

NON-CATALOG

Surface Mount

Voltage Controlled Oscillator

JTOS-300P+

5V Tuning for PLL ICs 148 to 174 MHz

Features

- low phase noise
- 5V tuning voltage range
- linear tuning characteristics
- aqueous washable

Applications

- PLL circuitry
- measurement instrumentation
- frequency synthesizers



CASE STYLE: BK377

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

Electrical Specifications

FREQUENCY (MHz)		POWER OUTPUT (dBm)	TUNING VOLTAGE (V)		PHASE NOISE (dBc/Hz)				PULLING pk-pk @ 12 dB (MHz)	PUSHING (MHz/V)	TUNING SENSITIVITY (MHz/V)	HARMONICS (dBc)		3 dB MODULATION BANDWIDTH (MHz)	POWER SUPPLY	
Min.	Max.	Typ.	Min.	Max.	SSB at offset frequencies: Typ.				Typ.	Typ.	Typ.	Typ.	Max.	Typ.	Voltage (V)	Current (mA) Max.
1 kHz	10 kHz	100 kHz	1 MHz													
148	174	+10	0.5	5.0	-82	-102	-122	-142	1.0	0.2	10-14	-27	-20	0.12	12	20

Pin Connections

RF OUT	13
VCC	2
V-TUNE	5
GROUND	1,3,4,6,7,8,9,10,11,12,14

Maximum Ratings

Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	16V
Absolute Max. Tuning Voltage (Vtune)	7V
All specifications	50 ohm system

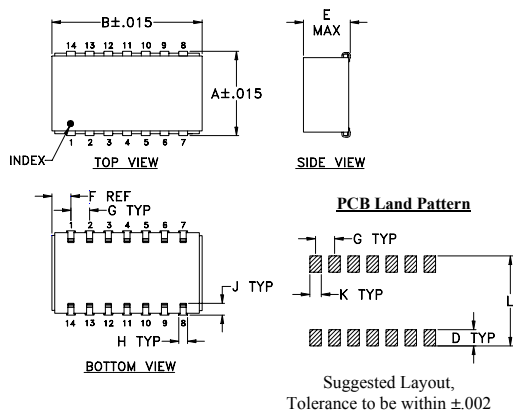
Permanent damage may occur if any of these limits are exceeded.

Tape & Reel: F107

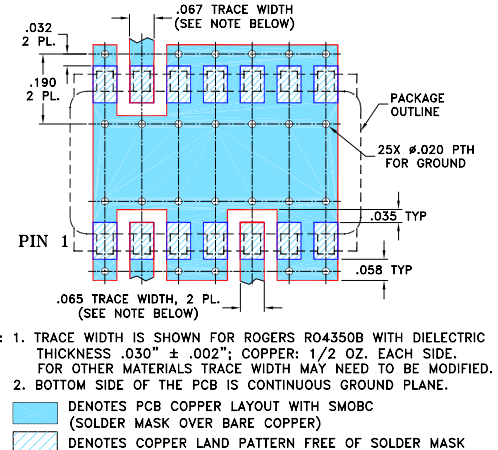
7" Reels with 10, 20, 50, 100 devices
13" Reels with 200 devices

Environmental Ratings: ENV65

Outline Drawing



Demo Board MCL PIN: TB-04
Suggested PCB Layout (PL-005)



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	L	wt
.505	.800	--	.100	.250	.100	.100	.047	.065	.065	.525	grams
12.83	20.32	--	2.54	6.35	2.54	2.54	1.19	1.65	1.65	13.34	3.0

Notes

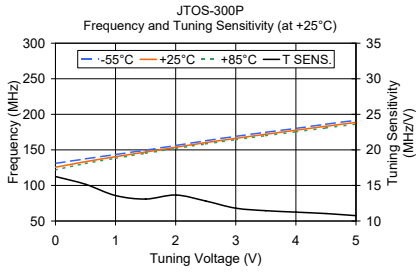
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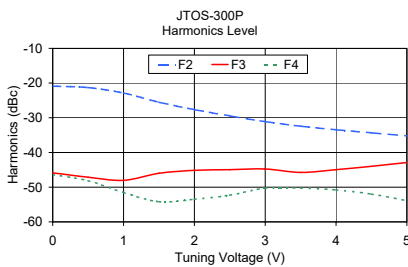
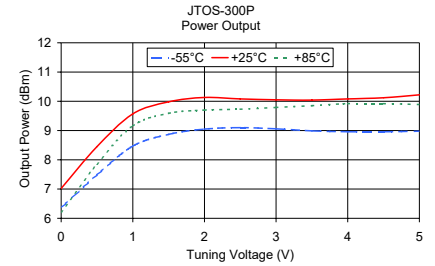
NON-CATALOG

Performance Data & Curves

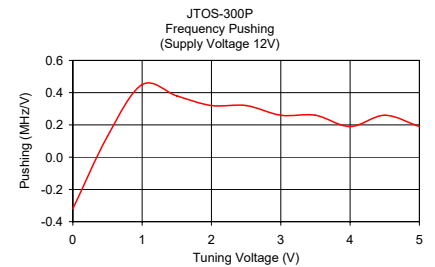
JTOS-300P+



V TUNE	TUNING SENS. (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)		
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C
0.00	16.26	130.97	125.58	121.94	6.36	7.02	6.21
0.50	15.16	137.44	133.44	130.82	7.48	8.45	7.85
1.00	13.58	143.41	140.40	138.32	8.47	9.57	9.16
1.50	13.09	149.57	147.01	145.24	8.87	9.98	9.59
2.00	13.65	156.17	153.67	152.09	9.05	10.13	9.70
2.50	12.81	162.85	160.26	158.44	9.10	10.08	9.73
3.00	11.80	169.07	166.24	164.40	9.06	10.05	9.79
3.50	11.45	174.77	172.00	170.06	8.99	10.04	9.85
4.00	11.24	180.29	177.66	175.50	8.96	10.08	9.92
4.50	11.05	186.11	183.22	180.88	8.96	10.12	9.92
5.00	10.75	191.68	188.65	186.34	8.98	10.22	9.89



V TUNE	HARMONICS (dBc)			FREQ. PUSHING (MHz/V)
	F2	F3	F4	
0.00	-20.87	-45.87	-46.37	-0.32
0.50	-21.30	-47.14	-48.14	0.13
1.00	-22.87	-48.04	-51.54	0.45
1.50	-25.50	-46.00	-54.17	0.38
2.00	-27.65	-45.15	-53.48	0.32
2.50	-29.45	-44.95	-52.29	0.32
3.00	-31.10	-44.77	-50.27	0.26
3.50	-32.42	-45.76	-50.26	0.26
4.00	-33.45	-44.95	-50.79	0.19
4.50	-34.33	-43.99	-51.99	0.26
5.00	-35.22	-42.89	-53.89	0.19



Notes

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Voltage Controlled Oscillator

JTOS-300P+

Typical Performance Data

V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			HARMONICS (dBc)			FREQ. PUSH (MHz/V)	FREQ OFFSET (KHz)	PHASE NOISE (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C	F2	F3	F4			
0.5	15.16	137.4	133.4	130.8	7.48	8.45	7.85	-21.3	-47.1	-48.1	0.37	1	-82
1.0	13.58	143.4	140.4	138.3	8.47	9.57	9.16	-22.9	-48.0	-51.5		10	-102
1.5	13.09	149.6	147.0	145.2	8.87	9.98	9.59	-25.5	-46.0	-54.2		100	-122
2.0	13.65	156.2	153.7	152.1	9.05	10.13	9.70	-27.7	-45.2	-53.5		1000	-142
2.5	12.81	162.9	160.3	158.4	9.10	10.08	9.73	-29.5	-45.0	-52.3	0.19		
3.0	11.80	169.1	166.2	164.4	9.06	10.05	9.79	-31.1	-44.8	-50.3			
3.5	11.45	174.8	172.0	170.1	8.99	10.04	9.85	-32.4	-45.8	-50.3			
4.0	11.24	180.3	177.7	175.5	8.96	10.08	9.92	-33.5	-45.0	-50.8	0.10		
4.5	11.05	186.1	183.2	180.9	8.96	10.12	9.92	-34.3	-44.0	-52.0			
5.0	10.75	191.7	188.7	186.3	8.98	10.22	9.89	-35.2	-42.9	-53.9	0.16		

REV. X1
JTOS-300P+
070131
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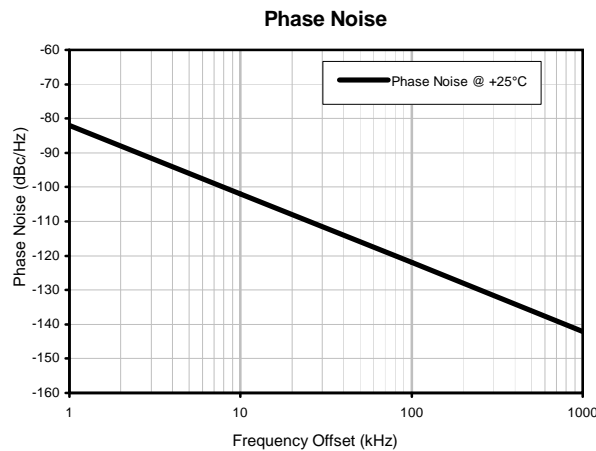
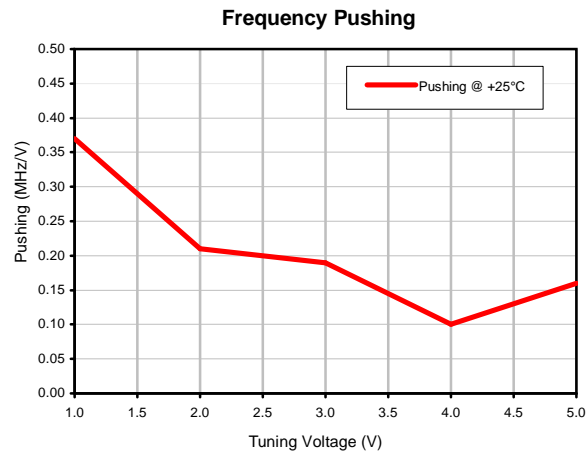
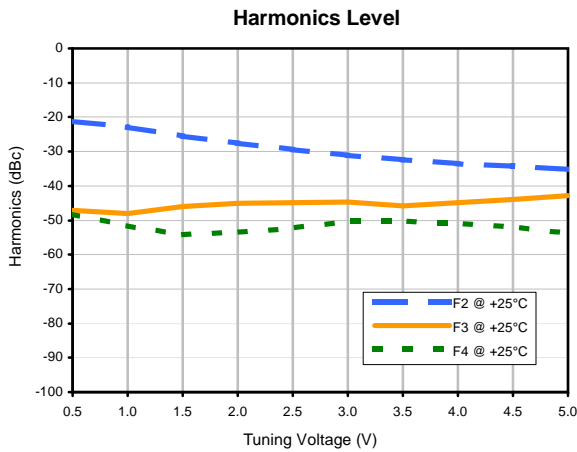
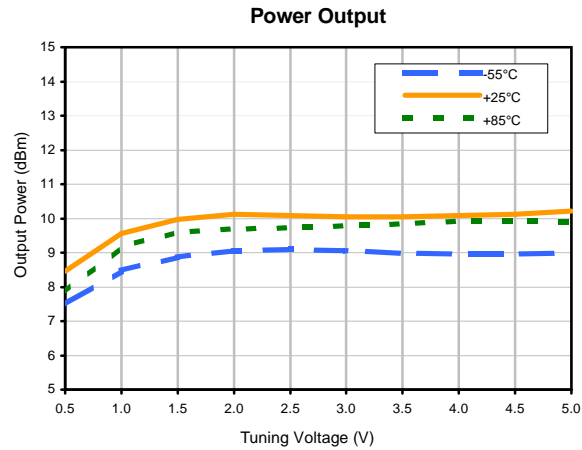
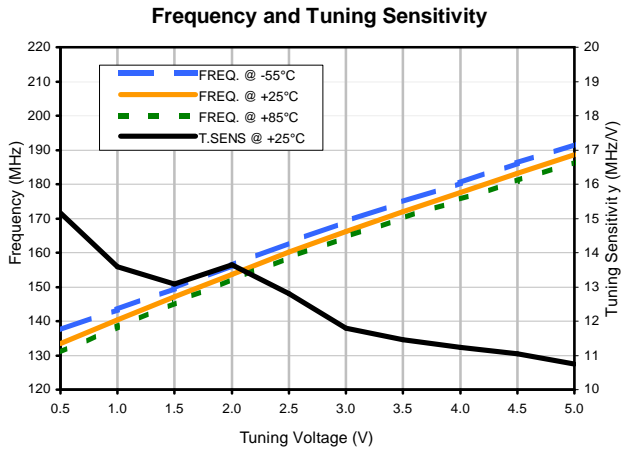
The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see



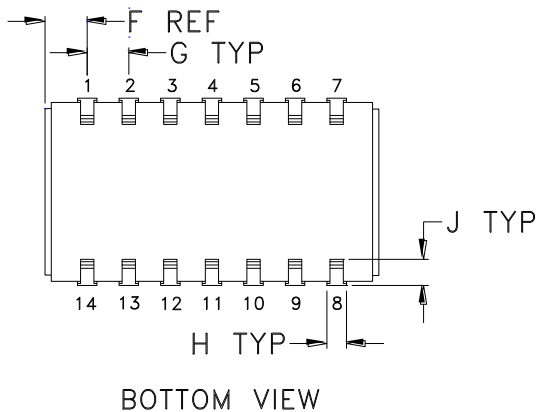
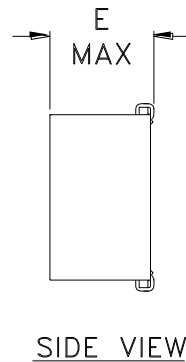
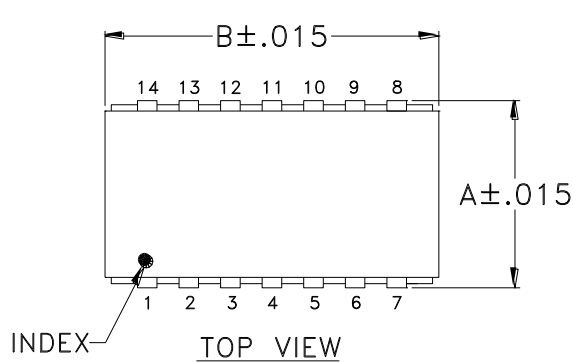
Voltage Controlled Oscillator

JTOS-300P+

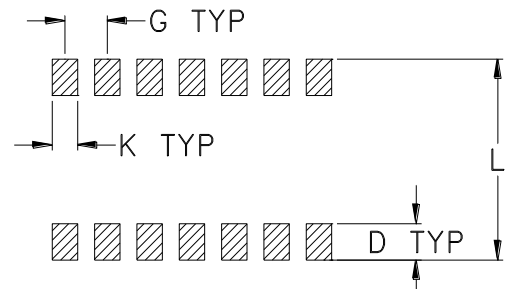
Typical Performance Data



Outline Dimensions



PCB Land Pattern



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

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAM
BK377	.505 (12.83)	.800 (20.32)	-- --	.100 (2.54)	.250 (6.35)	.100 (2.54)	.100 (2.54)	.047 (1.19)	.065 (1.65)	.065 (1.65)	.525 (13.34)	2.0 MAX.

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .01$; 3Pl. $\pm .005$

Notes:

- Case material: Copper Nickel alloy.
- Base material: Printed wiring laminate.
- Termination finish:
 - For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
 - For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.



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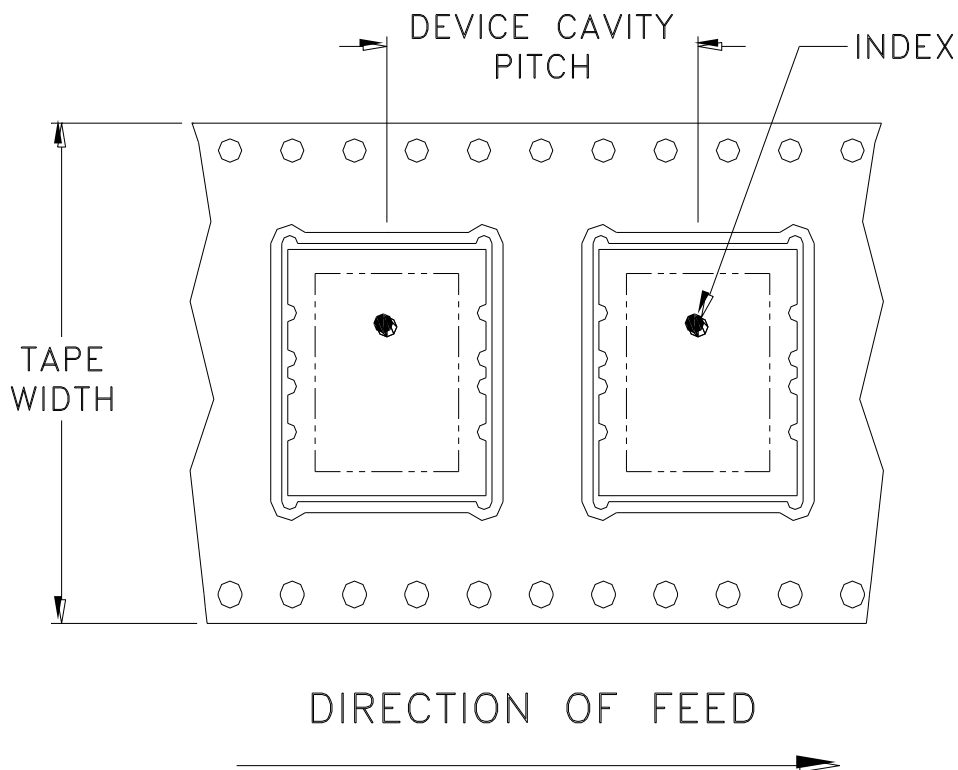
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Tape & Reel Packaging TR-F107

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
32	20	7	Small quantity standards (see note)	10
				20
				50
		100		
		13	Standard	200

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.

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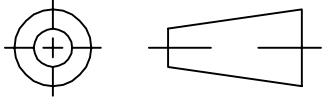
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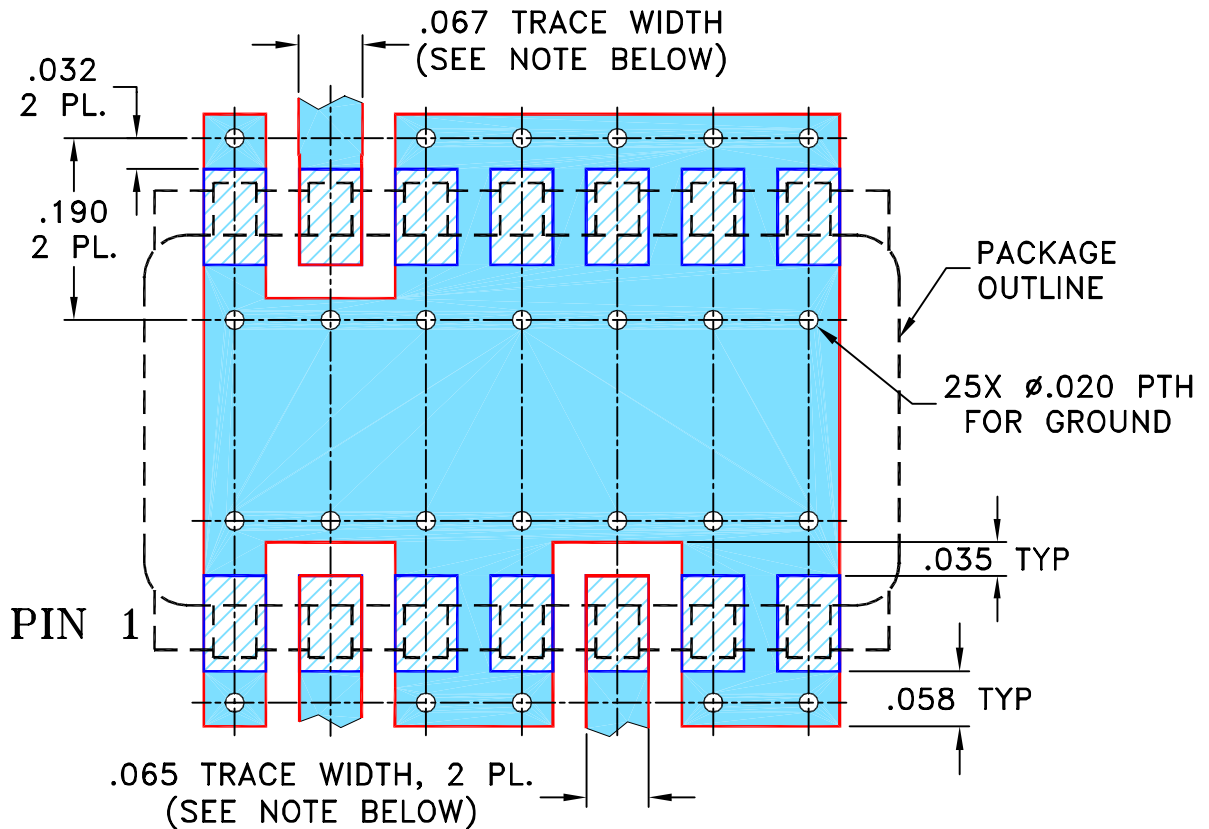
THIRD ANGLE PROJECTION




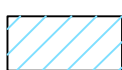
REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
B	M76077	UPDATED DRAWING	04/01	GF	MM
C	M82575	UPDATED DRAWING	08/08/02	IL	MM
D	M102713	UPDATED DIMENSIONS & NOTES	01/17/06	MMG	IL
E	M115059	CORRECTED NOTE 2	12/18/07	MMG	IL

SUGGESTED MOUNTING CONFIGURATION FOR BK377 CASE STYLE, "jc" PIN CONNECTION



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B 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

UNLESS OTHERWISE SPECIFIED	INITIALS	DATE
DRAWN	FB	05/20/00
CHECKED	MM	05/24/00
APPROVED	DB	05/24/00

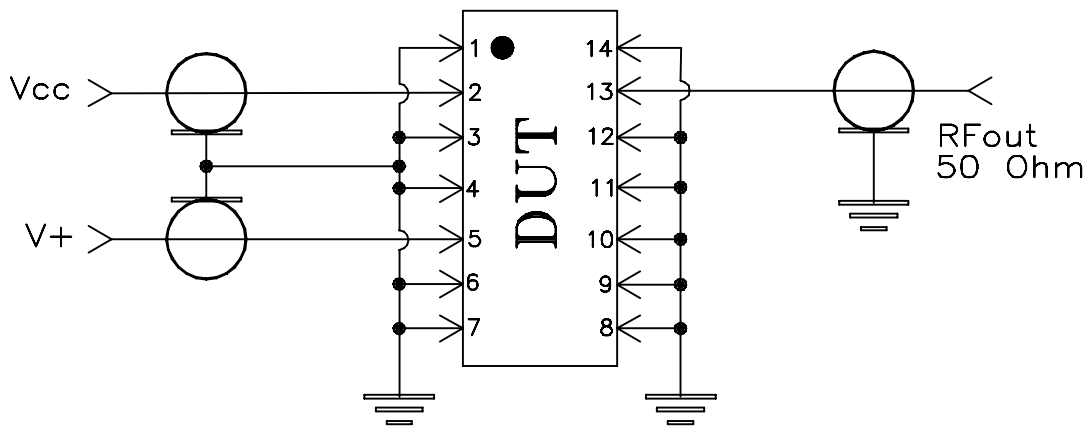
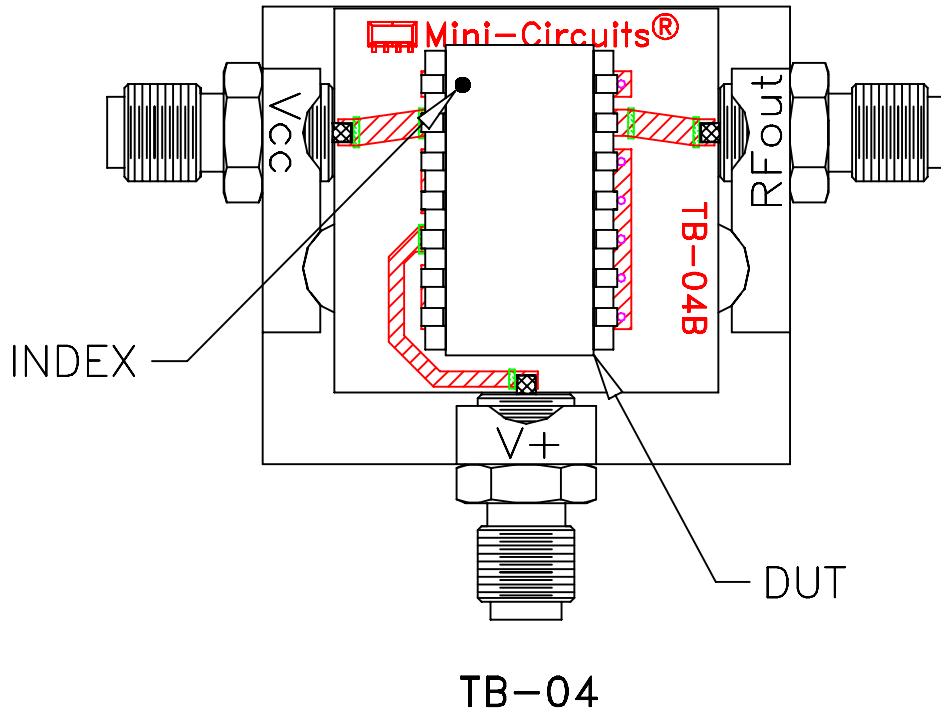
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PL, jc, BK377, JTOS, TB-04

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SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-005	E
FILE:	98PL005	SCALE: 5:1	SHEET: 1 OF 1


Evaluation Board and Circuit



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° 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, Para 4.2.5, Test S, 95% Coverage
Vibration (High Frequency)	20g peak, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
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