High IP3

Frequency Mixer

LAVI-2VH+

Level 23 (LO Power +23 dBm) 2 to 1100 MHz

Generic photo used for illustration purposes only

CASE STYLE: CK605

+RoHS Compliant

The +Suffix identifies 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	+25 dBm
RF Power	+24 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

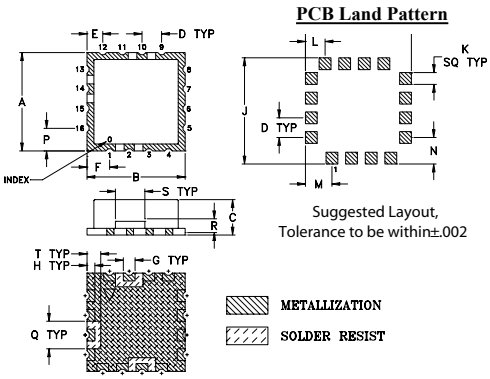
Features

- very high IP3, 34 dBm typ.
- wideband, 2 to 1100 MHz
- excellent L-R isolation, 48 dB typ. and L-I isolation, 47 dB typ.
- high 1 dB compression, 23 dBm typ.
- shielded metal cover
- aqueous washable
- protected by US Patent 6,807,407

Applications

- cellular base stations
- mobile radio
- defense communications
- CATV
- VHF/UHF radios

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

Electrical Specifications (T_{AMB}=25°C)

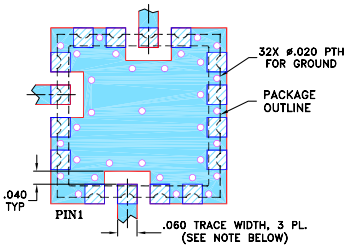
FREQUENCY (MHz)			CONVERSION LOSS (dB)			RF in at 1dB Compr (dBm)	IP3* (dBm)	LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)	
RF	LO	IF	Typ.	σ	Max.	Typ.	Typ.	Typ.	Min.	Typ.	Min.
2-1100	2-1100	2-1000	7.5	0.12	9.5	+23	34	48	37	47	36

* Specified at RF= 1000 MHz

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 +23dBm	LO +23dBm	LO +23dBm	LO +23dBm	LO +23dBm	LO +23dBm		LO +23dBm
2.10	32.10	6.21	54.85	54.80	1.23	4.05	33.04	2.00	1.23
5.10	35.10	6.21	54.39	54.54	1.22	4.11	32.18	5.00	1.22
12.10	42.10	6.23	53.71	53.75	1.23	4.13	30.70	12.00	1.23
52.10	82.10	6.18	55.03	54.87	1.27	2.52	29.56	52.00	1.25
100.10	130.10	6.38	57.25	55.04	1.36	4.01	29.36	100.00	1.31
220.10	250.10	6.62	56.89	52.84	1.50	2.99	31.29	220.00	1.46
300.10	330.10	6.60	50.40	49.21	1.53	3.43	30.65	300.00	1.58
420.10	450.10	6.94	47.19	48.38	1.53	3.32	31.86	420.00	1.80
500.10	530.10	6.75	43.95	45.44	1.49	3.93	31.63	500.00	1.90
620.10	650.10	6.97	42.14	42.90	1.46	3.45	31.02	620.00	2.06
740.10	770.10	7.36	39.64	41.69	1.41	5.01	30.87	740.00	2.07
820.10	850.10	7.48	43.30	49.90	1.24	3.85	32.54	820.00	1.74
900.10	930.10	7.40	47.94	58.49	1.13	2.87	33.19	900.00	1.60
1010.10	1040.10	7.52	50.72	63.09	1.10	3.66	33.24	975.00	1.59
1070.10	1100.10	7.70	54.52	52.16	1.09	2.19	32.54	1000.00	1.55

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

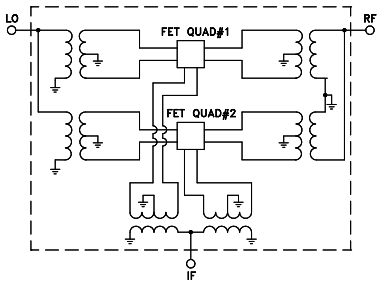


NOTES: 1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Electrical Schematic



Notes

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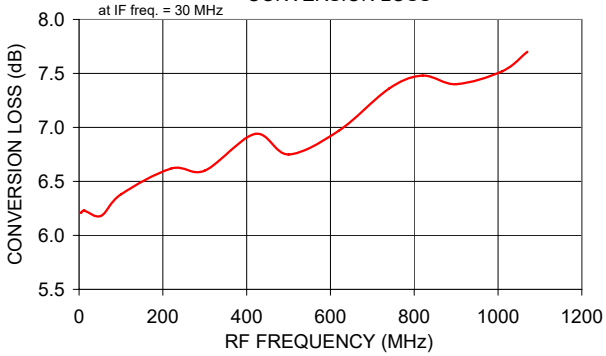
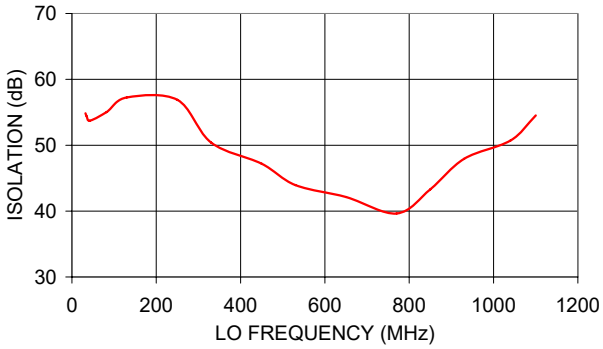
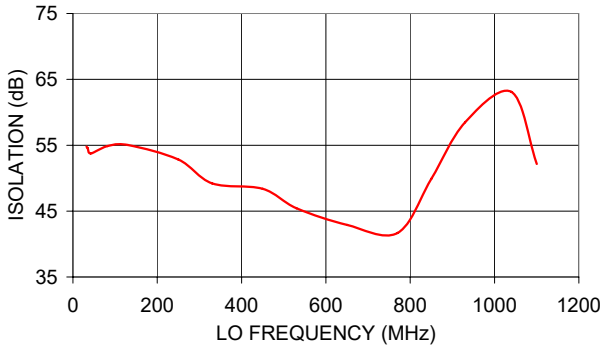
LAVI-2VH+
CONVERSION LOSS



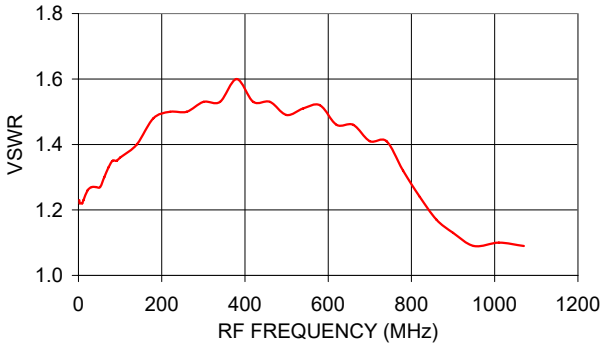
LAVI-2VH+
L-R ISOLATION



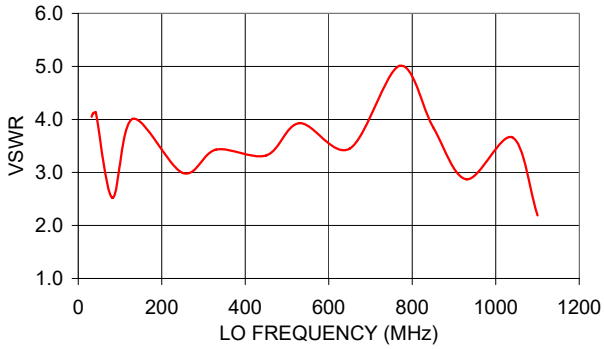
LAVI-2VH+
L-I ISOLATION



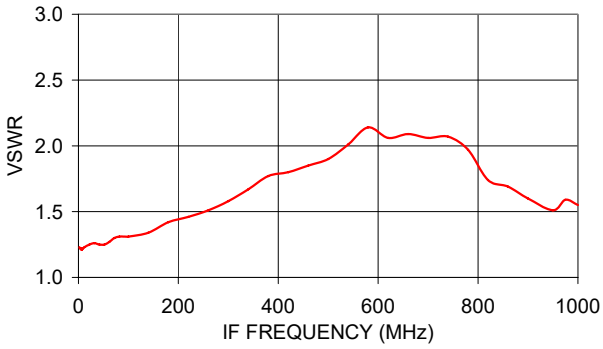
LAVI-2VH+
RF VSWR



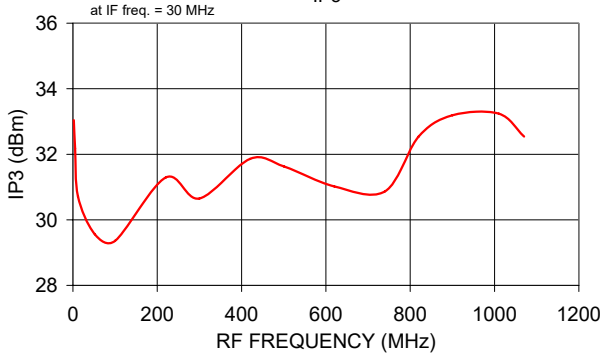
LAVI-2VH+
LO VSWR



LAVI-2VH+
IF VSWR



LAVI-2VH+
IP3



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Frequency Mixer LAVI-2VH+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm)		
		+22	+23	+24
10.1	40.1	6.39	6.47	6.42
50.1	80.1	6.44	6.41	6.39
90.1	120.1	6.69	6.66	6.64
130.1	160.1	6.59	6.56	6.54
170.1	200.1	6.79	6.76	6.75
210.1	240.1	6.78	6.75	6.73
250.1	280.1	6.81	6.79	6.77
290.1	320.1	6.91	6.88	6.86
330.1	360.1	6.83	6.80	6.78
370.1	400.1	7.05	7.02	7.01
410.1	440.1	7.02	7.00	6.98
450.1	480.1	7.12	7.10	7.08
490.1	520.1	7.08	7.05	7.03
530.1	560.1	7.14	7.12	7.09
570.1	600.1	7.23	7.20	7.17
610.1	640.1	7.25	7.22	7.19
650.1	680.1	7.35	7.33	7.31
690.1	720.1	7.34	7.31	7.28
730.1	760.1	7.44	7.41	7.39
770.1	800.1	7.51	7.48	7.46
810.1	840.1	7.66	7.64	7.63
840.1	870.1	7.71	7.68	7.66
880.1	910.1	7.75	7.72	7.69
910.1	940.1	7.79	7.76	7.73
950.1	980.1	7.82	7.78	7.75
980.1	1010.1	7.89	7.86	7.83
1020.1	1050.1	7.97	7.92	7.89
1050.1	1080.1	8.02	7.98	7.95
1090.1	1120.1	8.15	8.10	8.07
1120.1	1150.1	8.25	8.20	8.17
1160.1	1190.1	8.36	8.31	8.27
1190.1	1220.1	8.48	8.42	8.38
1230.1	1260.1	8.62	8.56	8.52
1260.1	1290.1	8.83	8.78	8.73
1300.1	1330.1	9.05	8.98	8.93
1330.1	1360.1	9.28	9.21	9.15
1370.1	1400.1	9.69	9.61	9.54
1400.1	1430.1	9.97	9.89	9.81
1440.1	1470.1	10.61	10.52	10.43
1470.1	1500.1	11.20	11.11	11.02

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm) @LO (dBm)		
		+22	+23	+24
10.1	40.1	30.62	31.24	31.52
50.1	80.1	29.83	30.01	30.52
90.1	120.1	28.88	29.41	30.30
130.1	160.1	29.79	30.61	31.36
170.1	200.1	30.26	30.60	31.63
210.1	240.1	29.95	30.41	31.50
250.1	280.1	30.35	30.92	31.77
290.1	320.1	30.46	31.07	32.18
330.1	360.1	30.89	31.47	31.90
370.1	400.1	30.83	31.75	32.46
410.1	440.1	31.61	32.64	33.08
450.1	480.1	31.02	31.94	32.80
490.1	520.1	32.28	33.00	34.14
530.1	560.1	32.38	33.13	34.64
570.1	600.1	32.63	33.56	34.14
610.1	640.1	31.79	33.03	34.13
650.1	680.1	30.97	32.41	33.19
690.1	720.1	30.47	31.43	31.99
730.1	760.1	30.70	31.27	32.22
770.1	800.1	31.24	32.22	33.60
810.1	840.1	31.73	32.84	34.08
840.1	870.1	32.21	33.17	34.18
880.1	910.1	32.52	33.66	35.05
910.1	940.1	32.75	33.85	34.86
950.1	980.1	33.09	34.62	34.69
980.1	1010.1	33.23	33.94	35.53
1020.1	1050.1	32.50	33.90	34.63
1050.1	1080.1	31.86	33.59	34.00
1090.1	1120.1	31.11	32.37	33.36
1120.1	1150.1	30.47	31.77	32.63
1160.1	1190.1	29.96	30.88	31.85
1190.1	1220.1	29.64	30.59	31.69
1230.1	1260.1	29.09	30.05	31.02
1260.1	1290.1	28.43	29.24	30.46
1300.1	1330.1	27.68	28.35	29.14
1330.1	1360.1	27.38	28.04	28.87
1370.1	1400.1	27.30	28.25	29.14
1400.1	1430.1	26.76	27.53	28.35
1440.1	1470.1	26.61	27.50	28.56
1470.1	1500.1	27.98	29.24	30.33

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=550.1MHz (dB) @LO (dBm) +23
540.0	10.1	7.44
530.0	20.1	7.45
520.0	30.1	7.46
510.0	40.1	7.46
500.0	50.1	7.42
490.0	60.1	7.42
480.0	70.1	7.42
470.0	80.1	7.40
460.0	90.1	7.40
450.0	100.1	7.41
440.0	110.1	7.39
430.0	120.1	7.37
410.0	140.1	7.40
400.0	150.1	7.39
380.0	170.1	7.36
370.0	180.1	7.36
350.0	200.1	7.35
340.0	210.1	7.38
320.0	230.1	7.33
310.0	240.1	7.35
290.0	260.1	7.34
280.0	270.1	7.26
260.0	290.1	7.31
250.0	300.1	7.28
230.0	320.1	7.24
220.0	330.1	7.26
200.0	350.1	7.19
190.0	360.1	7.23
170.0	380.1	7.21
160.0	390.1	7.22
140.0	410.1	7.22
130.0	420.1	7.14
110.0	440.1	7.18
100.0	450.1	7.15
80.0	470.1	7.12
70.0	480.1	7.17
50.0	500.1	7.17
40.0	510.1	7.18
20.0	530.1	7.20
10.0	540.1	7.48

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +23
10.0	20.1	6.71
50.0	60.1	6.44
90.0	100.1	6.48
130.0	140.1	6.58
170.0	180.1	6.62
210.0	220.1	6.75
250.0	260.1	6.80
290.0	300.1	6.80
330.0	340.1	6.82
370.0	380.1	6.83
410.0	420.1	6.99
450.0	460.1	7.05
490.0	500.1	7.14
530.0	540.1	7.25
570.0	580.1	7.30
610.0	620.1	7.35
650.0	660.1	7.44
690.0	700.1	7.46
730.0	740.1	7.52
770.0	780.1	7.67
810.0	820.1	7.70
850.0	860.1	7.84
890.0	900.1	7.90
930.0	940.1	7.99
970.0	980.1	8.04
1010.0	1020.1	8.03
1050.0	1060.1	8.09
1090.0	1100.1	8.15
1130.0	1140.1	8.25
1170.0	1180.1	8.36
1210.0	1220.1	8.37
1250.0	1260.1	8.49
1290.0	1300.1	8.60
1310.0	1320.1	8.62
1350.0	1360.1	8.81
1370.0	1380.1	8.90
1410.0	1420.1	9.27
1430.0	1440.1	9.52
1470.0	1480.1	10.29
1490.0	1500.1	10.87

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=1100.1MHz (dB) @LO (dBm) +23
1090.0	10.1	8.75
1070.0	30.1	8.78
1050.0	50.1	8.76
1030.0	70.1	8.68
1010.0	90.1	8.65
990.0	110.1	8.69
970.0	130.1	8.71
950.0	150.1	8.67
930.0	170.1	8.61
910.0	190.1	8.61
870.0	230.1	8.59
850.0	250.1	8.57
810.0	290.1	8.51
790.0	310.1	8.52
750.0	350.1	8.50
730.0	370.1	8.42
690.0	410.1	8.44
670.0	430.1	8.43
630.0	470.1	8.43
610.0	490.1	8.40
570.0	530.1	8.36
550.0	550.1	8.34
510.0	590.1	8.31
490.0	610.1	8.22
450.0	650.1	8.19
430.0	670.1	8.15
390.0	710.1	8.13
370.0	730.1	8.12
330.0	770.1	8.24
310.0	790.1	8.23
270.0	830.1	8.23
250.0	850.1	8.29
210.0	890.1	8.21
190.0	910.1	8.13
150.0	950.1	8.09
130.0	970.1	8.03
90.0	1010.1	7.98
70.0	1030.1	7.98
30.0	1070.1	8.07
10.0	1090.1	8.34

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+22	+23	+24	+22	+23	+24
40.1	54.31	54.32	54.29	53.81	53.77	53.73
80.1	54.00	54.01	53.91	53.61	53.57	53.56
120.1	54.88	54.73	54.64	55.32	55.19	55.11
160.1	55.38	55.19	55.12	55.29	55.15	54.99
200.1	54.91	54.71	54.46	54.44	54.31	53.99
240.1	53.69	53.44	53.08	53.63	53.38	52.93
280.1	52.41	52.22	51.76	51.89	51.70	51.16
320.1	51.40	51.10	50.74	50.40	50.09	49.65
360.1	49.67	49.31	49.17	48.76	48.42	48.22
400.1	49.21	48.76	48.47	48.42	47.98	47.64
440.1	48.65	48.44	48.14	47.81	47.57	47.37
480.1	48.54	48.32	48.07	47.03	46.83	46.53
520.1	47.06	46.90	46.55	45.63	45.47	45.08
560.1	46.07	45.93	45.60	44.74	44.58	44.19
600.1	44.73	44.48	44.28	43.94	43.67	43.37
640.1	43.78	43.43	43.24	43.15	42.80	42.52
680.1	42.95	42.79	42.61	42.55	42.36	42.07
720.1	42.72	42.53	42.24	42.47	42.29	41.88
760.1	43.34	43.23	42.98	43.47	43.26	42.95
800.1	44.73	44.58	44.03	46.11	45.85	45.20
840.1	46.93	46.96	46.76	48.88	48.82	48.51
870.1	49.06	48.97	48.76	49.51	49.53	49.55
910.1	52.70	52.78	52.84	49.20	49.45	49.87
940.1	54.64	55.13	55.82	48.64	49.06	49.73
980.1	55.47	56.38	58.06	48.43	48.84	49.75
1010.1	55.95	57.12	58.50	48.87	49.56	50.55
1050.1	54.00	54.91	56.06	48.20	48.93	50.46
1080.1	51.75	52.16	52.49	47.24	47.79	48.84
1120.1	50.08	50.44	50.84	45.97	46.45	47.57
1150.1	48.24	48.38	48.59	44.61	44.90	45.46
1190.1	46.87	46.95	47.19	43.16	43.32	43.80
1220.1	45.92	45.92	46.19	42.16	42.26	42.74
1260.1	44.98	44.95	45.04	41.06	41.12	41.40
1290.1	44.26	44.38	44.59	40.15	40.29	40.68
1330.1	43.43	43.55	43.71	39.15	39.33	39.64
1360.1	43.19	43.34	43.63	38.62	38.82	39.34
1400.1	42.74	42.83	42.93	37.92	38.08	38.34
1430.1	42.56	42.68	42.72	37.17	37.33	37.52
1470.1	41.95	41.94	41.98	35.65	35.68	35.73
1500.1	41.07	41.15	41.11	34.40	34.52	34.52

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+22	+23	+24
10.1	40.1	35.28	35.80	36.87
50.1	80.1	38.97	41.33	49.73
90.1	120.1	38.35	38.83	39.88
130.1	160.1	38.01	38.32	38.60
170.1	200.1	39.78	40.31	40.61
210.1	240.1	39.20	39.27	39.12
250.1	280.1	39.60	39.76	39.41
290.1	320.1	41.84	42.14	42.66
330.1	360.1	39.97	39.87	39.85
370.1	400.1	39.57	39.78	39.65
410.1	440.1	39.58	39.65	39.49
450.1	480.1	41.47	41.57	41.81
490.1	520.1	41.65	41.93	42.35
530.1	560.1	41.87	42.14	42.24
570.1	600.1	41.72	42.08	42.45
610.1	640.1	40.98	41.28	41.41
650.1	680.1	40.32	40.67	41.10
690.1	720.1	38.66	38.85	39.53
730.1	760.1	35.36	35.56	36.17
770.1	800.1	34.36	34.53	36.11
810.1	840.1	34.33	34.51	34.69
840.1	870.1	34.86	35.03	35.02
880.1	910.1	35.57	35.61	35.58
910.1	940.1	35.93	36.03	35.88
950.1	980.1	36.32	36.32	36.19
980.1	1010.1	36.33	36.17	36.31
1020.1	1050.1	36.09	36.11	35.91
1050.1	1080.1	36.54	36.60	36.72
1090.1	1120.1	36.64	36.50	36.56
1120.1	1150.1	37.15	37.25	37.33
1160.1	1190.1	37.56	37.81	37.88
1190.1	1220.1	38.11	38.25	38.30
1230.1	1260.1	39.44	39.64	39.77
1260.1	1290.1	39.52	39.56	39.50
1300.1	1330.1	38.67	38.45	38.41
1330.1	1360.1	37.86	37.68	37.50
1370.1	1400.1	37.64	37.50	37.52
1400.1	1430.1	40.43	40.38	40.32
1440.1	1470.1	45.84	45.08	42.84
1470.1	1500.1	50.11	47.95	45.98

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+22	+23	+24
10.1	40.1	1.24	1.28	1.26
50.1	80.1	1.34	1.35	1.36
90.1	120.1	1.36	1.38	1.39
130.1	160.1	1.42	1.43	1.44
170.1	200.1	1.47	1.48	1.49
210.1	240.1	1.51	1.52	1.54
250.1	280.1	1.54	1.56	1.57
290.1	320.1	1.56	1.57	1.58
330.1	360.1	1.56	1.58	1.59
370.1	400.1	1.57	1.58	1.59
410.1	440.1	1.57	1.58	1.59
450.1	480.1	1.57	1.57	1.58
490.1	520.1	1.56	1.57	1.58
530.1	560.1	1.54	1.54	1.55
570.1	600.1	1.53	1.53	1.54
610.1	640.1	1.52	1.52	1.52
650.1	680.1	1.50	1.50	1.50
690.1	720.1	1.49	1.48	1.48
730.1	760.1	1.47	1.47	1.47
770.1	800.1	1.45	1.45	1.45
810.1	840.1	1.42	1.42	1.42
840.1	870.1	1.40	1.40	1.40
880.1	910.1	1.39	1.39	1.38
910.1	940.1	1.39	1.38	1.37
950.1	980.1	1.38	1.37	1.36
980.1	1010.1	1.40	1.39	1.37
1020.1	1050.1	1.42	1.40	1.39
1050.1	1080.1	1.42	1.41	1.39
1090.1	1120.1	1.44	1.43	1.41
1120.1	1150.1	1.46	1.44	1.43
1160.1	1190.1	1.47	1.45	1.44
1190.1	1220.1	1.47	1.45	1.44
1230.1	1260.1	1.47	1.45	1.44
1260.1	1290.1	1.46	1.45	1.44
1300.1	1330.1	1.45	1.44	1.43
1330.1	1360.1	1.45	1.43	1.42
1370.1	1400.1	1.43	1.42	1.41
1400.1	1430.1	1.43	1.42	1.41
1440.1	1470.1	1.42	1.41	1.40
1470.1	1500.1	1.41	1.39	1.38

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+22	+23	+24
40.1	3.10	3.07	3.01
80.1	3.02	3.00	2.95
120.1	3.04	3.01	2.97
160.1	3.15	3.12	3.08
200.1	3.26	3.24	3.19
240.1	3.39	3.37	3.33
280.1	3.56	3.54	3.50
320.1	3.68	3.67	3.63
360.1	3.83	3.82	3.79
400.1	3.90	3.89	3.86
440.1	4.02	4.01	3.98
480.1	4.03	4.01	4.00
520.1	4.08	4.06	4.03
560.1	4.07	4.05	4.03
600.1	4.01	3.99	3.97
640.1	3.95	3.93	3.92
680.1	3.82	3.81	3.79
720.1	3.71	3.70	3.68
760.1	3.56	3.55	3.53
800.1	3.45	3.43	3.40
840.1	3.36	3.35	3.34
870.1	3.27	3.26	3.25
910.1	3.19	3.19	3.19
940.1	3.11	3.10	3.10
980.1	2.96	2.95	2.95
1010.1	2.89	2.89	2.89
1050.1	2.73	2.73	2.73
1080.1	2.63	2.63	2.63
1120.1	2.50	2.50	2.51
1150.1	2.38	2.37	2.37
1190.1	2.25	2.25	2.26
1220.1	2.15	2.15	2.16
1260.1	2.00	2.00	2.01
1290.1	1.92	1.92	1.93
1330.1	1.78	1.79	1.79
1360.1	1.69	1.69	1.70
1400.1	1.58	1.58	1.59
1430.1	1.50	1.50	1.51
1470.1	1.40	1.40	1.41
1500.1	1.33	1.33	1.34

IF (OUT) (MHz)	IF VSWR @LO=1100.1MHz (:1) @LO (dBm)		
	+22	+23	+24
10.1	1.31	1.33	1.35
30.1	1.34	1.35	1.37
50.1	1.36	1.38	1.39
70.1	1.35	1.37	1.39
90.1	1.37	1.39	1.41
110.1	1.39	1.41	1.43
130.1	1.43	1.45	1.46
150.1	1.45	1.47	1.48
170.1	1.47	1.48	1.49
190.1	1.50	1.52	1.53
230.1	1.56	1.58	1.59
250.1	1.60	1.61	1.62
290.1	1.68	1.69	1.70
310.1	1.69	1.70	1.71
350.1	1.76	1.77	1.78
370.1	1.77	1.78	1.79
410.1	1.81	1.81	1.82
430.1	1.83	1.83	1.84
470.1	1.89	1.89	1.89
490.1	1.91	1.91	1.91
530.1	1.91	1.91	1.91
550.1	1.95	1.94	1.94
590.1	1.93	1.92	1.92
610.1	1.93	1.92	1.92
650.1	1.97	1.96	1.95
670.1	1.92	1.91	1.90
710.1	1.92	1.91	1.89
730.1	1.91	1.90	1.89
770.1	1.86	1.84	1.83
790.1	1.89	1.87	1.85
830.1	1.86	1.84	1.82
850.1	1.87	1.84	1.83
890.1	1.84	1.81	1.79
910.1	1.82	1.79	1.77
950.1	1.81	1.78	1.76
970.1	1.77	1.74	1.72
1010.1	1.78	1.75	1.73
1030.1	1.76	1.73	1.71
1070.1	1.73	1.70	1.67
1090.1	1.76	1.73	1.70

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	16	17	38	34	36	39	54	52	54
1	-	34	+0	44	12	47	19	50	30	52	36	48
2	64	55	66	56	64	52	62	56	65	53	62	55
3	>90	>83	76	>83	74	>83	74	>83	75	>83	79	>83
4	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
5	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
6	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 550 MHz; 0.00 dBm.
LO IN: 580 MHz; +23.00 dBm
IF OUT: 30 MHz; -7.23 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	25	26	27	42	43	42	45	48	50	62
1	-	34	+0	44	13	48	19	51	31	52	38	49
2	44	45	53	45	52	42	54	46	55	43	54	45
3	66	73	56	80	54	75	53	72	54	68	58	73
4	89	79	83	76	76	74	75	73	75	73	76	72
5	>90	91	84	84	81	84	81	85	86	90	83	90
6	>90	>93	91	89	87	87	85	86	85	87	85	86
7	>90	>93	>93	>93	>93	>93	>93	>93	91	>93	>93	>93
8	>90	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
9	>90	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
10	>90	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

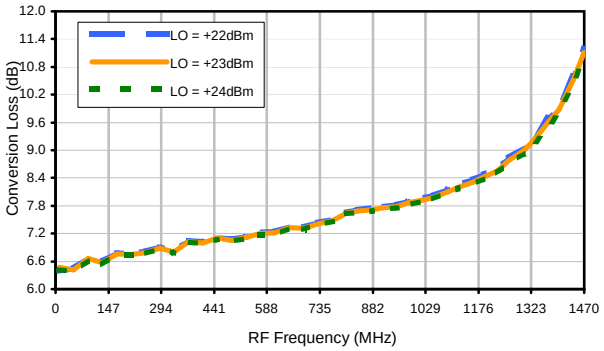
LO HARMONICS ORDER

Test conditions: RF IN: 550 MHz; 10.00 dBm.
LO IN: 580 MHz; +23.00 dBm
IF OUT: 30 MHz; 2.74 dBm

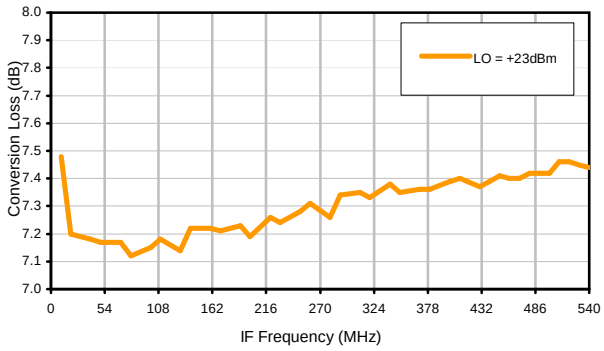
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Typical Performance Curves

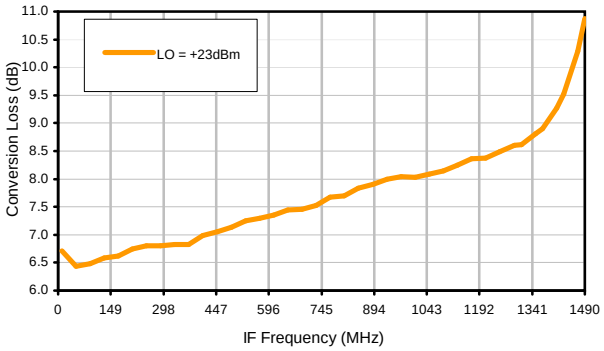
Conversion Loss @ IF=30MHz



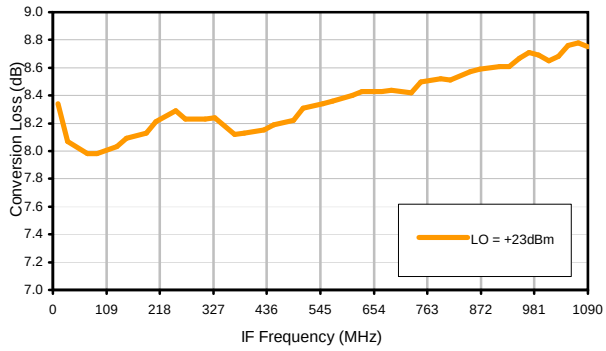
Conversion Loss vs. IF @ RF=550.1MHz



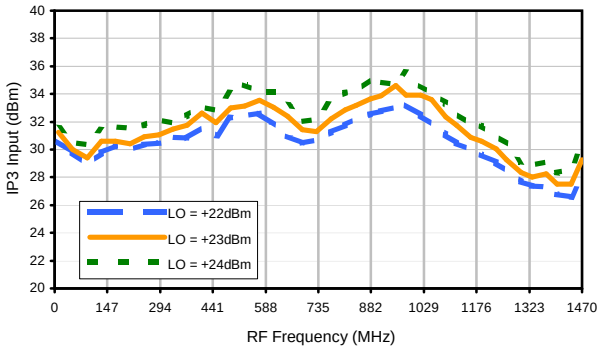
Conversion Loss vs. IF @ RF=10.1MHz



Conversion Loss vs. IF @ RF=1100.1MHz

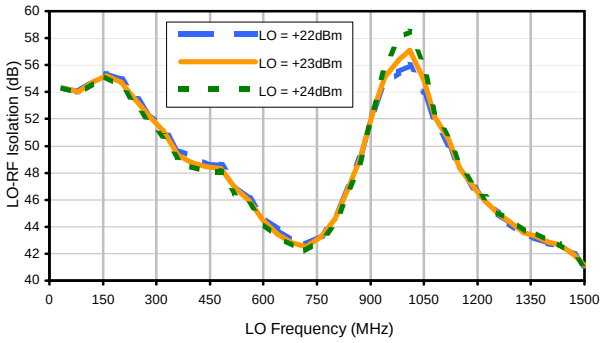


IP3 Input

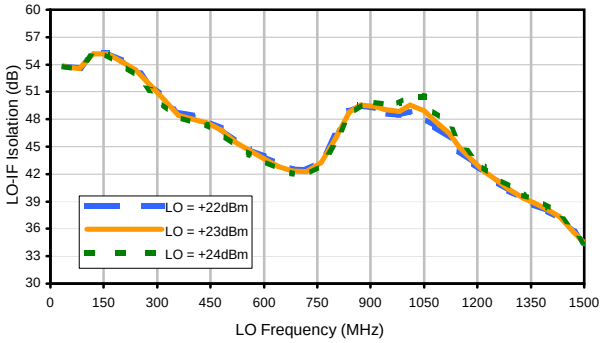


Typical Performance Curves

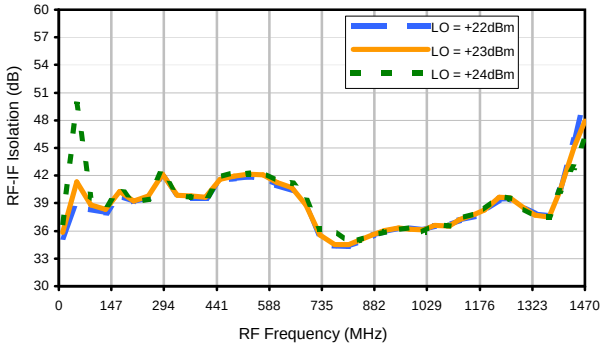
LO-RF Isolation



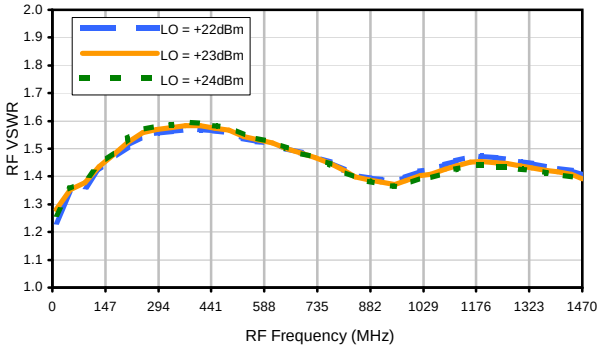
LO-IF Isolation



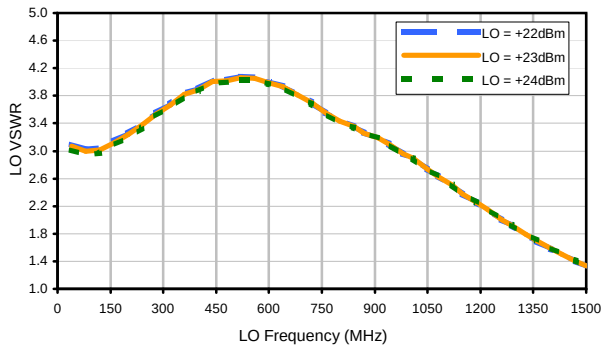
RF-IF Isolation



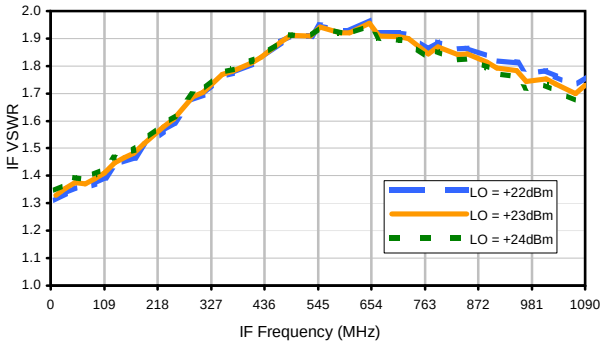
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	14	16	17	38	34	36	39	54	52	54
1	-	34	+0	44	12	47	19	50	30	52	36	48
2	64	55	66	56	64	52	62	56	65	53	62	55
3	>90	>83	76	>83	74	>83	74	>83	75	>83	79	>83
4	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
5	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
6	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
7	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
8	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
9	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
10	>90	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83	>83
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 550 MHz; 0.00 dBm.
LO IN: 580 MHz; +23.00 dBm
IF OUT: 30 MHz; -7.23 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	25	26	27	42	43	42	45	48	50	62
1	-	34	+0	44	13	48	19	51	31	52	38	49
2	44	45	53	45	52	42	54	46	55	43	54	45
3	66	73	56	80	54	75	53	72	54	68	58	73
4	89	79	83	76	76	74	75	73	75	73	76	72
5	>90	91	84	84	81	84	81	85	86	90	83	90
6	>90	>93	91	89	87	87	85	86	85	87	85	86
7	>90	>93	>93	>93	>93	>93	>93	>93	91	>93	>93	>93
8	>90	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
9	>90	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
10	>90	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93	>93
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

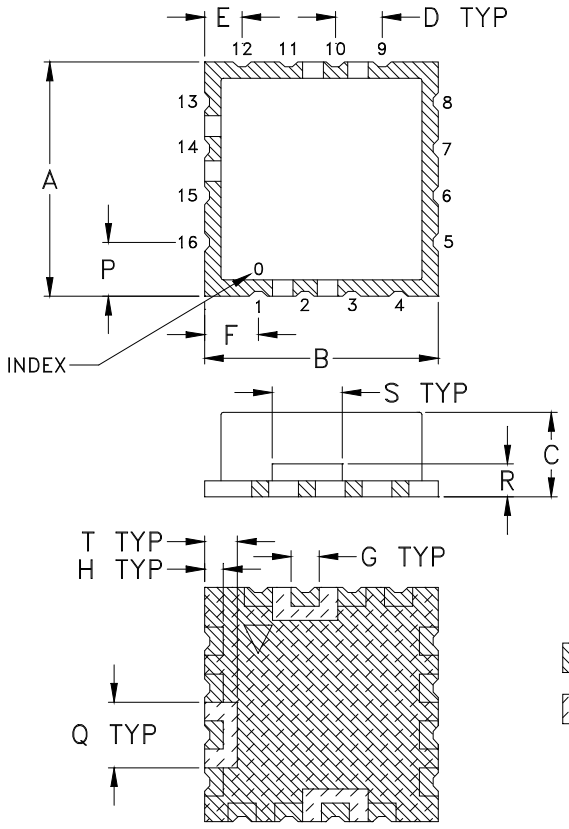
Test conditions: RF IN: 550 MHz; 10.00 dBm.
LO IN: 580 MHz; +23.00 dBm
IF OUT: 30 MHz; 2.74 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

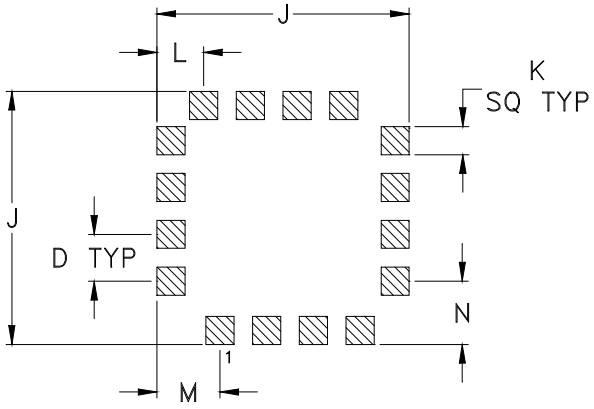
Case Style CK

CK605

Outline Dimensions



PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K
CK605	.500 (12.70)	.500 (12.70)	.180 (4.57)	.100 (2.54)	.080 (2.03)	.115 (2.92)	.060 (1.52)	.040 (1.02)	.540 (13.72)	.060 (1.52)

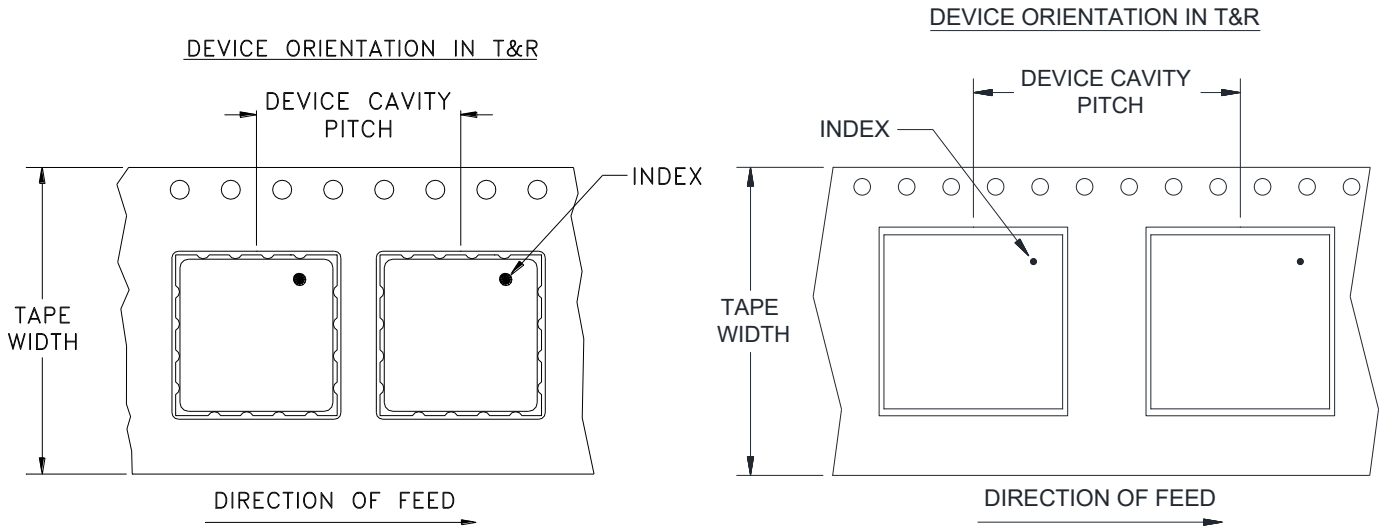
CASE #	L	M	N	P	Q	R	S	T	WT. GRAM	
CK605	.100 (2.54)	.135 (3.43)	.135 (3.43)	.115 (2.92)	.140 (3.56)	.070 (1.78)	.150 (3.81)	.070 (1.78)	1.2	+0.5 -0.0

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

Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. Termination finish:
   For RoHS Case Styles: 3-5 µ inch (.08-.13 microns) Gold over 120-240 µ inch (3.05-6.10 microns) Nickel plate. All models, (+) suffix.

Tape & Reel Packaging TR-F37



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
24	16	7	Small quantity standards (see note)	10
				20
				50
				100
		13	Standard	200
				500

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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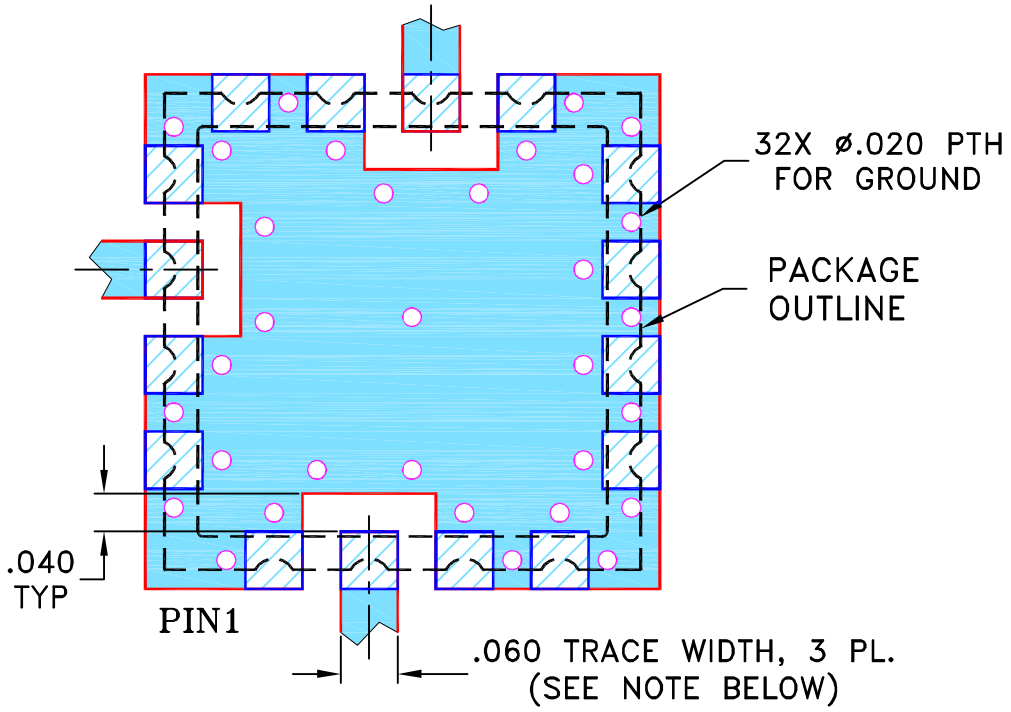
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
E	M105563	ADDED "rl" PIN CONNECTION	06/02/06	MMG	DJ
F	M105640	CORRECTED NOTE 2	06/08/06	MMG	MM
G	M124395	ADDED "RAMP"	09/09	EM	HH
G	R77589	ADDED "RAMP"	09/09	EM	HH

SUGGESTED MOUNTING CONFIGURATION FOR CK605 CASE STYLE, "kg/rl/16AM01" PIN CONNECTION



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 BOTTOM IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	AV	08/07/00
TOLERANCES ON:	CHECKED	SK	08/08/00
2 PL DECIMALS ±	APPROVED	DB	08/08/00
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

Mini-Circuits®

ASHEETA1.DWG REV:A DATE:01/12/95

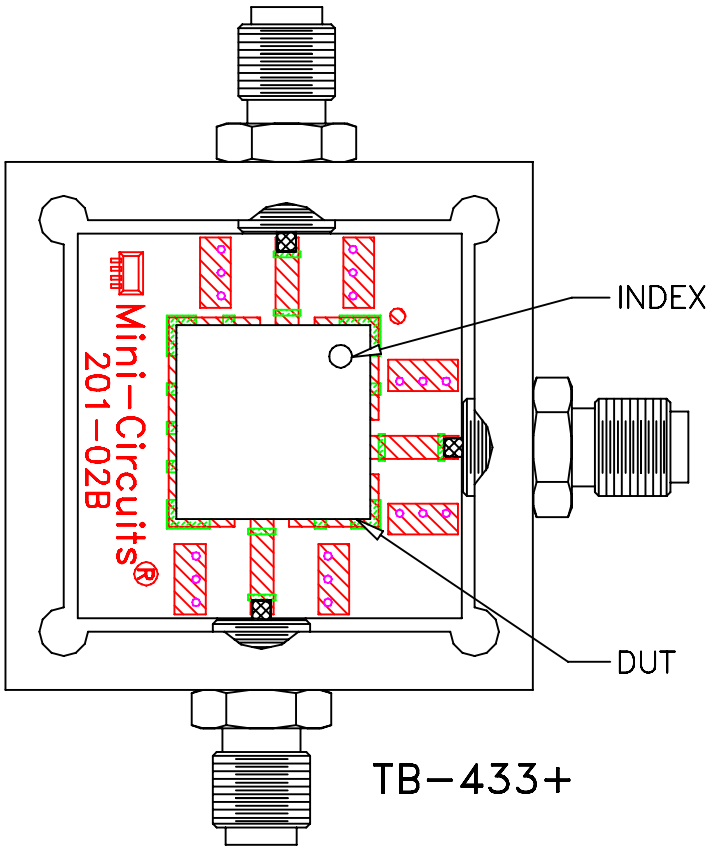
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL,kg/rl/16AM01,CK605,ROS/LAVI/RAMP

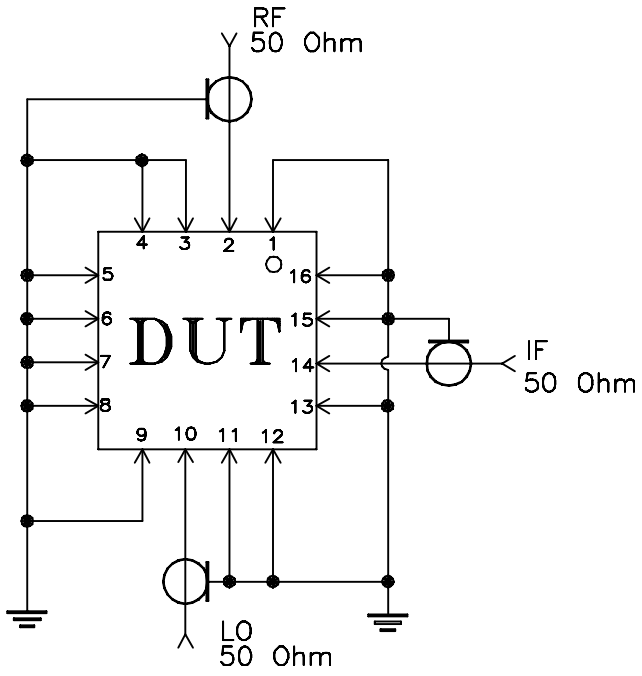
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-012	G

FILE:	SCALE:	SHEET:
98PL012	5:1	1 OF 1

Evaluation Board and Circuit



TB-433+



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.028 inch.

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Environmental Specifications ENV31

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	-45° 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
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
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	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215