

Up Converter Frequency Mixer

Level 13 (LO Power +13 dBm) 0.1 to 7400 MHz

ZX05-U742MH-S+

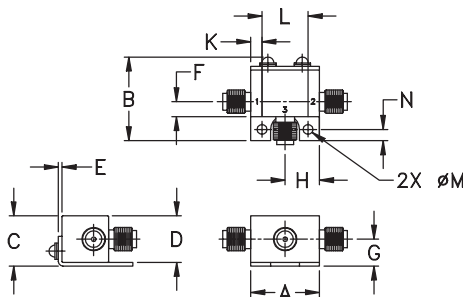
Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
IF Power	50mW
Permanent damage may occur if any of these limits are exceeded.	

Coaxial Connections

LO	2
IF (IN)	1
RF (OUT)	3

Outline Drawing



Outline Dimensions (inch mm)

A	B	C	D	E	F	G
.74	.90	.54	.50	.04	.16	.29
18.80	22.86	13.72	12.70	1.02	4.06	7.37
H	J	K	L	M	N	wt
.37	--	.122	.496	.106	.122	grams
9.40	--	3.10	12.60	2.69	3.10	20.0

Features

- up converter mixer
- low conversion loss, 8.3 dB typ.
- high IP3, 20 dBm typ.
- rugged construction
- small size
- protected by US patents, 6,790,049 and 7,027,795

Applications

- instrumentation
- wide band receivers
- ISM



Generic photo used for illustration purposes only

CASE STYLE: FL905

Connectors	Model
SMA	ZX05-U742MH-S+

+RoHS Compliant

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

Electrical Specifications

FREQUENCY (MHz)			CONVERSION LOSS* (dB)			LO-IF (IN) ISOLATION (dB)		LO-RF (OUT) ISOLATION (dB)		IP3 at center band (dBm)
IF (IN)	LO	RF (OUT)	Typ.	σ^{**}	Max.	Typ.	Min.	Typ.	Min.	
0.1-3300	2300-7400	2300-7400	8.3	0.2	9.9	23	10	25	11	20

1 dB COMPR. +9 dBm typ.

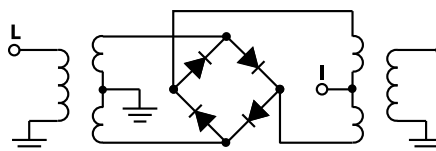
* Conversion Loss at 4075 MHz RF

** σ is a standard deviation

Typical Performance Data

Frequency (MHz)				Conversion Loss (dB)	Freq. (MHz)	Isolation L-I (dB)	Isolation L-R (dB)	VSWR LO Port (:1)	VSWR RF (OUT) Port (:1)
IF (IN)	LO	RF (OUT)	LO +13dBm		LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm	LO +13dBm
10.10	4085.10	4075.00	5.57	2300.10	21.13	38.74	2.92	2.95	
100.10	4175.10	4075.00	5.36	2600.10	26.47	35.51	2.17	3.33	
300.10	4375.10	4075.00	5.43	2900.10	28.02	30.76	1.89	3.40	
500.10	4575.10	4075.00	5.56	3200.10	26.53	27.62	1.82	3.19	
700.10	4775.10	4075.00	5.99	3500.10	23.07	27.19	1.96	2.47	
900.10	4975.10	4075.00	6.27	3800.10	23.29	26.81	2.17	2.35	
1100.10	5175.10	4075.00	7.07	4100.10	28.75	25.94	2.69	2.47	
1300.10	5375.10	4075.00	7.99	4400.10	23.50	23.80	3.31	2.61	
1500.10	5575.10	4075.00	8.41	4700.10	15.33	22.60	3.80	2.51	
1700.10	5775.10	4075.00	8.80	5000.10	13.50	21.09	4.23	3.21	
1900.10	5975.10	4075.00	8.78	5300.10	13.95	20.80	4.70	3.40	
2100.10	6175.10	4075.00	8.45	5600.10	15.79	20.24	4.55	3.49	
2300.10	6375.10	4075.00	7.73	5900.10	19.40	19.04	3.76	3.29	
2500.10	6575.10	4075.00	7.42	6200.10	24.99	17.57	2.67	3.31	
2700.10	6775.10	4075.00	7.02	6500.10	31.86	16.35	1.87	3.10	
2900.10	6975.10	4075.00	6.74	6800.10	32.02	15.61	1.88	2.67	
3100.10	7175.10	4075.00	6.89	7100.10	26.63	15.09	3.00	2.72	
3200.10	7275.10	4075.00	7.13	7300.10	20.91	15.81	4.08	3.21	
3250.10	7325.10	4075.00	7.33	7350.10	19.57	15.70	4.32	2.68	
3300.10	7375.10	4075.00	7.70	7400.10	19.47	16.10	4.73	3.67	

Electrical Schematic



Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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

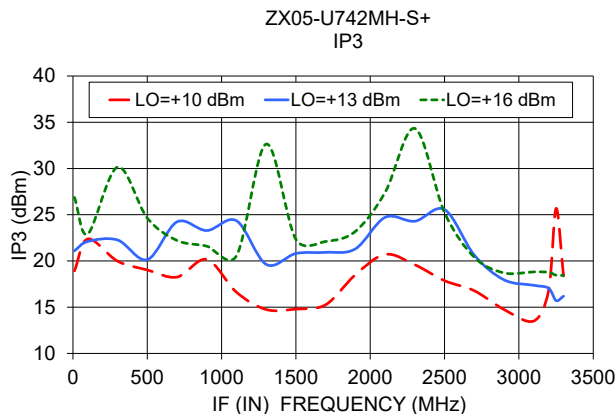
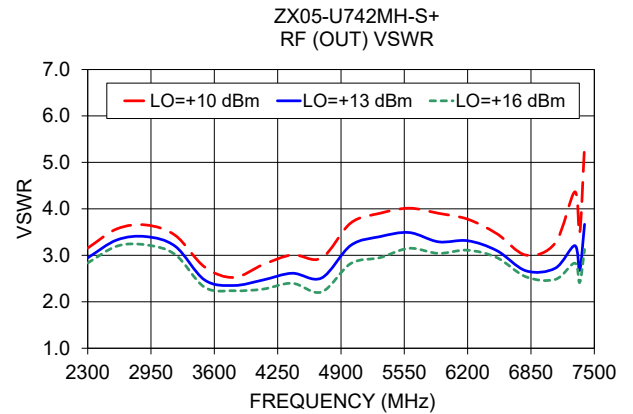
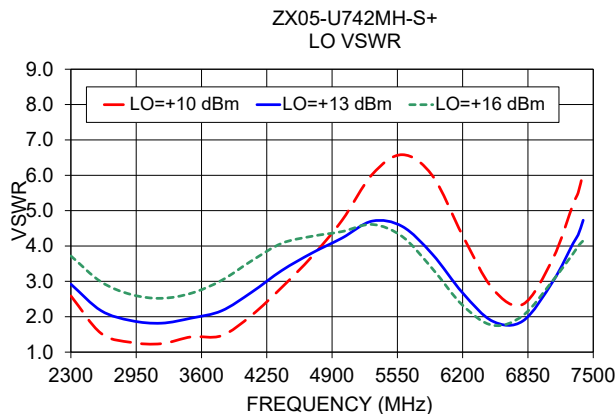
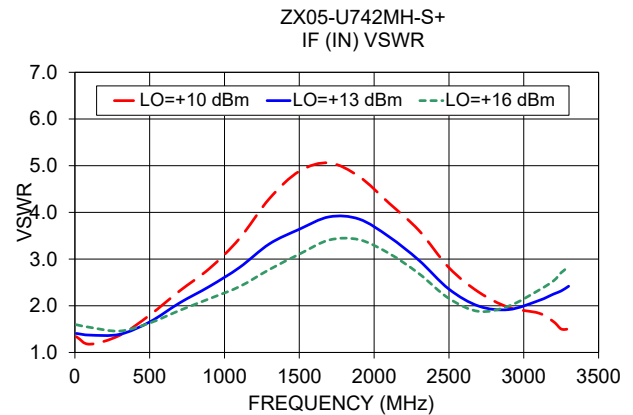
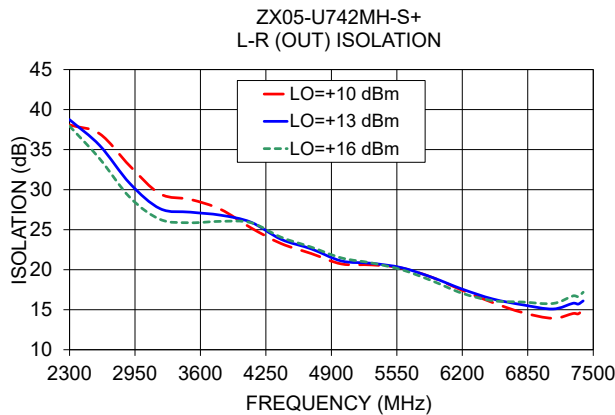
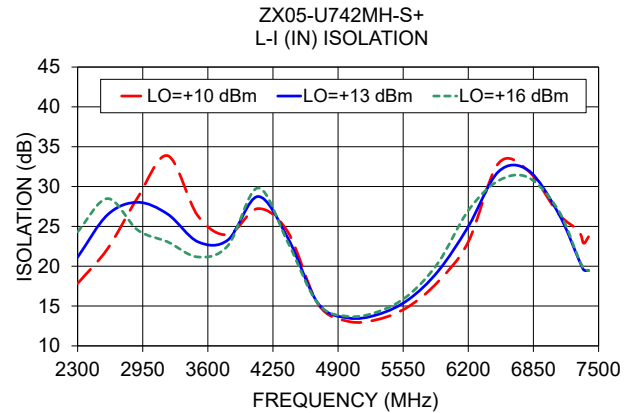
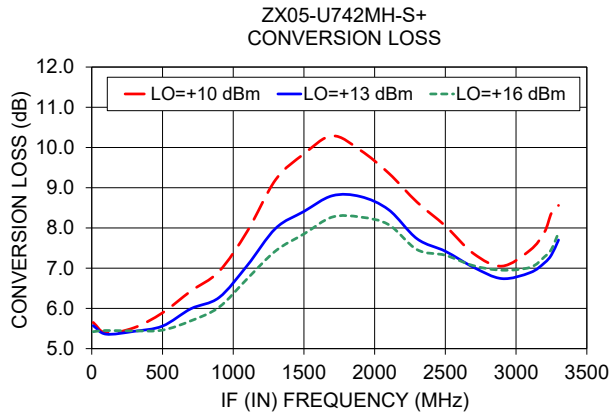


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Performance Charts

ZX05-U742MH-S+



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Frequency Mixer (Upconverter)

ZX05-U742MH-S+

Typical Performance Data

IF INPUT (MHz)	LO INPUT (MHz)	RF OUTPUT (MHz)	CONVERSION LOSS (dB)			IP-3 INPUT (dBm)			LO INPUT (MHz)	LO-IF ISOLATION (dB)			LO-RF ISOLATION (dB)		
			@LO (dBm)			@LO (dBm)				@LO (dBm)			@LO (dBm)		
			+10	+13	+16	+10	+13	+16		+10	+13	+16	+10	+13	+16
10	4085	4075	5.65	5.57	5.42	18.93	21.10	26.87	2300	17.83	21.13	24.33	38.08	38.74	37.94
20	4095	4075	5.29	5.09	5.23	18.77	20.26	25.68	2325	18.15	21.53	24.74	38.01	38.47	37.37
30	4105	4075	5.13	5.00	5.01	19.76	20.18	23.61	2350	18.29	21.73	24.87	39.89	39.30	37.36
40	4115	4075	5.25	5.11	5.17	21.08	20.63	23.13	2375	18.80	22.33	25.50	41.12	40.13	37.70
50	4125	4075	5.25	5.21	5.23	21.26	21.39	22.66	2400	19.13	22.72	25.92	40.77	39.78	37.38
60	4135	4075	5.25	5.21	5.31	22.12	21.23	22.19	2450	19.46	23.13	26.31	41.39	39.18	36.20
70	4145	4075	5.29	5.27	5.34	22.51	21.82	22.31	2500	20.54	24.29	27.30	40.51	39.02	36.37
80	4155	4075	5.30	5.29	5.35	21.86	21.90	22.10	2600	22.21	26.47	28.49	36.97	35.51	33.85
90	4165	4075	5.44	5.35	5.47	22.08	22.28	22.18	2700	24.29	28.38	27.80	35.26	33.07	31.70
100	4175	4075	5.39	5.36	5.45	22.38	22.11	22.92	2800	26.73	28.59	25.76	34.09	31.60	29.90
125	4200	4075	5.35	5.24	5.26	21.24	23.65	22.05	2900	28.63	28.02	24.54	32.94	30.76	29.02
150	4225	4075	5.38	5.29	5.29	22.46	25.92	23.23	3000	30.49	27.96	24.16	31.22	29.29	27.84
175	4250	4075	5.46	5.42	5.44	23.32	29.58	26.53	3100	34.06	28.06	23.65	30.18	28.28	26.96
200	4275	4075	5.57	5.52	5.57	23.31	31.35	27.87	3200	33.87	26.53	23.05	29.47	27.62	26.28
225	4300	4075	5.50	5.42	5.43	21.77	31.68	28.71	3300	30.50	25.19	22.44	28.95	27.36	26.07
250	4325	4075	5.47	5.39	5.40	20.85	26.16	27.54	3400	28.15	24.11	21.77	28.68	27.21	25.94
275	4350	4075	5.52	5.45	5.47	20.01	23.08	28.64	3500	26.33	23.07	21.16	28.78	27.19	25.87
300	4375	4075	5.52	5.43	5.44	19.98	22.27	30.15	3600	25.08	22.79	21.28	28.50	27.00	25.84
325	4400	4075	5.50	5.37	5.35	19.67	21.46	31.79	3700	24.36	22.92	21.78	27.92	26.77	25.79
350	4425	4075	5.52	5.34	5.32	19.15	20.50	27.71	3800	23.96	23.29	22.58	27.54	26.81	26.04
400	4475	4075	5.62	5.39	5.34	19.45	19.89	26.36	3900	24.41	24.36	24.02	27.19	26.83	26.24
450	4525	4075	5.70	5.42	5.33	19.64	20.04	24.04	4000	25.46	26.09	26.25	26.40	26.51	26.12
500	4575	4075	5.89	5.56	5.46	19.03	20.14	24.64	4100	27.23	28.75	29.82	25.24	25.94	25.88
550	4625	4075	5.99	5.58	5.43	18.83	19.51	23.69	4200	29.54	31.17	32.74	23.95	24.77	25.09
600	4675	4075	6.11	5.57	5.41	18.48	20.22	22.29	4300	29.10	28.34	27.87	23.47	24.12	24.45
650	4725	4075	6.26	5.80	5.49	17.51	21.43	20.89	4400	24.27	23.50	22.95	23.27	23.80	24.06
700	4775	4075	6.43	5.99	5.69	18.26	24.23	22.22	4500	20.10	19.74	19.40	22.85	23.31	23.49
750	4825	4075	6.49	6.05	5.87	18.66	24.89	21.82	4600	17.10	16.99	16.80	22.58	23.05	23.14
800	4875	4075	6.61	6.10	5.93	18.85	22.24	21.30	4700	15.25	15.33	15.29	22.02	22.60	22.82
850	4925	4075	6.84	6.25	5.97	20.39	22.38	21.77	4800	14.23	14.43	14.48	21.48	22.08	22.39
900	4975	4075	6.92	6.27	6.03	20.16	23.29	21.60	4900	13.52	13.83	13.95	20.99	21.52	21.94
950	5025	4075	7.15	6.47	6.29	19.57	23.54	21.15	5000	13.08	13.50	13.70	20.72	21.09	21.47
1000	5075	4075	7.32	6.58	6.35	18.57	24.00	21.59	5100	13.10	13.59	13.86	20.77	21.10	21.29
1100	5175	4075	7.92	7.07	6.74	16.62	24.35	20.56	5200	13.17	13.74	14.05	20.71	21.00	21.14
1200	5275	4075	8.53	7.59	7.14	15.73	21.27	21.73	5300	13.33	13.95	14.30	20.60	20.80	20.84
1300	5375	4075	9.20	7.99	7.43	14.75	19.63	32.64	5400	13.82	14.51	14.91	20.57	20.70	20.61
1400	5475	4075	9.61	8.20	7.69	14.13	20.42	21.68	5500	14.30	15.08	15.55	20.47	20.58	20.39
1500	5575	4075	9.84	8.41	7.85	14.80	20.81	22.33	5600	14.91	15.79	16.34	20.20	20.24	19.99
1600	5675	4075	10.12	8.67	8.10	15.03	20.47	21.41	5700	16.00	16.99	17.66	19.91	19.95	19.61
1700	5775	4075	10.29	8.80	8.27	15.27	20.93	22.11	5800	16.95	18.10	18.93	19.56	19.57	19.16
1800	5875	4075	10.16	8.87	8.38	16.80	20.76	22.07	5900	18.08	19.40	20.45	19.04	19.04	18.61
1900	5975	4075	9.93	8.78	8.27	18.51	21.31	23.20	6000	19.70	21.19	22.47	18.50	18.51	17.99
2000	6075	4075	9.74	8.73	8.27	18.53	22.53	23.52	6100	21.17	22.88	24.50	17.98	18.05	17.52
2100	6175	4075	9.36	8.45	8.08	20.71	24.72	27.42	6200	23.06	24.99	26.99	17.42	17.57	17.05
2200	6275	4075	8.90	8.06	7.72	22.30	24.62	29.92	6300	25.96	28.25	30.90	16.90	17.12	16.66
2300	6375	4075	8.64	7.73	7.46	19.59	24.30	34.33	6400	29.32	31.21	32.73	16.38	16.74	16.40
2400	6475	4075	8.27	7.50	7.30	18.09	24.96	27.40	6500	32.90	31.86	30.73	15.90	16.35	16.13
2500	6575	4075	8.05	7.42	7.32	17.87	25.56	25.22	6600	35.86	32.28	30.32	15.48	16.05	15.96
2600	6675	4075	7.67	7.19	7.15	17.46	22.74	22.02	6700	34.31	31.75	30.03	15.08	15.84	15.91
2700	6775	4075	7.36	7.02	7.06	16.78	20.63	20.40	6800	31.95	32.02	31.13	14.64	15.61	15.96
2800	6875	4075	7.24	6.91	7.04	15.71	19.44	19.15	6900	29.86	31.41	32.41	14.34	15.44	15.99
2900	6975	4075	7.05	6.74	6.95	14.75	17.96	18.71	7000	28.13	28.95	29.52	14.00	15.17	15.85
3000	7075	4075	7.13	6.77	6.90	13.91	17.85	19.06	7100	26.58	26.63	26.99	13.93	15.09	15.78
3100	7175	4075	7.45	6.89	7.02	13.51	17.37	18.82	7200	25.35	23.69	23.86	14.15	15.43	16.16
3200	7275	4075	7.89	7.13	7.28	16.81	17.05	18.77	7300	24.46	20.91	20.99	14.53	15.81	16.73
3300	7375	4075	8.56	7.70	7.88	18.38	16.19	18.45	7400	23.70	19.47	19.44	15.02	16.10	17.18

Frequency Mixer (Upconverter)

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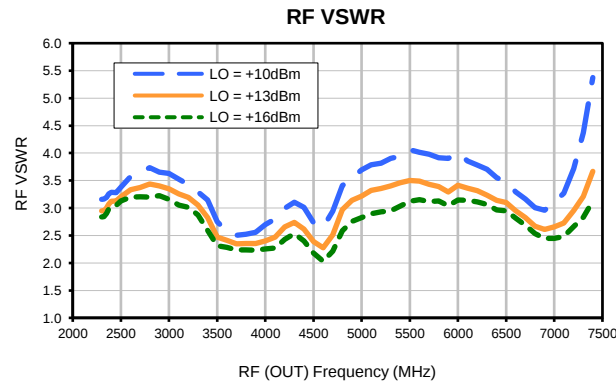
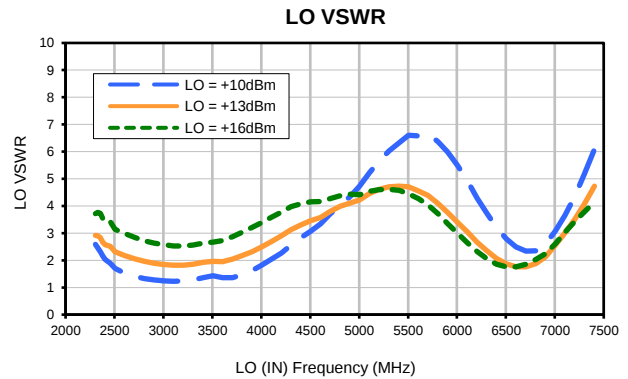
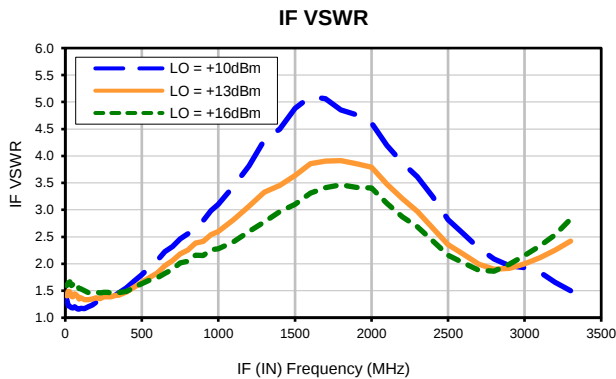
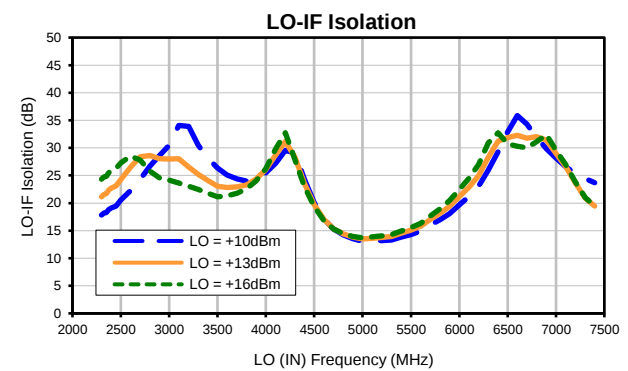
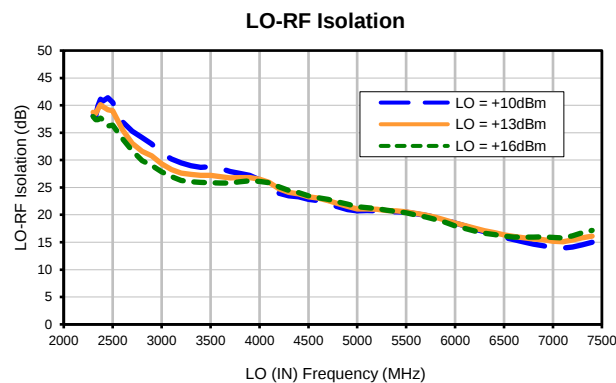
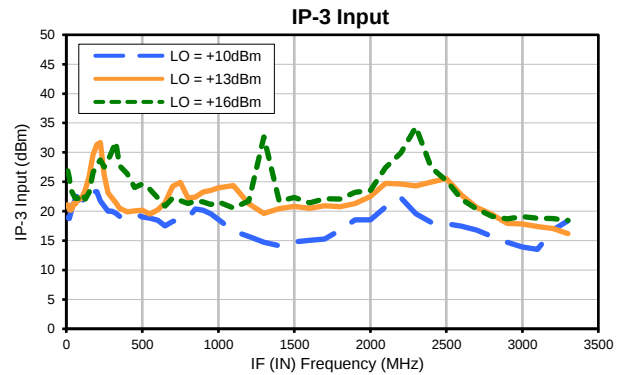
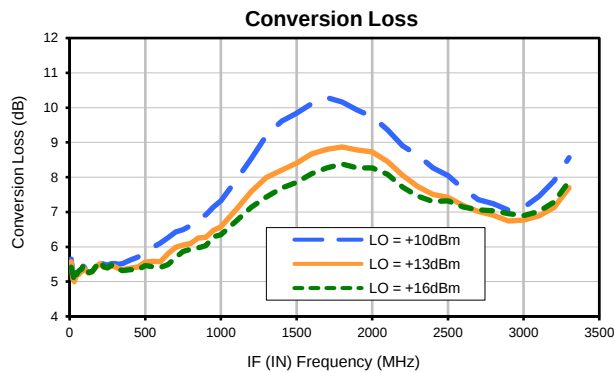
Typical Performance Data

IF INPUT (MHz)	LO INPUT (MHz)	IF VSWR (:1)			LO INPUT (MHz)	LO VSWR (:1)			RF OUTPUT (MHz)	RF VSWR (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+10	+13	+16		+10	+13	+16		+10	+13	+16
10	4085	1.34	1.41	1.59	2305	2.59	2.92	3.72	2300	3.16	2.95	2.84
20	4095	1.22	1.49	1.64	2330	2.45	2.90	3.76	2325	3.16	2.95	2.84
30	4105	1.21	1.48	1.67	2355	2.31	2.83	3.73	2350	3.19	3.00	2.90
40	4115	1.18	1.40	1.59	2380	2.15	2.66	3.52	2375	3.26	3.07	2.98
50	4125	1.18	1.39	1.62	2405	2.03	2.57	3.42	2400	3.29	3.12	3.03
60	4135	1.21	1.44	1.66	2455	1.89	2.52	3.43	2450	3.28	3.13	3.05
70	4145	1.18	1.43	1.65	2505	1.70	2.31	3.14	2500	3.38	3.20	3.13
80	4155	1.16	1.40	1.59	2605	1.53	2.17	2.99	2600	3.57	3.33	3.20
90	4165	1.16	1.35	1.55	2705	1.41	2.05	2.84	2700	3.65	3.37	3.20
100	4175	1.18	1.37	1.54	2805	1.33	1.96	2.72	2800	3.73	3.44	3.20
125	4200	1.17	1.33	1.50	2905	1.27	1.89	2.63	2900	3.65	3.40	3.22
150	4225	1.21	1.34	1.47	3005	1.24	1.84	2.57	3000	3.63	3.35	3.16
175	4250	1.23	1.35	1.46	3105	1.23	1.81	2.52	3100	3.52	3.26	3.05
200	4275	1.29	1.37	1.48	3205	1.24	1.82	2.52	3200	3.43	3.19	3.01
225	4300	1.28	1.35	1.46	3305	1.28	1.86	2.56	3300	3.29	3.05	2.87
250	4325	1.32	1.39	1.47	3405	1.36	1.93	2.63	3400	3.15	2.83	2.59
275	4350	1.35	1.39	1.47	3505	1.43	1.96	2.67	3500	2.75	2.47	2.31
300	4375	1.37	1.39	1.46	3605	1.36	1.95	2.72	3600	2.57	2.41	2.28
325	4400	1.41	1.41	1.48	3705	1.36	2.04	2.86	3700	2.50	2.35	2.24
350	4425	1.46	1.42	1.46	3805	1.46	2.17	3.03	3800	2.52	2.35	2.24
400	4475	1.56	1.48	1.49	3905	1.62	2.32	3.21	3900	2.56	2.36	2.23
450	4525	1.68	1.56	1.56	4005	1.82	2.49	3.39	4000	2.69	2.40	2.25
500	4575	1.80	1.65	1.63	4105	2.04	2.69	3.58	4100	2.80	2.47	2.27
550	4625	1.94	1.75	1.70	4205	2.26	2.90	3.77	4200	3.00	2.66	2.43
600	4675	2.06	1.83	1.74	4305	2.56	3.13	3.97	4300	3.11	2.74	2.53
650	4725	2.22	1.96	1.82	4405	2.83	3.31	4.08	4400	3.01	2.61	2.40
700	4775	2.32	2.06	1.90	4505	3.07	3.45	4.15	4500	2.73	2.39	2.18
750	4825	2.46	2.18	2.02	4605	3.34	3.57	4.17	4600	2.65	2.28	2.03
800	4875	2.56	2.25	2.05	4705	3.70	3.80	4.28	4700	2.94	2.51	2.21
850	4925	2.72	2.38	2.16	4805	4.03	3.99	4.38	4800	3.41	2.97	2.59
900	4975	2.80	2.42	2.15	4905	4.34	4.10	4.43	4900	3.55	3.14	2.75
950	5025	2.99	2.54	2.26	5005	4.73	4.23	4.41	5000	3.70	3.21	2.82
1000	5075	3.11	2.60	2.28	5105	5.22	4.46	4.54	5100	3.79	3.32	2.89
1100	5175	3.44	2.82	2.41	5205	5.65	4.61	4.60	5200	3.82	3.35	2.93
1200	5275	3.82	3.07	2.60	5305	6.03	4.70	4.61	5300	3.90	3.40	2.95
1300	5375	4.30	3.33	2.78	5405	6.32	4.73	4.57	5400	3.95	3.46	3.04
1400	5475	4.50	3.45	2.97	5505	6.61	4.70	4.45	5500	4.06	3.50	3.12
1500	5575	4.88	3.64	3.11	5605	6.58	4.55	4.27	5600	4.01	3.49	3.15
1600	5675	5.10	3.86	3.31	5705	6.66	4.39	4.03	5700	3.98	3.43	3.12
1700	5775	5.06	3.90	3.41	5805	6.37	4.09	3.71	5800	3.91	3.39	3.13
1800	5875	4.86	3.91	3.47	5905	5.99	3.76	3.35	5900	3.90	3.29	3.04
1900	5975	4.77	3.86	3.42	6005	5.49	3.40	3.00	6000	4.01	3.42	3.15
2000	6075	4.61	3.79	3.40	6105	4.93	3.04	2.65	6100	3.86	3.36	3.14
2100	6175	4.20	3.48	3.12	6205	4.30	2.67	2.32	6200	3.78	3.31	3.11
2200	6275	3.87	3.21	2.87	6305	3.73	2.35	2.06	6300	3.70	3.24	3.07
2300	6375	3.61	2.97	2.69	6405	3.21	2.07	1.85	6400	3.56	3.14	2.96
2400	6475	3.25	2.67	2.42	6505	2.79	1.87	1.76	6500	3.47	3.10	2.95
2500	6575	2.82	2.36	2.16	6605	2.49	1.76	1.76	6600	3.29	2.95	2.81
2600	6675	2.56	2.18	2.02	6705	2.34	1.76	1.86	6700	3.16	2.82	2.69
2700	6775	2.29	1.99	1.88	6805	2.35	1.88	2.03	6800	3.00	2.67	2.54
2800	6875	2.09	1.90	1.86	6905	2.60	2.12	2.25	6900	2.96	2.61	2.44
2900	6975	1.96	1.92	1.99	7005	3.09	2.56	2.61	7000	3.11	2.66	2.44
3000	7075	1.93	2.00	2.15	7105	3.65	3.00	3.03	7100	3.27	2.72	2.48
3100	7175	1.84	2.11	2.33	7205	4.37	3.52	3.43	7200	3.72	2.95	2.66
3200	7275	1.66	2.25	2.54	7305	5.19	4.08	3.79	7300	4.37	3.21	2.83
3300	7375	1.50	2.42	2.83	7405	6.09	4.73	4.15	7400	5.38	3.67	3.13

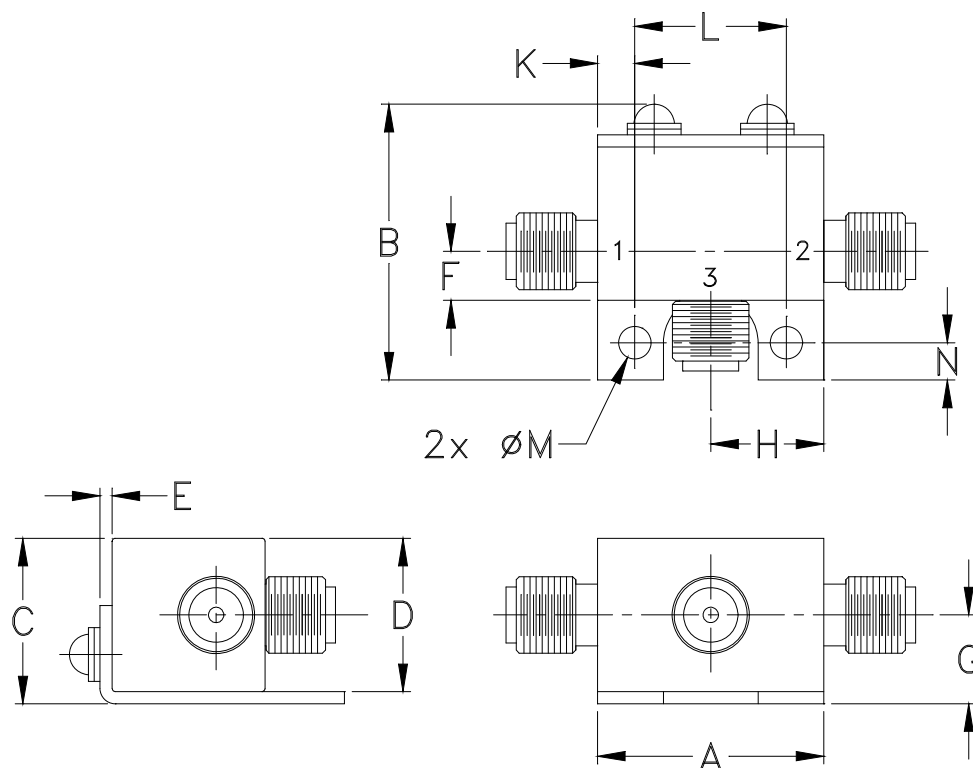
Frequency Mixer (Upconverter)

ZX05-U742MH-S+

Typical Performance Curves



Outline Dimensions



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N	WT, GRAM
FL905	.74 (18.80)	.90 (22.86)	.54 (13.72)	.50 (12.70)	.04 (1.02)	.16 (4.06)	.29 (7.37)	.37 (9.40)	- -	.122 (3.10)	.496 (12.60)	.106 (2.69)	.122 (3.10)	20.0

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

Tolerance on hole size and interaxes dimensions to be $\pm .005$.

Notes:

- Case material: Brass.
- Case finish: Nickel plate.



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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	-40° to 85°C	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