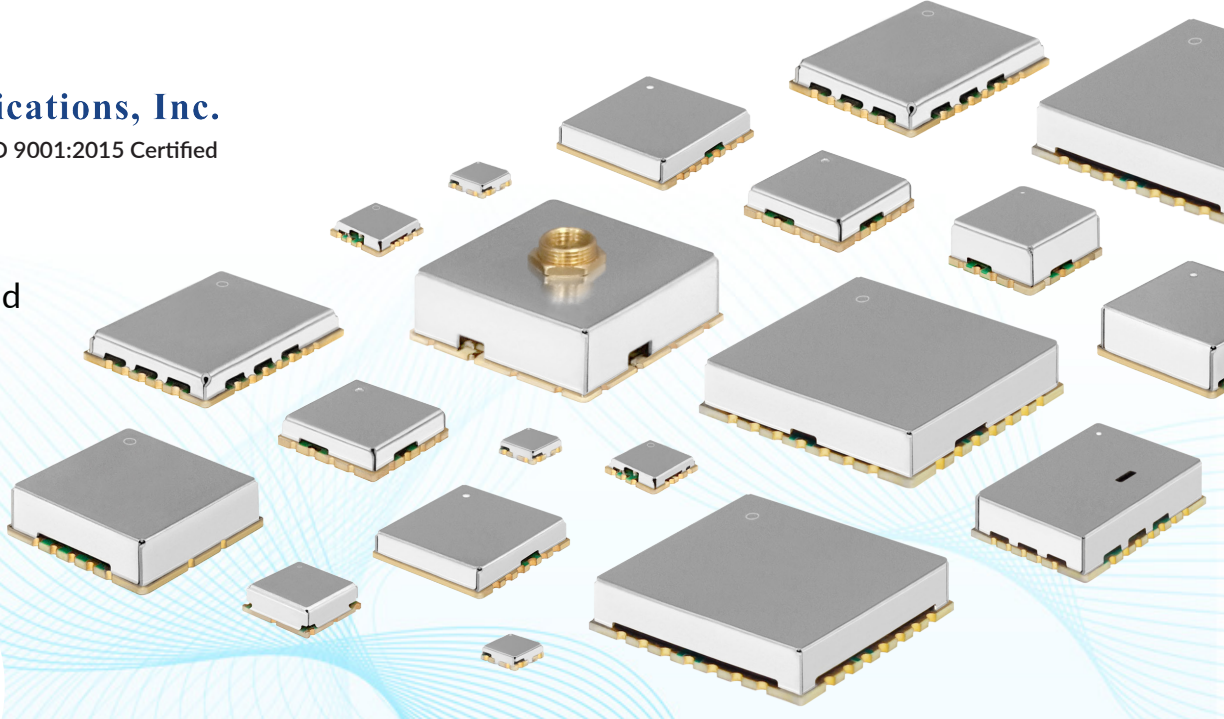


The most trusted brand  
of VCOs & PLLs.



2019

# PRODUCT SELECTION GUIDE

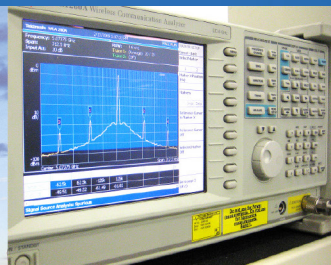
Voltage Controlled Oscillators | Phase-Locked Loops | 40 MHz - 15 GHz



Microwave  
Radio



Satellite  
Communications



Test &  
Measurement

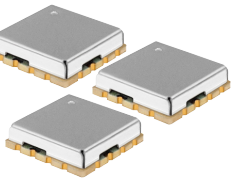


Military  
Communications



Aerospace

# CLV Series VCOs | 400 MHz - 4 GHz



Wide Frequency Range • Low Phase Noise • Low Harmonics

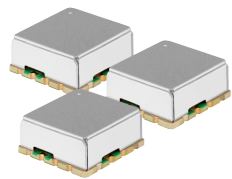
The CLV series VCOs utilize a microstrip topology that is based on a patented high-Q distributed resonator design which delivers low phase noise and linear tuning spanning over a wide range of frequency bands covering 400 MHz to 4 GHz. They exhibit excellent tuning linearity and superior harmonic suppression making them the ideal choice for test equipment and satellite communication applications.

Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
CLV0600A-LF	530	670	1 - 4.5	52	-2.5 to 5.5	-109	-15	5	24	<2	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0625E-LF	575	675	0.5 - 4.5	43	-4 to 4	-111	-8	5	25	<2	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV0710A-LF	660	760	0.5 - 11.5	20	-2 to 4	-115	-15	3.3	30	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0700E-LF	680	720	0.5 - 4.5	35	0 to 5	-109	-10	5	18	<2	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0798A-LF	730	920	1 - 15	28	-2 to 6.5	-108	-15	5	19	<2	<1	0.5 x 0.5 x 0.13	MINI-16-L
CLV0795B-LF	730	860	0.5 - 4.5	45	1 to 6	-105	-10	5	18	<4	<1	0.5 x 0.5 x 0.13	MINI-16-L
CLV0860A-LF	730	990	1 - 15	28	-2 to 7	-108	-15	5	19	<1	<1	0.5 x 0.5 x 0.22	MINI-16
CLV0769E-LF	734	804	1 - 4	40	0 to 5	-109	-9	5	16	<2	<0.5	0.5 x 0.5 x 0.22	MINI-16
CLV0750E-LF	750	830	0.5 - 4.5	31	1.5 to 5.5	-110	-14	5	18	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0835E-LF	800	835	0.5 - 4.5	25	-1 to 5	-111	-17	5	21	<1	<0.2	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0975B-LF	820	1170	0.5 - 15	31	-3 to 3.5	-109	-12	5	20	<2	<0.5	0.5 x 0.5 x 0.22	MINI-14S
CLV0915A-LF	830	1000	1 - 12	25	3 to 9	-112	-15	5	25	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1075A-LF	830	1300	0.5 - 17	35	0 to 8	-105	-18	5	26	<4	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV0865A-LF	855	875	1 - 4	19	0 to 6	-113	-15	4.5	25	<2	<2	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1025E-LF	865	1180	1 - 14	30	1 to 10	-107	-12	5	24	<2	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV0894A-LF	868	920	0.5 - 4.5	19	0 to 6	-113	-15	5	25	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0890A-LF	890	930	0.5 - 4.5	25	-3.5 to 1	-111	-20	5	20	<0.6	<0.2	0.5 x 0.5 x 0.22	MINI-14S
CLV0925E-LF	896	959	0.3 - 4.7	20	-7 to -3	-111	-24	5	12	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1000B-LF	900	1100	0.5 - 4.5	60	1 to 10	-104	-20	5	20	<4	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV0945E-LF	936	953	0.5 - 4.5	33	1 to 5	-110	-18	5	18	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV0989A-LF	939	1039	0.5 - 4.5	29	-2 to 3	-109	-15	5	25	<3	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1186A-LF	945	1427	0.5 - 24	24	2 to 8	-104	-15	8	30	<2	<2	0.5 x 0.5 x 0.13	MINI-14S-L
CLV0986E-LF	971	1002	0.5 - 4.5	18	-2 to 3	-113	-20	5	20	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1015E-LF	987	1032	0.6 - 5	21	-7 to -1	-109	-36	4.5	15	<2	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1030E-LF	990	1070	1 - 4.5	33	1 to 10	-106	-15	5	25	<3	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1000A-LF	998	1001	0.5 - 2.5	17	-4.5 to 0.5	-114	-18	3	18	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1100E-LF	1035	1180	1 - 10	25	0 to 8	-107	-15	5	23	<2	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1085E-LF	1050	1086	0.5 - 4.5	21	-4 to 2	-112	-20	5	23	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1150E-LF	1100	1200	0.3 - 4.7	39	0 to 4	-109	-20	5	22	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1137A-LF	1100	1175	0.5 - 4.5	37	-1 to 4	-109	-16	5	17	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1225A-LF	1180	1270	0.5 - 4.5	37	-1 to 6	-109	-25	5	26	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1277A-LF	1213	1341	0.5 - 4.5	38	0 to 7	-107	-20	5	28	<3	<2	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1295A-LF	1235	1355	0.5 - 4.5	68	3 to 7	-105	-15	5	26	<4	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1310A-LF	1260	1370	0.5 - 4.75	40	2 to 7	-107	-11	5	25	<0.5	<1.5	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1350E-LF	1295	1385	0.5 - 4.5	36	-3 to 3	-107	-12	5	21	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1320E-LF	1295	1335	1 - 5	18	-10 to 0	-109	-30	5	27	<1	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1420W-LF	1320	1520	0.5 - 10	28	-1 to 5	-110	-18	5	25	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1360E-LF	1345	1375	0.5 - 4.5	19	-4 to 2	-108	-15	5	22	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1370A-LF	1360	1380	0.5 - 4.5	24	0 to 6	-108	-20	5	18	<2	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1385E-LF	1370	1400	0.5 - 4.5	21	1 to 6.5	-109	-15	5	18	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1440E-LF	1400	1486	0.5 - 4.5	33	-3 to 3	-107	-15	5	23	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1450A-LF	1400	1500	0.5 - 5	26	0 to 6	-110	-18	5	27	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1455E-LF	1440	1470	1 - 5	16	-6.5 to 1.5	-110	-27	5	22	<1	<1	0.5 x 0.5 x 0.22	MINI-14MS
CLV1625B-LF	1445	1820	2 - 25	23	-2 to 3	-105	-22	5	25	<2	<1	0.5 x 0.5 x 0.13	MINI-16-L
CLV1585E-LF	1487	1587	0.25 - 4.5	36	2 to 7	-108	-17	5	24	<2	<3	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1525E-LF	1500	1550	0.3 - 4.7	25	-2 to 3	-108	-20	5	25	<1	<1	0.5 x 0.5 x 0.22	MINI-14S
CLV1545E-LF	1500	1580	0.5 - 4.5	35	-2.5 to 3.5	-108	-20	5	23	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1596A-LF	1507	1685	0.5 - 4.5	42	-2 to 5	-100	-18	5	20	<5	<4	0.5 x 0.5 x 0.22	MINI-14MS
CLV1580A-LF	1520	1635	0.5 - 4.5	55	1 to 7	-104	-18	4.75	22	<4	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1605E-LF	1572	1635	0.25 - 4.5	32	1.5 to 6	-107	-20	5	22	<1	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1630A-LF	1593	1654	0.5 - 4.5	31	1 to 6	-111	-15	5	24	<1	<1	0.5 x 0.5 x 0.13	MINI-16-L
CLV1635A-LF	1600	1670	0.5 - 4.5	33	0 to 6	-108	-25	5	22	<2	<1	0.5 x 0.5 x 0.13	MINI-14S-L
CLV1670A-LF	1640	1700	0.5 - 4.5	30	0 to 5	-111	-21	5	23	<1.5	<1	0.5 x 0.5 x 0.13	MINI-16-L
CLV1750A-LF	1690	1810	0.5 - 4.5	50	3 to 7	-104	-15	5	27	<4	<2	0.5 x 0.5 x 0.22	MINI-14S
CLV1835A-LF	1805	1865	2 - 4.4	50	-2 to 2	-99	-10	5	18	<3	<6	0.5 x 0.5 x 0.13	MINI-14S-L

# CRO Series VCOs | 400 MHz - 8 GHz

Low Tuning Sensitivity • Ultra-Low Phase Noise • Low Frequency Drift

The CRO or ceramic resonator family of oscillators are renowned for offering superior phase noise performance. They are available in ranges anywhere from 400 MHz to 8 GHz while providing very low tuning sensitivities for performance optimization. The unique construction of CRO oscillators and the implementation of the 'tabless' resonator design provides additional microphonic immunization and reduced phase hits in high data rate backhaul radio systems.



Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
CRO0815A-LF	815	815	0.5 - 4.5	3	-2 to 4	-122	-5	5	15	<0.5	<0.5	0.5 x 0.5 x 0.13	MINI-16HL-SM
CRO1000B-LF	1000	1000	0 - 3.3	4	0 to 6	-121	-15	5	18	<0.5	<0.5	0.5 x 0.5 x 0.13	MINI-16HL-SM
CRO1140A-LF	1140	1140	0.5 - 4.5	3	0 to 6	-120	-10	5	22	<0.2	<0.1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO1344A-LF	1342	1346	0.5 - 4.5	3	0 to 6	-118	-20	5	25	<0.5	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO1600M-LF	1600	1600	0.5 - 4.5	5	1 to 5	-125	-15	8	30	<0.2	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO1728A-LF	1691	1765	0.5 - 4.5	30	0 to 6	-110	-15	5	25	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO1820A-LF	1818	1822	0.5 - 4.5	5	2 to 7	-119	-25	5	20	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO1940A-LF	1910	1970	0.5 - 4.5	21	1 to 6	-112	-30	5	22	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2065B-LF	2005	2065	0.5 - 4.5	20	-3 to 3	-112	-25	5	20	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2120B-LF	2080	2158	0.5 - 4.75	22	1 to 7	-110	-22	5	23	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2125A-LF	2125	2125	1.5 - 3.5	3	5 to 9	-121	-12	8	31	<0.05	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2242A-LF	2200	2285	0.5 - 4.5	25	2 to 7	-110	-15	5	20	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2273B-LF	2265	2280	0.5 - 4.5	6	1 to 5	-115	-13	5	20	<0.5	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2330A-LF	2300	2360	0.5 - 4.5	19	-3 to 3	-111	-27	5	21	<2	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2390A-LF	2360	2420	0.5 - 4.5	27	-2 to 2	-110	-20	5	19	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2377A-LF	2370	2385	0.5 - 4.5	7	1 to 5	-116	-25	5	30	<0.5	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2500C-LF	2400	2600	1 - 12	23	5 to 9	-106	-15	8	28	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2490B-LF	2430	2550	0.5 - 4.5	40	0 to 7	-107	-20	5	19	<1	<2	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2570A-LF	2520	2620	0.5 - 4.5	38	0 to 6	-107	-20	5	18	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2605B-LF	2560	2650	0.5 - 4.5	30	1 to 7	-107	-15	5	25	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2835E-LF	2600	3070	1 - 14	50	1 to 11	-101	-15	8	30	<5	<5	0.5 x 0.5 x 0.22	MINI-16-SM-SP
CRO2645A-LF	2615	2675	0.5 - 4.5	23	1 to 7	-109	-15	5	19	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2665D-LF	2640	2710	0.5 - 4.5	30	0 to 6	-109	-15	5	21	<2	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2700B-LF	2670	2730	0.5 - 4.5	20	4 to 9	-108	-21	5	18	<2	<2	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2845A-LF	2770	2920	0.5 - 4.5	52	7 to 13	-106	-20	5	20	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2800B-LF	2800	2800	0.5 - 4.5	9	4 to 11	-115	-18	5	22	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2840A-LF	2810	2870	0.5 - 4.5	34	-3 to 3	-109	-18	4	12	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2850A-LF	2845	2855	0.5 - 4.5	9	4 to 9	-117	-10	5	19	<0.5	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO2960A-LF	2945	2975	0.5 - 4.5	13	4 to 10	-112	-16	5	20	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3000B-LF	3000	3000	0.5 - 4.5	11	6 to 12	-115	-20	5	20	<0.5	<0.5	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3069A-LF	3064	3074	0.5 - 4.5	12	0 to 5	-116	-22	5	20	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3250H-LF	3150	3350	0.5 - 4.5	62	7 to 13	-95	-18	5	25	<2	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3200A-LF	3200	3200	0.5 - 4.5	7	8 to 14	-116	-15	5	22	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3263A-LF	3206	3320	0.5 - 4.5	47	-2 to 5	-103	-15	5	26	<2	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3375A-LF	3370	3380	0.5 - 4.5	7	0 to 5	-112	-20	5	21	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3425B-LF	3420	3430	0.5 - 4.5	8	0 to 4	-110	-15	5	19	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3475E-LF	3475	3475	0.5 - 4.5	5	2 to 8	-115	-20	8	30	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3625C-LF	3625	3625	0.5 - 4.5	6	0 to 7	-112	-20	5	24	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3750A-LF	3750	3750	0.5 - 4.5	8	-1 to 5	-110	-30	5	18	<1	<1	0.5 x 0.5 x 0.22	MINI-16
CRO3815A-LF	3810	3820	0.5 - 4.5	6	0 to 6	-110	-18	8	30	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO3850B-LF	3850	3850	0.5 - 4.5	4	1.5 to 4	-109	-39	5	18	<1	<1	0.5 x 0.5 x 0.22	MINI-16
CRO4166A-LF	4166	4166	0.5 - 4.5	10	3 to 9	-103	-15	5	25	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO4187E-LF	4187	4188	0.5 - 4.5	6	0 to 7	-108	-15	8	30	<1	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO4580X2-LF	4580	4580	0.5 - 4.5	15	-1 to 6	-103	-25	5	30	<3	<1	0.5 x 0.5 x 0.22	MINI-16-SM
CRO4715A-LF	4715	4715	1 - 4	3	0 to 6	-107	-40	5	71	<1	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO5600Z-LF	5600	5600	0.5 - 4.5	12	0 to 6	-105	-40	5	60	<0.5	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO5950Z-LF	5945	5955	0.5 - 4.5	10	-3 to 3	-107	-40	5	70	<1	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO6000Z-LF	5990	6010	0.5 - 4.5	15	1 to 6	-108	-40	5	72	<5	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO6300Z-LF	6290	6310	0.5 - 4.5	18	1 to 6	-105	-40	5	74	<5	<2	0.86 x 0.63 x 0.22	VCO-24H
CRO6550X2-LF	6550	6550	0.3 - 4.7	10	-4 to 4	-102	-22	8	25	<2	<2	0.5 x 0.5 x 0.22	MINI-16-SM
CRO6700Z-LF	6690	6710	0.5 - 4.5	11	1 to 6	-104	-40	5	69	<1	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO6800Z-LF	6800	6800	0.5 - 4.5	18	3 to 7	-104	-40	5	69	<1	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO6950Z-LF	6945	6955	0.5 - 4.5	15	1 to 6	-104	-40	5	70	<1	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO7100Z-LF	7090	7110	0.5 - 4.5	10	1 to 7	-102	-40	5	75	<1	<1	0.86 x 0.63 x 0.22	VCO-24H
CRO7850A-LF	7845	7855	0.5 - 4.5	42	-4 to 4	-99	-40	5	135	<2	<0.1	0.86 x 0.63 x 0.22	VCO-24H

# DRO Series VCOs | 7 GHz - 12 GHz

Exceptional Spectral Purity • Low Power Consumption • Ultra-Fine Tuning Precision

The DRO series Voltage Controlled Oscillator is a fundamental, narrowband signal source utilizing a high-Q dielectric resonator for optimal phase noise performance. The DRO VCO solution is currently being offered for frequencies operating within 7 to 12 GHz. This customizable, ultra-low noise oscillator series is available with both electrical tuning and mechanical tuning for fine frequency precision.

Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
DRO7000A	7000	7000	0 - 12	1.5	0 to 6	-101	-25	5	23	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO7700A	7700	7700	0 - 12	0.7	-3 to 3	-103	-25	5	23	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO7950A	7950	7950	0 - 12	1	-3 to 3	-102	-22	5	15	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO8000A	8000	8000	0 - 12	1	-3 to 3	-102	-25	5	23	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO8100A	8100	8100	0 - 12	1	-3 to 3	-102	-25	5	25	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO8450A	8450	8450	0 - 12	0.5	-1 to 5	-103	-35	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO8750A	8750	8750	0 - 12	0.5	-1 to 5	-104	-30	5	20	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO8800A	8800	8800	0 - 12	0.5	-1 to 5	-104	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO8950A	8950	8950	0 - 12	0.75	2 to 5	-104	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9000A	9000	9000	0 - 12	0.6	-2 to 4	-106	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9180A	9180	9180	0 - 12	0.5	-2 to 4	-105	-25	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9192A	9192	9192	0 - 12	0.5	-2 to 4	-106	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9200A	9200	9200	0 - 12	0.6	-2 to 4	-106	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9250A	9250	9250	0 - 12	0.6	-2 to 4	-106	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9375A	9375	9375	0 - 12	0.5	-2 to 4	-105	-30	5	18	<1	<1	0.91 x 0.91 x 0.51	SDRO
DRO9700A	9700	9700	0 - 12	0.85	-3 to 3	-105	-35	5	18	<0.1	<2	0.91 x 0.91 x 0.51	SDRO
DRO9900A	9900	9900	0 - 12	0.9	-2 to 4	-103	-30	5	18	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO10000A	10000	10000	0 - 12	0.5	-3 to 3	-102	-25	5	20	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO10150A	10150	10150	0 - 12	0.5	-3 to 3	-103	-30	5	18	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO10240A	10240	10240	0 - 12	0.5	-3 to 3	-103	-30	5	18	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO10430A	10430	10430	0 - 12	0.5	-2 to 6	-102	-30	5	26	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO10500A	10500	10500	0 - 12	0.5	-2 to 6	-102	-30	5	23	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO11000A	11000	11000	0 - 12	0.8	-3 to 3	-103	-30	5	25	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO11050A	11050	11050	0 - 12	0.8	-1 to 5	-103	-30	5	25	<1	<2	0.91 x 0.91 x 0.51	SDRO
DRO11150A	11150	11150	0 - 12	0.6	-2 to 4	-106	-35	5	23	<1	<1.5	0.91 x 0.91 x 0.51	SDRO
DRO11700A	11700	11700	0 - 12	0.6	-3 to 3	-104	-35	5	25	<1	<1.5	0.91 x 0.91 x 0.51	SDRO
DRO11750A	11750	11750	0 - 12	0.5	-3 to 3	-104	-30	5	23	<1	<1.5	0.91 x 0.91 x 0.51	SDRO
DRO12000A	12000	12000	0 - 12	0.5	-3 to 3	-106	-35	5	23	<1	<1.5	0.91 x 0.91 x 0.51	SDRO

# USSP Series VCOs | 150 MHz - 4 GHz

Ultra-compact Size • Low Phase Noise • Low Power Consumption

The USSP series is the smallest VCO currently available which is housed in a package measuring 0.2" x 0.2" x 0.06". In addition to being uniquely characterized by their ultra-small size, they also provide exceptionally low power consumption, typically <30mW, making them ideal for mobile radio communication systems and portable satellite terminals.

Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
USSP1220-LF	1210	1230	0.5 - 3	52	0 to 6	-101	-15	3.3	13	<6	<3	0.2 x 0.2 x 0.04	USSP
USSP1325-LF	1250	1400	0.5 - 4.5	75	0 to 6	-100	-15	5	23	<3	<3	0.2 x 0.2 x 0.04	USSP
USSP1400-LF	1380	1420	0 - 3	101	-2 to 4	-93	-25	3	8	<5	<4	0.2 x 0.2 x 0.04	USSP
USSP1570-LF	1540	1600	0.5 - 2.5	115	-4 to 2	-90	-25	2.7	7	<5	<4	0.2 x 0.2 x 0.04	USSP
USSP1730-LF	1715	1745	1 - 4	68	0 to 7	-94	-25	5	19	<5	<5	0.2 x 0.2 x 0.04	USSP
USSP2350-LF	2300	2400	0.5 - 3	140	-4 to 4	-82	-15	2.7	6	<40	<13	0.2 x 0.2 x 0.04	USSP
USSP2400-LF	2400	2485	0.5 - 2.5	120	-5 to 2	-83	-15	2.7	6	<35	<13	0.2 x 0.2 x 0.04	USSP
USSP3300-LF	3050	3550	0 - 5	155	-3 to 5	-81	-12	3	13	<11	<13	0.2 x 0.2 x 0.04	USSP
USSP3417-LF	3410	3430	0 - 3	80	-2 to 6	-82	-13	3	13	<12	<20	0.2 x 0.2 x 0.04	USSP

# SMV Series VCOs | 60 MHz - 6 GHz

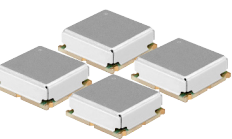


Exceptional Spectral Purity • Low Power Consumption • Ultra-fine Tuning Precision

The SMV series VCO provides the ideal combination of phase noise, power and size. Residing in a 0.3" x 0.3" x 0.08" package, this oscillator series offers a wide range of products from 60 MHz to 6 GHz while providing exceptional phase noise performance. They are further heightened by consuming little power, making them a perfect fit for any remote wireless system.

Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
SMV0135A-LF	120	150	0.5 - 4.5	12	2 to 8	-100	-11	5	20	<2	<1	0.3 x 0.3 x 0.08	SUB-L
SMV0375B-LF	350	400	0.5 - 4.5	12	2 to 8	-100	-11	5	20	<2	<1	0.3 x 0.3 x 0.08	SUB-L
SMV0360A-LF	355	365	0 - 3	20	-3 to 3	-105	-12	3	13	<3	<1	0.3 x 0.3 x 0.08	SUB-L
SMV0425A-LF	400	450	0 - 3	25	-4 to 3	-95	-12	3	14	<3	<1	0.3 x 0.3 x 0.08	SUB-L
SMV0780L-LF	750	810	0.5 - 3	40	1 to 5	-105	-10	2.7	9	<5	<5	0.3 x 0.3 x 0.08	SUB-L
SMV0912A-LF	775	1055	0 - 5	83	-2 to 3	-95	-15	5	15	<3	<2	0.3 x 0.3 x 0.08	SUB-L
SMV0850C-LF	800	900	0.5 - 4.5	61	5 to 11	-98	-20	5	25	<5	<5	0.3 x 0.3 x 0.08	SUB-L
SMV0978L-LF	975	995	0.5 - 2.5	76	1 to 7	-97	-12	3	7	<2	<6	0.3 x 0.3 x 0.08	SUB-L
SMV1100C-LF	980	1200	0.5 - 4.5	125	5 to 11	-98	-13	5	26	<10	<10	0.3 x 0.3 x 0.08	SUB-L
SMV1275A-LF	1100	1450	0.5 - 4.5	130	0 to 4	-96	-15	5	20	<8	<7	0.3 x 0.3 x 0.08	SUB-L
SMV1230A-LF	1220	1240	0 - 3	49	-2 to 4	-98	-20	3	10	<2	<1	0.3 x 0.3 x 0.08	SUB-L
SMV1365C-LF	1265	1465	0.5 - 4.5	113	5 to 11	-95	-7	5	21	<5	<10	0.3 x 0.3 x 0.08	SUB-L
SMV1450A-LF	1350	1550	0.5 - 4.5	88	-3 to 3	-98	-8	3	11	<5	<2	0.3 x 0.3 x 0.08	SUB-L
SMV1740C-LF	1640	1840	0.5 - 4.5	95	5 to 11	-90	-10	5	20	<8	<10	0.3 x 0.3 x 0.08	SUB-L
SMV1780A-LF	1710	1850	0 - 3	150	0 to 6	-87	-9	3	13	<7	<8	0.3 x 0.3 x 0.08	SUB-L
SMV1825A-LF	1800	1850	0 - 3	95	0 to 6	-90	-10	3	14	<10	<15	0.3 x 0.3 x 0.08	SUB-L
SMV1930A-LF	1880	1980	0 - 2.5	95	3 to 7	-87	-10	3	14	<10	<15	0.3 x 0.3 x 0.08	SUB-L
SMV1975A-LF	1950	2000	0 - 3	80	0 to 6	-90	-10	3	14	<10	<15	0.3 x 0.3 x 0.08	SUB-L
SMV2100L-LF	2050	2150	0 - 3	155	5 to 11	-85	-8	3	15	<25	<25	0.3 x 0.3 x 0.08	SUB-L
SMV2365C-LF	2180	2550	0.5 - 4.5	140	5 to 11	-88	-9	5	14	<10	<20	0.3 x 0.3 x 0.08	SUB-L
SMV2278A-LF	2275	2280	0.3 - 3	147	2 to 7	-91	-10	3	13	<6	<8	0.3 x 0.3 x 0.08	SUB-L
SMV2560A-LF	2435	2675	0.4 - 2.9	172	2 to 8	-82	-12	3	19	<31	<13	0.3 x 0.3 x 0.08	SUB-L
SMV2950A-LF	2850	3050	0 - 2.5	125	0 to 6	-85	-18	3	15	<15	<10	0.3 x 0.3 x 0.08	SUB-L
SMV3400C-LF	3180	3430	0.5 - 4.5	80	5 to 11	-89	-20	5	29	<13	<10	0.3 x 0.3 x 0.08	SUB-L
SMV3417B-LF	3415	3420	0 - 3	50	-1 to 5	-83	-32	3	17	<30	<14	0.3 x 0.3 x 0.08	SUB-L
SMV3895A-LF	3815	3975	0.5 - 2.5	140	0 to 4	-84	-15	2.8	11	<5	<21	0.3 x 0.3 x 0.08	SUB-L
SMV4596B-LF	4595	4598	0 - 2.5	110	-3 to 1	-81	-25	2.8	8	<5	<8	0.3 x 0.3 x 0.08	SUB-L
SMV5000E-LF	4780	5356	0.3 - 4.7	165	-2 to 2	-81	-20	5	27	<11	<4	0.3 x 0.3 x 0.08	SUB-L
SMV5550B-LF	5000	6000	0 - 10	135	0 to 6	-80	-35	5	24	<20	<10	0.3 x 0.3 x 0.08	SUB-L
SMV5320A-LF	5245	5395	1 - 4	170	-2 to 2	-81	-20	5	27	<11	<4	0.3 x 0.3 x 0.08	SUB-L
SMV5750A-LF	5700	5800	1 - 4	90	-2 to 2	-86	-30	5	26	<4	<5	0.3 x 0.3 x 0.08	SUB-L

# TRO Series VCOs | 1300 MHz - 2400 MHz

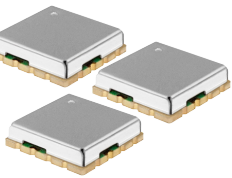


Exceptional Phase Noise • Small Size • Low Power Consumption

The TRO series features the latest enhancement in new VCO development. This series utilizes ceramic resonator topology to deliver ultra-low phase noise performance, but its compact size is what distinguishes itself from other ceramic resonator designs and sets a new standard. The TRO provides nearly a 45% and 70% reduction in overall area and volume size, respectively, in comparison to other CRO models. This series is currently available in the range of 1300 to 2400 MHz and offers spectral purity that is unmatched in a size measuring 0.375" x 0.375" x 0.12".

Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
TRO1350A-LF	1350	1350	0.5 - 4.5	5	0 to 6	-117	-25	5	25	<1	<1	0.375 x 0.375 x 0.12	375
TRO1790A-LF	1790	1790	0.5 - 4.5	5	1 to 7	-118	-12	5	25	<1	<1	0.375 x 0.375 x 0.12	375
TRO1800A-LF	1800	1800	0.5 - 4.5	4	1 to 7	-117	-10	5	25	<1	<1	0.375 x 0.375 x 0.12	375
TRO2000A-LF	2000	2000	0.5 - 4.5	5	5 to 8	-117	-17	5	28	<1	<1	0.375 x 0.375 x 0.12	375
TRO2400A-LF	2400	2400	0.5 - 4.5	4	2 to 8	-113	-20	5	25	<1	<2	0.375 x 0.375 x 0.12	375

# V Series VCOs | 40 MHz - 8 GHz



Low Phase Noise • Linear Tuning • Octave Bandwidth

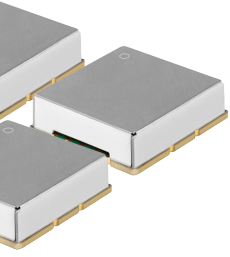
The V series comes available in the industry standard 0.5" x 0.5" package size and offers the widest selection of products encompassing 40 MHz to 8 GHz. Utilizing lumped element or microstrip resonator technology, the V series are specially designed for applications requiring either narrowband tuning or frequency bandwidths covering more than an octave.

Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
V061ME01-LF	45	77	1 - 10	5	1.5 to 9.5	-113	-6	5	23	<1	<0.5	0.5 x 0.5 x 0.22	MINI-14S
V093ME01-LF	88	98	0.5 - 4.5	6.4	6 to 10	-127	-12	5	17	<1	<1	0.5 x 0.5 x 0.22	MINI-16
V150ME03-LF	100	200	0 - 12.5	10	5 to 11	-115	-10	12	19	<0.2	<0.5	0.5 x 0.5 x 0.13	MINI-16-L
V155ME05-LF	121	163	0.5 - 4.5	14	6 to 10	-121	-18	5	18	<1	<1	0.5 x 0.5 x 0.22	MINI-16
V240ME05-LF	134	246	0.5 - 4.6	31	-4 to 4	-106	-9	5	7	<2	<1	0.5 x 0.5 x 0.13	MINI-16-L
V220ME02-LF	200	239	0.5 - 4.5	18	5 to 10	-121	-16	5	19	<1	<1	0.5 x 0.5 x 0.22	MINI-16
V330ME01-LF	320	340	1 - 4	23	4 to 9	-111	-10	5	14	<3	<5	0.5 x 0.5 x 0.13	MINI-14S-L
V350ME52-LF	350	700	0 - 10	45	-1 to 9	-99	-5	5	13	<4	<2	0.5 x 0.5 x 0.22	MINI-14S
V418ME03-LF	390	406	0.5 - 4.5	6	-3 to 3	-118	-14	4.7	16	<1	<0.5	0.5 x 0.5 x 0.13	MINI-16M-L
V560MC03-LF	400	800	0 - 12	56	0 to 12	-105	-5	5	18	<4	<3	0.5 x 0.5 x 0.22	MINI-14S
V495ME01-LF	485	505	0.5 - 4.5	10	-2 to 4	-113	-7	5	8	<2	<2	0.5 x 0.5 x 0.16	MINI-16M-LOW
V500ME03-LF	500	1000	0 - 11	54	6 to 14	-105	-13	12	25	<5	<10	0.5 x 0.5 x 0.22	MINI-16-SM
V515ME01-LF	502	529	0.5 - 4.5	10	-3 to 3	-115	-10	5	10	<1	<1	0.5 x 0.5 x 0.16	MINI-16M-LOW
V585ME73-LF	600	1200	0 - 13	58	6 to 11	-100	-12	10	18	<3	<7	0.5 x 0.5 x 0.22	MINI-16-SM
V580ME15-LF	745	885	0.5 - 4.5	53	7 to 12	-108	-12	10	24	<3	<2	0.5 x 0.5 x 0.13	MINI-16-L
V585ME30-LF	800	1600	1 - 21	60	5 to 11	-101	-5	11.5	16	<3	<8	0.5 x 0.5 x 0.22	MINI-14S
V580ME13-LF	830	970	0.5 - 4.5	51	2 to 8	-109	-12	5	17	<3	<1	0.5 x 0.5 x 0.22	MINI-16
V585ME48-LF	950	2050	0 - 15	81	1 to 7	-98	-33	10	19	<3	<3	0.5 x 0.5 x 0.13	MINI-16HL-SM
V585ME72-LF	1000	2000	0.75 - 21	65	2 to 8	-99	-30	4.75	17	<3	<2	0.5 x 0.5 x 0.13	MINI-16-L
V602ME55-LF	1000	1350	0.5 - 4.5	130	0.5 to 6.5	-98	-15	3	10	<5	<4	0.5 x 0.5 x 0.13	MINI-14S-L
V585ME66-LF	1100	2500	0.3 - 20	85	6 to 11	-95	-10	10	21	<7	<11	0.5 x 0.5 x 0.13	MINI-16-L
V602ME15-LF	1100	1400	0.5 - 4.5	130	5 to 10	-99	-15	5	15	<3	<13	0.5 x 0.5 x 0.13	MINI-14S-L
V585ME28-LF	1200	2200	1 - 20	75	5.5 to 11.5	-100	-18	5	25	<6	<11	0.5 x 0.5 x 0.13	MINI-14S-L
V602ME33-LF	1375	1700	0.5 - 4.5	97	-1 to 3	-100	-14	5.0	14	<2	<5	0.5 x 0.5 x 0.13	MINI-14S-L
V600ME78-LF	1400	2400	1 - 16	95	4 to 12	-95	-20	12	33	<10	<10	0.5 x 0.5 x 0.13	MINI-16HL-SM
V585ME19-LF	1500	2000	0.8 - 20	34	3 to 7	-101	-10	10	15	<3	<9	0.5 x 0.5 x 0.22	MINI-14S
V600ME10-LF	1600	3200	0.5 - 20	108	4 to 12	-89	-25	5	26	<16	<10	0.5 x 0.5 x 0.13	MINI-16-L
V604ME08-LF	1680	1985	1 - 10	-99	4 to 9.5	-99	-12	9	22	<3	<7	0.5 x 0.5 x 0.22	MINI-14S
V600ME20-LF	1700	2800	0.5 - 15	118	3 to 10	-95	-20	5	21	<5	<8	0.5 x 0.5 x 0.13	MINI-16-L
V674ME25-LF	1820	2480	0.5 - 9.5	98	1 to 8	-91	-19	10	13	<5	<18	0.5 x 0.5 x 0.22	MINI-14H
V626ME10-LF	2000	2500	1 - 14	53	1 to 6	-97	-7	9	18	<2	<12	0.5 x 0.5 x 0.13	MINI-14H-L
V600ME14-LF	2000	4000	0 - 24	100	0 to 11	-86	-15	5	27	<10	<14	0.5 x 0.5 x 0.16	MINI-16-LOW
V626ME21-LF	2250	2790	1.5 - 13	60	0 to 6	-98	-20	8	28	<4	<14	0.5 x 0.5 x 0.13	MINI-16-L
V674ME29-LF	2400	2900	0.5 - 4.5	220	0 to 6	-86	-20	5	23	<6	<8	0.5 x 0.5 x 0.22	MINI-16
V805ME12-LF	2600	3110	1.75 - 12	66	3 to 12	-92	-20	12	23	<5	<20	0.5 x 0.5 x 0.13	MINI-14H-L
V600ME31-LF	2700	5400	0 - 24	140	3 to 11	-75	-20	5	25	<53	<18	0.5 x 0.5 x 0.16	MINI-16-LOW
V810ME08-LF	2750	3500	0.5 - 9.5	120	3 to 9	-88	-15	10	24	<6	<13	0.5 x 0.5 x 0.13	MINI-14H-L
V846ME29-LF	2900	4400	1 - 22	90	4 to 12	-80	-18	8	26	<8	<26	0.5 x 0.5 x 0.13	MINI-16-L
V600ME45-LF	3000	6000	0 - 24	147	-1 to 9	-74	-12	12	24	<22	<21	0.5 x 0.5 x 0.16	MINI-16-LOW
V844ME21-LF	3100	3600	0.25 - 4.75	165	2 to 10	-82	-15	5	21	<14	<10	0.5 x 0.5 x 0.22	MINI-14S
V600ME76-LF	3180	3710	1 - 12	65	-3.5 to 4.5	-90	-15	5	18	<3	<12	0.5 x 0.5 x 0.13	MINI-16-L
V846ME30-LF	3350	4550	0 - 20	70	0 to 8	-85	-15	5	25	<10	<20	0.5 x 0.5 x 0.13	MINI-16-L
V844ME02-LF	3400	3600	1 - 5	94	1 to 5	-88	-15	5	18	<1	<6	0.5 x 0.5 x 0.13	MINI-14S-L
V900ME01-LF	3500	4000	2 - 18	70	2 to 8	-88	-45	8	24	<9	<12	0.5 x 0.5 x 0.22	MINI-14H
V910ME20-LF	3920	4520	1 - 7	168	1 to 7	-83	-23	5	30	<14	<10	0.5 x 0.5 x 0.13	MINI-14S-L
V844ME36-LF	4100	4300	0.5 - 4.5	93	1 to 5	-86	-15	5	15	<8	<10	0.5 x 0.5 x 0.13	MINI-14S-L
V950ME09-LF	4200	5000	1 - 12	124	9 to 17	-85	-18	12	35	<10	<28	0.5 x 0.5 x 0.13	MINI-14S-L
V950ME26-LF	4600	5400	0.3 - 9.5	110	2 to 8	-82	-20	5	28	<10	<14	0.5 x 0.5 x 0.22	MINI-14S
V940ME29-LF	4900	5500	0 - 10	87	0 to 8	-88	-25	5	28	<5	<15	0.5 x 0.5 x 0.22	MINI-14S
V950ME25-LF	5000	6000	0 - 22	56	-3 to 3	-88	-32	5	22	<8	<8	0.5 x 0.5 x 0.13	MINI-16HL-SM
V940ME40-LF	5100	5200	0.5 - 4.5	70	3 to 7	-88	-25	5	30	<5	<15	0.5 x 0.5 x 0.22	MINI-14S
V940ME03-LF	5725	5875	0.5 - 4.5	85	0 to 4	-85	-30	5	26	<10	<8	0.5 x 0.5 x 0.13	MINI-14S-L
V940ME28-LF	5840	6040	0.5 - 4.5	85	-3 to 4	-85	-15	5	28	<10	<8	0.5 x 0.5 x 0.22	MINI-14S
V965ME06-LF	6380	6420	0.5 - 4.5	80	-5 to 2	-89	-19	5	50	<11	<13	0.5 x 0.5 x 0.13	MINI-14S-L
V965ME04-LF	6500	6550	0.5 - 4.5	80	-6 to 1	-85	-19	5	50	<6	<12	0.5 x 0.5 x 0.13	MINI-14S-L

# ZRO Series VCOs | 600 MHz - 3 GHz

Ultra-low Phase Noise • Voltage Bias Stabilization • Temperature Compensated

The ZRO series VCOs are ceramic resonator based oscillators which have been designed with an innovative topology to help provide extremely low phase noise. Utilizing specialized voltage bias and temperature stabilization techniques, the ZRO oscillator maintains minimal tuning sensitivity and low harmonic suppression for maximum overall performance.

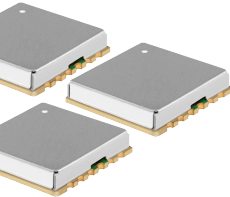


Part Number	Low Freq (MHz)	High Freq (MHz)	Vtune (Vdc)	Kvco (MHz/V) (typ)	Output Power (dBm)(typ)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc)(typ)	Vcc (Vdc)	Icc (mA) (typ)	Pushing (MHz/V) (max)	Pulling (MHz) (max)	Size (Inches)	Package
ZRO0690B2LF	690	690	0 - 6	2	7 to 11	-131	-19	8	23	<1	<1	0.75 x 0.75 x 0.22	ZMX-14-SM
ZRO0700B-LF	699	701	0.5 - 4.5	2	7 to 11	-129	-21	5	18	<0.06	<0.30	0.75 x 0.75 x 0.22	ZMX-14-SM
ZRO0750A-LF	745	755	0 - 8	2	7 to 11	-128	-24	8	23	<0.06	<0.30	0.75 x 0.75 x 0.22	ZMX-14-SM
ZRO0818C2LF	805	831	0 - 11	3	3 to 7	-126	-35	10	23	<0.20	<1.5	0.75 x 0.75 x 0.22	ZMX-14-SM
ZRO0915C2LF	902	928	0 - 11	2	3 to 7	-128	-35	10	23	<0.20	<1.5	0.75 x 0.75 x 0.22	ZMX-14-SM
ZRO1000A-LF	1000	1000	1.5 - 3.5	2	5 to 9	-129	-18	8	25	<0.20	<0.5	0.75 x 0.75 x 0.22	ZMX-14-SM

# RFS Series Fixed Frequency PLLs | 1 GHz - 6 GHz

Reference Signal Included • No External Programming • Fixed Frequency

The RFS series is a complete fixed frequency PLL solution incorporating a 10 MHz TCXO reference oscillator, phase detector, loop filter, VCO and PIC microcontroller. It simplifies any design requiring a highly stable, low cost single frequency signal source in the range of 1 GHz to 6 GHz by removing the need for any external programming. Operating off two DC supply voltages, the RFS series utilizes a microstrip topology and a loop filter bandwidth that is configured per each application to provide optimal phase noise performance.



Part Number	Freq (MHz)	Output Power (dBm) (typ)	Spurs (dBc)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc) (typ)	Vcc (Vdc)	Icc (mA) (typ)	Startup Lock Time (msec) (typ)	Size (Inches)	Package
RFS1030-LF	1030	3	-65	-98	-20	5/3	35/10	1	0.6 x 0.6 x 0.13	RFS-V12N
RFS1090A-LF	1090	3	-62	-98	-20	5/3	35/10	1	0.6 x 0.6 x 0.13	RFS-V12N
RFS1130-LF	1130	3	-65	-99	-25	5/3	35/10	1	0.6 x 0.6 x 0.13	RFS-V12N
RFS1500A-LF	1500	5	-65	-98	-25	5/3	35/10	1	0.6 x 0.6 x 0.13	RFS-V12N
RFS2450-LF	2450	3	-65	-95	-20	5/3	30/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS2800A-LF	2800	3	-65	-95	-20	5/3	30/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS2950A-LF	2950	3	-65	-95	-20	5/3	30/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS3379A-LF	3379	3	-65	-90	-20	5/3	35/14	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS3400A-LF	3400	3	-65	-90	-20	5/3	35/14	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS3500A-LF	3500	3	-65	-93	-20	5/3	30/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS3600A-LF	3600	3	-65	-90	-20	5/3	35/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS3800A-LF	3800	3	-65	-90	-20	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS3900A-LF	3900	3	-65	-90	-20	5/3	35/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS4000A-LF	4000	2	-65	-88	-15	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS4200A-LF	4200	3	-65	-88	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS4300Z-LF	4300	3	-65	-85	-45	5	60	3	1.0 x 1.0 x 0.22	SFS-L1M
RFS4400-LF	4400	3	-65	-87	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS4500A-LF	4500	2	-65	-86	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS4800A-LF	4800	2	-65	-86	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5000A-LF	5000	0	-65	-85	-20	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5350A-LF	5350	0	-65	-85	-20	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5450A-LF	5450	0	-65	-85	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5600A-LF	5600	0	-65	-86	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5750A-LF	5750	0	-65	-85	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5850A-LF	5850	0	-65	-85	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS5900A-LF	5900	3	-65	-86	-20	5/3	30/12	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS6000A-LF	6000	0	-65	-85	-25	5/3	35/15	3	0.6 x 0.6 x 0.13	RFS-V12N
RFS12000C-LF	12000	0	-65	-86	-30	5/3.3	95/15	1	1.0 x 1.0 x 0.22	SFS-L1
RFS15000C-LF	15000	-6	-65	-80	-20	5/3.3	95/15	1	1.0 x 1.0 x 0.22	SFS-L1

# SFS Series Fixed Frequency PLLs | 500 MHz - 15 GHz

No External Programming • Ultra-Low Noise • Small Size

The SFS series is a fixed frequency PLL solution incorporating the phase detector, loop filter, VCO and PIC controller. It minimizes design complexities by eliminating the need for any external programming. It is ideal for any commercial application requiring a single frequency signal source within the range of 500 MHz to 15 GHz and it delivers superior phase noise performance by utilizing either a microstrip or ceramic resonator topology.



Part Number	Freq (MHz)	Output Power (dBm) (typ)	Spurs (dBc)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc) (typ)	Vcc (Vdc)	Icc (mA) (typ)	Reference Input (MHz)	Size (Inches)	Package
SFS0640A-LF	640	0	-70	-105	-13	5/3	25/9	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS0700C-LF	700	0	-70	-119	-15	5/3	25/14	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS0960C-LF	960	0	-65	-115	-15	5/3	25/14	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS0990C-LF	990	0	-65	-115	-15	5/3	25/14	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS1000C-LF	1000	1	-70	-118	-12	5/3	25/14	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS1200C-LF	1200	1	-70	-117	-13	5/3	25/14	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS1280C-LF	1280	5.5	-70	-113	-15	5/3	25/14	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS1385C-LF	1385	3	-70	-105	-10	5/3	33/11	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS1600E-LF	1600	5	-65	-120	-12	8/3	35/10	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS1625C-LF	1625	0	-70	-115	-12	5/3	25/14	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS1800R-LF	1800	5.5	-70	-112	-22	5/3	28/10	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS1830C-LF	1830	3	-70	-105	-20	5/3	28/10	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS1855C-LF	1855	3	-70	-105	-18	5/3	28/10	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS1875C-LF	1875	3	-70	-105	-18	5/3	28/10	156.25	0.6 x 0.6 x 0.22	PLL-V12C
SFS2000C-LF	2000	6	-70	-110	-18	5/3	30/10	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS2100C-LF	2100	7	-70	-112	-25	5/3	25/10	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS2200C-LF	2200	6	-70	-109	-10	5/3	30/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS2400C-LF	2400	6	-70	-109	-10	5/3	30/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS2500C-LF	2500	6	-70	-111	-20	5/3	30/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS2700C-LF	2700	6	-70	-110	-16	5/3	35/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS2810C-LF	2810	6	-65	-110	-20	5/3.3	25/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS3000C-LF	3000	6	-70	-109	-10	5/3	30/11	20	0.6 x 0.6 x 0.22	PLL-V12C
SFS3275C-LF	3275	0	-65	-107	-12	5/3	32/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS3450C-LF	3450	2	-65	-104	-15	5/3	25/11	10	0.6 x 0.6 x 0.22	PLL-V12C
SFS4000C-LF	4000	0	-65	-102	-12	5/3.3	32/11	100	0.6 x 0.6 x 0.22	PLL-V12C
SFS4800C-LF	4800	3	-70	-109	-25	5/3	140/15	10	1.0 x 1.0 x 0.22	SFS-L1
SFS4875A-LF	4875	2.5	-65	-84	-25	5/3	33/15	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS4900A-LF	4900	0	-65	-90	-25	5/3	33/15	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS5200A-LF	5200	0	-65	-90	-25	5/3	33/15	20	0.6 x 0.6 x 0.13	PLL-V12N
SFS5490A-LF	5490	2	-70	-93	-30	5/3	33/11	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS6200A-LF	6200	3	-65	-90	-20	5/3	40/11	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS6350A-LF	6350	3	-65	-90	-20	5/3	40/11	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS6400A-LF	6400	6	-65	-88	-20	5/3	40/11	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS6520A-LF	6520	6	-65	-90	-20	5/3	40/11	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS6750A-LF	6750	3	-65	-86	-20	5/3	33/11	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS7000A-LF	7000	3	-70	-85	-20	5/3.3	35/14	10	0.6 x 0.6 x 0.13	PLL-V12N
SFS7750C-LF	7750	3	-70	-90	-30	5/3	120/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS7850C-LF	7850	-3	-70	-91	-30	5/3	120/11	80	1.0 x 1.0 x 0.22	SFS-L1
SFS8000C-LF	8000	0	-70	-95	-30	5/3	120/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS8875C-LF	8875	0	-65	-95	-20	5/3	120/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS9000C-LF	9000	0	-70	-100	-30	5/3	90/11	100	1.0 x 1.0 x 0.22	SFS-L1
SFS9280C-LF	9280	0	-65	-100	-30	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS10000C-LF	10000	0	-70	-100	-30	5/3	90/11	100	1.0 x 1.0 x 0.22	SFS-L1
SFS10500K-LF	10500	0	-65	-97	-20	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS11000Y-LF	11000	0	-70	-95	-20	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS11250C-LF	11250	0	-65	-95	-20	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS11500K-LF	11500	0	-70	-93	-30	5/3	95/15	10	1.0 x 1.0 x 0.22	SFS-L1
SFS11600H-LF	11600	0	-65	-103	-30	5/3.3	85/40	100	1.0 x 1.0 x 0.22	SFS-L1
SFS11800C-LF	11800	3	-70	-90	-30	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS12000H-LF	12000	0	-65	-103	-30	5/3	85/40	100	1.0 x 1.0 x 0.22	SFS-L1
SFS12500C-LF	12500	0	-65	-95	-30	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS13175C-LF	13175	0	-65	-90	-25	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS13500C-LF	13500	-3	-65	-90	-25	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1
SFS14400H-LF	14400	-3	-65	-96	-20	5/3.3	85/40	100	1.0 x 1.0 x 0.22	SFS-L1
SFS15000C-LF	15000	-6	-65	-80	-30	5/3	90/11	10	1.0 x 1.0 x 0.22	SFS-L1



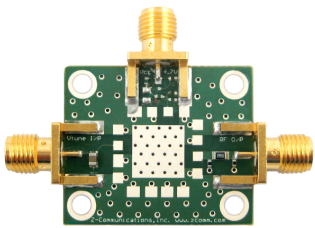
# PLL Synthesizers | 80 MHz - 6 GHz

Integer-N & Fractional-N • Low Phase Noise • Compact Size

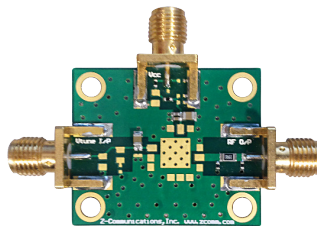
The programmable phase lock loop (PLL) solutions come in a selection of size and type. The PLLs are offered as either integer-N or fractional-N while utilizing a passive or active loop filter depending on the bandwidth. They can be quickly programmed through a 3-wire serial interface while providing very low spurious suppression and small step sizes. The PLL family of products are available in several different sizes ranging from 0.866" x 0.63" to as small as 0.5" x 0.5".

Part Number	Low Freq (MHz)	High Freq (MHz)	Step Size (kHz)	Output Power (dBm) (typ)	Spurs (dBc)	PN @10kHz (dBc/Hz) (typ)	2nd Harm (dBc) (typ)	Vcc (Vdc)	Icc (mA) (typ)	Switch Speed (msec) (typ)	Size (Inches)	Package
PVA0837AF-LF	832	842	1	3.00	-55	-106	-10	5/3	35/15	2	0.6 x 0.6 x 0.13	PLL-V12N
PSA1200AF-LF	950	1450	250	0.00	-75	-75	-10	15/5	40/25	0.01	0.86 x 0.63 x 0.14	PLL-24S1
PSA1225AF-LF	1025	1425	1000	0.00	-75	-90	-10	12/5	40/25	1	0.86 x 0.63 x 0.14	PLL-24S1
PSA1525AF-LF	1325	1725	1000	3.00	-75	-90	-10	12/5	40/25	2	0.86 x 0.63 x 0.14	PLL-24S1
PSA1634AF-LF	1384	1884	250	0.00	-75	-74	-10	15/5	40/25	3	0.86 x 0.63 x 0.14	PLL-24S1
PSA1825AF-LF	1625	2025	1000	0.50	-77	-90	-15	12/5	30/20	1	0.86 x 0.63 x 0.14	PLL-24S1
PSA1685AF-LF	1680	1690	100	4.50	-70	-100	-15	5	40	1	0.86 x 0.63 x 0.14	PLL-24
PSA1975AF-LF	1775	2175	1000	0.00	-65	-90	-20	12/5	30/20	1	0.86 x 0.63 x 0.14	PLL-24S1
PSA2100AF-LF	1900	2300	1000	0.00	-65	-90	-20	15/5	23/20	1	0.86 x 0.63 x 0.14	PLL-24S1
PSA2150AF-LF	2000	2300	1000	5.00	-65	-90	-20	15/5	25/23	1	0.86 x 0.63 x 0.14	PLL-24S1
PVA2125C-LF	2025	2226	100	0.00	-65	-94	-15	5/3	21/10	3	0.6 x 0.6 x 0.22	PLL-V12C
PSA2275AF-LF	2075	2475	1000	0.00	-65	-90	-20	12/5	23/20	1	0.86 x 0.63 x 0.14	PLL-24S1
PSA2575AF-LF	2375	2775	1000	0.00	-70	-89	-20	12/5	30/20	1	0.86 x 0.63 x 0.14	PLL-24S1

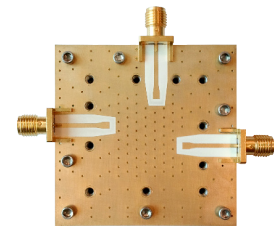
## Evaluation Boards | For Z-Comm VCOs & PLLs



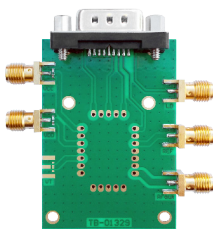
**MINIEVAL**  
V, CRO and CLV  
Series VCOs



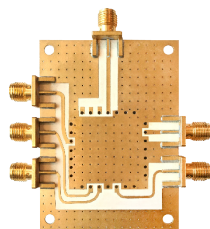
**SMVEVAL**  
SMV Series VCOs



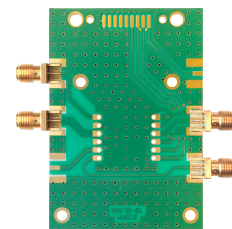
**DROEVAL**  
DRO Series VCOs



**PLLEVAL**  
PSA and PSN  
Series PLLs



**SFSL1EVAL**  
SFS Series PLLs with  
SFS-L1 package

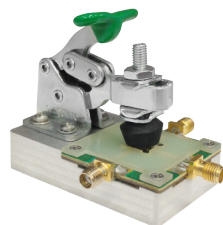


**SFSEVAL**  
SFS Series PLLs  
with PLL-V12C or  
PLL-V12N packages

## Test Fixtures | For Z-Comm VCOs & PLLs



**MINI-16-TF**  
V, CRO and CLV Series VCOs



**SMV-TF**  
SMV Series VCOs



**PLL-24-TF**  
PSN and PSA Series PLLs



**PLL-V12N-TF**  
SFS Series PLLs

# VCO & PLL Outlines

### MINI-XX

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

PACKAGE	H	PACKAGE	H
MINI-14S	0.220	MINI-16	0.220
MINI-14S-LOW	0.160	MINI-16-LOW	0.160
MINI-14S-L	0.130	MINI-16-L	0.130
MINI-14S-UL	0.100	MINI-16-UL	0.100
		MINI-16-EL	0.085

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF  $\phi$  0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION  
P1 Vt  
P2 RF OUT  
P3 Vcc  
REST GROUND

### VCO-24H

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF  $\phi$  0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION  
P1 RF OUTPUT  
P2-12 GROUND  
P13 Vcc  
P14-16 GROUND  
P17 Vtune  
P18-24 GROUND

### SUB-L

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF  $\phi$  0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION  
P1 Vt  
P2 RF Out  
P3 Vcc  
REST GROUND

### USSP

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF  $\phi$  0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION  
P1 Vt  
P2 RF OUT  
P3 Vcc  
REST GROUND

### ZMX-14-SM

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF  $\phi$  0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION  
P1 Vt  
P2 RF OUT  
P3 Vcc  
REST GROUND

# VCO & PLL Outlines

### SDRO

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF Ø 0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION

P1	V <sub>I</sub>
P2	RF OUT
P3	V <sub>CC</sub>
REST	GROUND

### RFS-V12N

INCH	MM
A	0.600
B	0.576
C	0.135 MAX
D	0.032
E	0.025
F	0.086

PIN OUT DETAILS

P1	GROUND
P2	GROUND
P3	GROUND
P4	N/C
P5	GROUND
P6	GROUND
P7	V <sub>CC</sub> +0.50
P8	GROUND
P9	GROUND
P10	RF OUT
P11	V <sub>CC</sub> PLL
P12	LOCK DETECT

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF Ø 0.015 ON GROUND PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION

1	RF OUT
5	REF IN
7	CLOCK
8	DATA
10	LOAD ENABLE
12	LOCK DETECT
13	V <sub>CC</sub>
17	N/C
REST	GROUND

### PLL-24

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF Ø 0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION

1	RF OUT
5	REF IN
7	CLOCK
8	DATA
10	LOAD ENABLE
12	LOCK DETECT
13	V <sub>CC</sub>
17	N/C
REST	GROUND

### PLL-V12N

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF Ø 0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION

1	V <sub>CC</sub> (VCO)
3	RF OUT
5	MUX OUT
6	V <sub>CC</sub> (CHIP)
7	CLOCK
8	DATA
9	ENABLE
10	REF IN
REST	GROUND

FOR SFS MODELS:  
P7, P8 AND P9 SHALL BE N/C  
P5 PROGRAMMED AS DIGITAL LOCK DETECT

### SFS-L1

NOTE: ALL DIMENSIONS ARE IN INCHES  
TOL: XXX: +/- 0.010

RECOMMENDED FOOTPRINT  
SEVERAL HOLES OF Ø 0.015 ON GND. PLANE ARE RECOMMENDED FOR GOOD GROUNDING.

0.030 MIN. CUTBACK FROM LIVE PADS

PIN CONFIGURATION

6	RF OUT
11	LOCK DETECT
12	N/C
13	N/C
14	N/C
17	REF IN
23	N/C
24	V <sub>CC</sub> CHIP
26	V <sub>CC</sub> VCO
REST	GROUND



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