1.97	1.15	1.17	1.21	1.15	1.21
16500	2.12	2.03	1.11	1.06	1.23	1.06	1.11
17500	2.18	2.14	1.21	1.18	1.34	1.08	1.04
18500	2.19	2.19	1.10	1.16	1.33	1.17	1.13
19500	2.33	2.33	1.28	1.36	1.47	1.23	1.19
20500	2.54	2.52	1.48	1.54	1.57	1.22	1.19
21500	2.60	2.53	1.56	1.53	1.49	1.24	1.20
22500	2.52	2.44	1.37	1.32	1.21	1.17	1.15
23500	2.59	2.53	1.38	1.32	1.24	1.13	1.14
24500	2.73	2.61	1.55	1.36	1.38	1.13	1.13
25500	2.85	2.71	1.57	1.32	1.43	1.16	1.17
26500	2.82	2.75	1.42	1.34	1.46	1.21	1.17
27500	2.79	2.82	1.19	1.38	1.43	1.30	1.17
28500	2.89	2.96	1.14	1.44	1.44	1.39	1.16
29500	3.05	3.10	1.41	1.62	1.55	1.41	1.14
30500	3.33	3.30	1.76	1.76	1.71	1.39	1.10
31500	3.64	3.51	1.99	1.85	1.96	1.22	1.04
32500	3.69	3.48	1.92	1.70	1.80	1.11	1.06
33500	3.50	3.31	1.66	1.51	1.51	1.04	1.13
34500	3.42	3.24	1.58	1.53	1.30	1.16	1.21
35500	3.40	3.22	1.48	1.48	1.31	1.29	1.33
36500	3.57	3.43	1.38	1.38	1.41	1.44	1.51
37500	3.65	3.56	1.29	1.22	1.45	1.58	1.71
38500	3.93	3.87	1.47	1.40	1.65	1.69	1.92
39500	4.33	4.39	1.82	1.92	1.95	1.60	1.87
40500	4.50	4.75	1.85	2.22	1.94	1.50	1.73
41500	4.55	4.94	1.69	2.21	1.82	1.56	1.56
42500	4.71	5.19	1.77	2.44	2.16	1.79	1.33
43500	5.79	6.10	2.50	2.58	2.63	1.93	1.32

**Notes**

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# USB-1SP2T-A44

## Typical Performance Data

TEST CONDITIONS: @Temperature = 0°C, Pin=8dBm

Frequency (MHz)	Isolation @ Active states (dB)			Isolation @ Disconnected state (dB)		
	COM-1	COM-2	J1-J2	COM-1	COM-2	J1-J2
100	80.47	89.62	92.32	74.67	84.62	105.77
500	83.24	80.48	85.07	80.98	77.48	93.02
1000	75.20	74.91	79.38	71.94	71.45	87.51
1500	71.95	72.08	76.13	68.50	68.38	84.27
2000	70.22	70.36	74.29	67.00	66.80	81.84
2500	69.47	69.49	73.33	65.94	65.89	79.88
3000	68.78	68.95	72.21	65.70	65.45	78.02
3500	68.75	68.82	72.14	65.43	65.50	77.21
4000	68.57	68.81	71.56	65.83	65.83	75.39
4500	68.71	69.04	71.24	66.20	65.45	74.48
5000	69.01	69.71	71.28	65.80	65.90	73.73
5500	68.96	69.78	70.74	65.28	65.19	72.37
6000	68.90	69.86	70.72	67.25	68.07	72.13
6500	67.80	68.77	71.14	65.02	66.45	71.94
7000	66.30	67.14	70.96	68.34	69.50	71.27
7500	65.28	65.84	71.88	69.47	70.73	72.87
8000	64.94	65.14	72.02	68.00	69.57	76.08
8500	65.43	65.32	71.17	72.40	72.11	79.74
9500	63.74	64.15	71.55	71.34	71.55	79.52
10500	64.90	64.33	71.26	73.23	70.07	75.59
11500	66.47	65.18	68.03	71.75	70.21	75.69
12500	66.66	66.47	66.48	67.47	67.12	77.83
13500	67.11	68.46	64.52	63.51	64.62	78.56
14500	67.92	69.10	62.29	60.48	61.48	77.99
15500	64.75	65.17	61.40	58.02	59.03	80.03
16500	62.69	62.60	59.88	56.93	56.80	76.09
17500	60.51	59.28	58.07	56.34	54.86	73.62
18500	58.17	58.00	57.88	55.24	54.76	72.45
19500	56.66	56.80	57.20	53.47	53.44	70.41
20500	54.90	55.92	56.38	51.53	52.44	69.09
21500	55.09	55.48	55.84	52.10	51.78	70.50
22500	53.80	54.02	54.67	51.36	51.14	69.49
23500	52.46	52.62	53.70	50.20	50.25	66.96
24500	52.27	52.52	53.22	49.60	50.02	64.37
25500	52.84	53.64	53.29	49.39	50.77	63.59
26500	54.02	54.77	52.76	49.96	50.83	62.86
27500	55.40	56.97	52.73	51.91	51.84	63.64
28500	54.53	57.13	53.03	53.21	53.43	63.73
29500	53.57	55.47	53.33	54.93	55.39	63.52
30500	53.69	54.18	54.06	56.67	57.42	62.37
31500	53.51	53.79	54.92	58.80	59.65	59.63
32500	53.63	54.03	55.62	61.80	62.07	56.97
33500	54.71	55.44	56.80	67.31	65.37	55.40
34500	56.56	57.66	58.99	64.50	62.91	53.80
35500	60.54	62.29	60.22	58.94	58.74	52.36
36500	70.95	77.84	62.44	55.67	55.48	51.74
37500	65.30	65.21	65.24	53.39	53.12	50.91
38500	57.23	57.40	62.20	51.35	51.20	49.81
39500	53.80	54.23	60.89	49.66	49.45	49.25
40500	50.39	50.92	58.64	47.65	47.55	48.17
41500	48.82	48.99	56.20	46.47	46.22	47.36
42500	47.19	46.95	53.13	45.51	45.20	46.26
43500	47.16	46.85	52.20	46.22	45.40	46.06

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# Solid State USB SPDT Switch

# USB-1SP2T-A44

## Typical Performance Data

TEST CONDITIONS: @Temperature = 25°C, Pin=8dBm

Frequency (MHz)	Insertion Loss (dB)		VSWR, Active Ports (:1)			VSWR, Internally Terminated Ports (:1)	
	COM-1	COM-2	J1	J2	COM	J1	J2
	100	0.67	0.68	1.07	1.07	1.08	1.05
500	0.82	0.83	1.08	1.08	1.08	1.04	1.04
1000	0.92	0.93	1.09	1.10	1.10	1.04	1.04
1500	1.00	1.00	1.11	1.11	1.13	1.03	1.03
2000	1.06	1.06	1.12	1.13	1.16	1.04	1.04
2500	1.11	1.11	1.15	1.15	1.19	1.04	1.04
3000	1.17	1.17	1.16	1.16	1.21	1.04	1.04
3500	1.21	1.21	1.16	1.17	1.23	1.04	1.05
4000	1.26	1.25	1.16	1.16	1.24	1.05	1.05
4500	1.28	1.28	1.15	1.15	1.23	1.06	1.06
5000	1.30	1.30	1.13	1.12	1.19	1.08	1.07
5500	1.34	1.34	1.09	1.08	1.15	1.09	1.08
6000	1.37	1.36	1.06	1.04	1.10	1.10	1.09
6500	1.39	1.39	1.07	1.06	1.05	1.11	1.09
7000	1.43	1.42	1.11	1.10	1.02	1.11	1.09
7500	1.48	1.47	1.15	1.13	1.03	1.11	1.09
8000	1.51	1.50	1.18	1.16	1.05	1.10	1.07
8500	1.52	1.51	1.21	1.16	1.08	1.10	1.06
9500	1.62	1.61	1.19	1.16	1.12	1.07	1.06
10500	1.70	1.71	1.17	1.21	1.19	1.07	1.12
11500	1.77	1.80	1.20	1.29	1.21	1.12	1.19
12500	1.86	1.91	1.25	1.36	1.22	1.16	1.26
13500	1.97	2.02	1.33	1.44	1.27	1.21	1.31
14500	2.05	2.07	1.34	1.39	1.27	1.23	1.30
15500	2.10	2.07	1.15	1.17	1.18	1.16	1.22
16500	2.21	2.14	1.10	1.04	1.23	1.06	1.12
17500	2.27	2.25	1.17	1.15	1.32	1.07	1.06
18500	2.31	2.33	1.10	1.16	1.35	1.17	1.13
19500	2.45	2.47	1.29	1.37	1.49	1.23	1.19
20500	2.66	2.65	1.51	1.54	1.57	1.23	1.20
21500	2.69	2.64	1.54	1.50	1.46	1.23	1.19
22500	2.63	2.58	1.38	1.33	1.22	1.18	1.16
23500	2.72	2.68	1.38	1.32	1.24	1.14	1.14
24500	2.84	2.74	1.52	1.33	1.35	1.13	1.14
25500	2.98	2.86	1.59	1.32	1.43	1.17	1.15
26500	2.97	2.92	1.44	1.34	1.47	1.22	1.16
27500	2.93	2.99	1.18	1.39	1.46	1.32	1.17
28500	3.02	3.12	1.15	1.45	1.45	1.39	1.16
29500	3.19	3.27	1.41	1.60	1.53	1.42	1.14
30500	3.50	3.49	1.78	1.78	1.74	1.38	1.10
31500	3.77	3.66	2.00	1.83	1.90	1.22	1.05
32500	3.80	3.63	1.91	1.68	1.75	1.12	1.07
33500	3.65	3.48	1.66	1.50	1.49	1.07	1.13
34500	3.56	3.44	1.55	1.51	1.30	1.17	1.21
35500	3.53	3.41	1.46	1.45	1.28	1.29	1.36
36500	3.72	3.61	1.36	1.33	1.38	1.46	1.54
37500	3.86	3.80	1.29	1.23	1.49	1.60	1.70
38500	4.11	4.11	1.48	1.42	1.67	1.68	1.85
39500	4.44	4.52	1.77	1.86	1.82	1.61	1.84
40500	4.64	4.91	1.82	2.15	1.81	1.49	1.69
41500	4.79	5.24	1.71	2.22	1.85	1.53	1.52
42500	4.94	5.35	1.83	2.36	2.11	1.93	1.34
43500	5.95	6.25	2.45	2.44	2.50	1.92	1.28

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# Solid State USB SPDT Switch

# USB-1SP2T-A44

## Typical Performance Data

TEST CONDITIONS: @Temperature = 25°C, Pin=8dBm

Frequency (MHz)	Isolation @ Active states (dB)			Isolation @ Disconnected state (dB)		
	COM-1	COM-2	J1-J2	COM-1	COM-2	J1-J2
100	80.18	89.15	91.54	74.65	82.94	104.08
500	83.00	80.18	84.83	80.24	76.94	92.53
1000	74.66	74.48	78.88	71.14	70.67	87.34
1500	71.49	71.46	75.44	67.91	67.61	83.86
2000	69.61	69.76	73.60	66.07	65.96	81.52
2500	68.63	68.90	72.46	65.14	65.06	80.16
3000	68.08	68.20	71.63	64.70	64.79	77.87
3500	68.03	68.09	71.36	64.44	64.42	76.92
4000	67.75	67.88	70.94	64.50	64.57	75.22
4500	67.94	68.20	70.72	64.66	64.72	74.40
5000	68.35	68.67	70.82	64.63	65.19	73.98
5500	68.17	68.57	70.66	63.90	64.23	71.98
6000	68.46	69.18	70.64	66.03	66.26	71.83
6500	67.92	68.17	70.75	64.46	65.08	71.38
7000	66.57	66.93	70.66	67.23	67.28	70.50
7500	65.45	65.69	71.73	67.80	69.11	72.13
8000	64.78	64.82	72.29	67.03	68.74	76.10
8500	65.42	64.77	70.77	70.87	70.93	80.22
9500	63.68	63.54	73.69	69.91	70.20	78.69
10500	64.37	63.21	71.12	72.08	69.52	75.52
11500	65.85	64.79	68.65	73.68	71.68	75.08
12500	65.77	65.75	67.45	68.91	68.46	75.86
13500	66.26	67.52	65.14	65.28	65.43	76.84
14500	68.18	69.11	63.11	61.72	62.51	77.81
15500	65.50	65.99	62.15	58.95	60.05	82.35
16500	63.31	62.87	60.84	57.61	57.50	79.19
17500	60.81	59.78	58.88	56.90	55.33	74.86
18500	58.73	58.25	58.56	55.69	55.07	74.72
19500	56.89	56.96	57.62	53.89	53.91	73.07
20500	54.94	56.08	56.80	51.75	52.70	69.91
21500	55.16	55.53	56.34	52.22	51.93	71.90
22500	53.75	54.05	55.07	51.59	51.29	70.19
23500	52.44	52.60	54.10	50.34	50.26	67.40
24500	52.11	52.26	53.55	49.52	49.98	64.56
25500	52.58	53.27	53.51	49.36	50.64	63.41
26500	53.64	54.33	52.91	49.87	50.77	62.70
27500	55.01	56.42	52.92	51.77	51.67	63.07
28500	54.40	57.06	53.03	52.83	53.06	63.41
29500	53.46	55.47	53.39	54.47	54.97	63.08
30500	53.75	54.28	54.04	56.43	56.77	62.32
31500	53.59	53.88	54.89	58.15	58.98	59.69
32500	53.76	54.16	55.56	60.82	61.03	57.03
33500	54.80	55.53	56.63	65.93	64.31	55.48
34500	56.49	57.41	58.63	64.47	62.90	53.88
35500	60.31	62.19	59.76	59.24	58.94	52.42
36500	70.57	76.99	61.74	56.03	55.80	51.67
37500	66.92	66.00	64.47	53.65	53.31	51.05
38500	57.95	57.85	62.55	51.47	51.28	50.01
39500	54.29	54.65	61.52	49.60	49.37	49.26
40500	50.78	51.21	59.09	47.81	47.64	48.28
41500	49.09	49.26	56.42	46.77	46.66	47.55
42500	47.77	47.16	53.38	45.95	45.47	46.34
43500	47.65	47.42	53.04	46.32	45.64	46.63

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# USB-1SP2T-A44

## Typical Performance Data

TEST CONDITIONS: @Temperature = 50°C, Pin=8dBm

Frequency (MHz)	Insertion Loss (dB)		VSWR, Active Ports (:1)			VSWR, Internally Terminated Ports (:1)	
	COM-1	COM-2	J1	J2	COM	J1	J2
	100	0.70	0.72	1.08	1.08	1.08	1.05
500	0.85	0.87	1.08	1.09	1.09	1.04	1.04
1000	0.95	0.96	1.10	1.10	1.11	1.03	1.03
1500	1.03	1.04	1.11	1.12	1.14	1.03	1.02
2000	1.09	1.10	1.13	1.13	1.16	1.03	1.03
2500	1.15	1.15	1.14	1.15	1.19	1.03	1.04
3000	1.20	1.18	1.16	1.16	1.22	1.04	1.04
3500	1.25	1.21	1.16	1.18	1.24	1.04	1.05
4000	1.30	1.27	1.16	1.16	1.26	1.05	1.04
4500	1.34	1.32	1.16	1.15	1.24	1.06	1.06
5000	1.36	1.37	1.13	1.12	1.21	1.08	1.07
5500	1.40	1.41	1.09	1.07	1.16	1.10	1.07
6000	1.43	1.43	1.06	1.04	1.11	1.10	1.08
6500	1.45	1.47	1.07	1.06	1.05	1.11	1.09
7000	1.49	1.48	1.12	1.10	1.03	1.12	1.10
7500	1.54	1.53	1.16	1.14	1.04	1.11	1.09
8000	1.58	1.56	1.20	1.18	1.03	1.11	1.08
8500	1.59	1.58	1.21	1.16	1.07	1.10	1.05
9500	1.69	1.66	1.19	1.17	1.13	1.07	1.07
10500	1.78	1.77	1.18	1.23	1.19	1.07	1.13
11500	1.86	1.85	1.20	1.29	1.21	1.11	1.19
12500	1.95	1.96	1.25	1.35	1.21	1.16	1.25
13500	2.03	2.08	1.33	1.44	1.27	1.21	1.31
14500	2.11	2.13	1.32	1.40	1.26	1.21	1.30
15500	2.16	2.14	1.15	1.18	1.19	1.15	1.23
16500	2.25	2.21	1.10	1.04	1.23	1.07	1.13
17500	2.35	2.33	1.17	1.16	1.34	1.07	1.05
18500	2.42	2.40	1.10	1.17	1.35	1.15	1.13
19500	2.56	2.54	1.28	1.36	1.49	1.21	1.17
20500	2.75	2.71	1.45	1.50	1.52	1.21	1.18
21500	2.78	2.71	1.52	1.48	1.45	1.24	1.19
22500	2.76	2.67	1.41	1.34	1.22	1.21	1.16
23500	2.88	2.77	1.43	1.36	1.27	1.18	1.16
24500	3.01	2.84	1.55	1.34	1.37	1.16	1.16
25500	3.12	2.92	1.54	1.26	1.41	1.16	1.18
26500	3.12	3.01	1.42	1.36	1.48	1.21	1.15
27500	3.05	3.08	1.20	1.42	1.46	1.28	1.14
28500	3.09	3.19	1.14	1.42	1.43	1.36	1.14
29500	3.26	3.37	1.39	1.60	1.54	1.38	1.14
30500	3.59	3.59	1.75	1.76	1.71	1.36	1.11
31500	3.90	3.81	1.98	1.85	1.93	1.23	1.08
32500	3.96	3.72	1.89	1.65	1.72	1.13	1.08
33500	3.85	3.59	1.65	1.47	1.49	1.08	1.16
34500	3.82	3.57	1.58	1.52	1.32	1.20	1.20
35500	3.75	3.54	1.43	1.46	1.30	1.35	1.37
36500	3.89	3.72	1.29	1.32	1.39	1.50	1.56
37500	4.02	3.92	1.30	1.21	1.47	1.58	1.74
38500	4.31	4.27	1.51	1.46	1.68	1.61	1.86
39500	4.58	4.66	1.73	1.83	1.79	1.54	1.76
40500	4.80	5.02	1.77	2.07	1.77	1.48	1.66
41500	5.05	5.44	1.73	2.21	1.84	1.52	1.52
42500	5.20	5.51	1.85	2.52	2.12	1.69	1.27
43500	6.26	6.50	2.31	2.40	2.48	1.82	1.25

**Notes**

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- C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCStore/terms.jsp](http://www.minicircuits.com/MCStore/terms.jsp)



# Solid State USB SPDT Switch

# USB-1SP2T-A44

## Typical Performance Data

TEST CONDITIONS: @Temperature = 50°C, Pin=8dBm

Frequency (MHz)	Isolation @ Active states (dB)			Isolation @ Disconnected state (dB)		
	COM-1	COM-2	J1-J2	COM-1	COM-2	J1-J2
100	80.19	88.56	91.49	74.45	82.66	105.87
500	82.50	79.90	84.50	79.81	76.71	93.08
1000	74.35	74.16	78.42	70.69	70.42	87.61
1500	70.94	70.97	75.06	67.20	67.14	84.41
2000	69.08	69.31	73.13	65.45	65.49	81.59
2500	68.16	68.39	72.10	64.26	64.42	79.88
3000	67.44	67.69	71.27	64.14	63.96	77.98
3500	67.32	67.64	71.01	63.75	63.81	76.81
4000	67.00	67.46	70.54	63.69	63.69	75.31
4500	67.15	67.74	70.53	63.35	64.13	74.53
5000	67.34	67.99	70.53	63.84	64.80	73.41
5500	67.53	68.25	70.10	62.83	63.39	72.27
6000	68.02	68.80	70.33	64.61	65.95	71.84
6500	67.70	68.12	70.64	63.55	64.89	71.47
7000	66.55	66.64	70.56	65.52	66.82	70.92
7500	65.22	65.36	71.77	67.23	68.01	72.58
8000	64.39	64.68	72.78	65.92	66.99	76.41
8500	64.39	64.18	74.93	67.00	68.35	78.73
9500	63.74	63.65	72.97	69.20	69.73	79.84
10500	64.37	63.18	72.56	70.40	68.21	75.17
11500	65.38	64.25	68.94	73.12	70.76	74.35
12500	65.79	65.61	67.46	72.03	69.85	75.41
13500	66.13	67.14	66.01	66.93	66.92	76.75
14500	68.71	69.30	63.52	62.80	63.33	78.04
15500	66.01	66.39	62.57	59.41	60.62	84.07
16500	64.08	63.37	60.98	58.44	57.93	80.17
17500	61.54	60.32	59.18	57.45	55.69	76.06
18500	59.20	58.63	59.00	56.05	55.41	74.30
19500	57.33	57.28	58.02	54.15	54.20	73.86
20500	55.18	56.22	57.14	52.05	52.84	70.91
21500	55.38	55.61	56.62	52.57	52.23	72.51
22500	54.12	54.20	55.50	51.90	51.53	70.77
23500	52.67	52.67	54.48	50.54	50.43	68.75
24500	52.20	52.35	53.79	49.70	50.07	64.96
25500	52.55	53.14	53.76	49.46	50.64	63.84
26500	53.70	54.29	53.10	49.94	50.78	62.98
27500	55.02	56.27	53.08	51.76	51.66	63.55
28500	54.36	56.88	53.16	52.88	53.01	63.53
29500	53.48	55.48	53.53	54.43	54.90	63.44
30500	53.79	54.22	54.23	56.04	56.68	62.57
31500	53.58	53.92	55.03	57.97	58.54	59.84
32500	53.91	54.11	55.63	60.45	60.80	57.14
33500	55.11	55.52	56.45	64.71	63.61	55.64
34500	56.51	57.55	58.49	64.40	62.56	53.86
35500	60.45	61.82	59.53	59.43	58.84	52.49
36500	70.12	74.88	61.40	56.17	55.89	51.86
37500	66.87	65.74	64.62	53.68	53.45	51.09
38500	58.24	58.14	62.75	51.45	51.14	49.96
39500	54.58	54.85	61.70	49.60	49.21	49.25
40500	51.05	51.47	59.60	47.96	47.73	48.44
41500	49.56	49.53	57.06	47.05	46.80	47.76
42500	47.97	47.52	54.11	46.40	45.61	46.67
43500	47.97	47.84	53.69	46.70	45.94	46.88

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