



COAXIAL

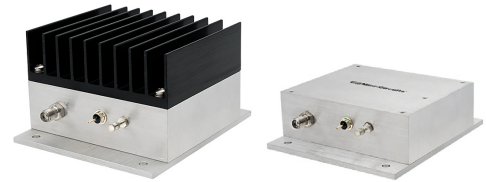
Low Noise Amplifier

ZHL-1217HLN+ ZHL-1217HLNX+

50Ω 1200 to 1700 MHz SMA Female

FEATURES

- Very Low Noise Figure, 1.5 dB Max.
- Wideband, 1200 to 1700 MHz
- High Dynamic Range



Generic photo used for illustration purposes only

APPLICATIONS

- GPS
- Mar Sat
- Communication Systems

Model No.	ZHL-1217HLN+	ZHL-1217HLNX+ ▲
Option	With Heatsink	Without Heatsink
Case Style	NN92	
Connectors	SMA female	

+RoHS Compliant
 The +Suffix identifies RoHS Compliance.
 See our website for methodologies and qualifications

ELECTRICAL SPECIFICATIONS¹ AT +25 °C

Parameter	Frequency (MHz)	ZHL-1217HLN+			ZHL-1217HLNX+ ▲			Units
		Min.	Typ.	Max.	Min	Typ.	Max.	
Frequency Range		1200		1700	1200		1700	MHz
Noise Figure ²	1200-1700		0.75	1.5		0.75	1.5	dB
Gain	1200-1700	36	42		36	42		dB
Gain Flatness	1200-1700			±1.0			±1.0	dB
Output Power at 1 dB Compression	1200-1700		+27			+27		dBm
Output Third Order Intercept Point	1200-1700		+40			+40		dBm
Input VSWR	1200-1700		1.4			1.4		:1
Output VSWR	1200-1700		1.3			1.3		:1
DC Supply Voltage			+15			+15		V
Supply Current			650	725		650	725	mA

1. Open load is not recommended, potentially can cause damage.

2. Noise Figure specified at room temperature, increases to 2.3 dB max. at +65 °C.

▲ Heatsink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum baseplate temperature to +65 °C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heatsink to be 1.8 °C/W max.

ABSOLUTE MAXIMUM RATINGS³

Parameter	Ratings
Operating Temperature	-20 °C to +65 °C
Storage Temperature	-55 °C to +100 °C
DC Voltage	+20 V
Input RF Power ⁴ (No Damage)	+10 dBm

3. Permanent damage may occur if any of these limits are exceeded.

4. With no load, derate max. input power by 20 dB.





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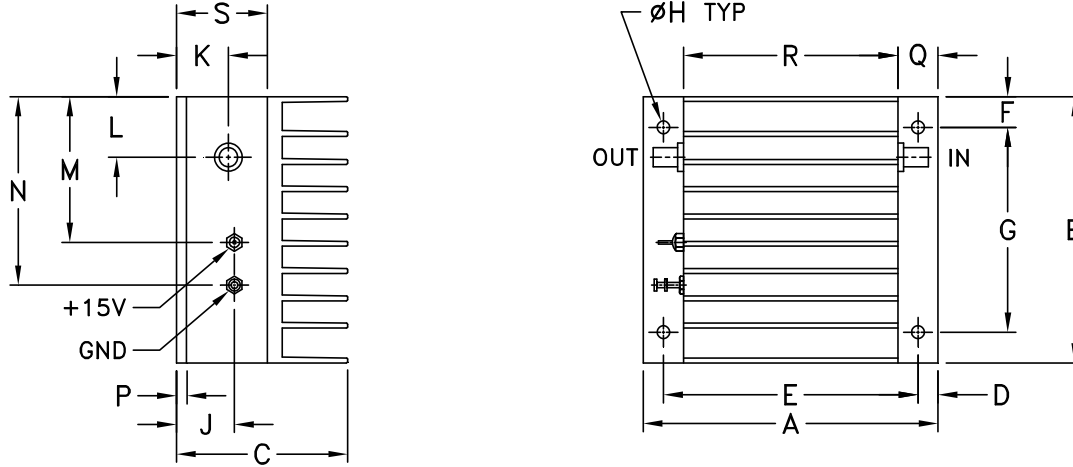
Low Noise Amplifier

ZHL-1217HLN+ ZHL-1217HLNX+

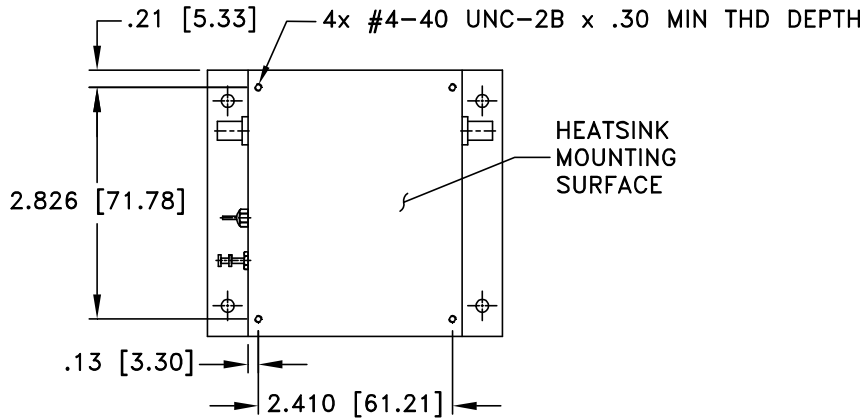
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50Ω 1200 to 1700 MHz SMA Female

OUTLINE DRAWING FOR MODELS WITH HEATSINK



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



OUTLINE DIMENSIONS (Inch/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	wt
3.66	3.25	2.13	.25	3.16	.38	2.50	.156	.72	.64	.74	1.78	2.30	.125	.50	2.66	1.13	grams*
92.96	82.55	54.10	6.35	80.26	9.65	63.50	3.96	18.29	16.26	18.80	45.21	58.42	3.18	12.70	67.56	28.7	500.0

*362 grams without heatsink





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Low Noise Amplifier

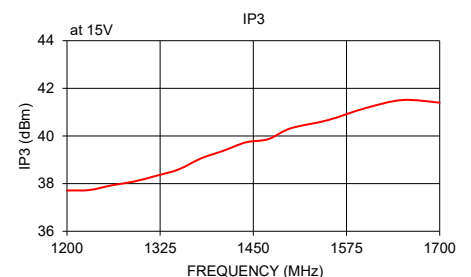
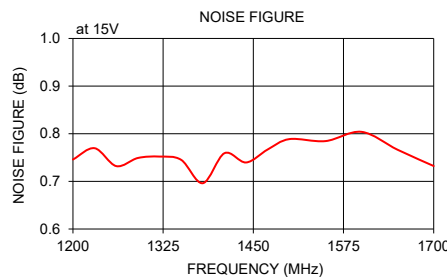
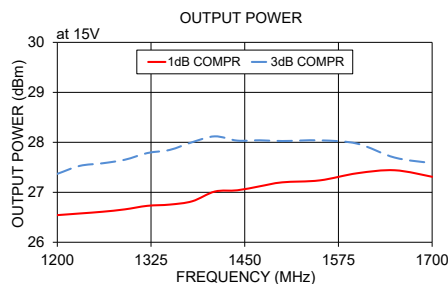
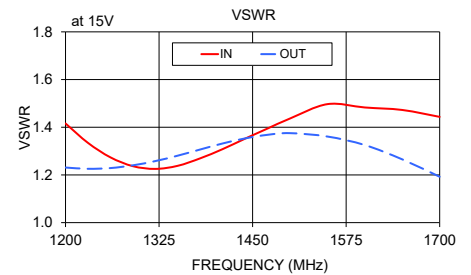
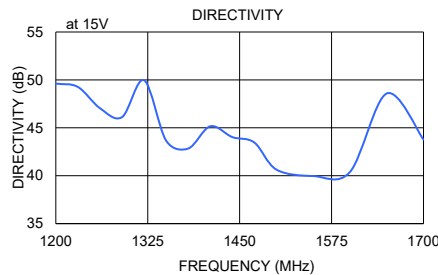
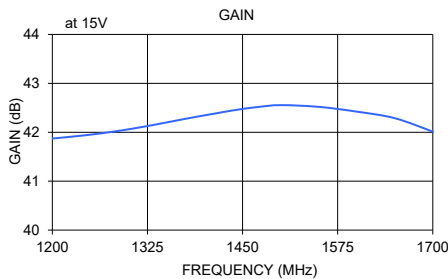
ZHL-1217HLN+ ZHL-1217HLNX+

Mini-Circuits

50Ω 1200 to 1700 MHz SMA Female

TYPICAL PERFORMANCE DATA AND CHARTS

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		P _{OUT} at 1 dB COMPR. (dBm)	NOISE FIGURE (dB)	IP3 (dBm)
	+15 V	+15 V	IN	OUT	+15 V	+15 V	+15 V
1200	41.87	49.61	1.42	1.23	26.54	0.75	37.71
1230	41.92	49.26	1.33	1.23	26.58	0.77	37.73
1260	41.97	47.05	1.27	1.23	26.61	0.73	37.93
1290	42.04	46.11	1.24	1.24	26.66	0.75	38.09
1320	42.11	49.96	1.23	1.26	26.73	0.75	38.33
1350	42.20	43.66	1.24	1.28	26.75	0.75	38.60
1380	42.29	42.83	1.27	1.31	26.82	0.70	39.06
1410	42.37	45.16	1.31	1.33	27.01	0.76	39.38
1440	42.45	44.03	1.35	1.35	27.04	0.74	39.73
1470	42.52	43.46	1.39	1.37	27.12	0.77	39.87
1500	42.55	40.64	1.44	1.38	27.20	0.79	40.32
1550	42.52	39.97	1.50	1.36	27.24	0.78	40.66
1600	42.42	40.39	1.48	1.33	27.38	0.80	41.16
1650	42.29	48.58	1.47	1.27	27.44	0.77	41.51
1700	42.01	43.77	1.44	1.19	27.31	0.73	41.40



NOTES

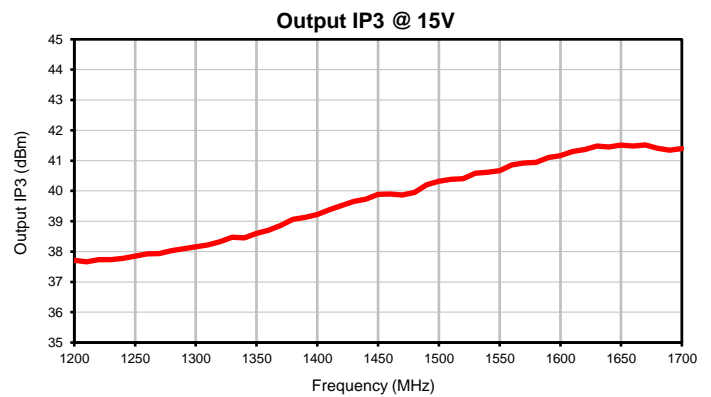
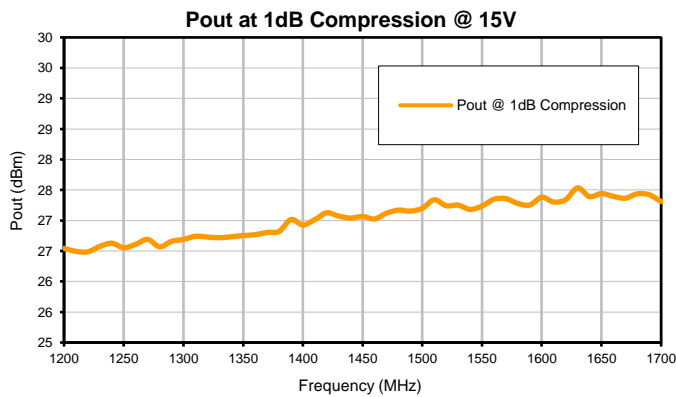
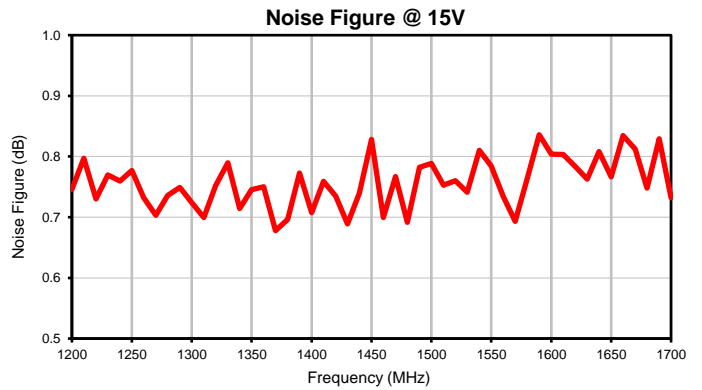
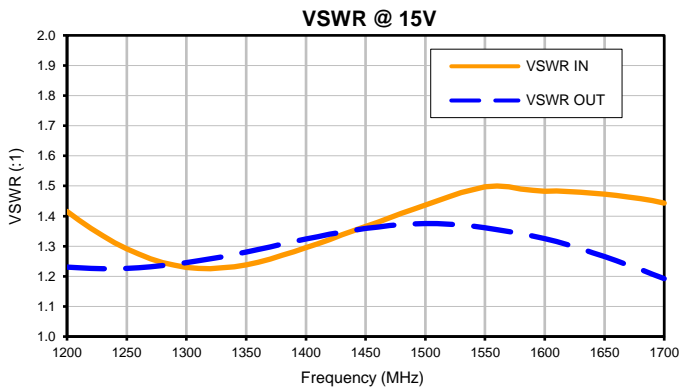
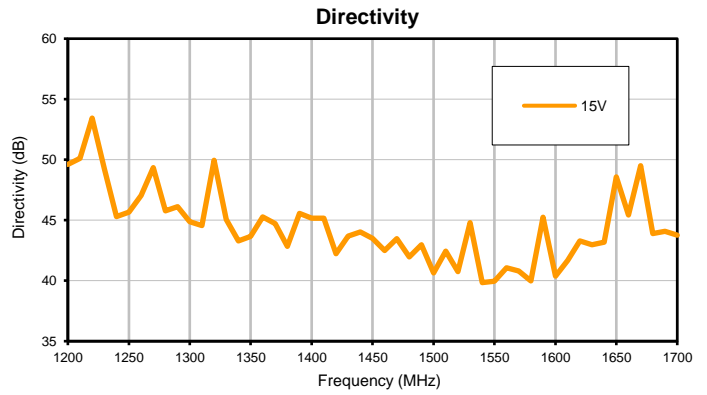
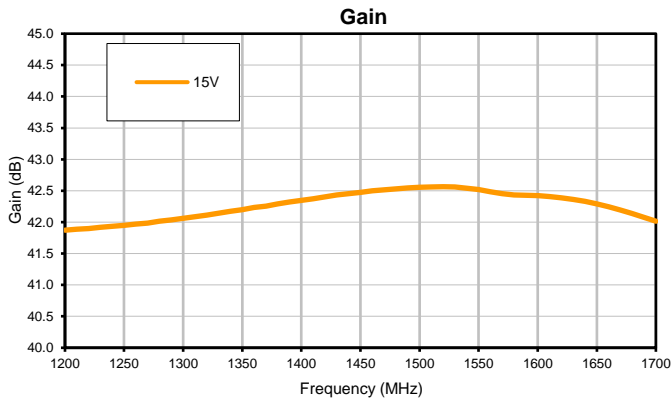
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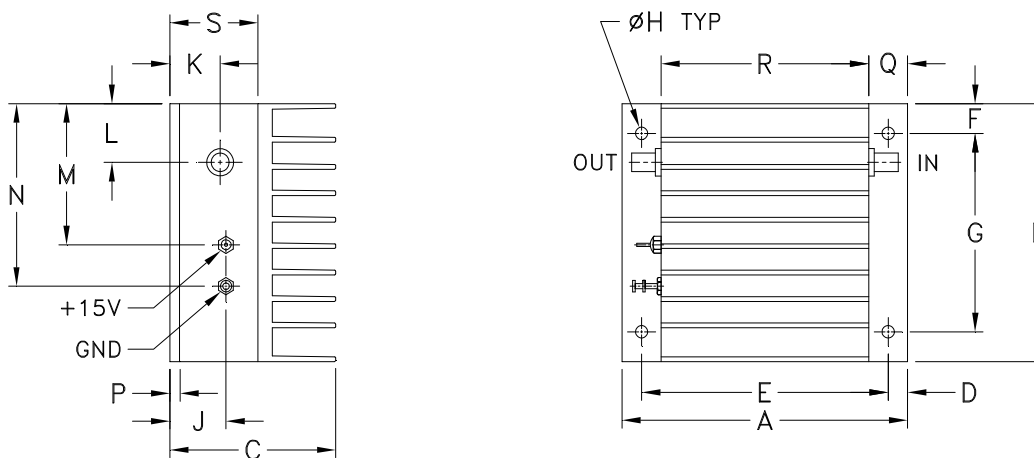
Typical Performance Data

FREQ. (MHz)	GAIN (dB) 15V	DIRECTIVITY (dB) 15V	VSWR (:1)		NOISE FIGURE (dB) 15V	POUT @ 1 dB COMPRESSION (dBm) 15V	OUTPUT IP3 (dBm) 15V
			IN 15V	OUT 15V			
1200	41.87	49.61	1.42	1.23	0.75	26.54	37.71
1210	41.89	50.10	1.39	1.23	0.80	26.49	37.66
1220	41.90	53.44	1.36	1.23	0.73	26.49	37.73
1230	41.92	49.26	1.33	1.23	0.77	26.58	37.73
1240	41.93	45.29	1.31	1.23	0.76	26.63	37.77
1250	41.95	45.66	1.29	1.23	0.78	26.55	37.85
1260	41.97	47.05	1.27	1.23	0.73	26.61	37.93
1270	41.99	49.33	1.26	1.23	0.70	26.69	37.94
1280	42.01	45.77	1.25	1.24	0.74	26.57	38.03
1290	42.04	46.11	1.24	1.24	0.75	26.66	38.09
1300	42.06	44.87	1.23	1.25	0.72	26.69	38.16
1310	42.09	44.57	1.23	1.25	0.70	26.74	38.22
1320	42.11	49.96	1.23	1.26	0.75	26.73	38.33
1330	42.14	45.05	1.23	1.27	0.79	26.72	38.47
1340	42.17	43.29	1.23	1.27	0.71	26.73	38.45
1350	42.20	43.66	1.24	1.28	0.75	26.75	38.60
1360	42.23	45.26	1.25	1.29	0.75	26.77	38.70
1370	42.26	44.70	1.26	1.30	0.68	26.81	38.86
1380	42.29	42.83	1.27	1.31	0.70	26.82	39.06
1390	42.32	45.55	1.28	1.32	0.77	27.02	39.12
1400	42.35	45.16	1.30	1.32	0.71	26.93	39.22
1410	42.37	45.16	1.31	1.33	0.76	27.01	39.38
1420	42.40	42.22	1.32	1.34	0.73	27.13	39.52
1430	42.43	43.69	1.34	1.35	0.69	27.07	39.66
1440	42.45	44.03	1.35	1.35	0.74	27.04	39.73
1450	42.48	43.50	1.37	1.36	0.83	27.07	39.88
1460	42.50	42.49	1.38	1.36	0.70	27.03	39.90
1470	42.52	43.46	1.39	1.37	0.77	27.12	39.87
1480	42.53	41.95	1.41	1.37	0.69	27.17	39.95
1490	42.54	42.98	1.42	1.37	0.78	27.15	40.20
1500	42.55	40.64	1.44	1.38	0.79	27.20	40.32
1510	42.56	42.45	1.45	1.37	0.75	27.34	40.39
1520	42.56	40.74	1.46	1.37	0.76	27.24	40.41
1530	42.56	44.80	1.48	1.37	0.74	27.25	40.59
1540	42.54	39.84	1.49	1.37	0.81	27.18	40.61
1550	42.52	39.97	1.50	1.36	0.78	27.24	40.66
1560	42.48	41.07	1.50	1.35	0.73	27.35	40.85
1570	42.45	40.80	1.50	1.35	0.69	27.36	40.92
1580	42.43	39.97	1.49	1.34	0.76	27.28	40.94
1590	42.43	45.24	1.49	1.33	0.84	27.25	41.10
1600	42.42	40.39	1.48	1.33	0.80	27.38	41.16
1610	42.41	41.69	1.48	1.32	0.80	27.30	41.30
1620	42.39	43.29	1.48	1.30	0.78	27.34	41.36
1630	42.36	42.98	1.48	1.29	0.76	27.53	41.48
1640	42.33	43.19	1.48	1.28	0.81	27.39	41.45
1650	42.29	48.58	1.47	1.27	0.77	27.44	41.51
1660	42.25	45.44	1.47	1.25	0.83	27.40	41.48
1670	42.20	49.49	1.46	1.24	0.81	27.36	41.52
1680	42.14	43.89	1.46	1.22	0.75	27.44	41.41
1690	42.08	44.07	1.45	1.21	0.83	27.42	41.35
1700	42.01	43.77	1.44	1.19	0.73	27.31	41.40

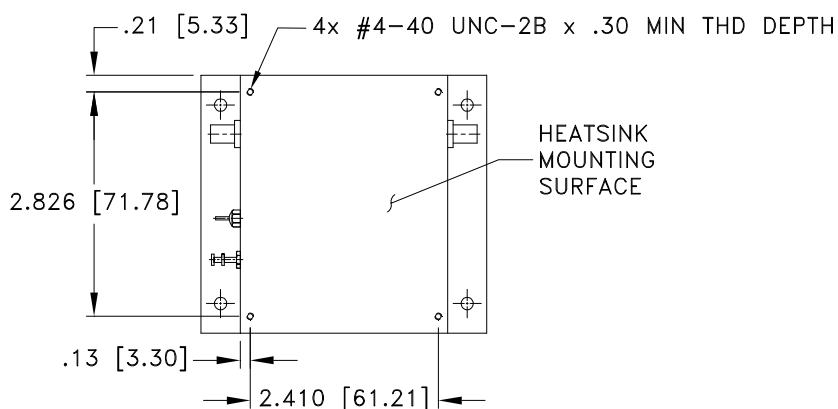
Typical Performance Curves



Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
NN92	3.66 (92.96)	3.25 (82.55)	2.13 (54.10)	.25 (6.35)	3.16 (80.26)	.38 (9.65)	2.50 (63.50)	.156 (3.96)	.72 (18.29)	.64 (16.26)	.74 (18.80)	1.78 (45.21)	2.30 (58.42)

CASE#	P	Q	R	S	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
NN92	.125 (3.18)	.50 (12.70)	2.66 (67.56)	1.13 (28.58)	500.0	362.0

Dimensions are in inches (mm). Tolerances: 2 Pl. + .03; 3 Pl. + .015

Notes:

- Case material: Aluminum alloy.
- Case and mounting bracket finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Heat sink finish: Black anodize.



INTERNET <http://www.minicircuits.com>

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Mini-Circuits ISO 9001 & ISO 14001 Certified



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-54° to 65°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 85° C	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C