

# High IP3 Frequency Mixer

## LAVI-17VH+

### Level 21 (LO Power +21 dBm) 470 to 1730 MHz



CASE STYLE: CK605  
PRICE: \$22.95 ea. QTY. (1-9)  
\$15.95 ea. QTY. (100)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

#### Maximum Ratings

Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C
LO Power	+24 dBm
RF Power	+21 dBm

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

#### Pin Connections

LO	10
RF	2
IF	14
GROUND	1,3,4,5,6,7,8,9,11,12,13,15,16

#### Features

- very high IP3, 32 dBm typ.
- wideband, 470 to 1730 MHz
- excellent L-R isolation, 52 dB typ. and L-I isolation, 50 dB typ.
- high 1 dB compression, 20 dBm typ.
- shielded metal cover
- aqueous washable
- protected by US Patent 6,807,407

#### Applications

- satellite communication
- UHF receivers, transmitters
- GPS
- cellular
- defense communication

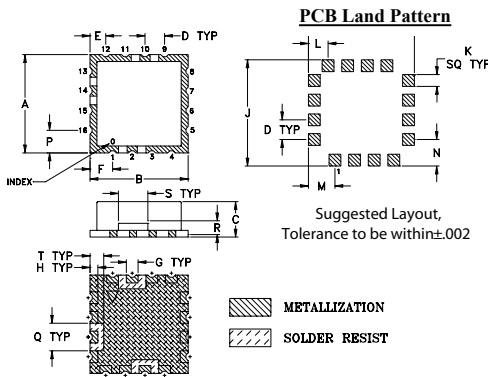
#### Electrical Specifications (T<sub>AMB</sub>=25°C)

FREQUENCY (MHz)			CONVERSION LOSS (dB)			RF in at 1dB Compr (dBm)	IP3 (dBm)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)	
RF	LO	IF	Typ.	σ	Max.	Typ.	Typ.	Typ.	Min.	Typ.	Min.
470-1730	600-1800	70-1000	6.8	0.2	8.9	+20	32	52	38	50	36

#### Typical Performance Data

Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)	IP3 (dBm)	IF Freq. (MHz)	VSWR IF (:1)
RF	LO	LO +21dBm	LO +21dBm	LO +21dBm	LO +21dBm	LO +21dBm	LO +21dBm	LO +21dBm	LO +21dBm
430.10	564.90	6.11	50.26	60.35	1.57	4.42	30.29	70.00	1.95
470.10	600.10	6.54	52.88	58.91	1.57	4.24	29.54	100.00	1.80
570.90	696.10	6.52	55.33	52.96	1.68	4.10	29.38	120.00	1.81
671.70	792.10	6.47	53.24	49.22	1.81	3.87	30.88	140.00	1.78
772.50	888.10	6.41	49.96	48.12	1.91	3.58	32.01	160.00	1.73
873.30	984.10	6.32	46.96	47.11	1.98	3.21	33.60	180.00	1.71
1074.90	1176.10	6.38	43.21	44.31	1.92	2.44	33.09	200.00	1.70
1175.70	1272.10	6.47	43.47	42.45	1.84	2.22	31.68	300.00	1.57
1276.50	1368.10	6.61	45.03	42.04	1.75	2.20	31.26	400.00	1.42
1377.30	1464.10	6.84	46.98	42.95	1.67	2.46	31.39	500.00	1.29
1478.10	1560.10	7.10	48.08	45.58	1.60	2.91	30.48	600.00	1.17
1578.90	1656.10	7.38	51.04	50.04	1.53	3.38	31.09	700.00	1.13
1679.70	1752.10	7.59	57.31	57.60	1.49	3.73	31.52	750.00	1.13
1730.10	1800.10	7.65	60.39	53.90	1.45	4.07	30.32	800.00	1.13
1770.10	1835.30	7.57	55.84	48.95	1.45	3.75	31.57	1000.00	1.12

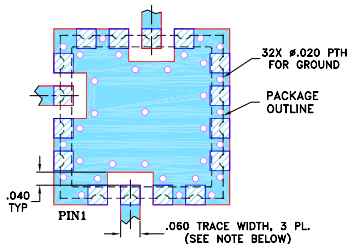
#### Outline Drawing



#### Outline Dimensions (inch/mm)

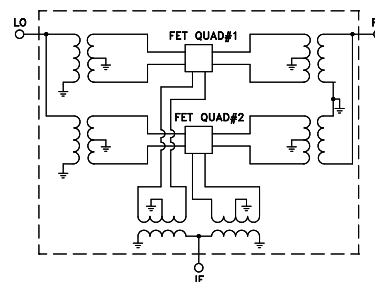
A	B	C	D	E	F	G	H	J	K
.500	.500	.180	.100	.080	.115	.060	.040	.540	.060
12.7	12.7	4.572	2.54	2.032	2.921	1.524	1.016	13.72	1.524
L	M	N	P	Q	R	S	T	wt.	
.100	.135	.135	.115	.140	.070	.150	.070	grams	
2.54	3.429	3.429	2.921	3.556	1.778	3.81	1.778	1.0	

#### Demo Board MCL P/N: TB-433+ Suggested PCB Layout (PL-012)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

#### Electrical Schematic



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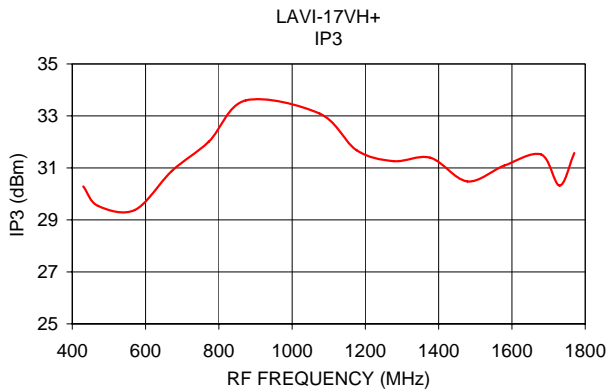
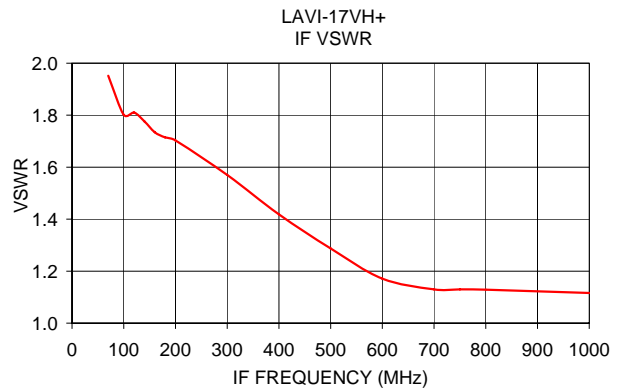
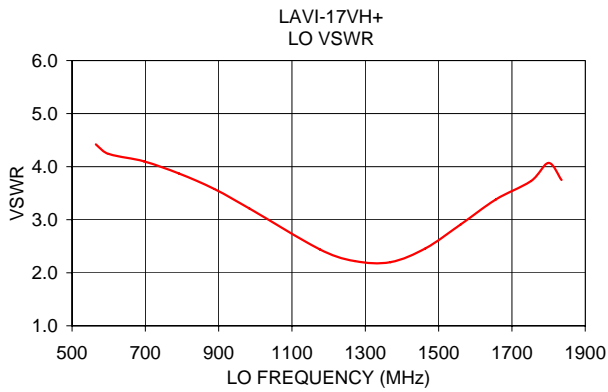
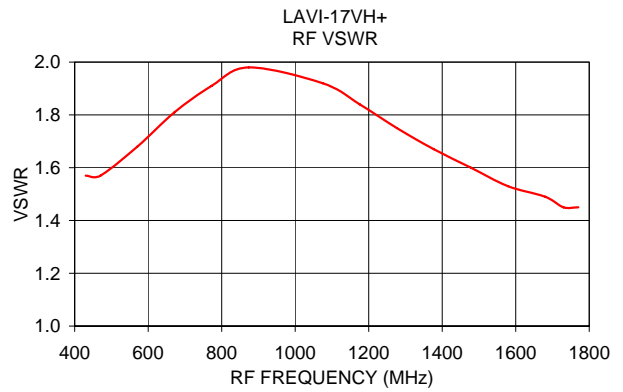
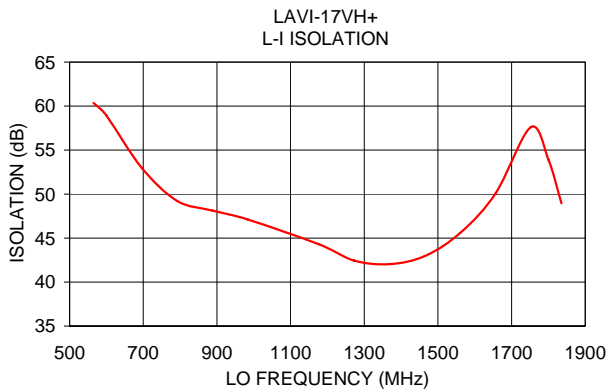
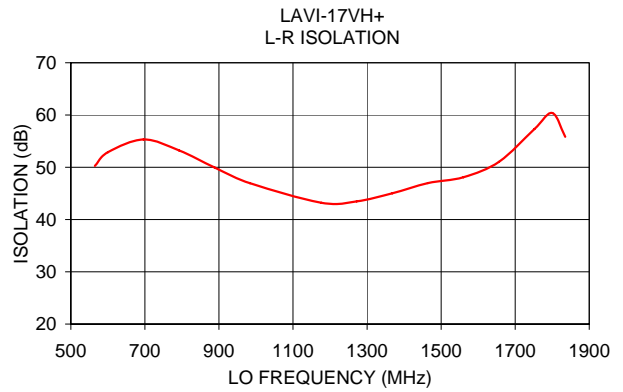
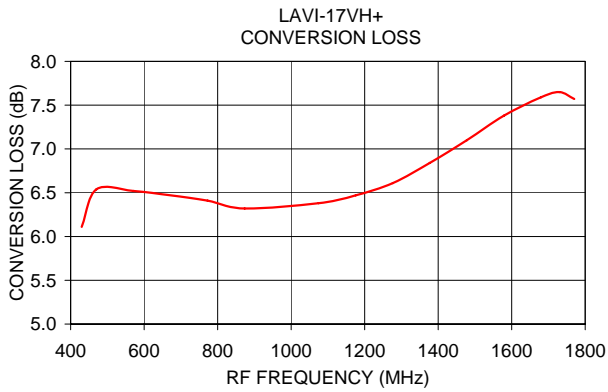
For detailed performance specs & shopping online see web site

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IF/RF MICROWAVE COMPONENTS

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuits' applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

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## Harmonic Table ( $T_{AMB} = 25^{\circ}C$ ) (Relative to desired IF output)

RF HARMONICS ORDER	RF CAL (-dBc)											
	0	1	2	3	4	5	6	7	8	9	10	
0	-	-	22	27	26	25	36	40	45	52	52	46
1	-	28	0	39	18	41	36	58	50	55	43	66
2	90	69	66	55	66	59	71	59	81	72	83	70
3	93	103	79	86	75	87	82	97	86	100	95	101
4	96	102	100	97	94	94	94	100	100	102	100	101
5	94	102	101	99	97	95	95	97	100	101	103	104
6	96	104	102	100	96	96	94	93	97	97	101	102
7	91	100	102	104	98	97	96	92	96	98	99	102
8	94	102	100	101	101	100	100	93	94	93	96	99
9	93	92	102	95	99	85	102	79	90	75	90	79
10	94	92	73	83	70	80	59	71	59	67	54	67
	0	1	2	3	4	5	6	7	8	9	10	

LO HARMONICS ORDER

Test conditions: RF IN: 1100 MHz, 0 dBm.  
 LO IN: 1200 MHz, 21 dBm.  
 IF OUT: 100 MHz.  
 C. LOSS: 7.13 dB.