

Frequency Mixer

LAVI-ED12677

Level 20 (LO Power +20 dBm)

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability. At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.



Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : CK605

ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		Min.	Typ.	Max.	Units
Frequency	LO (fL to fU)	61.5		2720	MHz
	RF (fL to fU)	61.5		2720	MHz
	IF	80.5		535	MHz
Conversion Loss	Mid Band		6.8		dB
	Total Range		7.7		dB
LO-RF Isolation	Low Range		56		dB
	Mid Range		62		dB
	Upper Range		58		dB
LO-IF Isolation	Low Range		53		dB
	Mid Range		58		dB
	Upper Range		49		dB
IP3 Input			+27		dBm

Note: Low Range = [fL to 10fL]
mid band = [2fL to fU/2]

Mid Range = [10fL to fU/2]

Upper Range = [fU/2 to fU]

MAXIMUM RATINGS	
Operating Temperature	-45°C to 85°C
Storage Temperature	-55°C to 100°C

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

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)			RF (IN) (MHz)	LO (MHz)	IP-3 Input (dBm)		
		@LO (dBm)				@LO (dBm)			@LO (dBm)					@LO (dBm)		
		+17	+20	+23		+17	+20	+23	+17	+20	+23			+17	+20	+23
61.5	39.0	10.04	9.59	9.37	39.0	71.25	72.85	74.82	84.21	84.59	80.48	61.50	39.00	15.34	18.68	20.37
73.0	48.0	9.23	8.85	8.60	48.0	68.57	70.26	72.64	75.81	76.52	76.03	73.00	48.00	16.62	19.01	21.68
84.5	57.0	8.63	8.31	8.05	57.0	65.81	67.09	68.32	69.60	70.24	71.14	84.50	57.00	13.13	16.01	20.68
96.0	66.0	8.22	7.91	7.68	66.0	63.20	64.21	64.52	65.12	65.55	66.25	96.00	66.00	18.83	21.02	23.68
107.5	75.0	7.91	7.61	7.39	75.0	60.98	61.83	61.82	61.72	61.97	62.35	107.50	75.00	19.20	20.82	23.32
119.0	84.0	7.62	7.34	7.15	84.0	59.22	59.94	59.93	59.12	59.31	59.56	119.00	84.00	19.39	21.13	23.28
130.5	93.0	7.41	7.12	6.95	93.0	57.91	58.55	58.77	57.18	57.42	57.70	130.50	93.00	19.46	21.22	22.26
142.0	102.0	7.21	6.93	6.75	102.0	56.90	57.45	57.96	55.66	55.82	56.27	142.00	102.00	20.28	22.41	22.40
153.5	111.0	7.02	6.76	6.57	111.0	56.05	56.55	57.46	54.39	54.49	55.15	153.50	111.00	20.80	22.43	24.12
165.0	120.0	6.96	6.71	6.52	120.0	55.26	55.72	56.76	53.26	53.36	53.98	165.00	120.00	21.32	23.17	24.90
256.8	194.0	6.75	6.60	6.50	194.0	50.72	50.90	51.24	47.48	47.48	47.71	256.75	194.00	23.02	25.05	27.33
348.5	268.0	6.45	6.27	6.15	268.0	48.56	48.66	48.74	45.22	45.20	45.23	348.50	268.00	25.18	27.28	29.20
440.3	342.0	6.06	5.92	5.82	342.0	49.74	49.98	50.08	45.93	45.91	45.82	440.25	342.00	26.22	28.39	30.49
532.0	416.0	6.33	6.15	6.01	416.0	51.15	51.54	51.82	47.17	47.11	47.01	532.00	416.00	27.60	30.08	32.24
623.8	490.0	6.35	6.21	6.12	490.0	52.28	52.78	53.21	49.40	49.23	49.07	623.75	490.00	26.79	29.40	31.71
715.5	564.0	6.50	6.29	6.14	564.0	53.96	54.61	54.96	53.34	53.00	53.00	715.50	564.00	27.34	29.49	31.63
807.3	638.0	6.48	6.32	6.20	638.0	56.66	57.30	57.67	58.62	57.55	56.96	807.25	638.00	26.72	29.04	31.30
899.0	712.0	7.09	6.90	6.77	712.0	61.40	62.36	63.39	80.13	86.36	75.19	899.00	712.00	27.00	29.17	31.44
990.8	786.0	7.03	6.86	6.72	786.0	68.01	69.75	71.52	57.51	57.92	58.41	990.75	786.00	28.60	31.22	33.71
1082.5	860.0	7.52	7.31	7.18	860.0	69.46	70.27	69.82	56.27	56.60	56.91	1082.50	860.00	28.12	30.77	33.46
1174.3	934.0	7.67	7.52	7.42	934.0	64.57	65.21	65.44	53.39	53.73	54.13	1174.25	934.00	27.04	29.87	32.65
1266.0	1008.0	7.64	7.44	7.31	1008.0	60.47	60.79	60.83	49.69	49.85	49.99	1266.00	1008.00	25.96	28.57	31.34
1357.8	1082.0	7.80	7.63	7.51	1082.0	56.86	57.01	57.21	46.25	46.34	46.44	1357.75	1082.00	26.72	29.80	32.89
1449.5	1156.0	7.65	7.46	7.33	1156.0	61.42	63.55	66.91	50.23	50.80	51.47	1449.50	1156.00	25.57	28.55	32.02
1541.3	1230.0	8.02	7.84	7.73	1230.0	59.04	59.89	60.97	61.78	62.97	64.08	1541.25	1230.00	26.22	29.45	32.98
1633.0	1304.0	7.76	7.55	7.40	1304.0	54.86	54.98	55.11	66.30	65.47	64.00	1633.00	1304.00	26.37	29.56	33.07
1724.8	1378.0	8.27	8.10	7.99	1378.0	52.31	52.30	52.23	56.67	55.85	55.28	1724.75	1378.00	26.60	29.95	33.63
1816.5	1452.0	8.05	7.88	7.75	1452.0	51.62	51.50	51.21	52.63	51.96	51.57	1816.50	1452.00	27.17	30.53	34.50
1908.3	1526.0	8.11	7.92	7.79	1526.0	50.07	49.76	49.28	51.13	50.60	50.24	1908.25	1526.00	28.34	31.84	35.69
2000.0	1600.0	8.25	8.05	7.93	1600.0	49.60	49.10	48.37	51.18	50.48	49.95	2000.00	1600.00	27.39	30.83	34.39
2080.0	1665.0	8.43	8.24	8.11	1665.0	51.05	50.48	49.65	51.50	50.68	49.95	2080.00	1665.00	27.44	31.11	34.67
2160.0	1730.0	8.52	8.30	8.14	1730.0	53.49	52.94	52.22	52.82	52.17	51.62	2160.00	1730.00	28.74	31.90	34.92
2240.0	1795.0	8.44	8.23	8.08	1795.0	58.12	57.91	57.39	53.06	53.67	54.25	2240.00	1795.00	28.27	31.43	34.58
2320.0	1860.0	8.90	8.69	8.56	1860.0	65.03	65.90	66.02	49.31	49.87	50.62	2320.00	1860.00	27.72	30.74	33.89
2400.0	1925.0	9.05	8.84	8.70	1925.0	71.03	75.15	80.33	46.59	46.93	47.39	2400.00	1925.00	27.28	30.47	33.69
2480.0	1990.0	9.00	8.75	8.58	1990.0	64.21	64.03	64.05	44.90	45.11	45.37	2480.00	1990.00	26.29	29.56	33.00
2560.0	2055.0	9.34	9.09	8.94	2055.0	63.15	62.99	63.32	43.88	44.11	44.33	2560.00	2055.00	25.39	28.69	32.53
2640.0	2120.0	9.70	9.47	9.34	2120.0	62.46	61.82	61.79	43.16	43.38	43.58	2640.00	2120.00	24.60	28.03	31.90
2720.0	2185.0	9.78	9.50	9.31	2185.0	58.76	57.79	57.27	42.39	42.60	42.81	2720.00	2185.00	23.39	26.61	30.18
2800.0	2250.0	10.85	10.68	10.58	2250.0	58.85	57.99	57.30	41.76	41.99	42.20	2800.00	2250.00	23.51	26.80	30.98

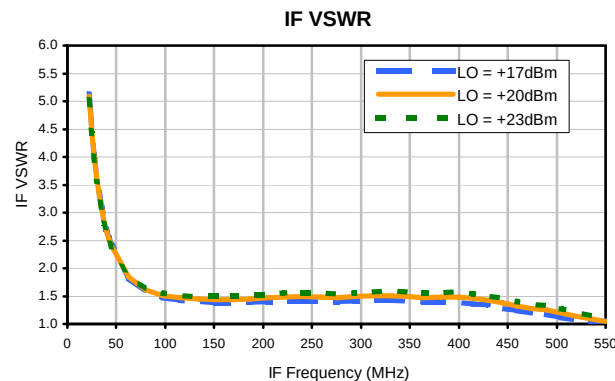
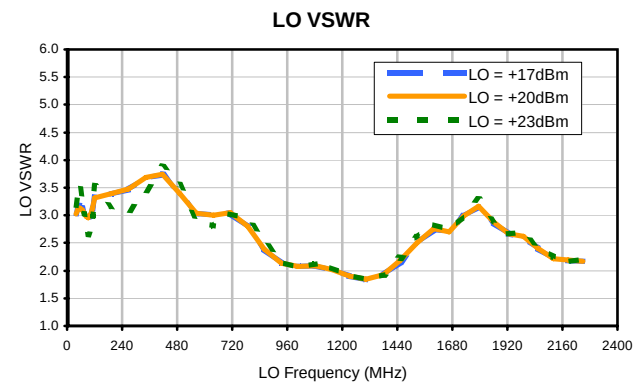
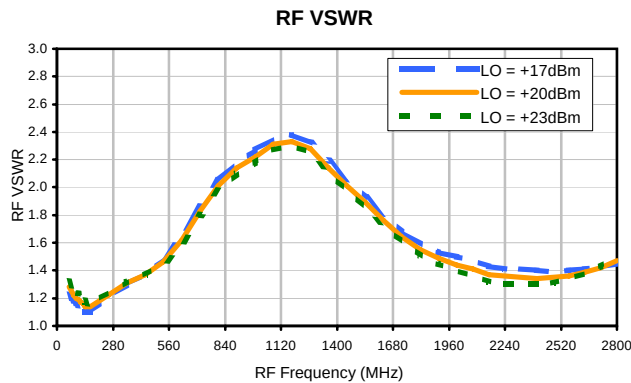
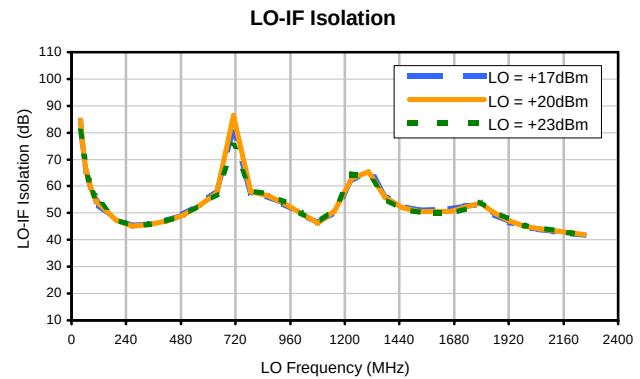
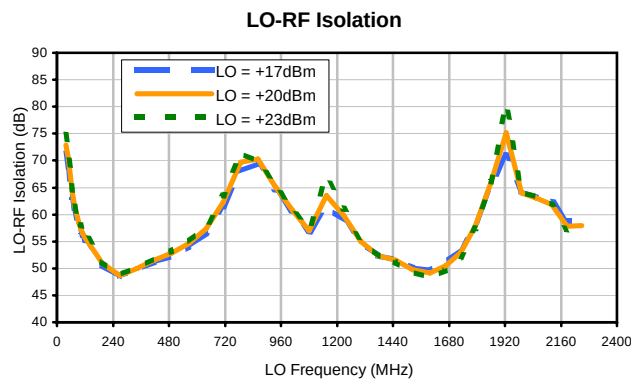
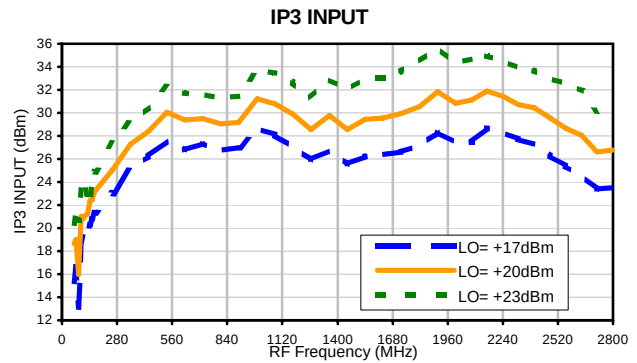
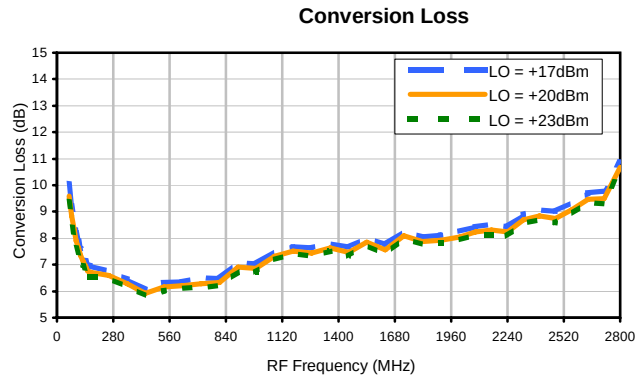
Frequency Mixer

LAVI-ED12677

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1)			LO (MHz)	LO VSWR (:1)			IF (OUT) (MHz)	IF VSWR (:1)		
		@LO (dBm)				@LO (dBm)				@LO (dBm)		
		+17	+20	+23		+17	+20	+23		+17	+20	+23
61.5	39.0	1.22	1.28	1.32	39.0	3.03	3.03	3.18	22.5	5.13	5.09	5.02
73.0	48.0	1.20	1.25	1.29	48.0	3.12	3.11	3.44	25.0	4.53	4.47	4.41
84.5	57.0	1.18	1.22	1.26	57.0	3.16	3.13	3.51	27.5	4.04	3.99	3.93
96.0	66.0	1.16	1.20	1.24	66.0	3.13	3.10	3.33	30.0	3.66	3.61	3.55
107.5	75.0	1.14	1.19	1.23	75.0	3.05	3.04	3.03	32.5	3.34	3.30	3.25
119.0	84.0	1.13	1.17	1.21	84.0	2.96	2.98	2.77	35.0	3.09	3.05	3.01
130.5	93.0	1.11	1.16	1.20	93.0	2.93	2.96	2.65	37.5	2.88	2.84	2.81
142.0	102.0	1.10	1.14	1.18	102.0	2.98	3.01	2.70	40.0	2.70	2.67	2.65
153.5	111.0	1.10	1.14	1.16	111.0	3.12	3.14	2.98	42.5	2.55	2.52	2.51
165.0	120.0	1.10	1.14	1.16	120.0	3.33	3.32	3.52	45.0	2.41	2.40	2.38
256.8	194.0	1.21	1.22	1.24	194.0	3.38	3.40	3.16	62.8	1.84	1.84	1.85
348.5	268.0	1.30	1.31	1.32	268.0	3.46	3.48	3.08	80.5	1.58	1.61	1.63
440.3	342.0	1.37	1.37	1.37	342.0	3.69	3.69	3.45	98.3	1.47	1.51	1.55
532.0	416.0	1.48	1.46	1.44	416.0	3.73	3.74	3.87	116.0	1.42	1.47	1.51
623.8	490.0	1.65	1.62	1.59	490.0	3.39	3.40	3.56	133.8	1.40	1.45	1.50
715.5	564.0	1.86	1.83	1.80	564.0	3.04	3.04	2.91	151.5	1.38	1.44	1.49
807.3	638.0	2.05	2.01	1.98	638.0	3.00	3.00	2.81	169.3	1.38	1.44	1.50
899.0	712.0	2.18	2.14	2.10	712.0	3.05	3.05	3.03	187.0	1.39	1.45	1.51
990.8	786.0	2.27	2.22	2.18	786.0	2.79	2.80	2.94	204.8	1.40	1.47	1.53
1082.5	860.0	2.35	2.31	2.27	860.0	2.40	2.39	2.53	222.5	1.41	1.48	1.56
1174.3	934.0	2.38	2.33	2.30	934.0	2.14	2.14	2.15	240.3	1.41	1.49	1.56
1266.0	1008.0	2.32	2.28	2.25	1008.0	2.08	2.08	2.07	258.0	1.41	1.48	1.56
1357.8	1082.0	2.19	2.14	2.10	1082.0	2.09	2.09	2.12	275.8	1.40	1.47	1.54
1449.5	1156.0	2.06	2.01	1.98	1156.0	2.02	2.02	2.05	293.5	1.41	1.49	1.56
1541.3	1230.0	1.93	1.89	1.85	1230.0	1.90	1.90	1.91	311.3	1.42	1.51	1.58
1633.0	1304.0	1.80	1.76	1.72	1304.0	1.83	1.84	1.85	329.0	1.42	1.51	1.59
1724.8	1378.0	1.68	1.64	1.61	1378.0	1.92	1.93	1.93	346.8	1.41	1.49	1.57
1816.5	1452.0	1.59	1.55	1.51	1452.0	2.16	2.18	2.23	364.5	1.39	1.47	1.55
1908.3	1526.0	1.53	1.49	1.45	1526.0	2.49	2.51	2.60	382.3	1.39	1.48	1.56
2000.0	1600.0	1.50	1.44	1.40	1600.0	2.75	2.76	2.83	400.0	1.39	1.48	1.57
2080.0	1665.0	1.47	1.41	1.36	1665.0	2.70	2.70	2.75	415.0	1.36	1.46	1.54
2160.0	1730.0	1.43	1.37	1.32	1730.0	2.98	2.99	2.99	430.0	1.34	1.43	1.51
2240.0	1795.0	1.41	1.36	1.30	1795.0	3.15	3.17	3.28	445.0	1.29	1.38	1.46
2320.0	1860.0	1.41	1.35	1.30	1860.0	2.87	2.88	2.92	460.0	1.24	1.32	1.40
2400.0	1925.0	1.40	1.34	1.30	1925.0	2.67	2.67	2.67	475.0	1.20	1.28	1.36
2480.0	1990.0	1.39	1.35	1.31	1990.0	2.62	2.62	2.70	490.0	1.17	1.25	1.33
2560.0	2055.0	1.40	1.36	1.34	2055.0	2.40	2.40	2.40	505.0	1.12	1.20	1.28
2640.0	2120.0	1.41	1.39	1.38	2120.0	2.21	2.21	2.25	520.0	1.07	1.14	1.21
2720.0	2185.0	1.43	1.42	1.43	2185.0	2.18	2.19	2.17	535.0	1.04	1.09	1.15
2800.0	2250.0	1.45	1.47	1.49	2250.0	2.17	2.17	2.20	550.0	1.06	1.05	1.10

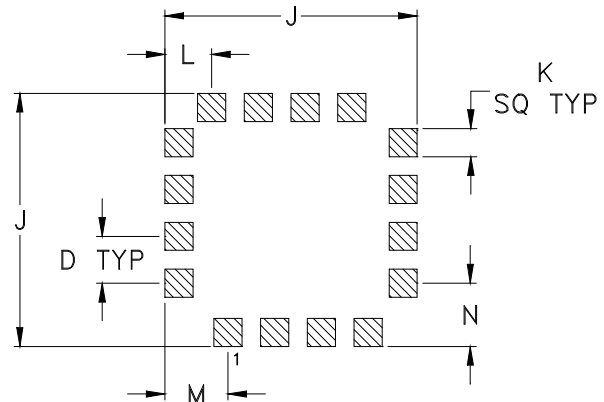
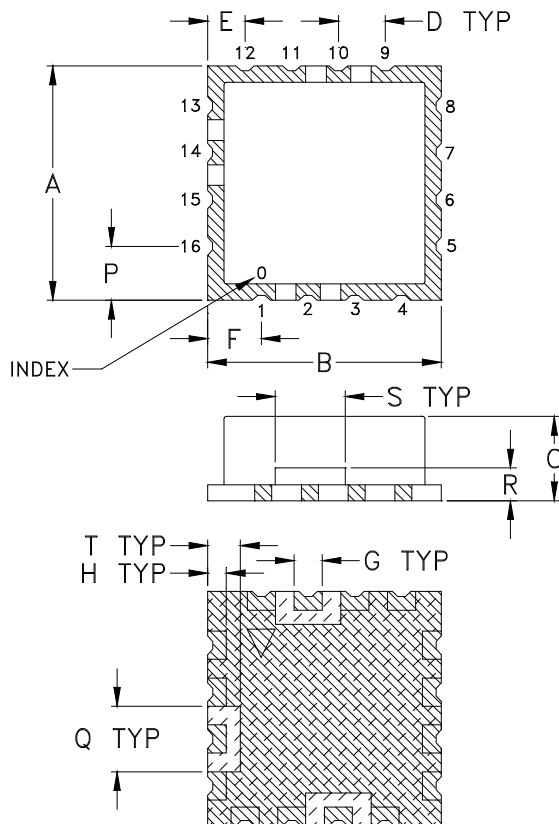
Typical Performance Curves



Outline Dimensions

CK605

PCB Land Pattern



Suggested Layout,
Tolerance to be within $\pm .002$

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. $\pm .03$; 3Pl. $\pm .015$

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- 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.



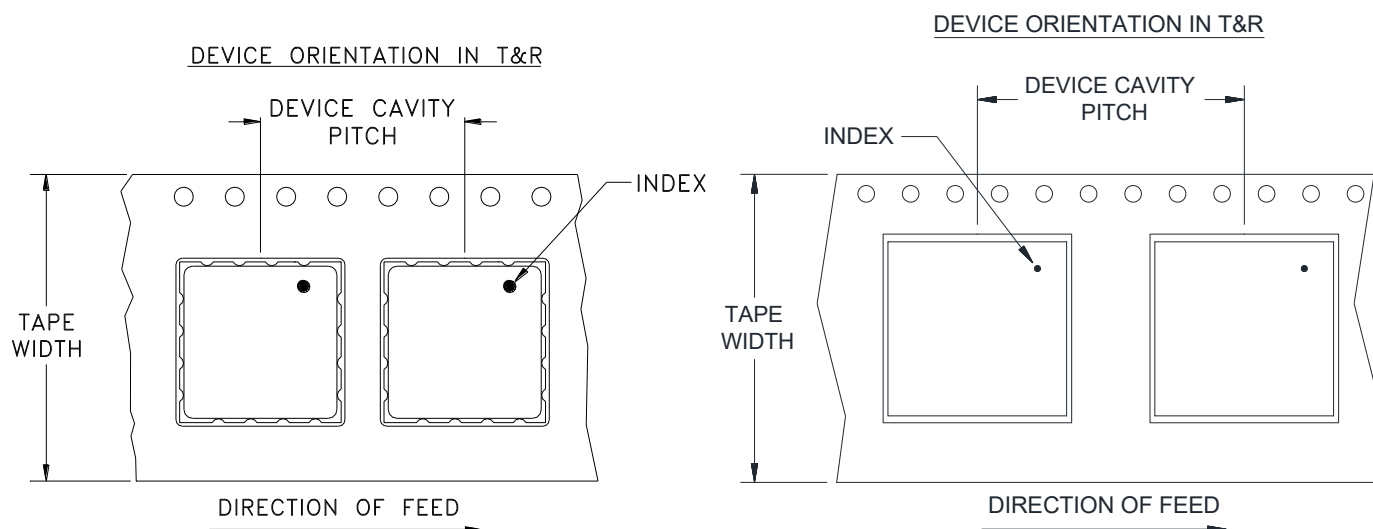
P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

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



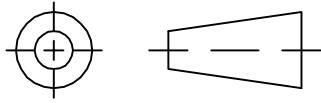
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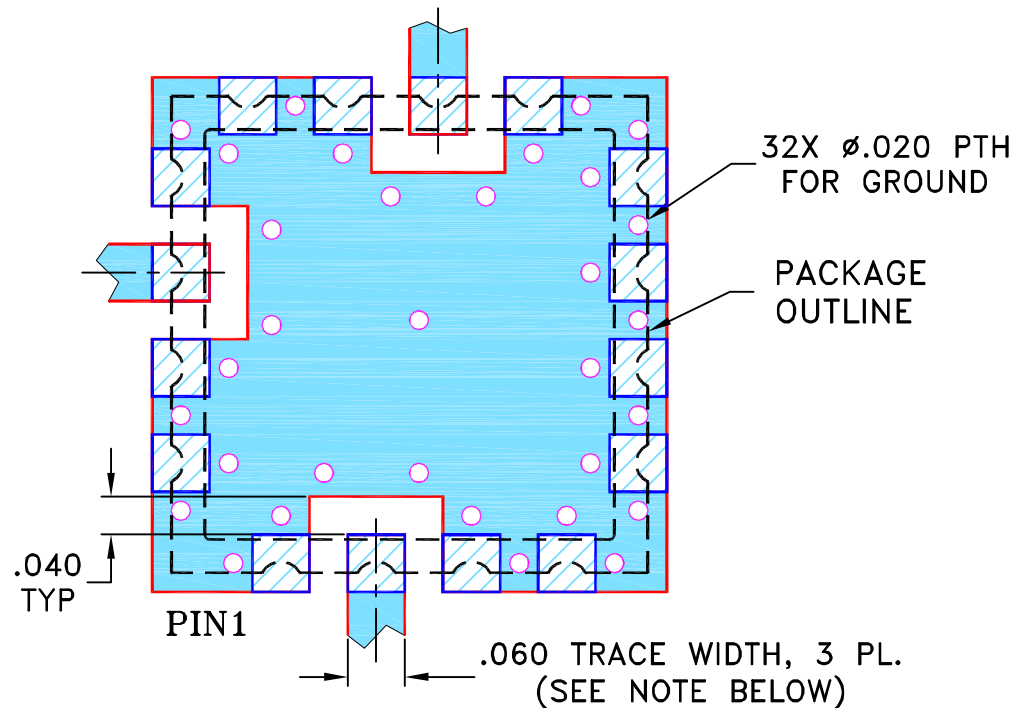
THIRD ANGLE PROJECTION



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

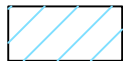
SUGGESTED MOUNTING CONFIGURATION FOR
CK605 CASE STYLE, "kg/rl/16AM01" PIN CONNECTION

NOTES:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .030" $\pm$.002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- 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

TOLERANCES ON:

2 PL DECIMALS $\pm$ 3 PL DECIMALS $\pm$.005ANGLES $\pm$ FRACTIONS $\pm$

DRAWN

AV

08/07/00

CHECKED

SK

08/08/00

APPROVED

DB

08/08/00

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Brooklyn NY 11235

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

SIZE
A

CODE IDENT
15542

DRAWING NO:
98-PL-012

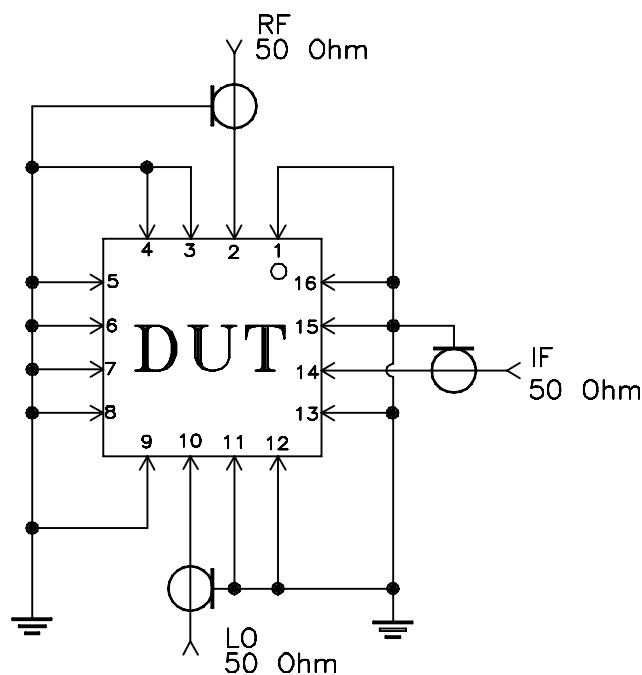
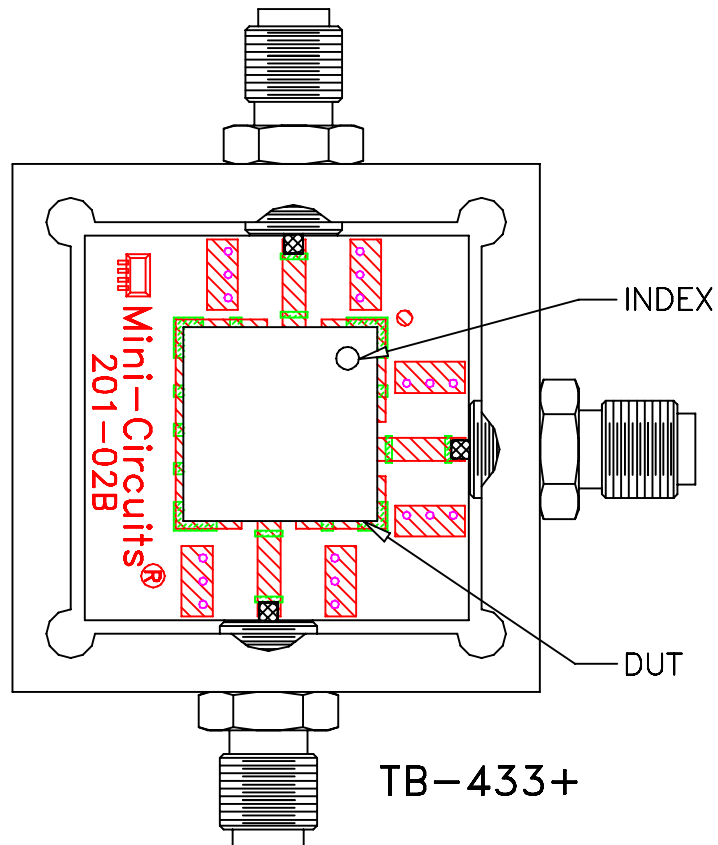
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Evaluation Board and Circuit



Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent,
Dielectric Constant=3.5, Thickness=.028 inch.

Schematic Diagram

 **Mini-Circuits®**



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