

# Surface Mount Voltage Controlled Oscillator

# JTOS-400P+ JTOS-400P

5V Tuning for PLL IC's 194 to 220 MHz

## Features

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

## Applications

- PLL circuitry
- measurement instrumentation
- frequency synthesizers



CASE STYLE: BK377  
PRICE: \$16.95 ea. QTY (5-49)

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

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) SSB at offset frequencies: Typ.				PULLING p-k-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.	1 kHz	10 kHz	100 kHz	1 MHz	Typ.	Typ.	Typ.	Typ.	Max.	Typ.	Voltage (V)	Current (mA) Max.
194	220	+11	0.5	5.0	-82	-102	-122	-142	1.4	0.4	13-18	-25	-20	0.13	12	20

## Pin Connections

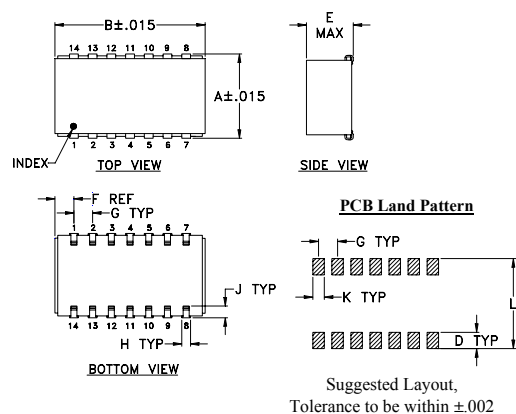
RF OUT	13
VCC	2
V-TUNE	5
GROUND	1,3,4,6,7,8,9,10,11,12,14

## Maximum Ratings

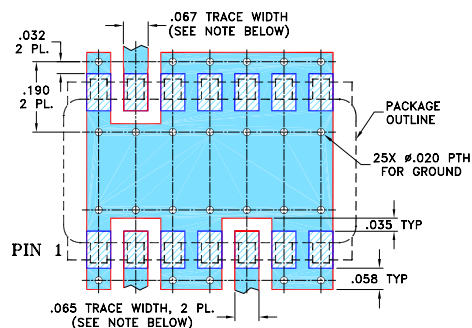
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	+16V
Absolute Max. Tuning Voltage (Vtune)	+7V

all specifications: 50 ohm system  
Permanent damage may occur if any of these limits are exceeded.

## Outline Drawing



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



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B 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

## 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



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

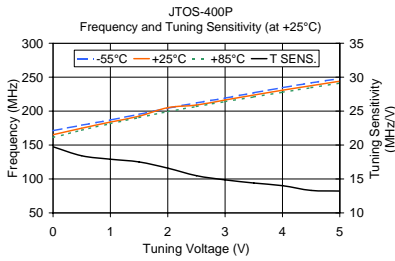
IF/RF MICROWAVE COMPONENTS

For detailed performance specs & shopping online see web site

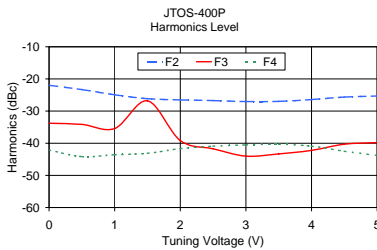
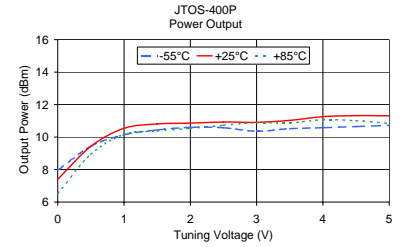
Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established 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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## Performance Data & Curves



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	19.74	171.24	165.27	161.07	7.95	7.40	6.54
0.50	18.42	179.35	174.81	171.96	9.44	9.43	8.94
1.00	17.91	186.89	183.80	181.54	10.14	10.54	10.17
1.50	17.51	195.32	192.53	190.53	10.44	10.81	10.38
2.00	16.59	204.34	205.03	199.16	10.60	10.86	10.54
2.50	15.48	212.15	208.90	206.87	10.58	10.93	10.73
3.00	14.87	219.26	216.39	213.96	10.36	10.91	10.89
3.50	14.40	227.09	223.63	220.94	10.52	11.03	10.88
4.00	14.01	234.56	230.71	227.86	10.58	11.26	11.07
4.50	13.31	241.66	237.48	234.56	10.65	11.32	11.01
5.00	13.22	247.96	244.05	241.36	10.72	11.31	10.84



V TUNE	HARMONICS (dBc)			FREQ. PUSHING (MHz/V)
	F2	F3	F4	
0.00	-21.95	-33.78	-42.12	-0.06
0.50	-23.31	-34.15	-44.15	0.38
1.00	-24.91	-35.41	-43.58	0.45
1.50	-26.14	-26.81	-43.14	0.32
2.00	-26.51	-39.17	-41.67	0.19
2.50	-26.73	-41.73	-40.90	0.26
3.00	-27.02	-44.02	-40.52	0.19
3.50	-26.97	-43.31	-40.31	0.19
4.00	-26.41	-42.24	-40.91	0.06
4.50	-25.64	-40.31	-42.48	0.06
5.00	-25.30	-39.80	-43.80	0.13

