NON-CATALOG

Surface Mount

Voltage Controlled Oscillator

MOS-2133-219+

5V Tuning for PLL IC's 2033 to 2133 MHz

Features

- linear tuning characteristics
- low phase noise
- low pulling
- low pushing
- aqueous washable

Applications

- wireless communications
- broadcast service

CASE STYLE: CZ682

+RoHS Compliant

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

Electrical Specifications

MODEL NO.	FREQ. (MHz)		POWER OUTPUT (dBm)	PHASE NOISE dBc/Hz SSB at offset frequencies,kHz Typ.				TUNING VOLTAGE RANGE (V)		SENSI-TIVITY (MHz/V)	PORT CAP (pF)	3 dB MODULATION BANDWIDTH (MHz)	NON HARMONIC SPURIOUS (dBc)	HARMONICS (dBc)		PULLING pk-pk @12 dBr (MHz)	PUSHING (MHz/V)	DC OPERATING POWER Vcc (volts)	DC OPERATING POWER Current (mA)
	Min.	Max.	Typ.	1	10	100	1000	Min.	Max.	Typ.	Typ.	Typ.	Typ.	Typ.	Max.	Typ.	Typ.		Max.
MOS-2133-219+	2033	2133	+2.5	-78	-103	-124	-144	0.5	5	35-41	18	200	-90	-21	-13	0.2	0.5	5	40

Pin Connections

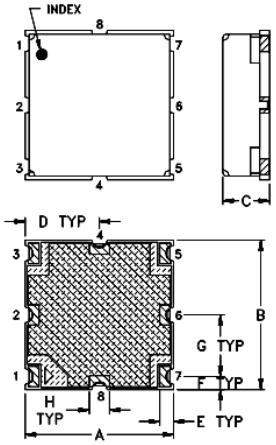
RF OUT	5
VCC	3
V-TUNE	1
GROUND	2,4,6,7,8

Maximum Ratings

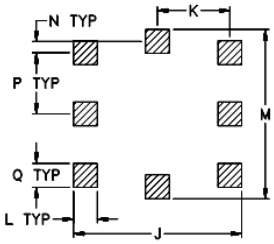
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	6.5V
Absolute Max. Tuning Voltage (Vtune)	7.0V
All specifications	50 ohm system

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

Outline Drawing



PCB Land Pattern

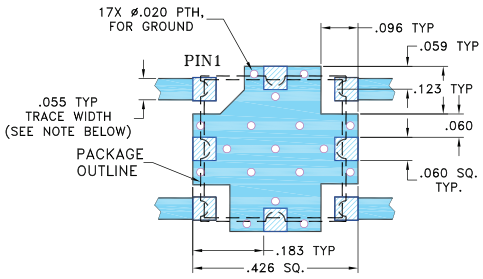


Suggested Layout,
Tolerance to be within ±.002

METALLIZATION

SOLDER RESIST

Demo Board MCL P/N: TB-128
Suggested PCB Layout (PL-023)



NOTE: 1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS 0.030" ± 0.002"; 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	M	N	P	Q	wt.
.375	**.375**	**.131**	**.188**	**.035**	**.033**	**.154**	**.050**	**.425**	**.183**	**.060**	**.425**	**.028**	**.154**	**.060**	grams
9.52	9.52	3.33	4.77	0.89	0.84	3.91	1.27	10.80	4.65	1.52	10.80	0.71	3.91	1.52	.60

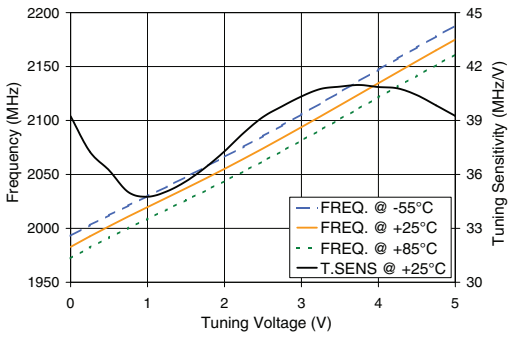
Performance Data & Curves*

MOS-2133-219+

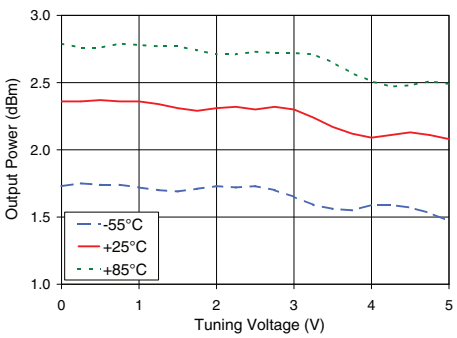
V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			Icc (mA)	HARMONICS (dBc)			FREQ. PUSH (MHz/V)	FREQ. PULL (MHz)	PHASE NOISE (dBc/Hz) at offsets				FREQ OFFSET (KHz)	PHASE NOISE at 2083 MHz (dBc/Hz)
		-55°C	+25°C	+85°C	-55°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	39.24	1993.1	1982.8	1972.3	1.73	2.36	2.79	32.85	-21.2	-34.2	-41.7	1.09	0.28	-79.0	-101.9	-122.9	-143.0	1.0	-77.51
0.50	36.23	2012.2	2001.9	1991.4	1.74	2.37	2.76	33.03	-21.6	-34.8	-40.3	1.10	0.32	-76.2	-101.3	-122.5	-142.6	2.0	-87.86
0.75	35.01	2021.1	2011.0	2000.2	1.74	2.36	2.79	33.15	-21.7	-34.1	-40.3	1.05	0.32	-77.1	-102.2	-123.3	-143.5	3.5	-95.62
1.00	34.76	2029.9	2019.7	2008.8	1.72	2.36	2.78	33.26	-21.5	-34.6	-39.0	0.99	0.28	-77.3	-103.1	-123.6	-144.1	6.0	-97.68
1.25	35.06	2038.7	2028.4	2017.5	1.70	2.34	2.77	33.36	-21.2	-34.4	-39.2	0.94	0.22	-78.8	-102.4	-124.3	-144.3	8.5	-101.66
1.50	35.62	2047.7	2037.2	2026.2	1.69	2.31	2.77	33.45	-21.0	-33.0	-38.6	0.89	0.20	-77.3	-103.4	-124.1	-143.7	10.0	-103.37
1.75	36.38	2056.8	2046.1	2034.9	1.71	2.29	2.74	33.54	-21.1	-33.5	-37.9	0.83	0.14	-78.2	-103.1	-123.9	-143.9	20.8	-111.40
2.00	37.29	2066.2	2055.2	2043.8	1.73	2.31	2.71	33.62	-21.2	-32.8	-37.5	0.78	0.13	-78.3	-103.4	-124.2	-144.2	35.5	-115.43
2.25	38.31	2075.7	2064.5	2052.9	1.72	2.32	2.71	33.70	-21.5	-32.4	-37.5	0.71	0.16	-76.1	-103.7	-124.2	-144.1	60.7	-118.72
2.50	39.19	2085.5	2074.1	2062.2	1.73	2.30	2.73	33.78	-21.5	-32.6	-36.9	0.63	0.21	-76.9	-102.9	-124.0	-144.5	86.7	-123.53
2.75	39.79	2095.5	2083.9	2071.7	1.70	2.32	2.72	33.86	-21.0	-32.3	-37.5	0.52	0.22	-77.6	-102.6	-124.1	-144.5	100.0	-124.78
3.00	40.34	2105.7	2093.8	2081.4	1.65	2.30	2.72	33.95	-21.3	-32.3	-37.3	0.40	0.19	-77.5	-102.7	-124.1	-144.1	148.1	-127.74
3.25	40.76	2115.9	2103.9	2091.3	1.59	2.24	2.71	34.03	-21.9	-32.5	-37.0	0.25	0.18	-79.1	-103.7	-124.4	-144.9	177.0	-129.50
3.50	40.89	2126.3	2114.1	2101.3	1.56	2.17	2.65	34.09	-21.3	-31.6	-37.4	0.09	0.14	-77.2	-103.6	-124.2	-144.2	211.6	-131.04
3.75	40.98	2136.7	2124.3	2111.3	1.55	2.12	2.57	34.16	-20.9	-31.8	-38.5	0.08	0.17	-76.6	-102.5	-124.0	-144.3	302.4	-134.04
4.00	40.86	2147.1	2134.6	2121.4	1.59	2.09	2.51	34.22	-20.7	-31.5	-39.6	0.27	0.18	-78.2	-102.3	-123.7	-143.5	361.5	-134.97
4.25	40.79	2157.5	2144.8	2131.5	1.59	2.11	2.47	34.27	-20.3	-32.5	-39.2	0.47	0.22	-77.2	-101.9	-123.1	-143.5	507.5	-138.15
4.50	40.41	2167.8	2155.0	2141.5	1.57	2.13	2.48	34.31	-20.4	-32.5	-39.9	0.68	0.21	-76.1	-101.6	-122.6	-142.4	606.7	-140.02
4.75	39.84	2178.0	2165.1	2151.4	1.53	2.11	2.51	34.35	-20.1	-32.7	-40.1	0.89	0.19	-74.2	-101.1	-121.7	-141.9	851.6	-142.88
5.00	39.26	2188.0	2175.0	2161.2	1.47	2.08	2.49	34.39	-20.1	-32.7	-40.5	1.12	0.15	-73.3	-99.8	-121.3	-141.2	1000.0	-144.58

*at 25°C unless mentioned otherwise

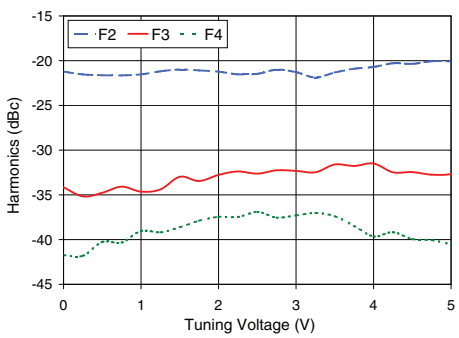
MOS-2133-219+
Frequency and Tuning Sensitivity



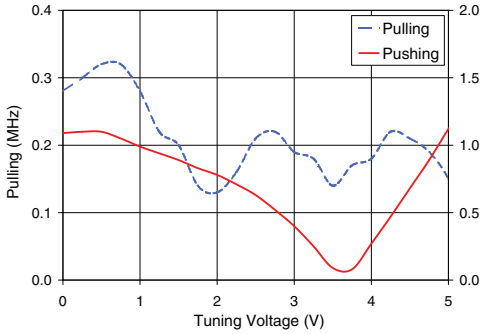
MOS-2133-219+
Power Output



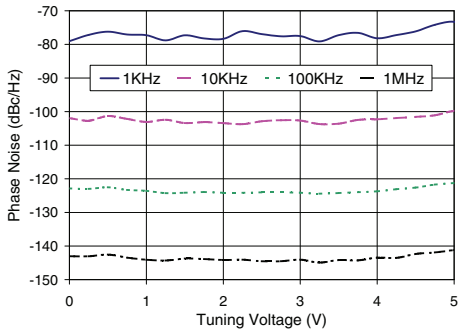
MOS-2133-219+
Harmonics Level



MOS-2133-219+
Frequency Pulling & Pushing (Vcc ± 5%)



MOS-2133-219+
Phase Noise Vs. Tuning Voltage



MOS-2133-219+
Phase Noise