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**SPECIFICATION FOR APPROVAL**

CUSTOMER	立創電子
CERTIFIED MODEL/TYPE	NTSA3103
PART NO.	NTSA3103FV039(RoHS)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	DEC.02.2020
REV. NO.	1.1
REV. DATE	AUG.31.2017

FOR CUSTOMER APPROVAL	CHECKED BY
	戶鋒
	APPROVED BY
	朱鳳美

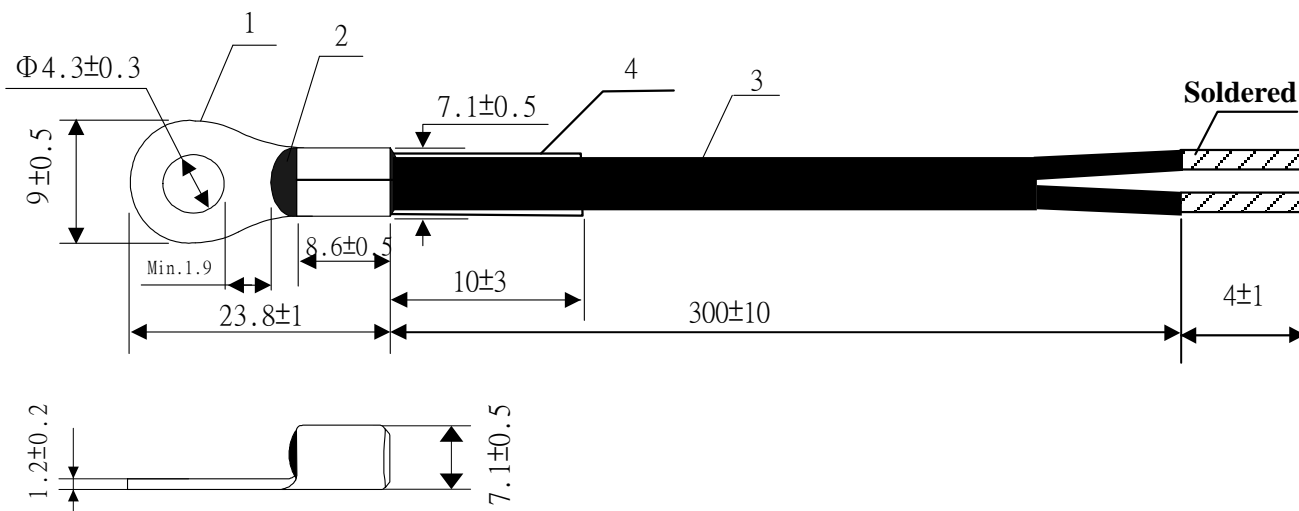


A. Material List

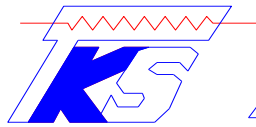
NO.	ITEM	DESCRIPTION
1	THERMINAL	R8-4
2	COATING RESIN	BLACK EPOXY
3	LEAD WIRE	UL4413#24 TS黑色線
4	TUBE	Φ3.0 熱縮套管(黑色)
*	ELEMENT	NTC THERMISTOR

B. Electrical Characteristic

ITEM	VALUE
R25°C	10KΩ±1%
B25/85	3435 K ± 1%



							Customer	立創電子		
							Customer P/N			
							Thinking P/N	NTSA3103FV039		
							Drawing NO.	SA1610025		
							Date	2017/8/31		
1.1	2017/8/31	增加epoxy阻燃等級		曹建暉	戶鋒	朱鳳美	Tol:	±0.3mm	Unit: mm	Scale:
1.0	2016/10/19	新規格制作		曹建暉	戶鋒	盧宜睦	THINKING ELECTRONIC INDUSTRIAL CO.,LTD			
Rev.	Date	Subjects of Change	ECN No	Designed by	Checked by	Approved by				



Specification of NTC Thermistor for Temperature Measurement and Control

PART NO . NTSA3103FV039

CUSTOMER P/N. _____

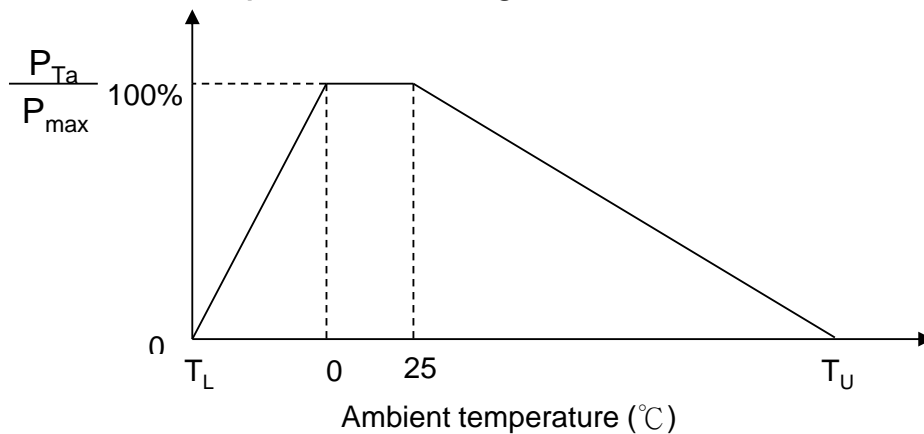
1. Electrical characteristics

	Parameter	Symbol	Test Conditions	Min.	Nor.	Max.	Unit.
a.	Resistance At 25°C	R ₂₅	Ta=25°C ±0.05°C P _T ≤ 0.1mW	9.90	10.0	10.10	K Ω
b.	Resistance At 85°C	R ₈₅	Ta=85°C ±0.05°C P _T ≤ 0.1mW	-----	1.451	-----	K Ω
c.	R ₂₅ /R ₈₅	K	-----	-----	6.890	-----	-----
d.	B Constant	B _{25/85}	(1779.707* LnK)	3401	3435	3469	K
e.	Thermal Dissipation Constant	δ	Ta=25°C	-----	Approx.5	-----	mW/°C
f.	Thermal Time Constant	τ	25°C → 85°C T1=25+(85-25)*63.2%=62.92°C	-----	Approx.20	-----	Sec
g.	Hi-Pot Test	-----	4000V AC 3 sec	-----	-----	0.5	mA

2. Maximum Ratings

	Parameter	Specification	Unit
a.	Operation Temperature Range	-40 ----- +125	°C
b.	Max power Dissipation at 25°C	7	mW

Max. Power Dissipation Derating Curve



Note: T_L = Minimum Temp. of Operating Temp. Range (°C)

T_U = Maximum Temp. of Operating Temp. Range (°C)

3. Reliability Test

Item	Test Conditions	Variable
Temp. cycle test	-40 °C x 30min → +25 °C x 5 min +125°C x 30min → +25 °C x 5 min X 10Cycles	Within ± 3 %
High Temperature Storage	125± 5 °C , 1000 ± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3%
low Temperature Storage	-40 °C ± 5 °C , 1000 ± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3%
Humidity test	40 °C 95 % RH X 1000 HRS	Within ± 3 %

Install and use

1. Use this product within the specified temperature range.
2. Higher temperature may cause deterioration of the characteristics or the material quality of this product.
3. Do not melt the solder in resin head, when you solder this product. If you melt the solder in resin head, it has possibility that the break of wire, short and insulation damage.
4. Do not touch the resin head directly by solder iron. It may cause the melt of solder in resin head.
5. At least away from resin head 10mm above when lead dividing.
6. In case you cut the lead wire of this product less than 10mm from resin head, the heat of melted solder at lead wire edge is propagated easily to the resin head along the lead wire.
7. Radius of lead bending should be more than 1mm when lead bending.
Holding element by side lead wire is recommended when lead wire is bent or cut.
8. Do not apply an excessive force to the lead. Otherwise, it may cause junction between lead and element to break or crack.
9. The ceramic element of this product is fragile, and care must be taken not to load an excessive press-force or not to give a shock at handling. Such forces may cause cracking or chipping.
10. If you mold by resin this product, please evaluate the quality of this product before you use it.

Warehouse Storage Conditions of Products

To keep solderability of product from declining, the following storage condition is recommended.

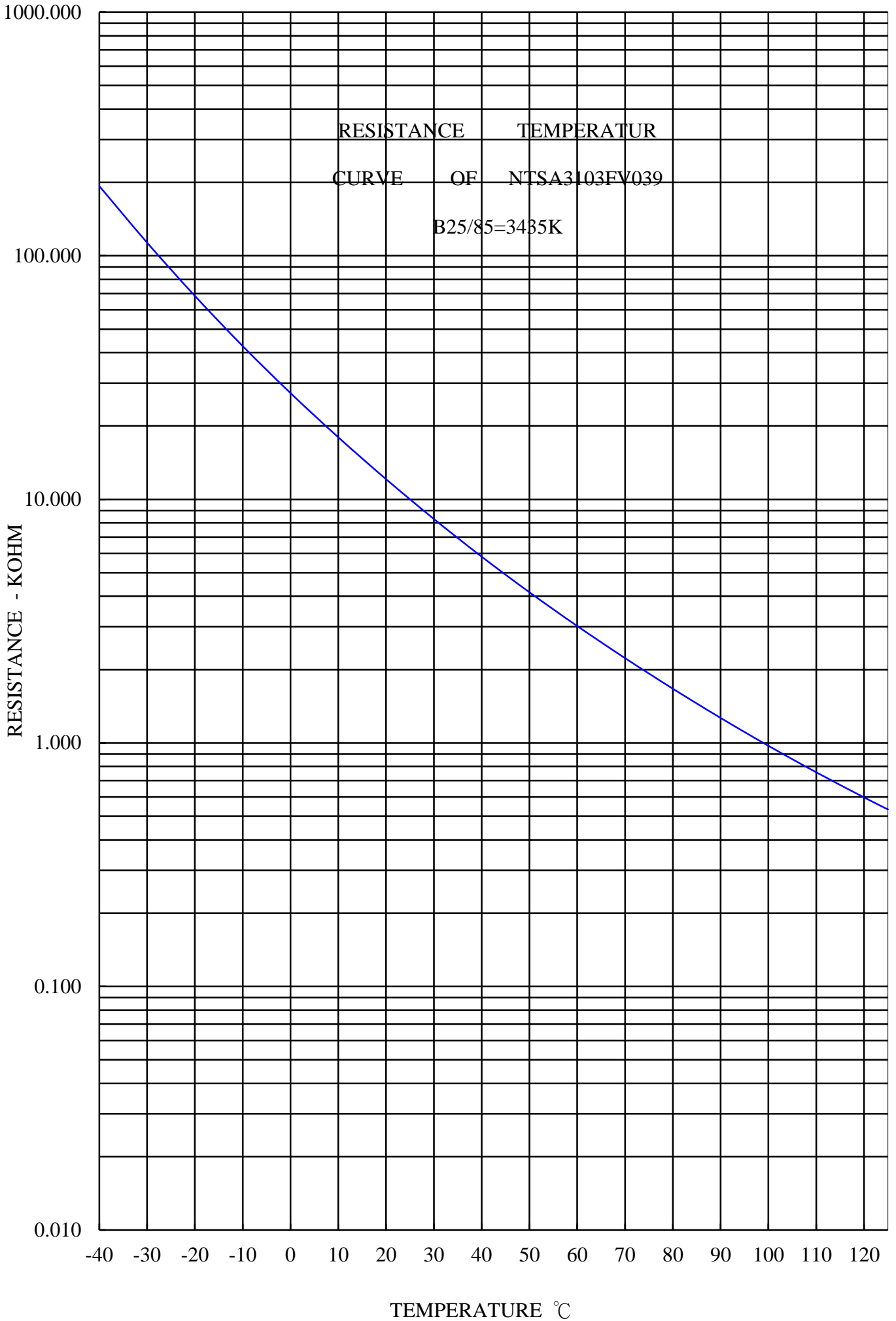
1. Storage condition:
Temperature -10°C to +40°C
Humidity less than 75%RH (not dewing condition)
2. Storage term:
Use this product within 1 year after delivery by first-in and first-out stocking system.
3. Handling after unpacking:
After unpacking, reseal product promptly or store it in a sealed container with a drying agent.
4. Storage place:
Do not store this product in corrosive gas (Sulfuric acid gas, Chlorine gas, etc.) or in direct sunlight.

Warn and note item

This product is designed for application in an ordinary environment (normal room temperature, humidity and atmospheric pressure).

Do not use under the following conditions because all of these factors can deteriorate the product characteristics or cause failures and burn-out.

1. Corrosive gas or deoxidizing gas (Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
2. Volatile or flammable gas
3. Dusty conditions
4. Under vacuum, or under high or low pressure
5. Wet or humid locations; soak in the liquid or wash with liquid
6. Places with salt water, oils, chemical liquids or organic solvents and do not use directly with quick-drying glue.
7. Strong vibrations
8. Other places where similar hazardous conditions exist
9. Be sure to provide an appropriate fail-safe function on your product to prevent secondary damages that may be caused by the abnormal function or the failure of our product.





R - T Table

Part No. : NTSA3103FV039

R25=10KΩ±1%

B25/85 = 3435 K ± 1%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol. (°C)	
-40	201.078	193.278	185.761	-0.71	0.73
-39	190.222	182.944	175.926	-0.70	0.72
-38	180.006	173.213	166.659	-0.70	0.72
-37	170.392	164.051	157.930	-0.69	0.71
-36	161.346	155.425	149.706	-0.69	0.70
-35	152.831	147.302	141.959	-0.68	0.70
-34	144.817	139.652	134.658	-0.68	0.69
-33	137.269	132.444	127.775	-0.67	0.69
-32	130.160	125.650	121.285	-0.66	0.68
-31	123.460	119.245	115.162	-0.66	0.68
-30	117.143	113.202	109.384	-0.65	0.67
-29	111.185	107.501	103.928	-0.65	0.66
-28	105.563	102.118	98.7744	-0.64	0.66
-27	100.256	97.0334	93.9047	-0.63	0.65
-26	95.2449	92.2299	89.3014	-0.63	0.65
-25	90.5107	87.6898	84.9483	-0.62	0.64
-24	86.0369	83.3973	80.8306	-0.61	0.63
-23	81.8080	79.3377	76.9343	-0.61	0.63
-22	77.8094	75.4973	73.2466	-0.60	0.62
-21	74.0277	71.8634	69.7554	-0.60	0.61
-20	70.4501	68.4240	66.4494	-0.59	0.61
-19	67.0650	65.1680	63.3183	-0.58	0.60
-18	63.8613	62.0850	60.3520	-0.58	0.59
-17	60.8286	59.1652	57.5414	-0.57	0.59
-16	57.9573	56.3993	54.8778	-0.56	0.58
-15	55.2381	53.7788	52.3528	-0.56	0.57
-14	52.6624	51.2954	49.9589	-0.55	0.57
-13	50.2221	48.9415	47.6887	-0.54	0.56
-12	47.9096	46.7097	45.5353	-0.54	0.55
-11	45.7175	44.5932	43.4922	-0.53	0.55
-10	43.6392	42.5856	41.5533	-0.52	0.54
-9	41.6680	40.6806	39.7126	-0.52	0.54
-8	39.7980	38.8726	37.9649	-0.51	0.53
-7	38.0234	37.1560	36.3048	-0.51	0.52
-6	36.3389	35.5258	34.7276	-0.50	0.52
-5	34.7392	33.9771	33.2285	-0.49	0.51
-4	33.2197	32.5054	31.8032	-0.49	0.50
-3	31.7759	31.1062	30.4477	-0.48	0.49
-2	30.4034	29.7757	29.1580	-0.47	0.49
-1	29.0983	28.5099	27.9306	-0.46	0.48
0	27.8568	27.3053	26.7621	-0.46	0.47
1	26.6755	26.1586	25.6492	-0.45	0.47
2	25.5509	25.0666	24.5889	-0.44	0.46
3	24.4801	24.0262	23.5784	-0.44	0.45

4	23.4601	23.0348	22.6149	-0.43	0.44
5	22.4881	22.0896	21.6961	-0.42	0.44
6	21.5615	21.1883	20.8195	-0.41	0.43
7	20.6780	20.3286	19.9830	-0.41	0.42
8	19.8354	19.5082	19.1845	-0.40	0.41
9	19.0313	18.7251	18.4219	-0.39	0.41
10	18.2640	17.9774	17.6935	-0.38	0.40
11	17.5314	17.2633	16.9976	-0.38	0.39
12	16.8318	16.5811	16.3325	-0.37	0.38
13	16.1636	15.9292	15.6967	-0.36	0.37
14	15.5251	15.3061	15.0887	-0.35	0.37
15	14.9150	14.7104	14.5072	-0.34	0.36
16	14.3318	14.1408	13.9510	-0.34	0.35
17	13.7742	13.5960	13.4187	-0.33	0.34
18	13.2410	13.0748	12.9094	-0.32	0.33
19	12.7309	12.5760	12.4218	-0.31	0.32
20	12.2430	12.0987	11.9549	-0.30	0.31
21	11.7761	11.6418	11.5079	-0.29	0.31
22	11.3293	11.2044	11.0797	-0.29	0.30
23	10.9016	10.7855	10.6695	-0.28	0.29
24	10.4921	10.3843	10.2766	-0.27	0.28
25	10.1000	10.0000	9.90000	-0.26	0.27
26	9.73179	9.63182	9.53193	-0.27	0.28
27	9.37884	9.27903	9.17937	-0.28	0.29
28	9.04045	8.94092	8.84161	-0.29	0.31
29	8.71597	8.61684	8.51798	-0.31	0.32
30	8.40478	8.30614	8.20783	-0.32	0.33
31	8.10630	8.00823	7.91056	-0.33	0.34
32	7.81994	7.72253	7.62557	-0.34	0.35
33	7.54518	7.44850	7.35233	-0.35	0.37
34	7.28150	7.18562	7.09029	-0.36	0.38
35	7.02842	6.93339	6.83896	-0.38	0.39
36	6.78546	6.69134	6.59786	-0.39	0.40
37	6.55218	6.45901	6.36653	-0.40	0.41
38	6.32816	6.23598	6.14454	-0.41	0.43
39	6.11298	6.02184	5.93146	-0.43	0.44
40	5.90627	5.81618	5.72690	-0.44	0.45
41	5.70765	5.61865	5.53049	-0.45	0.46
42	5.51677	5.42888	5.34186	-0.46	0.48
43	5.33329	5.24653	5.16067	-0.48	0.49
44	5.15689	5.07128	4.98660	-0.49	0.50
45	4.98727	4.90282	4.81932	-0.50	0.52
46	4.82413	4.74085	4.65854	-0.51	0.53
47	4.66719	4.58509	4.50398	-0.53	0.54
48	4.51619	4.43527	4.35536	-0.54	0.55
49	4.37087	4.29113	4.21243	-0.55	0.57
50	4.23098	4.15243	4.07494	-0.57	0.58
51	4.09630	4.01894	3.94265	-0.58	0.59
52	3.96661	3.89044	3.81534	-0.59	0.61
53	3.84170	3.76670	3.69280	-0.61	0.62
54	3.72135	3.64753	3.57482	-0.62	0.63
55	3.60539	3.53274	3.46121	-0.63	0.65
56	3.49362	3.42214	3.35178	-0.65	0.66

57	3.38588	3.31556	3.24636	-0.66	0.67
58	3.28200	3.21282	3.14478	-0.67	0.69
59	3.18182	3.11377	3.04688	-0.69	0.70
60	3.08518	3.01826	2.95250	-0.70	0.71
61	2.99195	2.92614	2.86150	-0.71	0.73
62	2.90198	2.83728	2.77374	-0.73	0.74
63	2.81514	2.75153	2.68909	-0.74	0.75
64	2.73131	2.66878	2.60742	-0.76	0.77
65	2.65037	2.58891	2.52862	-0.77	0.78
66	2.57220	2.51179	2.45256	-0.78	0.80
67	2.49670	2.43733	2.37913	-0.80	0.81
68	2.42376	2.36542	2.30825	-0.81	0.82
69	2.35328	2.29595	2.23979	-0.83	0.84
70	2.28517	2.22884	2.17367	-0.84	0.85
71	2.21934	2.16398	2.10980	-0.85	0.86
72	2.15569	2.10131	2.04809	-0.87	0.88
73	2.09415	2.04072	1.98846	-0.88	0.89
74	2.03464	1.98215	1.93083	-0.90	0.91
75	1.97708	1.92552	1.87512	-0.91	0.92
76	1.92140	1.87076	1.82126	-0.92	0.93
77	1.86753	1.81779	1.76919	-0.94	0.95
78	1.81541	1.76655	1.71883	-0.95	0.96
79	1.76497	1.71698	1.67012	-0.97	0.98
80	1.71615	1.66901	1.62300	-0.98	0.99
81	1.66890	1.62260	1.57742	-1.00	1.01
82	1.62315	1.57767	1.53332	-1.01	1.02
83	1.57886	1.53419	1.49064	-1.03	1.03
84	1.53596	1.49210	1.44934	-1.04	1.05
85	1.49443	1.45135	1.40937	-1.06	1.06
86	1.45420	1.41189	1.37067	-1.07	1.08
87	1.41523	1.37368	1.33321	-1.09	1.09
88	1.37748	1.33667	1.29694	-1.10	1.11
89	1.34090	1.30082	1.26182	-1.12	1.12
90	1.30547	1.26610	1.22780	-1.13	1.14
91	1.27113	1.23247	1.19486	-1.15	1.15
92	1.23785	1.19988	1.16296	-1.17	1.17
93	1.20559	1.16830	1.13205	-1.18	1.18
94	1.17433	1.13770	1.10211	-1.20	1.20
95	1.14402	1.10805	1.07310	-1.21	1.22
96	1.11464	1.07930	1.04499	-1.23	1.23
97	1.08615	1.05144	1.01775	-1.25	1.25
98	1.05853	1.02444	0.99135	-1.26	1.26
99	1.03174	0.99825	0.96576	-1.28	1.28
100	1.00576	0.97287	0.94096	-1.30	1.30
101	0.98056	0.94825	0.91691	-1.31	1.31
102	0.95612	0.92438	0.89360	-1.33	1.33
103	0.93241	0.90123	0.87100	-1.35	1.35
104	0.90941	0.87877	0.84908	-1.36	1.36
105	0.88709	0.85699	0.82783	-1.38	1.38
106	0.86543	0.83586	0.80721	-1.40	1.40
107	0.84441	0.81535	0.78722	-1.42	1.41
108	0.82401	0.79546	0.76782	-1.44	1.43
109	0.80421	0.77615	0.74900	-1.45	1.45
110	0.78499	0.75741	0.73074	-1.47	1.47
111	0.76632	0.73923	0.71302	-1.49	1.48

112	0.74820	0.72157	0.69582	-1.51	1.50
113	0.73060	0.70443	0.67913	-1.53	1.52
114	0.71351	0.68778	0.66292	-1.55	1.54
115	0.69690	0.67162	0.64719	-1.56	1.56
116	0.68077	0.65592	0.63191	-1.58	1.57
117	0.66510	0.64067	0.61707	-1.60	1.59
118	0.64987	0.62585	0.60266	-1.62	1.61
119	0.63507	0.61145	0.58866	-1.64	1.63
120	0.62068	0.59746	0.57505	-1.66	1.65
121	0.60669	0.58386	0.56183	-1.68	1.67
122	0.59309	0.57064	0.54899	-1.70	1.68
123	0.57986	0.55779	0.53650	-1.72	1.70
124	0.56700	0.54529	0.52436	-1.74	1.72
125	0.55448	0.53313	0.51255	-1.76	1.74

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