

Engineering Development Model

Frequency Synthesizer

ZSN-EDR11130

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 : KF1336

ELECTRICAL SPECIFICATIONS 50Ω, over -10°C to +75°C				
Parameter	Min.	Typ.	Max.	Units
Frequency	1200		1400	MHz
Step size		500		kHz
Settling Time Within ±1kHz		80		μsec
Output Power	+14	+18	+22	dBm
Phase Noise				
at 100 Hz offset		-84		dBc/Hz
at 1 kHz offset		-93		dBc/Hz
at 10 KHz offset		-94	-88	dBc/Hz
at 100 KHz offset		-94	-88	dBc/Hz
at 1000 kHz offset		-134	-128	dBc/Hz
Integrated SSB Phase Noise		-41		dBc
Reference Spurious Suppression		-80		dBc
Comparison Spurious Suppression		-110		dBc
Non-Harm. Spurious Suppression		-90		dBc
Harmonic Suppression		-32		dBc
Supply voltage VCO & PLL		15		V
Supply current VCO & PLL		163	174	mA
Reference In (Internal)				
Frequency		10		MHz
Amplitude		1		Vp-p
Impedance		100		kΩ
Ph. N @ 1kHz		-145		dBc/Hz
Input Logic Levels	Logic high	2.64	3.3	V
Logic Low			0.66	
Digital Lock Detect	Locked	2.9	3.3	V
Unlocked			0.4	
Frequency Synthesizer PLL	ADF4113			

ABSOLUTE MAXIMUM RATINGS	
Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C
Supply Voltage	16V
Data, Clock & LE levels	3.6V

D-Sub15(Male) Pin connections				Other Connections	
VCC	1	CLOCK	4	RF OUT	SMA (Female)
MODULATION	7	DATA	3		
LOCK DETECT	6	LATCH ENABLE	5		
NOT CONNECTED	2,7,8,10-13,15	GROUND	9,14		

Notes

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REV. OR
ZSN-EDR11130
150215

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Typical Performance Data

FREQ. (MHz)	POWER OUTPUT (dBm)			HARMONICS						DC CURRENT (mA)		
				(dBc)								
	-10 °C	+25°C	+75 °C	F2			F3			-10 °C	+25°C	+75 °C
				-10 °C	+25°C	+75 °C	-10 °C	+25°C	+75 °C	-10 °C	+25°C	+75 °C
1180	17.52	17.73	18.09	-39.42	-36.65	-30.31	-33.74	-31.44	-28.06	151.08	160.90	169.66
1200	17.60	17.77	18.07	-39.81	-35.86	-30.32	-29.36	-28.82	-26.90	151.17	161.11	169.55
1220	17.67	17.82	18.04	-40.26	-35.32	-30.32	-28.57	-28.61	-27.01	151.33	161.34	169.65
1240	17.73	17.85	18.00	-40.41	-34.53	-30.09	-28.06	-28.30	-26.77	151.47	161.49	169.73
1260	17.79	17.88	17.97	-39.41	-34.04	-29.97	-27.80	-28.02	-26.85	151.68	161.72	169.84
1280	17.86	17.93	17.95	-38.16	-33.44	-29.77	-27.37	-27.51	-26.70	151.88	161.91	170.24
1300	17.95	18.00	17.97	-36.40	-32.57	-29.35	-26.65	-26.86	-26.32	152.08	162.09	170.37
1320	18.03	18.06	17.98	-35.42	-31.75	-28.98	-26.17	-26.47	-26.17	152.21	162.19	170.42
1340	18.10	18.12	17.99	-34.42	-31.21	-28.72	-25.46	-25.86	-25.77	152.33	162.30	170.49
1360	18.16	18.16	18.02	-33.88	-30.86	-28.54	-24.76	-25.20	-25.41	152.40	162.36	170.50
1380	18.17	18.18	18.02	-33.50	-30.54	-28.38	-24.34	-24.90	-25.32	152.45	162.42	170.50
1400	18.18	18.18	18.00	-32.78	-30.31	-28.35	-24.10	-24.72	-25.36	152.42	162.38	170.41
1420	18.17	18.17	17.98	-31.93	-30.11	-28.38	-24.06	-24.59	-25.44	152.33	162.28	170.29

FREQ. (MHz)	PHASE NOISE (dBc/Hz) @ OFFSETS														
	-10 °C					+25°C					+75 °C				
	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz	100Hz	1kHz	10kHz	100kHz	1MHz
1180	-83.34	-94.50	-93.37	-100.23	-136.20	-85.35	-93.91	-92.43	-101.07	-135.73	-83.50	-93.91	-92.90	-97.77	-134.72
1200	-85.60	-92.69	-93.93	-96.63	-135.21	-84.26	-94.22	-93.59	-96.37	-135.29	-84.49	-93.43	-93.59	-94.13	-133.90
1220	-83.39	-93.19	-94.01	-93.94	-134.54	-83.95	-92.56	-93.53	-93.42	-134.39	-82.72	-93.13	-93.62	-91.93	-133.20
1240	-84.60	-93.25	-94.15	-93.29	-134.26	-83.87	-93.05	-93.74	-92.81	-134.16	-82.07	-92.66	-93.38	-91.89	-133.18
1260	-86.34	-92.59	-93.77	-93.68	-134.37	-85.04	-92.78	-93.21	-93.18	-134.12	-81.03	-91.98	-93.49	-92.08	-133.23
1280	-84.11	-92.08	-93.80	-94.02	-134.41	-85.51	-94.60	-93.57	-93.42	-133.34	-81.87	-92.24	-93.48	-92.75	-133.35
1300	-83.44	-93.07	-93.48	-94.21	-133.68	-83.02	-94.51	-93.43	-93.67	-133.44	-79.80	-92.94	-93.80	-93.21	-133.15
1320	-83.18	-93.87	-93.56	-94.36	-133.75	-83.91	-94.41	-93.85	-93.88	-133.46	-79.97	-91.45	-93.28	-93.52	-133.27
1340	-85.37	-92.95	-93.69	-94.32	-133.67	-82.80	-95.00	-93.46	-94.09	-133.09	-79.57	-94.63	-92.47	-94.19	-133.03
1360	-84.25	-93.06	-93.20	-94.54	-133.48	-81.19	-93.56	-93.40	-94.53	-133.68	-80.32	-93.49	-92.62	-94.85	-131.77
1380	-82.33	-92.89	-93.20	-95.13	-133.08	-83.43	-91.99	-93.38	-95.28	-133.65	-81.27	-93.67	-92.76	-95.73	-132.90
1400	-83.43	-92.25	-92.64	-96.05	-132.33	-83.70	-93.78	-93.10	-96.39	-133.48	-81.91	-91.37	-92.68	-97.27	-132.44
1420	-82.96	-93.62	-93.25	-97.38	-132.46	-82.63	-92.76	-92.25	-98.02	-133.05	-81.47	-92.04	-91.75	-100.00	-132.48

Notes

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Frequency Synthesizer

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Typical Performance Data

COMPARISON SPURIOUS ORDER	COMPARISON SPURIOUS @Fcarrier 1200 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 1300 MHz± (n*Fcomparison) (dBc) NOTE 1			COMPARISON SPURIOUS @Fcarrier 1400 MHz± (n*Fcomparison) (dBc) NOTE 1		
	-10 °C	+25°C	+75 °C	-10 °C	+25°C	+75 °C	-10 °C	+25°C	+75 °C
-5	-89.10	-89.23	-87.50	-93.88	-92.43	-88.92	-88.50	-88.57	-88.83
-4	-85.36	-85.51	-83.65	-90.37	-88.41	-86.01	-85.86	-86.43	-87.26
-3	-80.30	-80.61	-78.90	-85.66	-83.64	-81.90	-82.28	-83.04	-84.88
-2	-73.61	-74.35	-72.81	-79.96	-77.61	-76.40	-77.97	-79.05	-80.80
-1	-65.08	-65.61	-63.49	-70.78	-68.26	-67.70	-71.20	-72.18	-74.23
0 ^{note 2}	-	-	-	-	-	-	-	-	-
+1	-65.00	-65.40	-63.34	-70.38	-67.96	-67.41	-70.79	-71.96	-74.56
+2	-73.45	-74.17	-72.66	-79.73	-77.32	-76.11	-77.80	-78.70	-81.28
+3	-79.96	-80.41	-78.55	-85.36	-83.16	-81.53	-81.88	-82.55	-85.20
+4	-84.53	-85.07	-83.09	-89.53	-87.97	-85.40	-85.50	-85.81	-87.38
+5	-88.23	-88.51	-86.62	-93.03	-91.90	-88.53	-87.90	-88.08	-89.07

Note 1: Comparison frequency 500 kHz

Note 2: All spurs are referenced to carrier signal (n=0).

REFERENCE SPURIOUS ORDER	REFERENCE SPURIOUS @Fcarrier 1200 MHz± (n*Freference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 1300 MHz± (n*Freference) (dBc) NOTE 3			REFERENCE SPURIOUS @Fcarrier 1400 MHz± (n*Freference) (dBc) NOTE 3		
	-10 °C	+25°C	+75 °C	-10 °C	+25°C	+75 °C	-10 °C	+25°C	+75 °C
-5	-112.92	-112.70	-113.96	-117.41	-109.19	-117.97	-124.64	-119.36	-109.21
-4	-110.43	-112.65	-116.63	-112.84	-111.28	-124.89	-114.78	-112.10	-108.71
-3	-104.61	-109.56	-108.02	-124.85	-107.58	-115.27	-108.01	-113.16	-106.32
-2	-124.94	-123.32	-108.64	-112.47	-108.32	-117.65	-111.55	-113.49	-102.76
-1	-90.82	-92.59	-92.84	-103.81	-98.66	-98.07	-89.45	-89.99	-89.58
0 ^{note 4}	-	-	-	-	-	-	-	-	-
+1	-95.87	-98.39	-96.59	-101.25	-98.45	-97.33	-89.57	-90.66	-90.58
+2	-112.43	-124.32	-111.58	-124.30	-108.22	-107.78	-108.68	-108.82	-103.74
+3	-112.19	-114.00	-111.72	-124.80	-107.93	-109.61	-104.64	-107.31	-106.81
+4	-123.94	-123.99	-125.24	-124.45	-124.60	-114.64	-111.91	-110.68	-111.99
+5	-113.63	-121.31	-114.94	-118.20	-111.64	-113.80	-112.21	-118.19	-109.64

Note 3: Reference frequency 10 MHz

Note 4: All spurs are referenced to carrier signal (n=0).

Notes

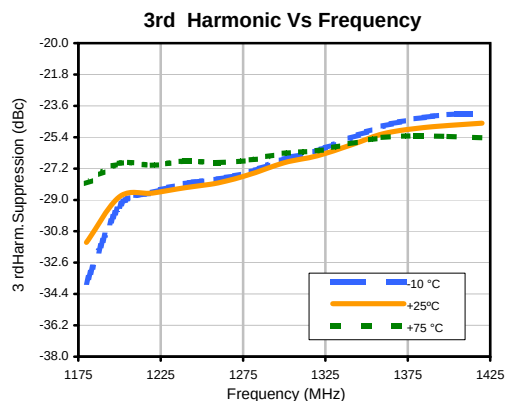
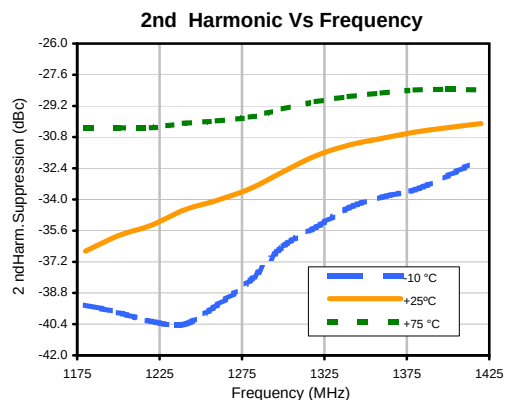
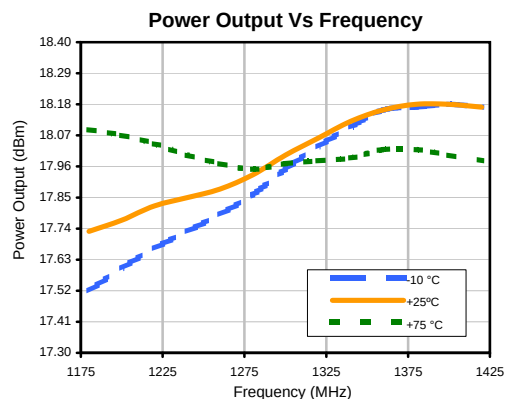
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Typical Performance Data

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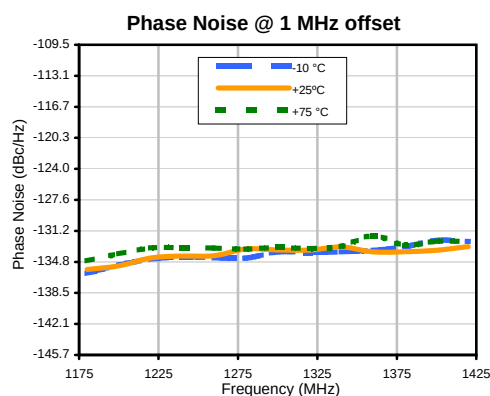
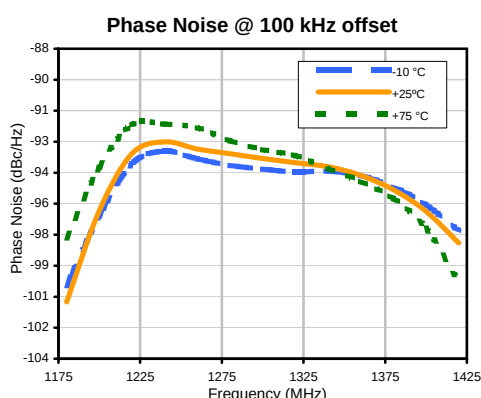
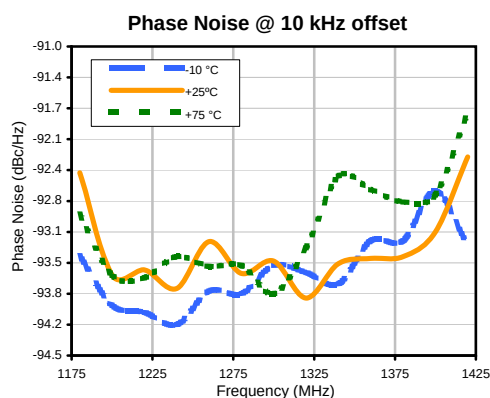
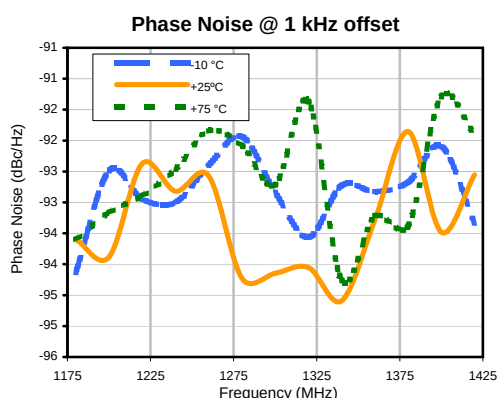
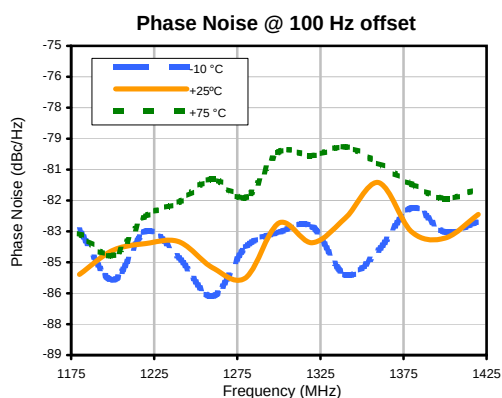
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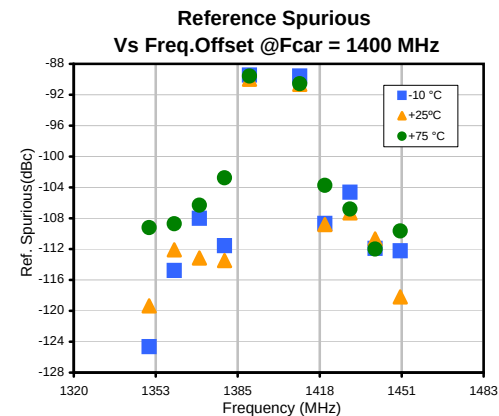
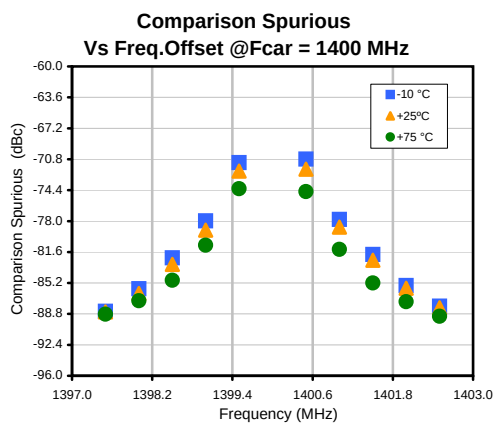
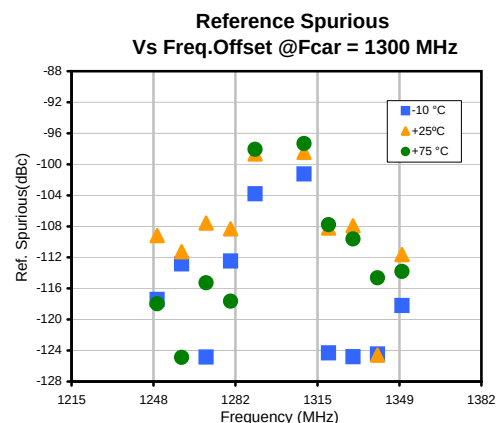
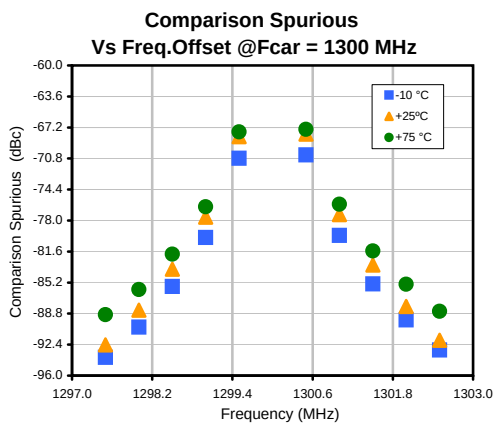
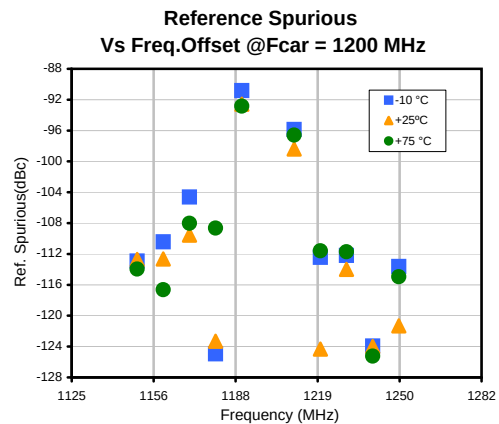
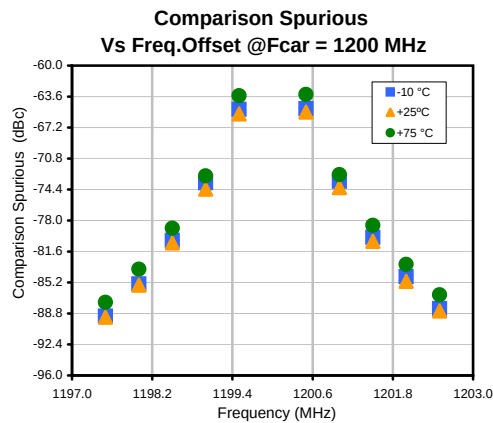
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Typical Performance Data

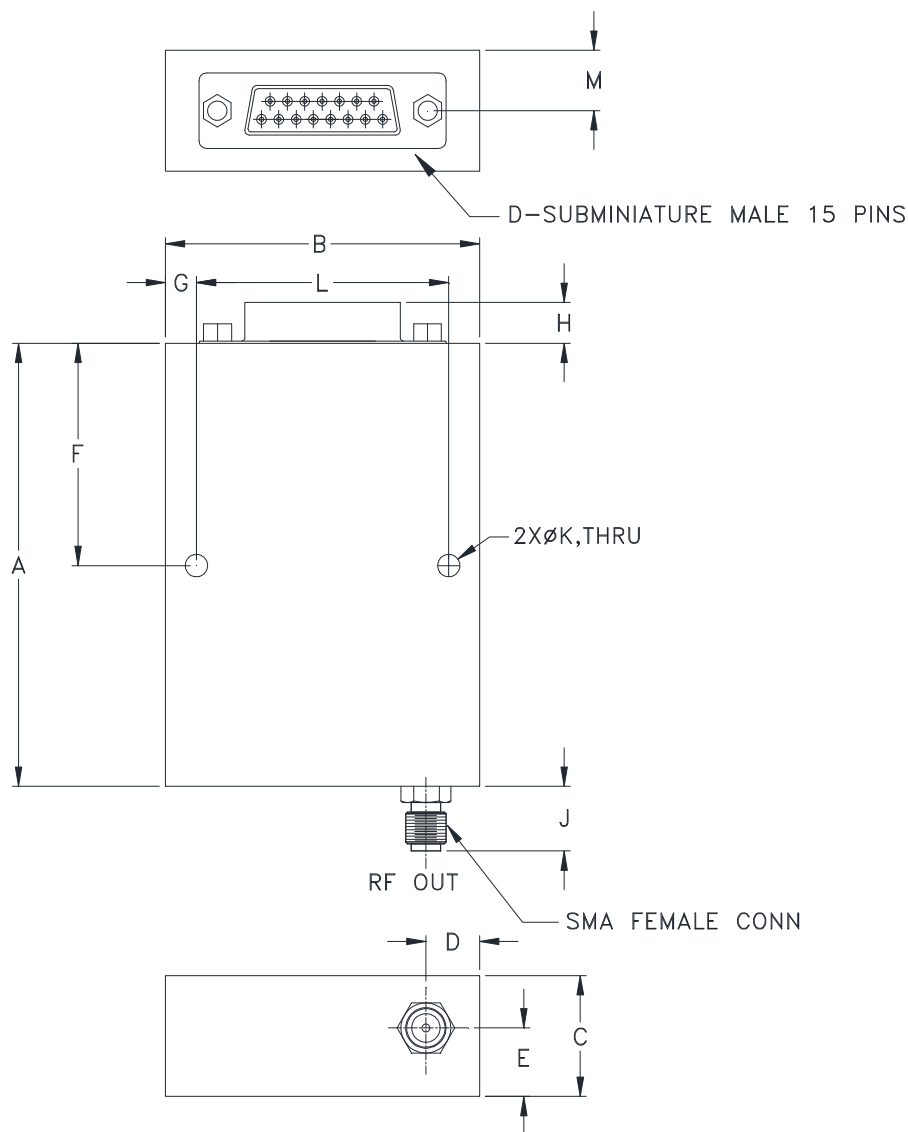
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CASE#	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAMS
KF1336	2.75 (69.85)	1.96 (49.78)	.75 (19.05)	.34 (8.64)	.375 (9.52)	1.38 (35.05)	.19 (4.83)	.25 (6.35)	.40 (10.16)	.14 (3.56)	1.575 (40.0)	.375 (9.52)	130

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

Notes:

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



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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