Surface Mount

Dual Matched MMIC Amplifiers

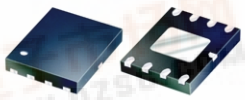
NEW!

MERA-556

50Ω High Dynamic Range DC to 2.2 GHz

Features

- Two matched amplifiers in one package
- InGaP HBT IF and RF amplifier
- frequency range, DC to 2.2 GHz, usable to 4 GHz
- high gain, 20.5 dB typ. at 100 MHz
- up to +18 dBm typ. output power at 100 MHz
- high IP3, +35 dBm at 100 MHz
- low noise figure, 3.5 dB typ.
- low thermal resistance
- transient protected
- patent pending
- useable as balanced and push pull amplifier



CASE STYLE: DL1020
PRICE: $ 3.40 ea. QTY (25)

Applications

- cellular
- catv
- VHF & UHF communication receivers & transmitters

Electrical Specifications @25°C

Freq.* (GHz)	Gain, dB Typical A1, A2						Maximum Power (dBm)					Dynamic Range				VSWR (:1) Typ.		Maximum Rating**		DC Operating Power Pin 5, Pin 8				Thermal Resistance	matching[1]			
	over frequency, GHz						Output (1 dB Comp.) Typ.				Input	NF	IP3 (dBm) Typ.												Amplitude Unbalance between 2 amps (dB)		Phase Unbalance between 2 amps (deg.)	
f_L-f_U	0.1	1	2	3	4	Min.@ 2GHz	0.1 GHz	1.0 GHz	2.0 GHz	Min.@ 1 GHz	(no dmg.)	(dB) Typ.	0.1 GHz	0.5 GHz	1.0 GHz	In	Out	I mA	P mW	Current (mA)	Volt Typ	Volt Min	Volt Max	θjc, typ. °C/W	DC-2.2 GHz Typ. Max.	2.2-4 GHz Typ. Max.	DC-2.2 GHz Typ.	2.2-4 GHz Typ.
DC-2.2	20.5	20.2	19	16.7	13	16	18	17.6	16.6	16.5	13	3.5	35	35.5	34	1.2	1.4	120	650	65	4.9	4.2	5.5	133	0.1 0.3	0.1 —	0.6	1.5

* Guaranteed specification DC-2.2GHz. Low frequency cutoff determined by external coupling capacitors.

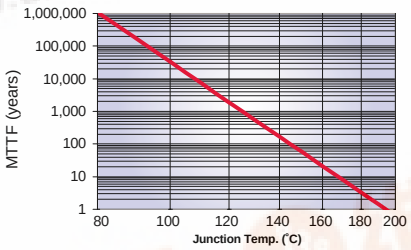
** Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation. Reliability predictions and normal operating conditions are applicable at current specified.

1. For test method, see application note AN-60-032

Pin Connections

PORT	
RF IN 1	1
RF OUT 1	8
RF IN 2	4
RF OUT 2	5
DC 1	8
DC 2	5
GROUND	2,3,6,7 and paddle

MTTF vs. Junction Temp.

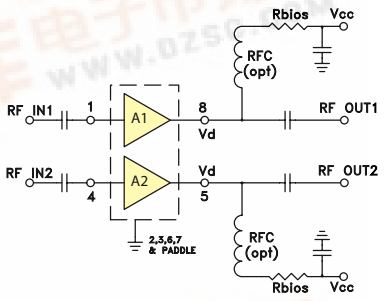


Maximum Ratings[2]

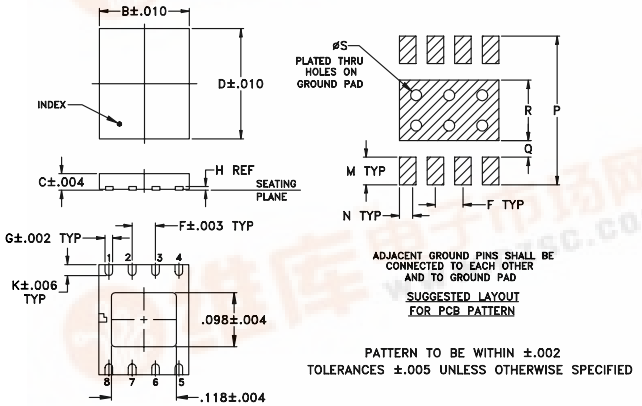
Operating Case Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C

2. See application note AN-60-032 for adequate heat sinking of paddle.

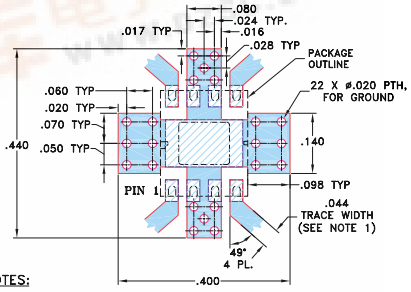
typical biasing configuration



Outline Drawing



Demo Board MCL P/N: TB-293
Suggested PCB Layout (PL-164)



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS .020 ± .0015. COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	wt.
—	.193	.035	.236	—	.050	.017	.008	—	.024	—	.050	.030	.270	.030	.110	.020	grams
—	4.90	0.90	6.00	—	1.27	0.43	0.20	—	0.60	—	1.27	0.76	6.86	0.76	2.79	0.51	.08

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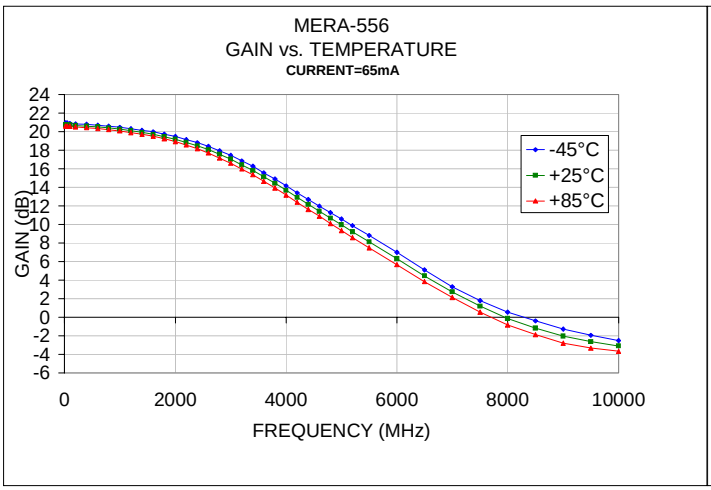
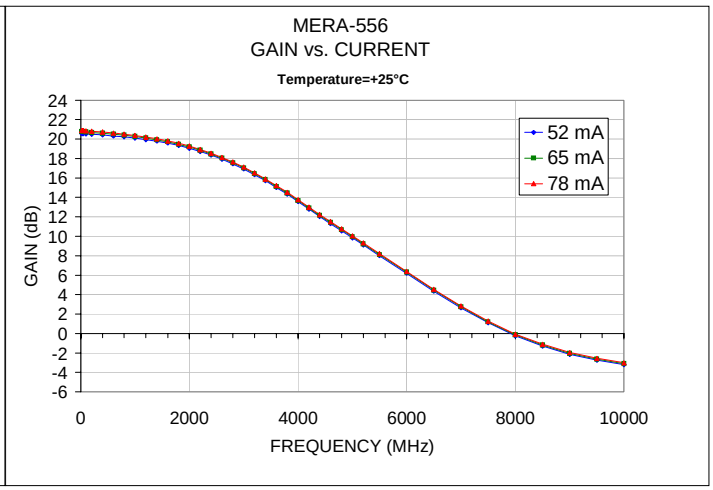
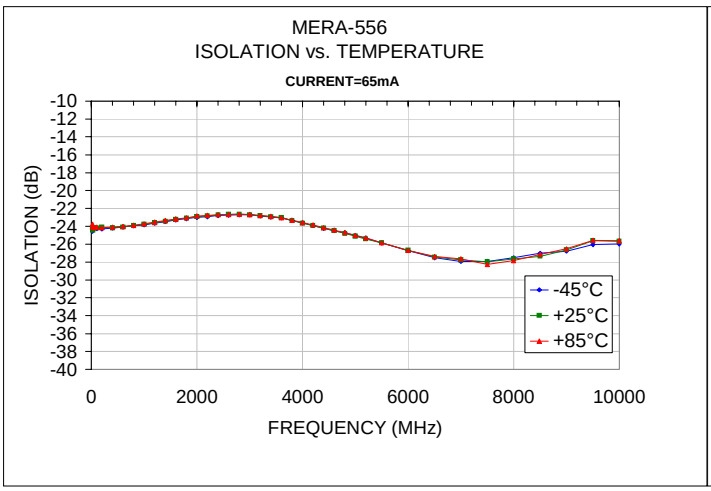
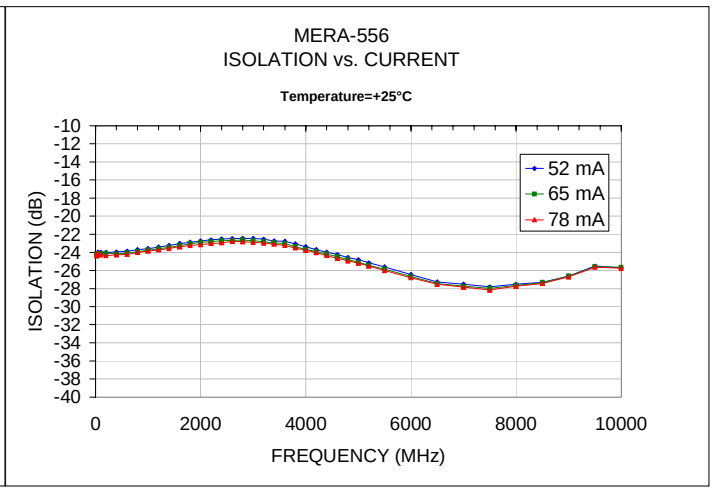
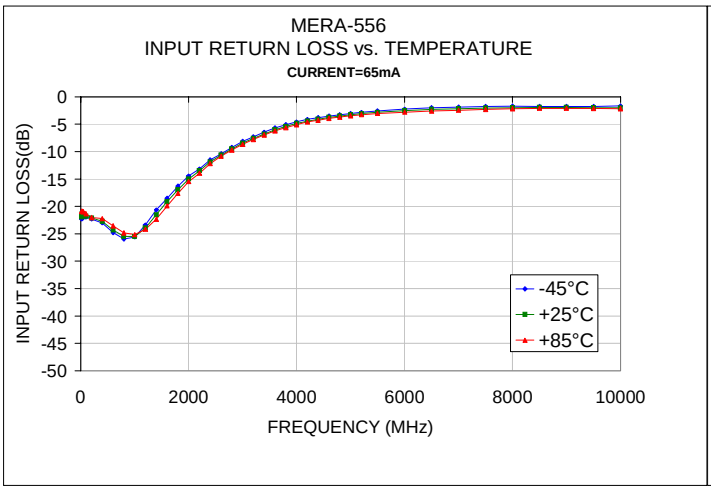
REV. OR
M94145
MERA-556
ED-11699/6

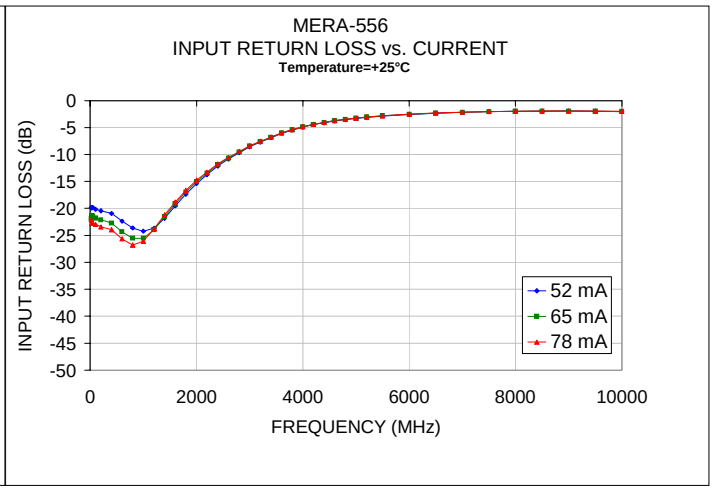

MERA-556
GAIN vs. TEMPERATURE
CURRENT=65mA
GAIN (dB)
FREQUENCY (MHz)
-45°C
+25°C
+85°C


MERA-556
GAIN vs. CURRENT
Temperature=+25°C
GAIN (dB)
FREQUENCY (MHz)
52 mA
65 mA
78 mA

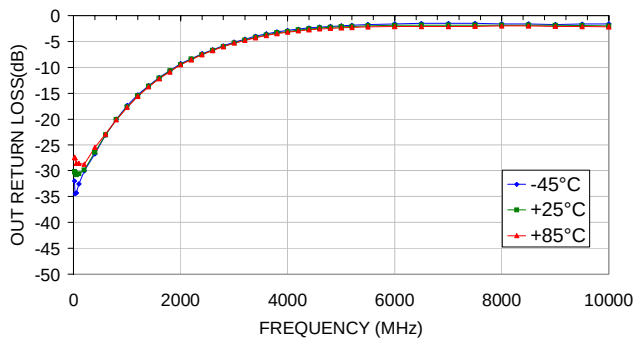

MERA-556
ISOLATION vs. TEMPERATURE
CURRENT=65mA
ISOLATION (dB)
FREQUENCY (MHz)
-45°C
+25°C
+85°C


MERA-556
ISOLATION vs. CURRENT
Temperature=+25°C
ISOLATION (dB)
FREQUENCY (MHz)
52 mA
65 mA
78 mA

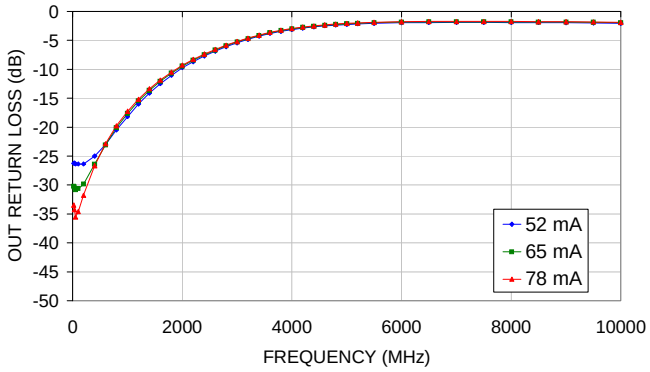

MERA-556
INPUT RETURN LOSS vs. TEMPERATURE
CURRENT=65mA
INPUT RETURN LOSS(dB)
FREQUENCY (MHz)
-45°C
+25°C
+85°C


MERA-556
INPUT RETURN LOSS vs. CURRENT
Temperature=+25°C
INPUT RETURN LOSS (dB)
FREQUENCY (MHz)
52 mA
65 mA
78 mA

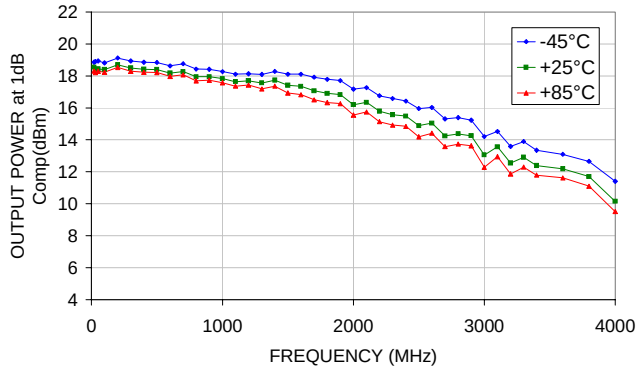
MERA-556
OUT RETURN LOSS vs. TEMPERATURE
CURRENT=65mA



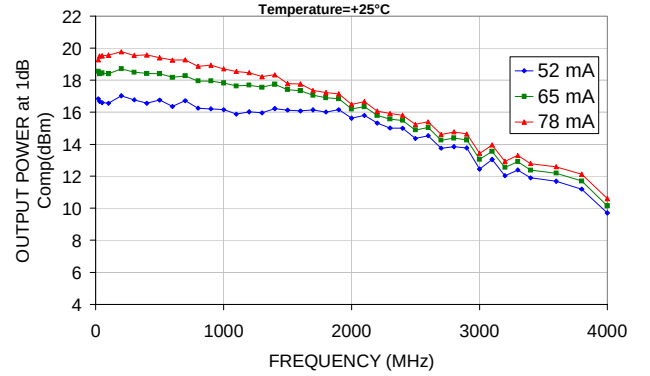
MERA-556
OUT RETURN LOSS vs. CURRENT
Temperature=+25°C



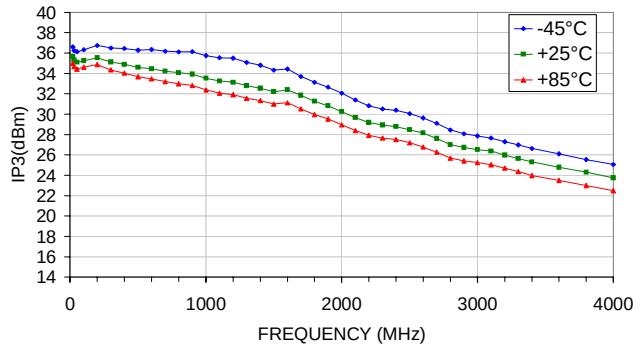
MERA-556
1dB Compression vs. TEMPERATURE
CURRENT=65mA



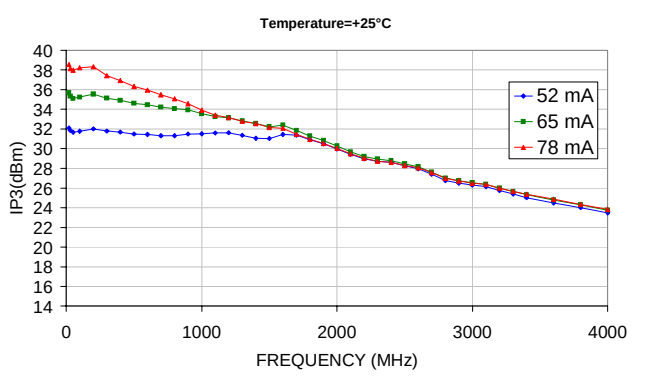
MERA-556
1dB Compression vs. CURRENT
Temperature=+25°C

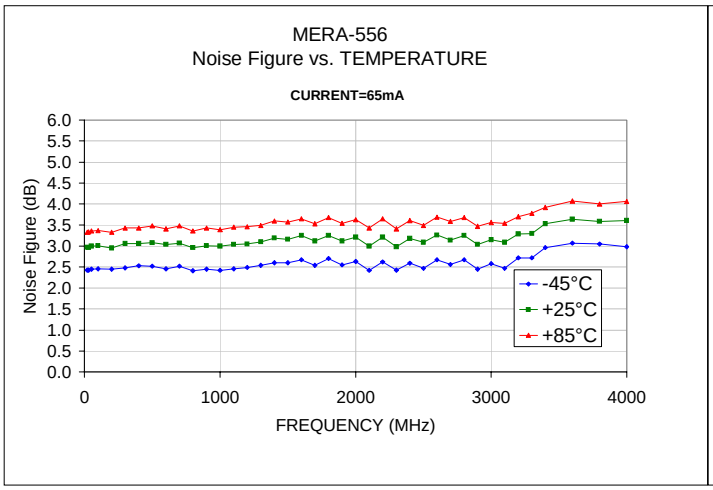


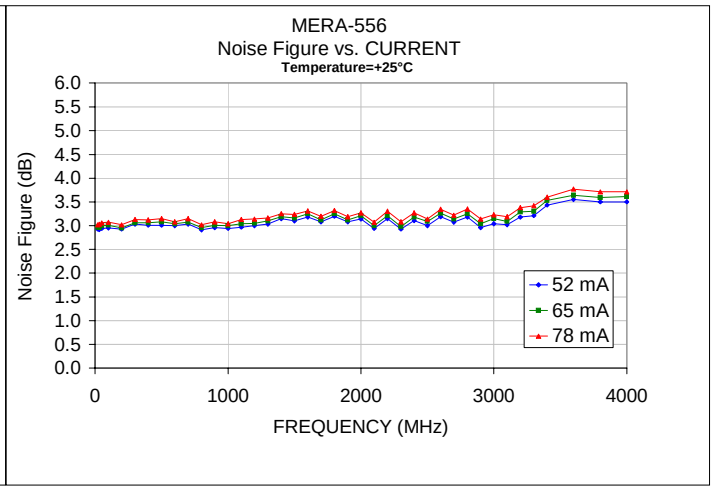
MERA-556
OUTPUT IP-3 vs. TEMPERATURE
CURRENT=65mA

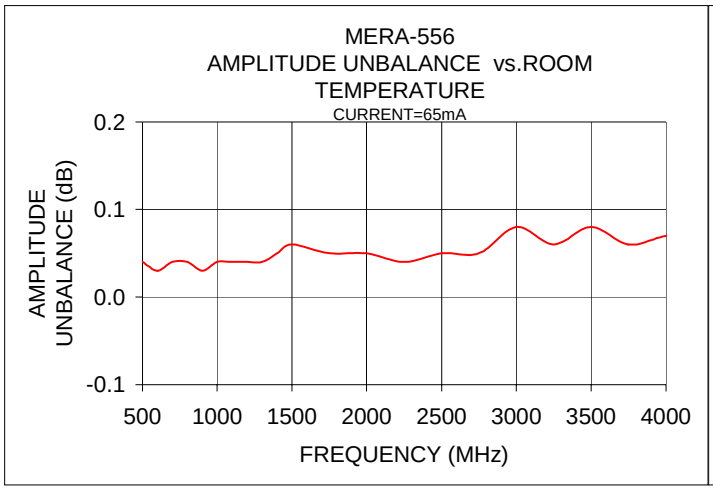


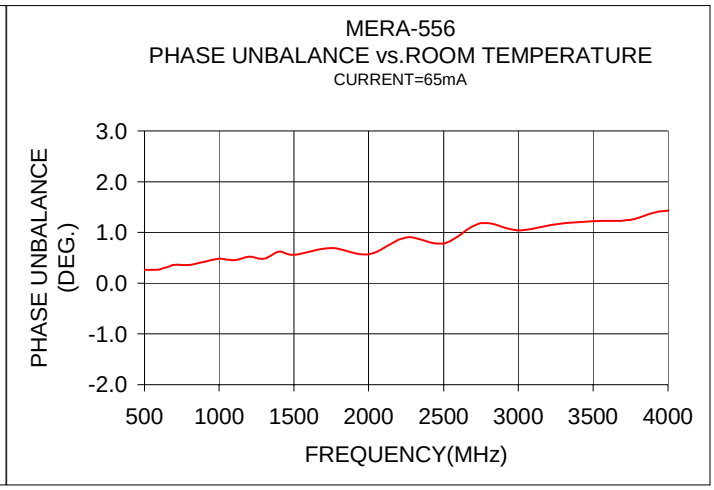
MERA-556
OUTPUT IP-3 vs. CURRENT
Temperature=+25°C




MERA-556
Noise Figure vs. TEMPERATURE
CURRENT=65mA
Noise Figure (dB)
FREQUENCY (MHz)
-45°C
+25°C
+85°C


MERA-556
Noise Figure vs. CURRENT
Temperature=+25°C
Noise Figure (dB)
FREQUENCY (MHz)
52 mA
65 mA
78 mA


MERA-556
AMPLITUDE UNBALANCE vs.ROOM TEMPERATURE
CURRENT=65mA
AMPLITUDE UNBALANCE (dB)
FREQUENCY (MHz)


MERA-556
PHASE UNBALANCE vs.ROOM TEMPERATURE
CURRENT=65mA
PHASE UNBALANCE (DEG.)
FREQUENCY(MHz)

S-PARAMETERS

MERA-556

Freq.	S11 (Input Return Loss)			S21 (Power Gain)			S12 (Isolation Out-in)			S22 (Output Return Loss)			K
MHz	dB	Mag	ngle(deg)	dB	Mag	Angle	dB	Mag	Angle	dB	Mag	Angle	
20.00	-21.39	0.09	-4.19	20.46	10.54	176.43	-23.82	0.06	-1.66	-27.37	0.04	6.78	1.07
30.00	-21.19	0.09	-2.55	20.47	10.56	175.50	-23.88	0.06	-3.83	-28.73	0.04	3.82	1.07
50.00	-21.14	0.09	-6.93	20.48	10.57	173.09	-23.83	0.06	-4.64	-27.94	0.04	-12.32	1.07
100.00	-21.32	0.09	-15.93	20.46	10.54	166.72	-23.94	0.06	-9.24	-28.48	0.04	-28.04	1.08
200.00	-21.54	0.08	-32.27	20.42	10.50	153.77	-23.92	0.06	-18.16	-28.02	0.04	-56.77	1.08
400.00	-21.96	0.08	-63.17	20.36	10.42	128.21	-23.84	0.06	-35.87	-25.40	0.05	-109.59	1.07
600.00	-23.16	0.07	-98.98	20.24	10.28	102.60	-23.77	0.06	-53.89	-23.08	0.07	-155.46	1.07
800.00	-24.14	0.06	-139.41	20.13	10.15	76.98	-23.62	0.07	-71.95	-20.35	0.10	166.19	1.07
1000.00	-24.56	0.06	174.27	20.02	10.02	51.39	-23.41	0.07	-90.60	-17.87	0.13	133.62	1.06
1200.00	-23.21	0.07	127.98	19.87	9.85	25.75	-23.27	0.07	-109.22	-15.72	0.16	103.63	1.05
1400.00	-21.05	0.09	88.55	19.71	9.67	0.03	-23.12	0.07	-128.28	-13.83	0.20	75.87	1.03
1600.00	-19.08	0.11	55.28	19.51	9.45	-25.63	-22.92	0.07	-147.35	-12.27	0.24	49.16	1.02
1800.00	-16.83	0.14	24.50	19.28	9.20	-51.43	-22.75	0.07	-167.19	-10.89	0.29	22.95	1.01
2000.00	-15.08	0.18	-4.31	19.00	8.91	-77.24	-22.56	0.07	173.12	-9.78	0.32	-3.06	1.00
2200.00	-13.44	0.21	-30.81	18.69	8.60	-103.03	-22.42	0.08	152.77	-8.75	0.37	-29.28	0.99
2400.00	-11.80	0.26	-57.24	18.32	8.24	-128.96	-22.32	0.08	131.97	-7.75	0.41	-55.51	0.98
2600.00	-10.39	0.30	-83.13	17.90	7.85	-154.81	-22.34	0.08	110.95	-6.82	0.46	-81.65	0.97
2800.00	-9.07	0.35	-108.64	17.42	7.43	179.11	-22.33	0.08	89.90	-6.00	0.50	-108.01	0.96
3000.00	-7.90	0.40	-133.57	16.84	6.95	153.22	-22.39	0.08	68.66	-5.28	0.54	-134.00	0.96
3200.00	-6.87	0.45	-158.01	16.20	6.46	127.58	-22.57	0.07	47.47	-4.59	0.59	-159.46	0.96
3400.00	-5.98	0.50	178.29	15.47	5.94	102.41	-22.85	0.07	26.22	-3.97	0.63	175.77	0.96
3600.00	-5.22	0.55	155.16	14.70	5.43	77.61	-23.09	0.07	4.90	-3.41	0.68	152.12	0.95
3800.00	-4.54	0.59	132.42	13.89	4.95	53.17	-23.48	0.07	-15.61	-2.96	0.71	128.94	0.95
4000.00	-4.04	0.63	110.41	13.00	4.47	29.29	-23.97	0.06	-36.35	-2.60	0.74	106.83	0.96
4200.00	-3.62	0.66	88.99	12.11	4.03	6.03	-24.49	0.06	-55.64	-2.33	0.76	85.71	0.97
4400.00	-3.28	0.69	68.19	11.22	3.64	-16.65	-24.95	0.06	-75.19	-2.10	0.79	65.33	0.97
4600.00	-3.03	0.71	47.93	10.34	3.29	-38.87	-25.50	0.05	-93.69	-1.96	0.80	45.76	1.00
4800.00	-2.83	0.72	28.10	9.45	2.97	-60.46	-25.99	0.05	-111.79	-1.83	0.81	26.91	1.02
5000.00	-2.68	0.73	8.64	8.62	2.70	-81.52	-26.49	0.05	-129.50	-1.74	0.82	8.49	1.06
5200.00	-2.54	0.75	-10.46	7.82	2.46	-102.56	-26.91	0.05	-146.60	-1.67	0.83	-9.57	1.10
5500.00	-2.39	0.76	-38.48	6.69	2.16	-133.54	-27.43	0.04	-171.94	-1.66	0.83	-36.36	1.18
6000.00	-2.26	0.77	-84.27	4.87	1.75	175.77	-27.81	0.04	146.49	-1.70	0.82	-80.16	1.34
6500.00	-2.14	0.78	-128.60	3.15	1.44	126.12	-28.08	0.04	100.53	-1.77	0.82	-123.84	1.49
7000.00	-2.06	0.79	-171.59	1.42	1.18	77.03	-28.28	0.04	55.77	-1.92	0.80	-166.81	1.74
7500.00	-1.88	0.81	147.32	-0.17	0.98	30.09	-28.78	0.04	9.98	-1.97	0.80	150.90	1.94
8000.00	-1.76	0.82	107.39	-1.48	0.84	-14.00	-30.47	0.03	-32.81	-2.08	0.79	112.00	2.56
8500.00	-1.75	0.82	68.76	-2.35	0.76	-59.07	-30.29	0.03	-72.18	-1.83	0.81	71.67	2.44
9000.00	-1.77	0.82	30.06	-3.02	0.71	-103.47	-30.11	0.03	-112.54	-1.87	0.81	32.26	2.57
9500.00	-1.91	0.80	-9.46	-3.52	0.67	-148.40	-30.50	0.03	-158.55	-2.01	0.79	-7.03	3.10
10000.00	-2.16	0.78	-49.27	-3.80	0.65	166.53	-30.87	0.03	168.72	-2.18	0.78	-46.19	4.00