

# Coaxial Frequency Mixer

Level 7 (LO Power +7 dBm) 1 to 1000 MHz

## ZFM-2+



Generic photo used for illustration purposes only

CASE STYLE: K18

Connectors	Model
BNC	ZFM-2+
SMA	ZFM-2-S+
<b>BRACKET (OPTION "B")</b>	

**+RoHS Compliant**

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

### Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

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

### Coaxial Connections

LO	1
RF	2
IF	3

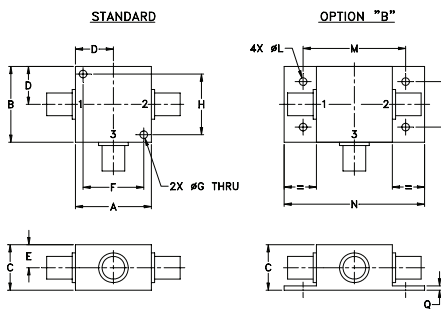
### Features

- low conversion loss, 5.72 dB typ.
- good L-R isolation, 40 dB typ, L-I, 35 dB typ.
- wideband, 1 to 1000
- rugged shielded case

### Applications

- VHF/UHF
- cellular
- instrumentation

### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H
1.25	1.25	.75	.63	.38	1.00	.125	1.000
31.75	31.75	19.05	16.00	9.65	25.40	3.18	25.40

J	K	L	M	N	P	Q	wt
--	--	.125	1.688	2.18	.75	.07	grams
--	--	3.18	42.88	55.37	19.05	1.78	70.0

### Electrical Specifications

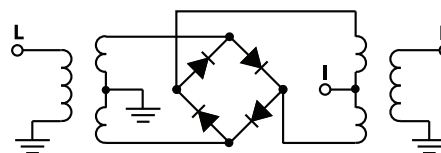
FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)					
LO/RF	IF	Mid-Band		Total Range	Max.	L		M		U		L		M		U	
$f_L-f_U$	$\bar{X}$	$\sigma$	Max.			Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.
1-1000	DC-1000	5.72	0.06	7.5	8.5	50	45	40	25	30	25	45	40	35	25	25	20

1 dB COMP.: +1 dBm typ. L = low range [ $f_L$  to  $10 f_L$ ] M = mid range [ $10 f_L$  to  $f_U/2$ ] U = upper range [ $f_U/2$  to  $f_U$ ]  
m = mid band [ $2f_L$  to  $f_U/2$ ]

### Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
1.00	31.00	7.23	>67.00	>67.00	1.30	2.70
2.00	32.00	6.50	>67.00	>67.00	1.15	2.63
5.00	35.00	5.80	>67.00	>67.00	1.07	2.77
10.00	40.00	5.62	>67.00	>67.00	1.06	2.55
20.00	50.00	5.68	>67.00	>67.00	1.07	2.41
50.00	80.00	5.58	61.94	63.74	1.09	2.37
100.00	70.00	5.53	54.33	54.76	1.11	2.29
167.34	137.34	5.57	48.65	47.61	1.16	2.20
233.87	203.87	5.72	45.10	43.03	1.18	2.16
300.40	270.40	5.45	42.56	40.00	1.20	2.13
366.94	336.94	5.73	40.45	37.57	1.22	2.06
466.74	436.74	5.82	38.33	34.32	1.23	2.13
500.00	470.00	5.72	38.80	34.10	1.26	2.09
599.81	569.81	6.02	37.43	32.81	1.29	2.09
666.34	636.34	6.11	37.94	31.57	1.34	2.04
799.41	769.41	6.27	36.06	29.67	1.40	2.13
832.68	802.68	6.46	35.22	28.79	1.47	2.19
899.21	869.21	7.00	33.77	26.14	1.55	2.24
932.48	902.48	7.37	33.17	25.03	1.66	2.28
1000.00	969.00	7.63	32.49	23.59	1.72	2.30

### Electrical Schematic



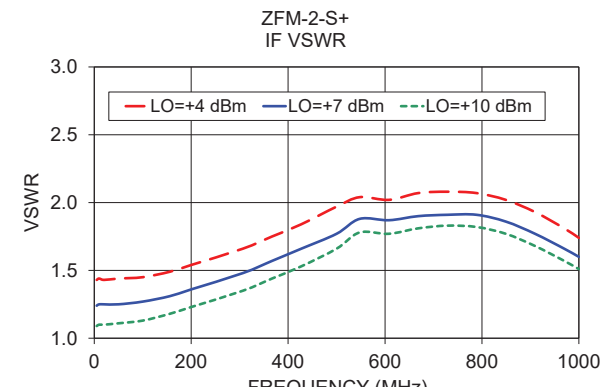
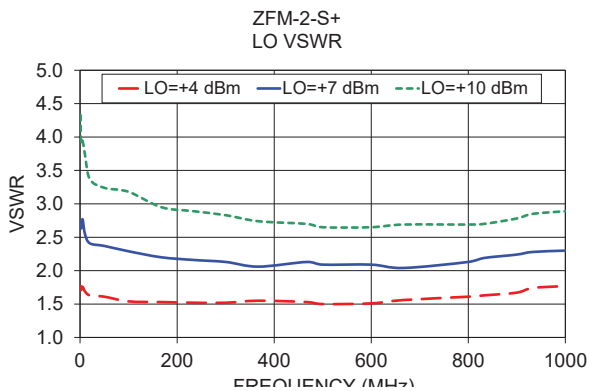
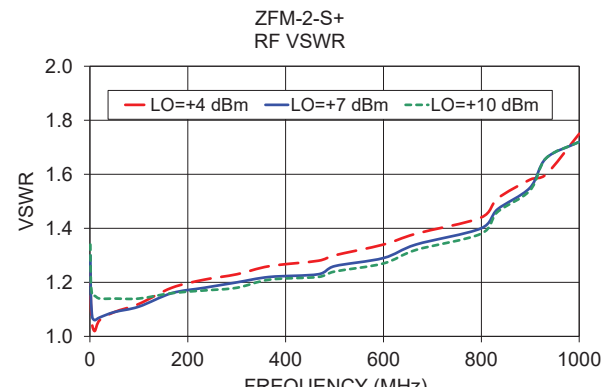
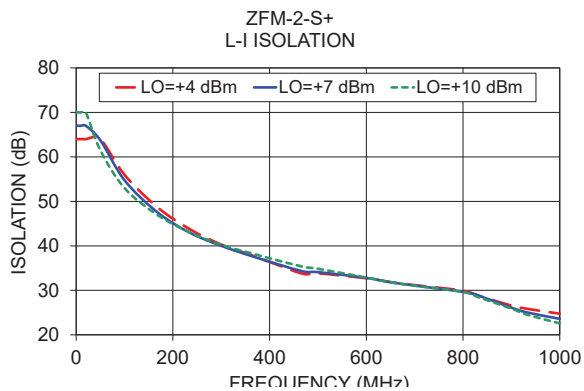
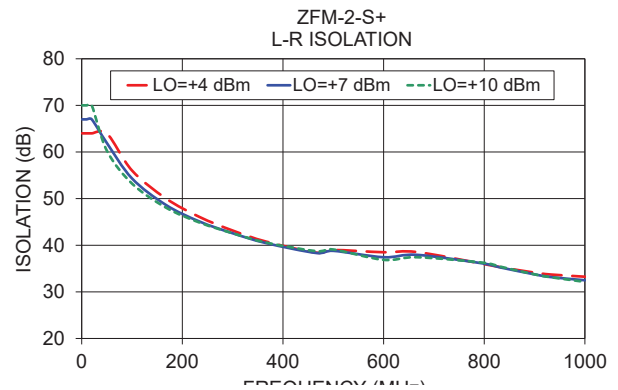
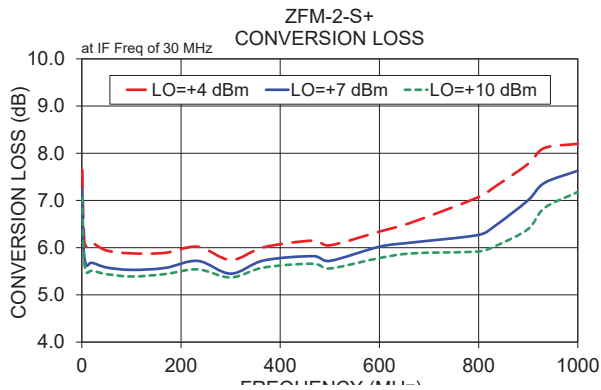
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# Frequency Mixer

# ZFM-2+

## Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
		@LO (dBm)				@LO (dBm)			@LO (dBm)		
		+4	+7	+10		+4	+7	+10	+4	+7	+10
1.0	31.0	7.65	7.23	7.05	1.0	64.00	67.00	70.00	64.00	67.00	70.00
2.0	32.0	6.99	6.50	6.38	2.0	64.00	67.00	70.00	64.00	67.00	70.00
5.0	35.0	6.14	5.80	5.68	5.0	64.00	67.00	70.00	64.00	67.00	70.00
10.0	40.0	6.01	5.62	5.47	10.0	64.00	67.00	70.00	64.00	67.00	70.00
20.0	50.0	6.10	5.68	5.51	20.0	64.00	67.00	70.00	64.00	67.00	70.00
50.0	80.0	5.94	5.58	5.44	50.0	64.00	61.94	60.30	64.00	63.74	61.51
100.0	70.0	5.88	5.53	5.39	100.0	56.03	54.33	53.23	55.98	54.76	53.00
167.3	137.3	5.89	5.57	5.44	167.3	50.05	48.65	48.08	48.75	47.61	47.01
233.9	203.9	6.02	5.72	5.54	233.9	46.08	45.10	44.88	43.82	43.03	43.10
300.4	270.4	5.74	5.45	5.37	300.4	43.14	42.56	42.56	40.29	40.00	40.23
366.9	336.9	6.01	5.73	5.58	366.9	40.77	40.45	40.57	37.73	37.57	38.18
466.7	436.7	6.15	5.82	5.66	466.7	38.41	38.33	38.72	33.78	34.32	35.36
500.0	470.0	6.05	5.72	5.56	500.0	38.98	38.80	39.09	33.83	34.10	34.86
599.8	569.8	6.34	6.02	5.78	599.8	38.50	37.43	36.87	32.71	32.81	32.88
666.3	636.3	6.54	6.11	5.88	666.3	38.54	37.94	37.43	31.60	31.57	31.51
799.4	769.4	7.07	6.27	5.92	799.4	35.96	36.06	36.24	29.94	29.67	29.67
832.7	802.7	7.29	6.46	6.03	832.7	35.29	35.22	35.39	28.80	28.79	28.42
899.2	869.2	7.77	7.00	6.39	899.2	34.14	33.77	33.77	26.59	26.14	25.92
932.5	902.5	8.11	7.37	6.84	932.5	33.72	33.17	33.14	25.85	25.03	24.52
1000.0	969.0	8.20	7.63	7.18	1000.0	33.25	32.49	32.14	24.75	23.59	22.58

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# Frequency Mixer

# ZFM-2+

## Typical Performance Data

RF/LO (MHz)	RF VSWR (:1)			LO VSWR (:1)			IF (MHz)	IF VSWR (:1)			LO/RF (MHz)	max. DC output (mV)	DC Offset (mV)
	@LO (dBm)			@LO (dBm)				@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10		+4	+7	+10	+7		
5.0	1.26	1.30	1.34	1.77	2.70	4.33	5.0	1.43	1.24	1.09	1.00	-230.1	0.09
10.0	1.12	1.15	1.20	1.71	2.63	3.91	10.0	1.44	1.25	1.10	2.00	-234.9	0.09
20.0	1.04	1.07	1.15	1.76	2.77	3.95	20.0	1.43	1.25	1.10	5.00	-240.2	0.08
50.0	1.02	1.06	1.15	1.69	2.55	3.74	50.0	1.44	1.25	1.11	20.00	-240.2	0.09
100.0	1.06	1.07	1.14	1.63	2.41	3.37	100.0	1.45	1.27	1.13	50.00	-236.5	0.09
155.8	1.09	1.09	1.14	1.61	2.37	3.24	155.8	1.49	1.31	1.18	100.00	-238.6	0.08
200.0	1.12	1.11	1.14	1.54	2.29	3.18	200.0	1.54	1.36	1.23	161.97	-242.9	0.06
306.5	1.18	1.16	1.16	1.53	2.20	2.95	306.5	1.66	1.48	1.35	200.00	-243.4	0.02
366.8	1.21	1.18	1.17	1.52	2.16	2.89	366.8	1.75	1.57	1.44	290.75	-246.8	0.11
427.1	1.23	1.20	1.18	1.52	2.13	2.83	427.1	1.84	1.66	1.53	322.94	-237.6	0.11
500.0	1.26	1.22	1.21	1.55	2.06	2.74	500.0	1.97	1.77	1.66	387.33	-224.0	0.01
547.7	1.28	1.23	1.22	1.53	2.13	2.70	547.7	2.04	1.88	1.78	451.72	-223.3	0.22
608.0	1.30	1.26	1.24	1.50	2.09	2.65	608.0	2.02	1.87	1.77	500.00	-229.6	0.23
668.3	1.34	1.29	1.27	1.51	2.09	2.65	668.3	2.07	1.90	1.81	580.49	-229.0	0.37
728.7	1.38	1.34	1.32	1.56	2.04	2.69	728.7	2.08	1.91	1.83	644.88	-207.4	0.48
789.0	1.44	1.40	1.38	1.61	2.13	2.69	789.0	2.07	1.91	1.82	709.27	-196.5	1.06
849.3	1.51	1.47	1.46	1.63	2.19	2.70	849.3	2.02	1.86	1.77	773.66	-138.5	0.83
909.6	1.58	1.55	1.54	1.67	2.24	2.78	909.6	1.93	1.77	1.68	838.04	-187.3	0.49
969.9	1.60	1.66	1.66	1.74	2.28	2.85	969.9	1.81	1.66	1.57	902.43	-173.9	0.72
1000.0	1.75	1.72	1.72	1.77	2.30	2.89	1000.0	1.74	1.60	1.51	1000.00	-178.5	0.64

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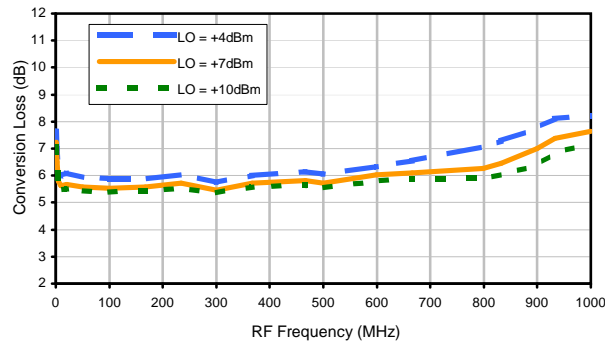


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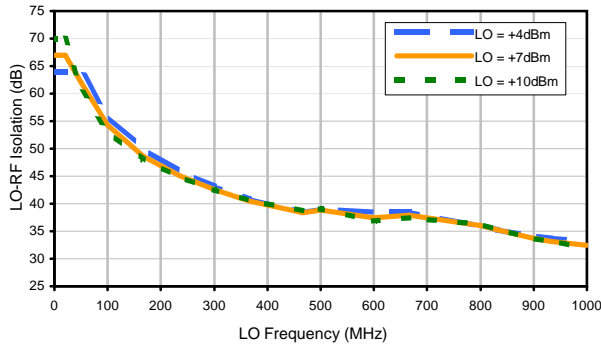


## Typical Performance Curves

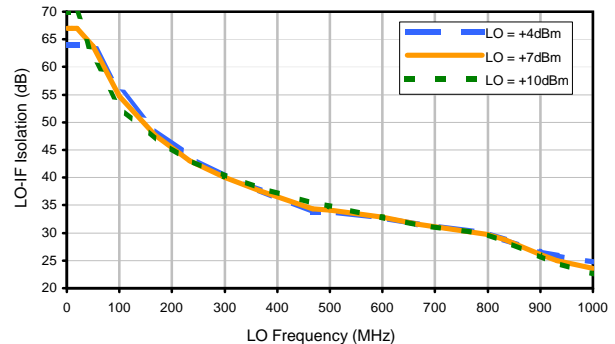
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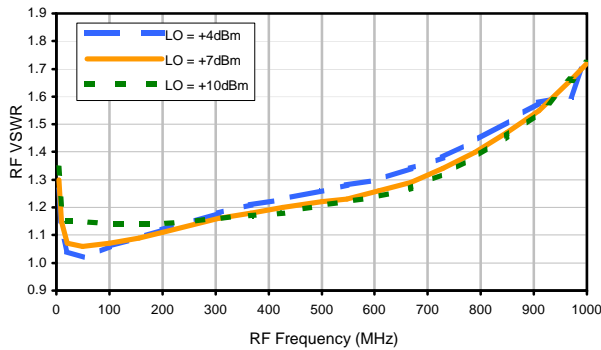
LO-RF Isolation



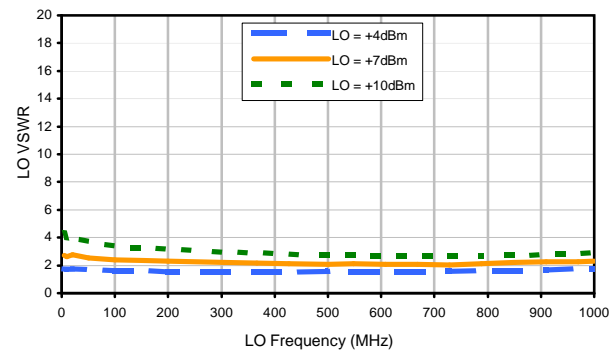
LO-IF Isolation



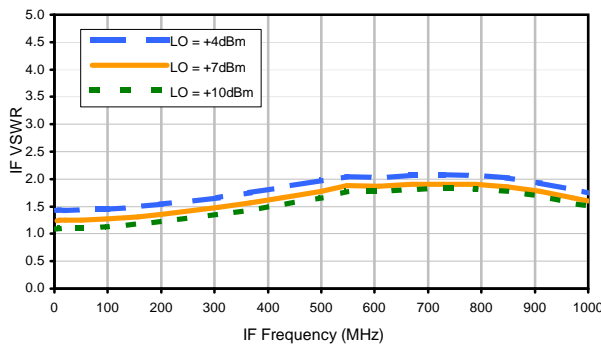
RF VSWR



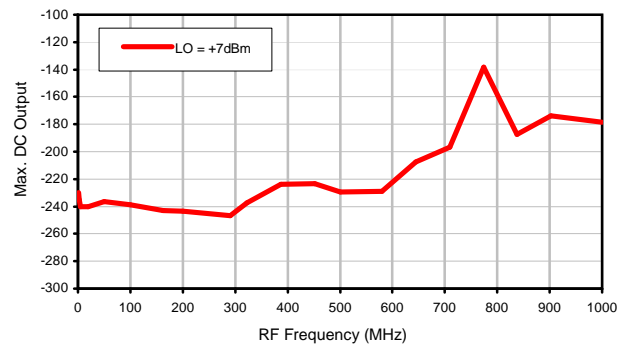
LO VSWR



IF VSWR



Max. DC Output

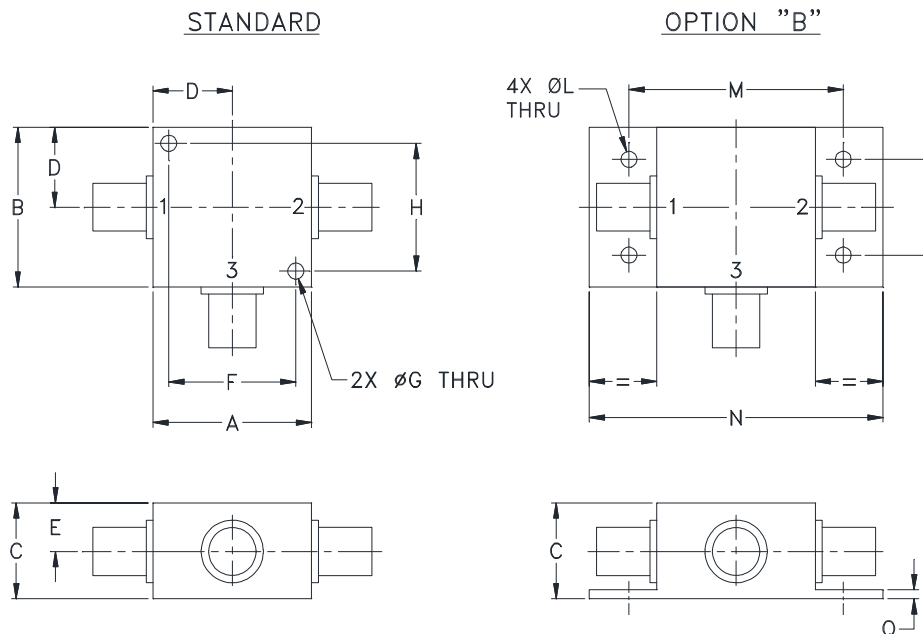


# Case Style

# K

## K18

### Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
K18	1.25 (31.75)	1.25 (31.75)	.75 (19.05)	.63 (16.00)	.38 (9.65)	1.000 (25.40)	.125 (3.18)	1.000 (25.40)	--	--	.125 (3.18)	1.688 (42.88)	2.18 (55.37)

CASE#	P	Q	WT. GRAMS
K18	.75 (19.05)	.07 (1.78)	70.0

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

#### Notes:

- Case material: Aluminum alloy.
- Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Mounting bracket available on request. Add suffix B to part number.
- For port marking 1, 2, and 3 see specifications data sheet.
- For bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
- Refer to the individual model data sheet for the type of connectors available.

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<b>Specification</b>	<b>Test/Inspection Condition</b>	<b>Reference/Spec</b>
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I