

# High IP3 Frequency Mixer

## LAVI-10VH+

### Level 21 (LO Power +21 dBm) 300 to 1000 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	+23 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, 33 dBm typ.
- wideband, 300 to 1000 MHz
- excellent L-R isolation, 50 dB typ. and L-I isolation, 45 dB typ.
- high 1 dB compression, 20 dBm typ.
- shielded metal cover
- aqueous washable
- protected by US Patent 6,807,407

#### Applications

- cellular base stations
- mobile radio
- defense communications

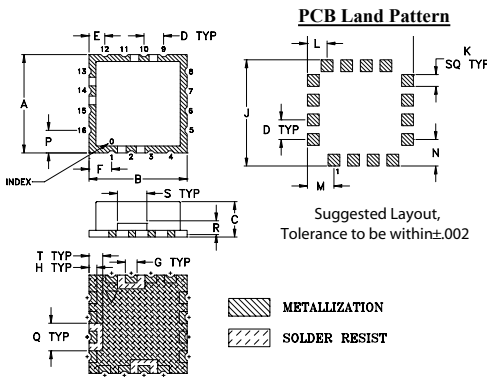
#### Electrical Specifications (T<sub>AMB</sub>=25°C)

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.
300-1000	525-1175	60-875	6.3	0.12	8.0	+20	33	50	40	45	30

#### 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
300.10	475.00	6.01	61.98	47.09	1.53	8.60	32.29	60.00	2.37
350.10	525.00	6.17	57.30	46.07	1.51	5.97	32.63	80.00	2.20
400.10	575.00	6.05	53.79	45.57	1.59	6.81	33.47	100.00	2.07
500.10	675.00	6.14	50.76	46.77	1.55	4.32	33.65	120.00	2.03
550.10	725.00	6.16	50.36	47.01	1.59	3.34	32.76	160.00	1.92
600.10	775.00	6.16	49.84	48.36	1.68	3.11	33.04	180.00	1.87
650.10	825.00	6.15	49.66	51.05	1.72	2.25	33.60	200.00	1.85
700.10	875.00	6.18	49.50	52.92	1.80	2.31	34.34	250.00	1.70
750.10	925.00	6.13	50.01	53.20	1.82	1.72	34.02	300.00	1.56
800.10	975.00	6.24	51.54	53.64	1.88	1.93	34.09	400.00	1.31
850.10	1025.00	6.18	53.99	54.13	1.89	1.94	34.21	500.00	1.28
870.10	1070.00	6.38	58.36	56.30	1.92	2.46	33.47	600.00	1.58
900.10	1070.00	6.39	58.36	56.30	1.93	2.46	33.87	700.00	1.94
950.10	1125.00	6.34	62.49	59.25	1.95	3.38	33.64	800.00	2.16
1000.10	1175.00	6.56	62.18	62.18	1.94	3.52	32.46	900.00	2.34

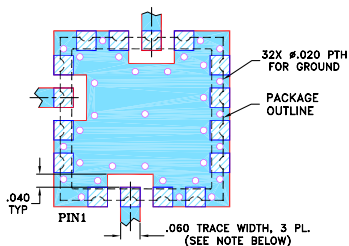
#### Outline Drawing



#### 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	

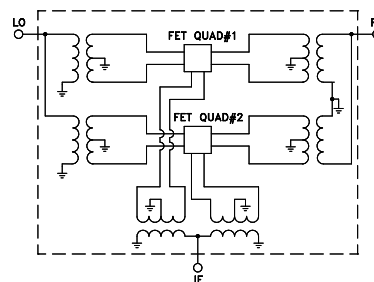
#### Demo Board MCL P/N: TB-433+ Suggested PCB Layout (PL-012)



- 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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ISO 9001 ISO 14001 AS 9100 CERTIFIED

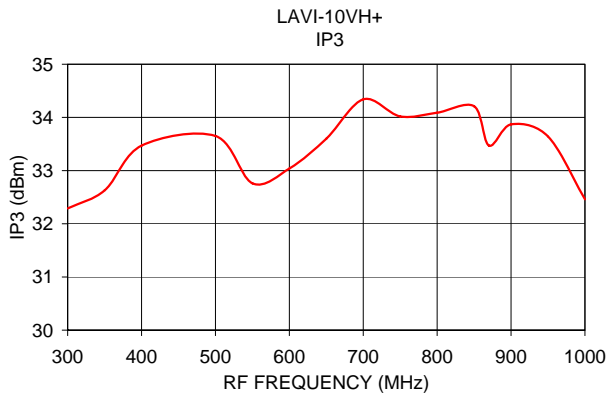
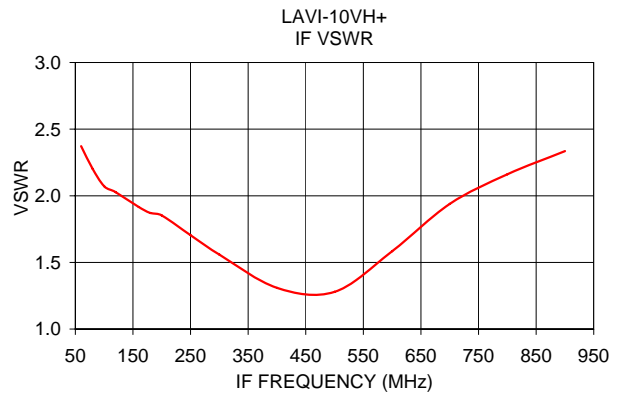
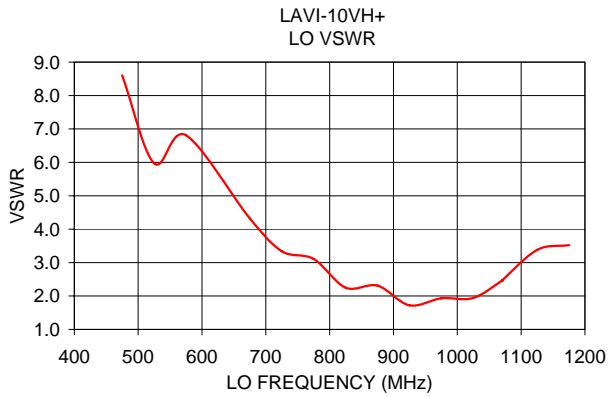
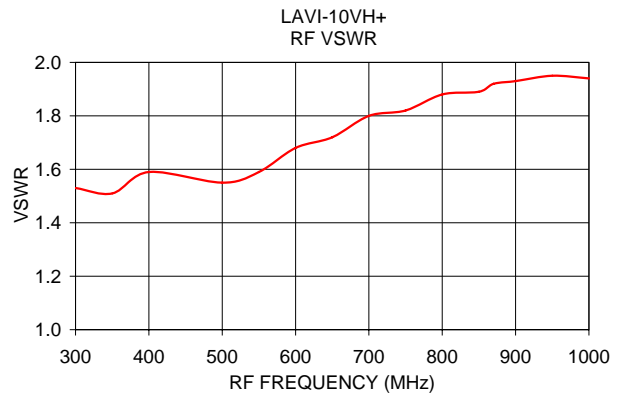
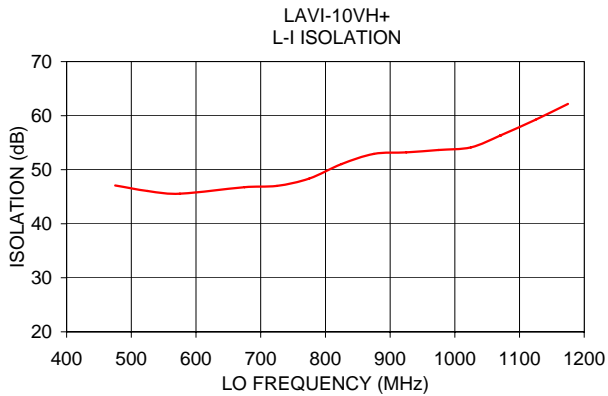
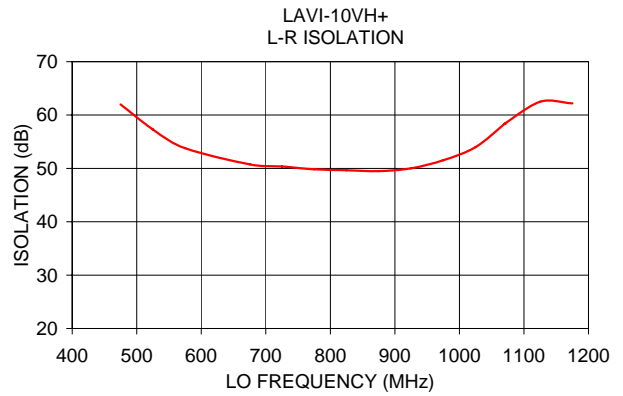
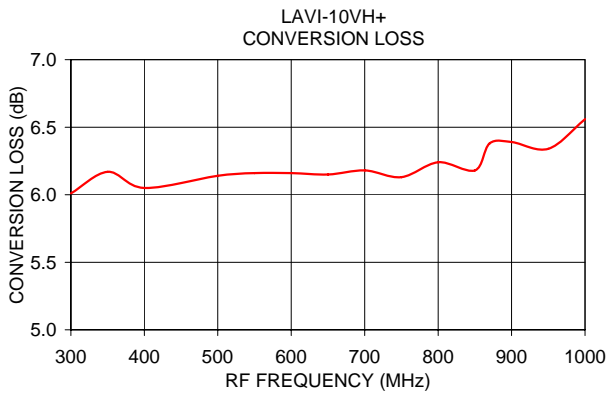
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IF/RF MICROWAVE COMPONENTS

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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	-	-	13	23	20	33	21	34	29	43	38	52
1	-	32	0	37	14	40	26	56	42	55	54	60
2	88	60	71	55	64	58	73	60	66	66	72	78
3	96	95	72	90	70	91	72	96	76	92	80	102
4	100	105	95	100	96	103	100	106	101	106	106	107
5	97	105	104	101	104	96	100	102	103	104	104	107
6	100	106	105	107	100	101	98	103	102	105	105	107
7	100	109	109	104	104	100	101	98	101	105	105	108
8	100	109	108	108	105	103	98	100	100	99	106	105
9	101	108	108	106	105	106	102	104	100	104	102	107
10	101	107	108	110	107	106	107	100	102	99	104	103

Test conditions: RF IN: 650 MHz, 0 dBm.  
 LO IN: 822.5 MHz, 21 dBm.  
 IF OUT: 172.5 MHz  
 C. LOSS: 6.36 dB.