Engineering Development Model

Frequency Synthesizer

ZSN-EDR11277

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : KH1331

ELECTRICAL SPECIFICATIONS 50Ω, over -15°C to +75°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency		1380		1480	MHz
Step size			100		kHz
Settling Time	**Within ±1kHz**		9		msec
Output Power		+7	+11	+15	dBm
Phase Noise					
	at 100 Hz offset		-89		dBc/Hz
	at 1 kHz offset		-90		dBc/Hz
	at 10 KHz offset		-97		dBc/Hz
	at 100 KHz offset		-90	-119	dBc/Hz
	at 1000 kHz offset		-145	-139	dBc/Hz
Integrated SSB Phase Noise			-49		dBc
Ref & Comp Spurious Suppression			-82		dBc
0.5 Step size Spurious Suppression			-91		dBc
Non-Harm. Spurious Suppression			-90		dBc
Harmonic Suppression			-31		dBc
Supply voltage	**VCO & PLL**		12		V
Supply current	**VCO & PLL**		13	21	V
Reference In (External)	**Frequency**		10		MHz
	Amplitude		1		Vp-p
	Impedance		100		kΩ
	Ph. N @ 1kHz		-145		dBc/Hz
Input Logic Levels	**Logic high**	1.4		3.33	V
	Logic Low			0.6	
Digital Lock Detect	**Locked**	1.4		3.33	V
	Unlocked			0.4	
Frequency Synthesizer PLL		ADF4153			

ABSOLUTE MAXIMUM RATINGS	
Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C
Supply Voltage	13V
Reference Frequency voltage	3.6Vp-p
Data, Clock & LE levels	3.63V

D-Sub15(Male) Pin connections				Other Connections	
VCC PLL	6	**CLOCK**	2	**RF OUT**	**SMA (Female)**
VCC VCO	8	**DATA**	3	**REF IN**	**SMA (Female)**
LOCK DETECT	1	**LATCH ENABLE**	4		
NOT CONNECTED	9-15	**GROUND**	5,7		

Frequency Synthesizer ZSN-EDR11277

Typical Performance Data

FREQ. (MHz)	POWER OUTPUT (dBm)			HARMONICS (dBc)						VCO CURRENT (mA)			PLL CURRENT (mA)		
				F2			F3								
	-45 °C	+25ºC	+85 °C	-45 °C	+25ºC	+85 °C	-45 °C	+25ºC	+85 °C	-45 °C	+25ºC	+85 °C	-45 °C	+25ºC	+85 °C
1370	10.63	11.54	10.54	-23.96	-26.00	-27.39	-23.96	-26.00	-27.39	136.62	142.42	147.21	13.18	13.18	13.18
1380	10.66	11.37	10.51	-25.01	-26.73	-28.19	-25.01	-26.73	-28.19	136.58	142.41	147.18	13.21	13.21	13.21
1390	10.75	11.22	10.58	-25.94	-27.28	-28.79	-25.94	-27.28	-28.79	136.55	142.40	147.17	13.21	13.21	13.21
1400	10.83	11.15	10.72	-26.82	-27.85	-29.37	-26.82	-27.85	-29.37	136.52	142.37	147.15	13.22	13.22	13.22
1410	10.86	11.17	10.87	-27.81	-28.67	-30.07	-27.81	-28.67	-30.07	136.48	142.34	147.14	13.23	13.23	13.23
1420	10.67	11.19	10.82	-28.77	-29.73	-30.93	-28.77	-29.73	-30.93	136.47	142.32	147.12	13.24	13.24	13.24
1430	10.31	11.17	10.52	-29.63	-30.78	-31.69	-29.63	-30.78	-31.69	136.48	142.29	147.11	13.24	13.24	13.24
1440	9.89	11.09	10.06	-30.35	-31.75	-32.23	-30.35	-31.75	-32.23	136.50	142.27	147.15	13.24	13.24	13.24
1450	9.54	10.99	9.57	-31.03	-32.45	-32.64	-31.03	-32.45	-32.64	136.52	142.27	147.17	13.24	13.24	13.24
1460	9.37	10.94	9.20	-31.79	-33.20	-32.99	-31.79	-33.20	-32.99	136.51	142.25	147.19	13.24	13.24	13.24
1470	9.40	10.92	9.03	-32.38	-33.79	-33.30	-32.38	-33.79	-33.30	136.50	142.25	147.18	13.25	13.25	13.25
1480	9.58	10.89	9.03	-33.28	-34.38	-33.69	-33.28	-34.38	-33.69	136.48	142.25	147.18	13.24	13.24	13.24
1490	10.14	10.85	9.19	-34.12	-34.85	-34.29	-34.12	-34.85	-34.29	136.47	142.23	147.17	13.24	13.24	13.24

FREQ. (MHz)	PHASE NOISE (dBc/Hz) @ OFFSETS														
	-45 °C					+25ºC					+85 °C				
	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz
1370	-86.51	-92.52	-97.41	-126.56	-147.33	-87.51	-91.96	-96.25	-124.87	-145.27	-89.88	-87.98	-93.39	-122.95	-143.23
1380	-88.91	-92.83	-98.11	-126.63	-147.32	-89.72	-90.30	-96.50	-124.85	-145.27	-88.92	-88.96	-93.87	-122.62	-143.00
1390	-86.48	-91.60	-98.16	-126.59	-147.29	-88.76	-90.27	-96.99	-124.79	-145.03	-88.47	-88.29	-94.23	-122.65	-142.88
1400	-89.77	-91.14	-98.68	-126.56	-147.00	-89.79	-90.66	-97.21	-124.67	-145.02	-91.33	-87.69	-94.45	-122.50	-142.86
1410	-87.56	-92.14	-98.56	-126.54	-146.96	-87.86	-90.51	-96.95	-124.50	-144.87	-87.50	-86.80	-94.19	-122.39	-142.65
1420	-85.61	-91.87	-99.06	-126.29	-146.84	-89.78	-90.50	-97.15	-124.36	-144.75	-86.59	-88.18	-94.02	-122.11	-142.51
1430	-88.34	-91.64	-98.88	-126.22	-146.80	-88.72	-90.35	-97.31	-124.27	-144.66	-88.64	-87.74	-94.12	-122.11	-142.46
1440	-87.43	-91.36	-98.74	-126.14	-146.75	-88.22	-89.50	-97.15	-124.20	-144.63	-86.14	-86.27	-93.70	-121.98	-142.27
1450	-85.75	-91.10	-98.77	-126.25	-146.56	-87.62	-88.94	-97.08	-124.13	-144.47	-90.51	-86.37	-94.21	-121.97	-142.25
1460	-84.84	-89.50	-98.66	-126.12	-146.72	-88.05	-88.56	-96.75	-123.91	-144.35	-87.85	-86.56	-93.68	-121.74	-142.08
1470	-88.67	-89.64	-98.35	-125.90	-146.51	-87.81	-89.30	-96.55	-123.91	-144.23	-87.51	-84.62	-93.79	-121.67	-142.06
1480	-85.36	-91.54	-97.62	-125.60	-146.28	-87.50	-89.43	-96.26	-123.65	-144.01	-89.09	-85.32	-93.27	-121.64	-142.03
1490	-86.87	-89.86	-98.16	-125.61	-146.10	-89.55	-88.44	-95.85	-123.54	-143.98	-86.33	-84.46	-92.92	-121.52	-141.75

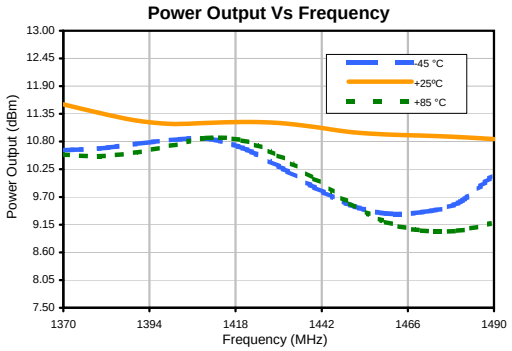
Notes
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits applicable established test performance criteria and measurement instructions.
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/MCLStore/terms.jsp

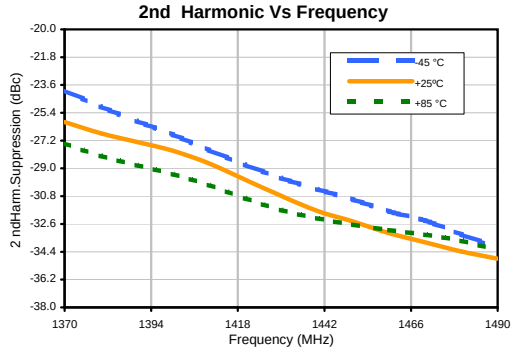
Typical Performance Data

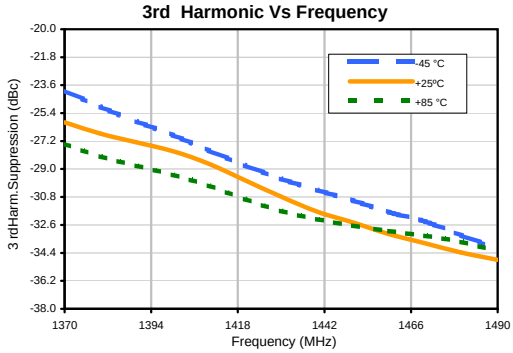
COMPARISON SPURIOUS ORDER	Reference & Comparison SPURIOUS @Fcarrier 1380 MHz± (n*Fcomparison) (dBc) NOTE 1			Reference & Comparison SPURIOUS @Fcarrier 1430 MHz± (n*Fcomparison) (dBc) NOTE 1			Reference & Comparison SPURIOUS @Fcarrier 1480 MHz± (n*Fcomparison) (dBc) NOTE 1		
n	-45 °C	+25ºC	+85 °C	-45 °C	+25ºC	+85 °C	-45 °C	+25ºC	+85 °C
-5	-85.24	-83.36	-81.00	-81.15	-80.53	-81.06	-80.11	-80.80	-82.63
-4	-78.22	-78.97	-79.82	-79.21	-79.51	-77.13	-79.87	-79.03	-75.32
-3	-81.15	-80.58	-82.58	-81.42	-80.78	-81.75	-81.29	-82.12	-79.59
-2	-83.94	-83.20	-84.24	-84.57	-82.40	-84.97	-82.95	-84.98	-82.68
-1	-89.53	-89.39	-90.30	-87.65	-87.28	-89.50	-87.29	-97.53	-87.34
0[note 2]	-	-	-	-	-	-	-	-	-
+1	-86.35	-87.70	-91.14	-88.31	-93.27	-95.32	-91.52	-89.56	-90.89
+2	-80.59	-81.86	-83.61	-81.10	-83.40	-83.22	-83.45	-83.36	-85.75
+3	-77.63	-78.28	-79.32	-77.46	-78.74	-78.89	-78.85	-78.89	-80.85
+4	-72.05	-72.24	-72.71	-71.34	-71.97	-72.42	-71.94	-72.10	-73.84
+5	-79.53	-78.99	-78.34	-77.89	-77.57	-78.95	-76.99	-77.64	-81.49

Note 1: Reference & Comparison frequency 10 MHz
Note 2: All spurs are referenced to carrier signal (n=0).

Typical Performance Data

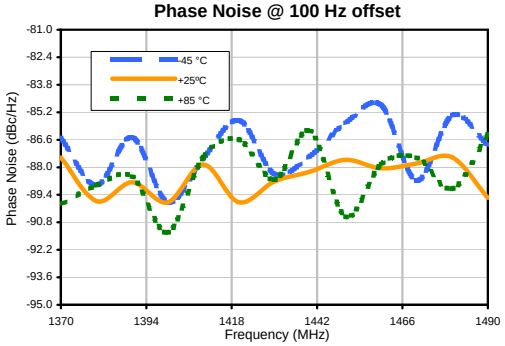




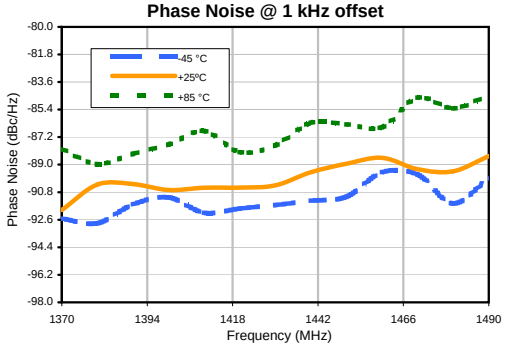


Typical Performance Data

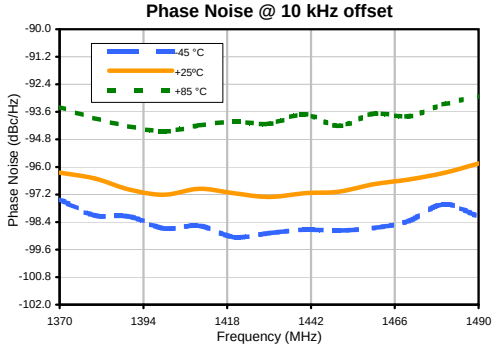
Phase Noise @ 100 Hz offset



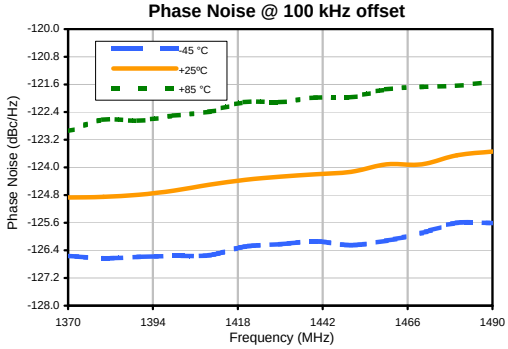
Phase Noise @ 1 kHz offset



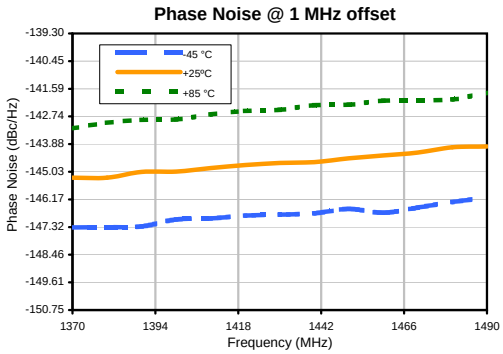
Phase Noise @ 10 kHz offset



Phase Noise @ 100 kHz offset

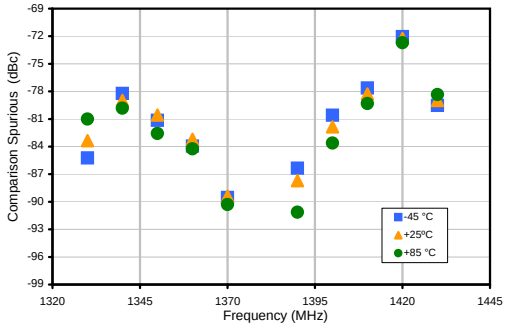


Phase Noise @ 1 MHz offset

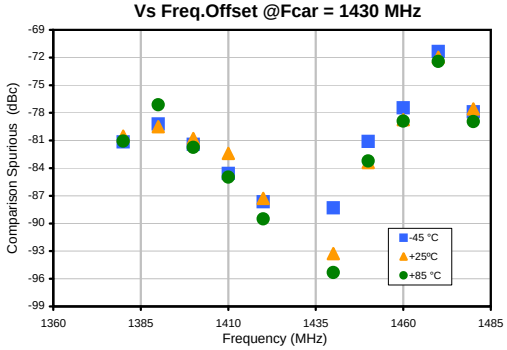


Typical Performance Data

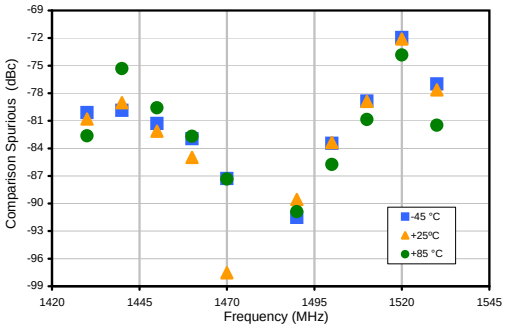
Comparison & Reference Spurious
Vs Freq.Offset @Fcar = 1380 MHz



Comparison & Reference Spurious
Vs Freq.Offset @Fcar = 1430 MHz



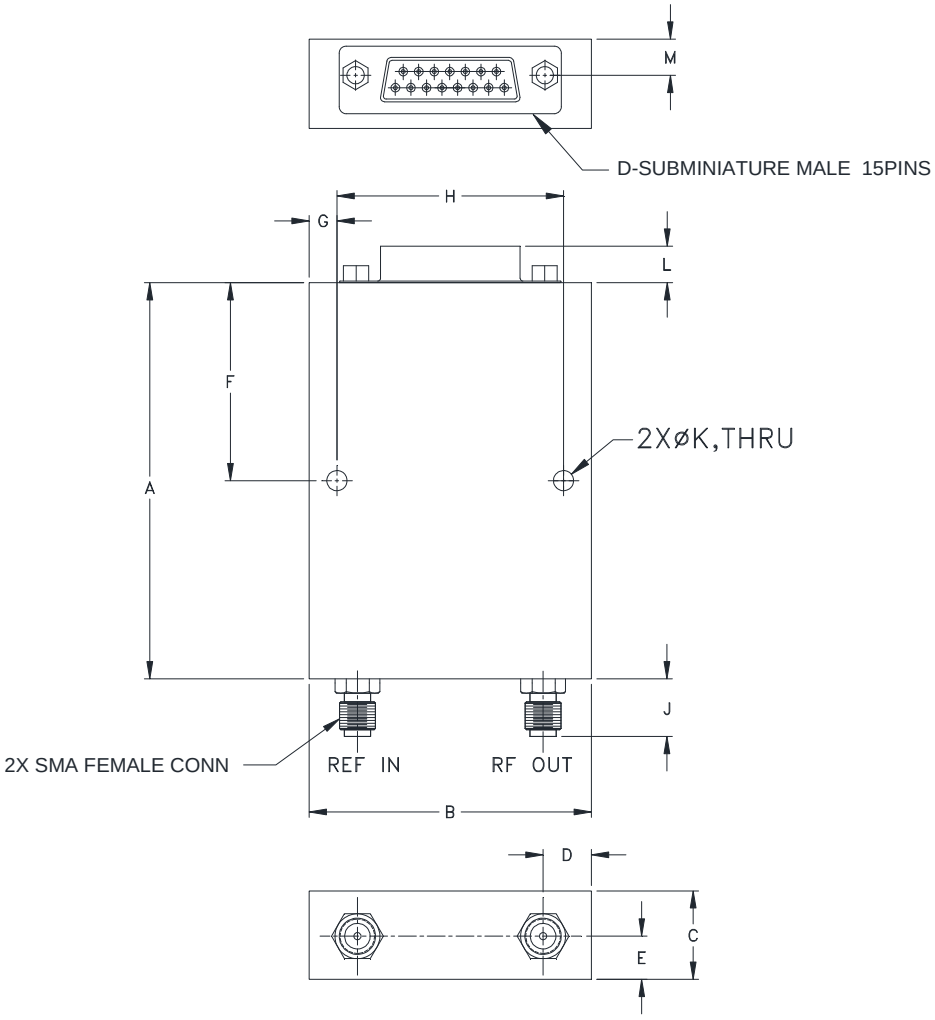
Comparison & Reference Spurious
Vs Freq.Offset @Fcar = 1480 MHz



Case Style KH

KH1331

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAMS
KH1331	2.75 (69.85)	1.96 (49.78)	.62 (15.75)	.34 (8.64)	.30 (7.62)	1.38 (35.05)	.19 (4.83)	1.574 (40.0)	.40 (10.16)	.14 (3.56)	.25 (6.35)	.25 (6.35)	130

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish: Clear chemical conversion coating, non-chrome or trivalent chrome based.

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Environmental Specifications ENV48T3

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	-40° to 85° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A