

Voltage Controlled Oscillator

SOS-611-119+

50Ω 581 to 611 MHz

The Big Deal:

- Low Phase Noise
- Linear Tuning
- Robust design and construction
- Small size .30" x .30" x .07"



CASE STYLE: FZ802

Product Overview:

The SOS-611-119+ is a Voltage Controlled Oscillator, designed to operate from 581 to 611 MHz for GPS applications. The SOS-611-119+ is packaged in a metal case (size of .30" x .30" x .07") to shield against unwanted signals and noise.

Key Features

Feature	Advantages
Linear Tuning Sensitivity Ratio: 1.17:1 typ.	Optimal for loop filter design.
Low Phase Noise: -112 dBc/Hz typ at 10kHz offset	Low phase noise improves system EVM (Error Vector Magnitude).
Good Pulling, 0.5 MHz typ.	Improves immunity against changes in output load.
Good Pushing, 0.3 MHz/V typ.	Provides increased immunity against noisy DC lines and improves output frequency stability vs. variations in supply voltage.
Robust design and construction	Each internal component of the SOS-611-119+ is bonded to the substrate, providing better immunity to microphonics, reduced phase hit, and decreased tombstoning risk during subsequent reflow operations.
Small size, .30" x .30" x .07"	The small size enables the SOS-611-119+ to be used in compact designs.

Voltage Controlled Oscillator

SOS-611-119+

5V Tuning for PLL ICs 581 to 611 MHz



CASE STYLE: FZ802

Features

- low phase noise, -112 dBc/Hz typ. @ 10kHz offset
- linear tuning characteristics
- low pulling, 0.5 MHz typ.
- Small size 0.30" x 0.30" x 0.07"
- aqueous washable

Applications

- wireless communications
- GPS

+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				TUNING					NON HARMONIC SPURIOUS (dBc)		HARMONICS (dBc)		PULLING pk-pk @12 dB (MHz)	PUSHING (MHz/V)	DC OPERATING POWER		
	Min.	Max.		Typ.	1	10	100	1000	VOLTAGE RANGE (V)		SENSI- TIVITY (MHz/V)	PORT CAP (pF)	3 dB MODULATION BANDWIDTH (MHz)	Typ.	Typ.	Typ.			Max.	Vcc	Current (mA)
									Min.	Max.											
SOS-611-119+	581	611	0	-88	-112	-132	-152	0.5	4.5	12 - 14	30	30	-90	-18	-12	0.5	0.3	5	19		

Pin Connections

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

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	7V
Absolute Max. Tuning Voltage (Vtune)	6.5V
All specifications	50 ohm system

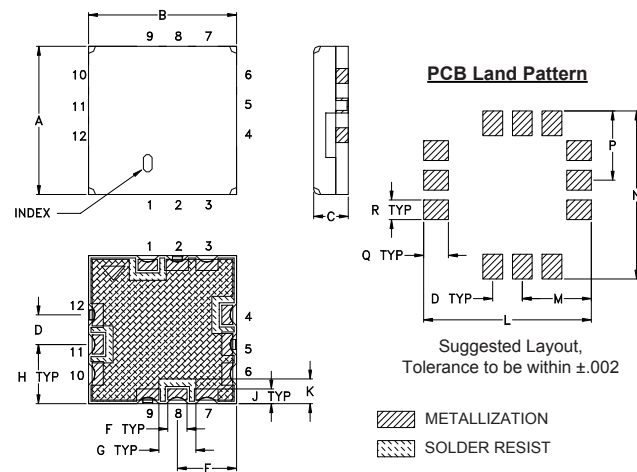
Permanent damage may occur if any of these limits are exceeded.

Tape & Reel: F78

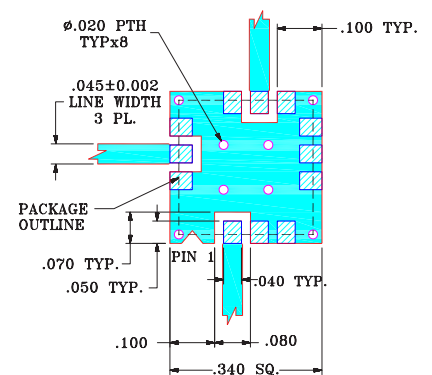
7" Reels with 10, 20, 50, 100 devices
13" Reels with 200, 500, 1000 devices

Environmental Ratings: ENV65T2

Outline Drawing



Demo Board MCL P/N: TB-271 Suggested PCB Layout (PL-143)



NOTE:

1. TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .025"±.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)

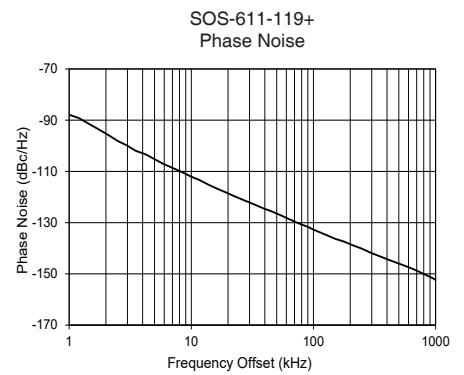
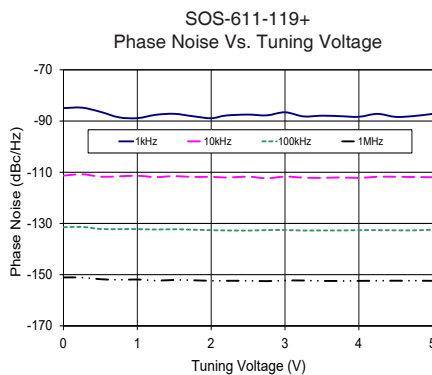
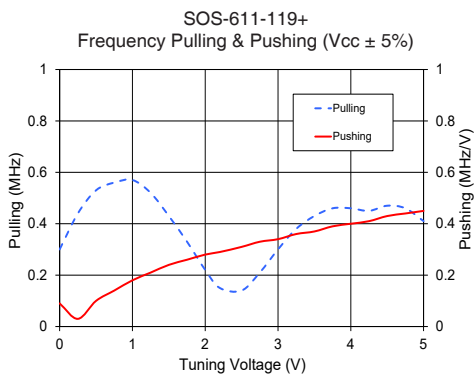
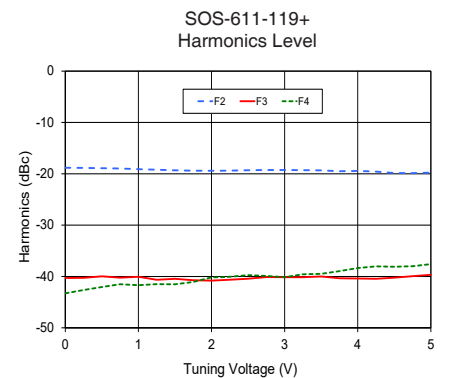
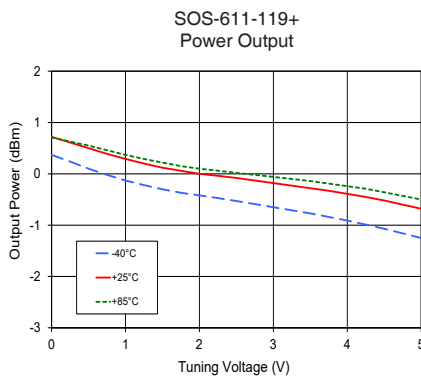
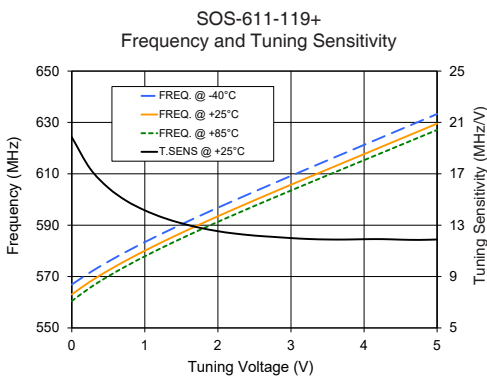
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt.
.300	.300	.070	.060	.120	.039	.075	.120	.030	.050	.340	.140	.340	.140	.050	.040	grams
7.62	7.62	1.78	1.52	3.05	0.99	1.91	3.05	0.76	1.27	8.64	3.56	8.64	3.56	1.27	1.02	.25

Performance Data & Curves*

SOS-611-119+

V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			I _{cc} (mA)	HARMONICS (dBc)			FREQ. PUSH (MHz/V)	FREQ. PULL (MHz)	PHASE NOISE (dBc/Hz) at offsets				FREQ OFFSET (kHz)	PHASE NOISE at 596 MHz (dBc/Hz)
		-40°C	+25°C	+85°C	-40°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	19.86	566.9	563.0	560.5	0.37	0.72	0.71	12.71	-18.8	-40.3	-43.3	0.09	0.30	-84.95	-111.3	-131.5	-151.1	1.0	-87.86
0.50	15.91	575.8	572.4	570.1	0.10	0.50	0.55	12.78	-18.9	-40.0	-42.1	0.10	0.53	-86.41	-111.7	-132.2	-151.8	2.5	-98.12
0.75	14.88	579.7	576.3	574.1	-0.02	0.39	0.46	12.80	-19.0	-40.2	-41.5	0.14	0.56	-88.57	-111.6	-132.2	-152.0	4.2	-103.28
1.00	14.15	583.4	580.1	577.9	-0.13	0.29	0.37	12.82	-19.1	-40.1	-41.7	0.18	0.57	-88.89	-111.4	-132.2	-151.9	7.1	-108.72
1.25	13.58	586.9	583.6	581.4	-0.22	0.20	0.29	12.84	-19.2	-40.6	-41.5	0.21	0.52	-87.58	-111.9	-132.4	-152.3	8.3	-110.17
1.50	13.15	590.3	587.0	584.8	-0.30	0.12	0.22	12.87	-19.3	-40.5	-41.5	0.24	0.43	-87.19	-111.5	-132.3	-152.1	10.0	-112.05
1.75	12.80	593.6	590.3	588.1	-0.37	0.06	0.15	12.89	-19.4	-40.7	-41.1	0.26	0.33	-88.13	-111.9	-132.4	-152.2	23.1	-119.91
2.00	12.53	596.8	593.5	591.3	-0.42	0.00	0.10	12.92	-19.4	-40.8	-40.2	0.28	0.22	-88.93	-111.8	-132.6	-152.4	38.7	-124.36
2.20	12.37	599.3	596.0	593.8	-0.46	-0.03	0.07	12.94	-19.4	-40.7	-40.1	0.29	0.15	-87.86	-112.1	-132.7	-152.4	63.8	-128.71
2.50	12.19	603.1	599.7	597.5	-0.53	-0.08	0.02	12.97	-19.3	-40.4	-39.7	0.31	0.14	-87.49	-111.7	-132.8	-152.4	89.6	-131.61
2.75	12.09	606.1	602.7	600.5	-0.59	-0.13	-0.02	12.99	-19.3	-40.1	-39.9	0.33	0.21	-87.80	-112.3	-132.6	-152.5	100.0	-132.71
3.00	11.99	609.2	605.8	603.5	-0.65	-0.18	-0.06	13.01	-19.3	-40.1	-40.1	0.34	0.30	-86.59	-111.7	-132.6	-152.3	150.3	-136.29
3.25	11.92	612.2	608.8	606.5	-0.71	-0.23	-0.10	13.04	-19.3	-40.1	-39.6	0.36	0.38	-88.21	-112.1	-132.8	-152.3	176.4	-137.32
3.50	11.88	615.2	611.7	609.4	-0.77	-0.28	-0.14	13.06	-19.3	-40.0	-39.5	0.37	0.43	-87.92	-112.2	-132.7	-152.4	210.9	-138.88
3.75	11.88	618.2	614.7	612.4	-0.84	-0.33	-0.19	13.08	-19.5	-40.4	-39.0	0.39	0.46	-88.12	-112.0	-132.7	-152.4	296.0	-141.79
4.00	11.90	621.3	617.7	615.3	-0.91	-0.39	-0.24	13.09	-19.4	-40.4	-38.4	0.40	0.46	-88.36	-112.2	-132.6	-152.4	347.5	-143.08
4.25	11.91	624.3	620.7	618.3	-0.99	-0.45	-0.29	13.11	-19.6	-40.5	-38.0	0.41	0.45	-87.21	-111.8	-132.6	-152.4	487.8	-145.78
4.50	11.87	627.3	623.6	621.2	-1.07	-0.52	-0.36	13.13	-19.9	-40.2	-38.1	0.43	0.47	-88.40	-111.8	-132.7	-152.4	583.0	-147.13
4.75	11.85	630.3	626.6	624.1	-1.16	-0.60	-0.43	13.15	-19.9	-39.9	-38.0	0.44	0.46	-88.05	-111.9	-132.7	-152.4	960.8	-151.83
5.00	11.88	633.3	629.6	627.1	-1.25	-0.68	-0.50	13.16	-19.8	-39.7	-37.6	0.45	0.41	-87.21	-111.9	-132.4	-152.4	1000.0	-152.39

*at 25°C unless mentioned otherwise



Additional Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
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