

NPN EPITAXIAL SILICON TRANSISTOR
FOR HIGH-FREQUENCY LOW-NOISE AMPLIFICATION

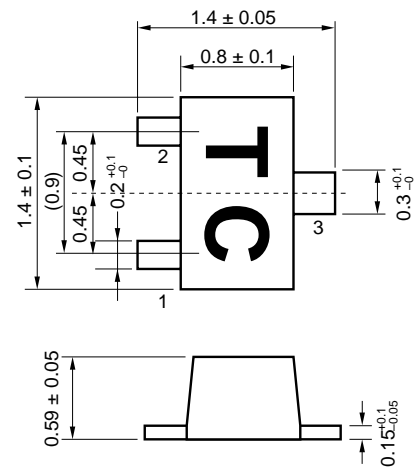
FEATURE

- Ultra super mini-mold thin flat package
(1.4 mm × 0.8 mm × 0.59 mm: TYP.)
- Contains same chip as 2SC5006

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

PARAMETER	SYMBOL	RATING	UNIT
Collector to Base Voltage	V _{CB0}	20	V
Collector to Emitter Voltage	V _{CEO}	12	V
Emitter to Base Voltage	V _{EBO}	3	V
Collector Current	I _C	100	mA
Total Power Dissipation	P _T	125	mW
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-65 to +150	°C

PACKAGE DIMENSIONS (in mm)



PIN CONNECTIONS

- 1: Emitter
- 2: Base
- 3: Collector

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I _{CBO}	V _{CB} = 10 V, I _E = 0			1000	nA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 1 V, I _C = 0			1000	nA
DC Current Gain	h _{FE}	V _{CE} = 3 V, I _C = 7 mA ^{Note 1}	80		145	
Gain Bandwidth Product	f _T	V _{CE} = 3 V, I _C = 7 mA, f = 1 GHz	3.0	4.5		GHz
Reverse Transfer Capacitance	C _{re}	V _{CB} = 3 V, I _E = 0, f = 1 MHz ^{Note 2}		0.7	1.5	pF
Insertion Power Gain	S _{21e} ²	V _{CE} = 3 V, I _C = 7 mA, f = 1 GHz	7.0	10.0		dB
Noise Figure	NF	V _{CE} = 3 V, I _C = 7 mA, f = 1 GHz		1.4	2.5	dB

Notes 1. Pulse measurement P_w ≤ 350 μs, duty cycle ≤ 2 %

2. Collector to base capacitance measured by capacitance meter (automatic balance bridge method) when emitter pin is connected to the guard pin.

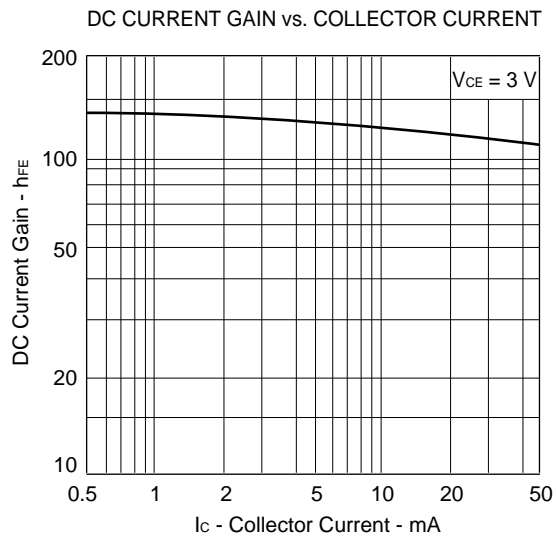
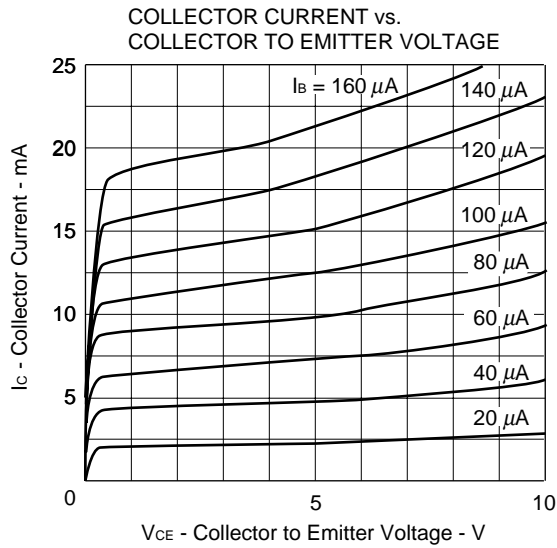
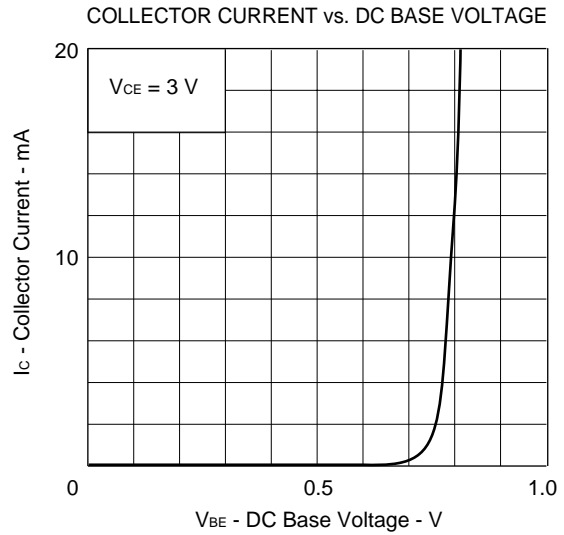
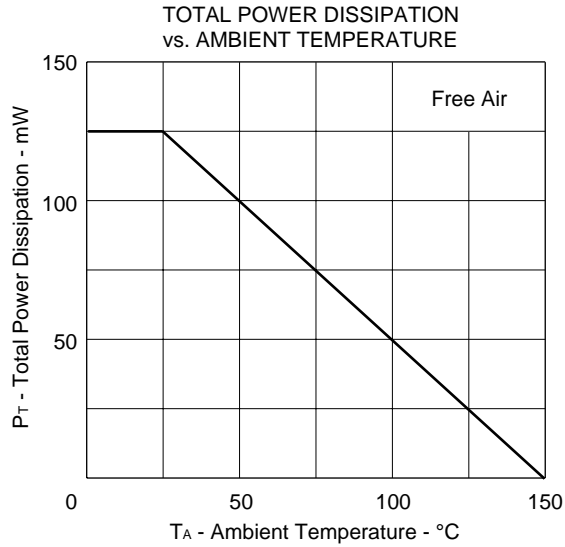
Because this product uses high-frequency process, avoid excessive input of static electricity, etc.

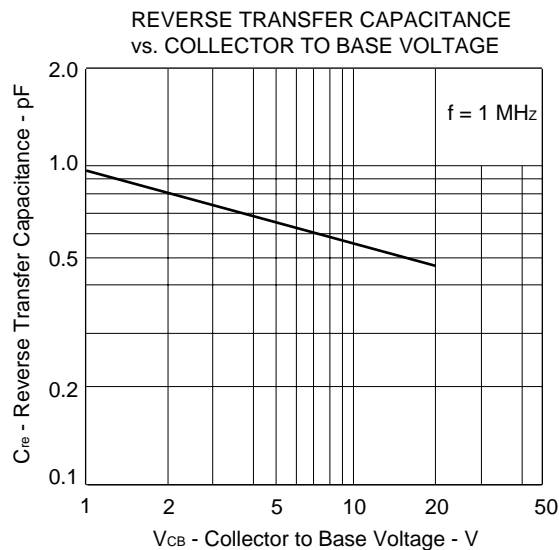
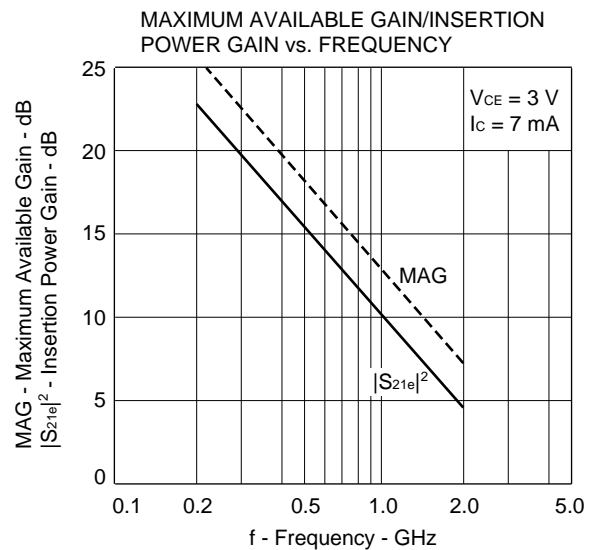
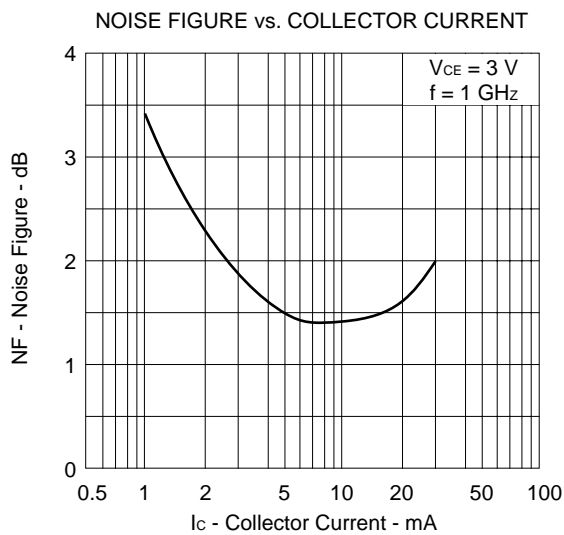
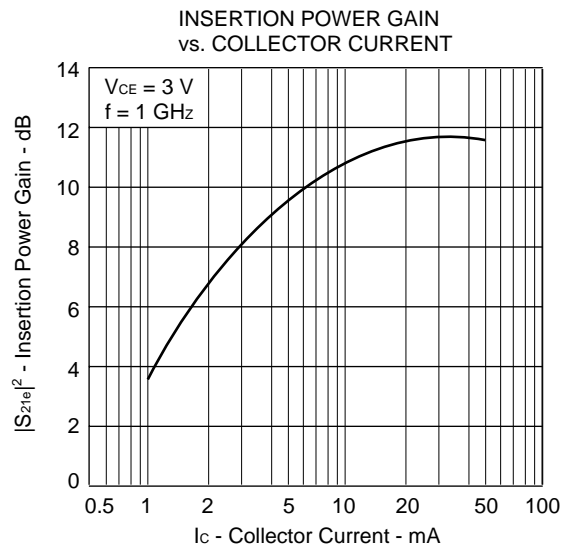
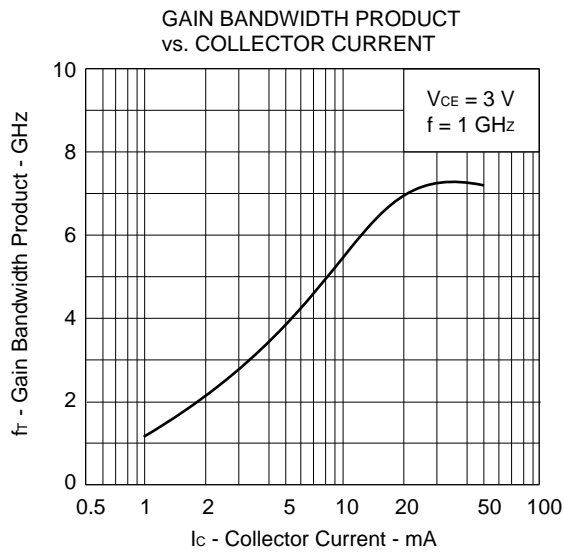
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h_{FE} CLASSIFICATION

RANK	EB	FB
Marking	TC	TD
h _{FE}	80 to 110	100 to 145

TYPICAL CHARACTERISTICS (T_A = 25 °C)





2SC5432 S PARAMETER

V_{CE} = 3.0 V, I_c = 10.0 mA, Z₀ = 50 Ω

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.575	-108.7	14.215	118.3	0.048	48.3	0.524	-55.9
400.00	0.548	-145.7	8.064	98.2	0.062	45.8	0.295	-73.7
600.00	0.540	-161.8	5.617	87.4	0.075	49.0	0.213	-84.1
800.00	0.539	-173.0	4.354	81.5	0.087	53.0	0.173	-90.5
1000.00	0.554	179.0	3.577	76.4	0.101	55.6	0.148	-97.4
1200.00	0.574	174.1	3.038	70.8	0.117	57.3	0.132	-105.9
1400.00	0.574	170.8	2.610	65.9	0.133	58.8	0.128	-115.7
1600.00	0.565	165.8	2.306	62.4	0.148	60.3	0.128	-124.7
1800.00	0.573	159.7	2.021	58.6	0.160	61.6	0.131	-134.0
2000.00	0.598	155.4	1.802	54.8	0.172	60.7	0.137	-144.8
2200.00	0.615	152.6	1.643	49.7	0.186	59.3	0.154	-154.6
2400.00	0.628	150.0	1.553	45.8	0.204	58.4	0.176	-160.5
2600.00	0.639	147.3	1.460	43.9	0.223	58.3	0.195	-164.7
2800.00	0.655	144.8	1.331	41.4	0.236	58.7	0.214	-168.6
3000.00	0.671	143.5	1.237	36.9	0.243	58.1	0.233	-172.8

V_{CE} = 3.0 V, I_c = 7.0 mA, Z₀ = 50 Ω

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.630	-95.3	12.557	123.1	0.055	47.9	0.609	-47.7
400.00	0.576	-136.3	7.443	101.8	0.071	41.3	0.359	-64.2
600.00	0.561	-155	5.246	89.3	0.082	42.8	0.264	-72.8
800.00	0.554	-167.6	4.082	82.7	0.091	46.0	0.218	-77.8
1000.00	0.565	-176.8	3.362	77.2	0.103	49.4	0.187	-81.9
1200.00	0.586	177.4	2.865	71.2	0.115	51.8	0.166	-87.6
1400.00	0.588	173.6	2.459	66.0	0.130	54.6	0.154	-95.8
1600.00	0.577	168.2	2.176	62.2	0.142	56.9	0.150	-104.6
1800.00	0.583	161.8	1.908	58.2	0.152	58.9	0.149	-113.3
2000.00	0.607	157.1	1.700	54.2	0.163	58.5	0.150	-123.7
2200.00	0.625	154.1	1.551	48.8	0.178	57.8	0.161	-134.8
2400.00	0.639	151.3	1.468	44.7	0.194	57.4	0.181	-143.4
2600.00	0.649	148.5	1.382	42.7	0.214	57.8	0.199	-148.6
2800.00	0.665	145.8	1.256	40.1	0.227	58.5	0.219	-153.9
3000.00	0.681	144.3	1.171	35.5	0.235	58.6	0.236	-159.5

V_{CE} = 3.0 V, I_c = 5.0 mA, Z₀ = 50 Ω

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.693	-81.4	10.462	129.2	0.063	50.6	0.699	-39.3
400.00	0.610	-125.1	6.572	105.9	0.083	39.0	0.442	-54.7
600.00	0.588	-146.4	4.723	92.0	0.093	37.7	0.334	-62.8
800.00	0.575	-160.7	3.713	84.4	0.098	38.5	0.284	-67.1
1000.00	0.582	-171.3	3.072	78.2	0.106	41.1	0.250	-69.7
1200.00	0.600	-178.3	2.566	71.8	0.116	43.9	0.226	-73.2
1400.00	0.603	177.2	2.253	65.9	0.127	47.9	0.209	-79.7
1600.00	0.590	171.4	1.997	61.8	0.135	51.6	0.199	-86.9
1800.00	0.594	164.4	1.754	57.5	0.144	54.6	0.195	-94.5
2000.00	0.619	159.2	1.563	53.1	0.153	55.4	0.192	-103.2
2200.00	0.638	155.9	1.430	47.6	0.167	55.7	0.194	-114.4
2400.00	0.651	152.8	1.352	43.4	0.182	56.3	0.211	-124.6
2600.00	0.660	149.8	1.268	41.3	0.201	57.3	0.231	-131.6
2800.00	0.677	147.0	1.149	38.5	0.214	58.8	0.249	-137.8
3000.00	0.694	145.3	1.071	33.6	0.222	59.1	0.264	-144.5

2SC5432 S PARAMETER

V_{CE} = 3.0 V, I_c = 3.0 mA, Z₀ = 50 Ω

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.782	-65.7	7.726	136.8	0.073	54.2	0.804	-29.6
400.00	0.669	-109.9	5.283	111.9	0.101	38.4	0.563	-43.8
600.00	0.639	-134.2	3.921	95.9	0.111	32.3	0.445	-52.1
800.00	0.616	-150.6	3.139	87.0	0.113	30.0	0.392	-56.7
1000.00	0.614	-163.0	2.608	79.9	0.118	30.2	0.358	-59.1
1200.00	0.629	-171.7	2.194	72.4	0.122	32.5	0.331	-61.7
1400.00	0.633	-177.4	1.930	65.7	0.126	37.3	0.309	-66.8
1600.00	0.617	176.2	1.716	61.1	0.128	42.2	0.296	-73.3
1800.00	0.618	168.4	1.514	56.2	0.132	46.7	0.289	-79.9
2000.00	0.642	162.5	1.349	51.7	0.137	49.0	0.285	-87.4
2200.00	0.663	158.6	1.234	45.8	0.148	51.7	0.280	-97.0
2400.00	0.676	155.2	1.167	41.4	0.162	54.2	0.292	-107.5
2600.00	0.684	151.9	1.091	39.2	0.180	56.7	0.314	-115.4
2800.00	0.698	148.7	0.985	36.2	0.195	59.3	0.330	-122.1
3000.00	0.716	146.7	0.920	31.1	0.205	60.7	0.341	-129.2

V_{CE} = 3.0 V, I_c = 1.0 mA, Z₀ = 50 Ω

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.914	-43.7	3.280	148.3	0.086	62.7	0.936	-15.4
400.00	0.795	-82.1	2.575	123.7	0.139	43.0	0.792	-26.4
600.00	0.769	-109.7	2.086	104.4	0.161	30.5	0.689	-35.5
800.00	0.731	-128.9	1.783	91.7	0.164	21.2	0.648	-42.3
1000.00	0.711	-144.3	1.498	81.7	0.166	14.9	0.630	-46.3
1200.00	0.715	-156.5	1.286	72.2	0.162	12.3	0.603	-49.8
1400.00	0.721	-164.7	1.146	63.6	0.148	13.5	0.578	-54.9
1600.00	0.700	-172.6	1.029	57.8	0.134	15.4	0.559	-61.5
1800.00	0.690	177.9	0.913	52.0	0.117	19.5	0.557	-68.5
2000.00	0.711	170.1	0.817	46.8	0.107	25.1	0.552	-75.6
2200.00	0.735	164.8	0.741	40.6	0.106	35.2	0.538	-84.3
2400.00	0.746	160.3	0.702	36.4	0.110	46.3	0.547	-94.8
2600.00	0.751	156.2	0.654	34.8	0.127	55.4	0.575	-103.4
2800.00	0.763	152.2	0.587	32.3	0.146	63.2	0.589	-110.3
3000.00	0.777	149.2	0.552	28.5	0.164	67.4	0.588	-118.0

V_{CE} = 1.0 V, I_c = 5.0 mA, Z₀ = 50 Ω

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.678	-95.9	9.388	123.0	0.082	44.1	0.611	-54.6
400.00	0.630	-137.1	5.585	100.5	0.100	34.1	0.363	-78.9
600.00	0.615	-155.7	3.937	87.4	0.109	33.2	0.274	-93.7
800.00	0.609	-168.4	3.084	80.3	0.115	34.5	0.228	-103.2
1000.00	0.620	-177.6	2.528	74.3	0.124	36.8	0.203	-112.2
1200.00	0.641	176.7	2.121	67.5	0.135	39.3	0.192	-121.5
1400.00	0.640	172.7	1.868	61.6	0.147	43.0	0.194	-129.8
1600.00	0.626	167.2	1.656	57.6	0.157	46.4	0.199	-136.6
1800.00	0.632	160.6	1.451	53.2	0.164	48.6	0.203	-144.2
2000.00	0.657	155.8	1.300	48.9	0.173	49.0	0.214	-152.4
2200.00	0.673	152.8	1.192	43.4	0.187	48.9	0.238	-160.2
2400.00	0.685	149.8	1.128	39.5	0.203	49.5	0.265	-164.8
2600.00	0.693	146.9	1.055	37.7	0.222	50.5	0.289	-168.2
2800.00	0.708	144.3	0.960	35.0	0.232	51.6	0.311	-172.0
3000.00	0.722	142.8	0.895	30.3	0.240	51.6	0.331	-176.2

2SC5432 S PARAMETER

$V_{CE} = 1.0\text{ V}$, $I_c = 3.0\text{ mA}$, $Z_0 = 50\ \Omega$

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.754	-77.4	7.160	130.9	0.097	48.5	0.729	-40.9
400.00	0.668	-121.7	4.630	106.0	0.126	32.9	0.469	-61.1
600.00	0.644	-143.9	3.356	90.7	0.134	27.4	0.359	-73.2
800.00	0.630	-158.8	2.664	82.0	0.136	25.4	0.306	-80.5
1000.00	0.634	-169.7	2.194	74.8	0.140	25.3	0.271	-86.0
1200.00	0.653	-177.1	1.850	67.1	0.145	27.6	0.250	-92.7
1400.00	0.656	178.0	1.633	60.6	0.148	31.6	0.242	-100.8
1600.00	0.640	172.0	1.448	56.1	0.151	36.1	0.241	-108.6
1800.00	0.643	164.6	1.275	51.3	0.153	39.6	0.245	-116.1
2000.00	0.667	159.3	1.139	46.5	0.158	41.4	0.248	-125.3
2200.00	0.686	155.7	1.048	40.8	0.169	43.4	0.265	-135.7
2400.00	0.698	152.5	0.988	36.7	0.181	45.9	0.295	-143.4
2600.00	0.706	149.3	0.923	34.8	0.199	48.4	0.322	-148.5
2800.00	0.721	146.4	0.833	32.1	0.211	50.5	0.346	-153.8
3000.00	0.737	144.5	0.779	27.2	0.220	51.6	0.365	-159.7

$V_{CE} = 1.0\text{ V}$, $I_c = 1.0\text{ mA}$, $Z_0 = 50\ \Omega$

FREQUENCY MHz	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
200.00	0.893	-49.6	3.192	143.8	0.119	59.2	0.903	-21.2
400.00	0.773	-90.6	2.404	117.2	0.180	37.9	0.720	-35.3
600.00	0.745	-117.4	1.906	97.3	0.203	25.0	0.610	-46.5
800.00	0.711	-135.9	1.603	84.7	0.205	15.4	0.564	-54.0
1000.00	0.698	-150.3	1.331	74.2	0.206	9.1	0.537	-58.9
1200.00	0.708	-161.3	1.148	64.2	0.199	6.5	0.511	-63.9
1400.00	0.716	-168.6	1.025	55.8	0.183	6.9	0.492	-71.0
1600.00	0.696	-176.0	0.916	50.0	0.165	7.9	0.483	-79.0
1800.00	0.690	175.0	0.809	44.2	0.145	10.1	0.486	-86.7
2000.00	0.714	167.7	0.719	39.0	0.131	13.9	0.482	-95.1
2200.00	0.738	162.9	0.657	33.0	0.125	22.2	0.482	-106.0
2400.00	0.750	158.7	0.619	29.3	0.126	32.3	0.508	-116.7
2600.00	0.758	154.7	0.572	28.1	0.137	42.3	0.541	-124.7
2800.00	0.770	150.9	0.513	26.2	0.152	50.5	0.559	-131.8
3000.00	0.785	148.0	0.483	23.0	0.167	55.1	0.566	-139.6

[MEMO]

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