

Voltage Controlled Oscillator

MOS-465+

50Ω 420 to 465 MHz

The Big Deal:

- Low Phase Noise
- Linear Tuning
- Robust design and construction
- Small size .375" x .375" x .131"



CASE STYLE: CZ682

Product Overview:

The MOS-465+ is a Voltage Controlled Oscillator, designed to operate from 420 to 465 MHz for radio applications. The MOS-465+ is packaged in a metal case (size of .375" x .375" x .131") to shield against unwanted signals and noise.

Key Features

Feature	Advantages
Low Current, 18 mA typ. at 3V VCC	At only 18mA, the MOS-465+ is ideal for applications with limited available power or densely packed applications where thermal and power management is critical.
Linear Tuning Sensitivity Ratio: 1.2:1 typ.	Optimal for loop filter design.
Low Phase Noise: -110 dBc/Hz typ at 10kHz offset	Low phase noise improves system EVM (Error Vector Magnitude).
Good Pulling, 0.3 MHz typ.	Improves immunity against changes in output load.
Good Pushing, 0.5 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 MOS-465+ is bonded to the substrate, providing better immunity to microphonics, reduced phase hit, and decreased tombstoning risk during subsequent reflow operations.
Small size, .375" x .375" x .131"	The small size enables the MOS-465+ to be used in compact designs.

Voltage Controlled Oscillator

MOS-465+

5V Tuning for PLL ICs 420 to 465 MHz

Features

- low phase noise, -110 dBc/Hz typ. @ 10kHz offset
- linear tuning characteristics
- low pulling, 0.3 MHz typ.
- low pushing, 0.5 MHz/V typ.
- aqueous washable

Applications

- wireless communications
- radio



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				TUNING					NON HARMONIC SPURIOUS (dBc)	HARMONICS (dBc)		PULLING pk-pk @12 dB _r (MHz)	PUSHING (MHz/V)	DC OPERATING POWER					
	Min.	Max.		1	10	100	1000	VOLTAGE RANGE (V)	SENSI- TIVITY (MHz/V)	PORT CAP (pF)	3 dB MODULATION BANDWIDTH (MHz)	Typ.		Typ.	Typ.			Typ.	Max.	Typ.	Max.	V _{cc} (volts)	Current (mA)
MOS-465+	420	465	+0.5	-85	-110	-130	-150	0.5	4.5	20 - 24	180	15	-90	-13	-	0.3	0.5	3	18				

Pin Connections

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

Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Max. Supply Voltage (Vcc)	5V
Absolute Max. Tuning Voltage (Vtune)	6.5V
All specifications	50 ohm system

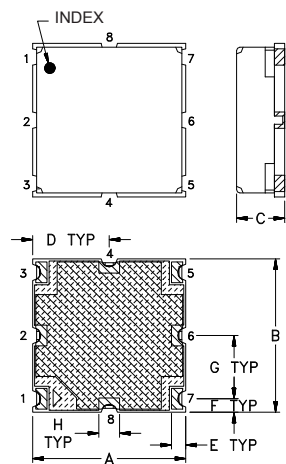
Permanent damage may occur if any of these limits are exceeded.

Tape & Reel: F60

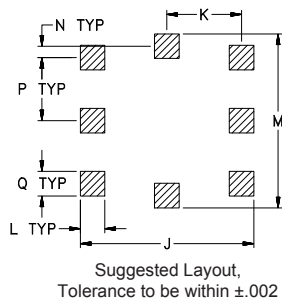
7" Reels with 10, 20, 50, 100 devices
13" Reels with 200, 500, 1000 devices

Environmental Ratings: ENV65T2

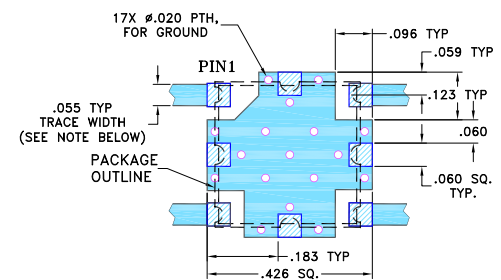
Outline Drawing



PCB Land Pattern



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.

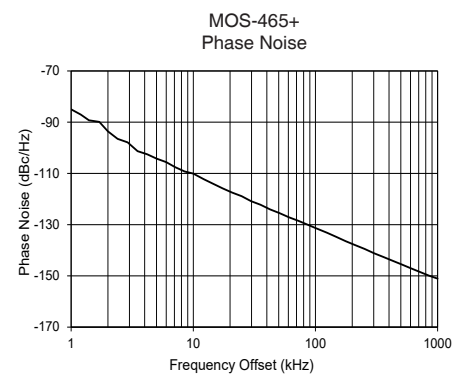
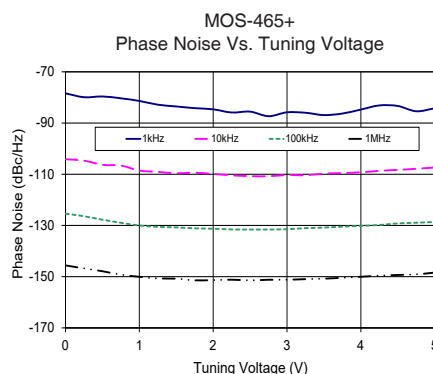
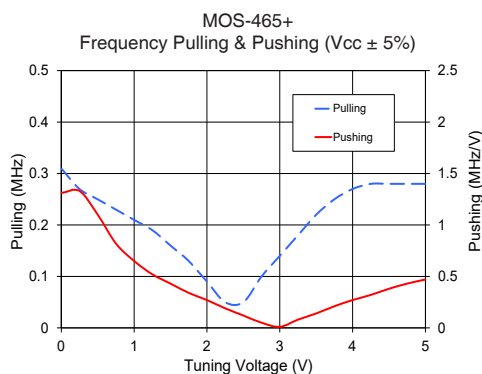
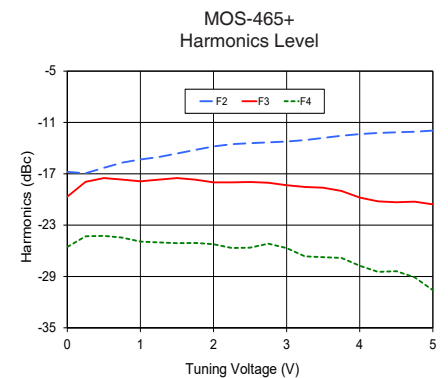
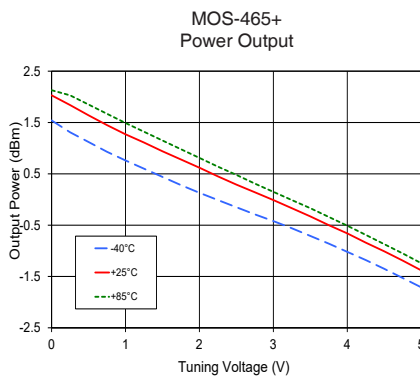
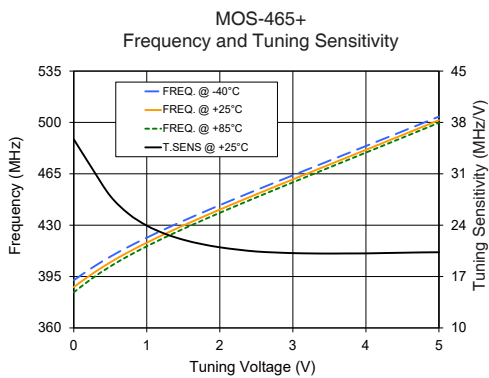
DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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

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 443 MHz (dBc/Hz)
		-40°C	+25°C	+85°C	-40°C	+25°C	+85°C		F2	F3	F4			1kHz	10kHz	100kHz	1MHz		
0.00	35.72	392.5	387.8	384.2	1.54	2.03	2.13	11.04	-16.8	-19.7	-25.6	1.31	0.31	-78.42	-104.1	-125.4	-145.6	1.0	-84.98
0.50	27.98	408.5	404.7	401.9	1.12	1.64	1.85	11.31	-16.3	-17.5	-24.3	1.10	0.25	-79.64	-106.3	-127.8	-147.9	2.0	-93.59
0.75	25.55	415.3	411.7	409.1	0.93	1.45	1.67	11.34	-15.7	-17.7	-24.5	0.82	0.23	-80.36	-106.6	-129.0	-149.2	3.5	-101.32
1.00	23.94	421.5	418.1	415.6	0.76	1.27	1.49	11.36	-15.3	-17.9	-24.9	0.65	0.21	-81.38	-108.6	-130.0	-150.0	6.0	-105.58
1.25	22.82	427.3	424.0	421.7	0.60	1.11	1.32	11.37	-15.0	-17.7	-25.0	0.52	0.19	-82.84	-109.1	-130.5	-150.7	8.5	-109.26
1.50	22.01	432.9	429.7	427.5	0.44	0.94	1.15	11.37	-14.6	-17.5	-25.1	0.43	0.16	-83.53	-109.6	-130.7	-150.8	10.0	-110.08
1.75	21.42	438.4	435.2	433.0	0.28	0.78	0.98	11.37	-14.2	-17.7	-25.1	0.34	0.13	-84.20	-109.4	-131.1	-151.4	20.8	-117.49
2.00	20.98	443.6	440.6	438.4	0.13	0.62	0.81	11.36	-13.8	-18.0	-25.2	0.27	0.09	-84.65	-109.9	-131.3	-151.3	35.5	-122.23
2.25	20.66	448.8	445.8	443.7	-0.01	0.45	0.64	11.35	-13.5	-18.0	-25.7	0.19	0.05	-85.89	-110.4	-131.5	-151.2	60.7	-127.12
2.50	20.40	453.9	451.0	448.9	-0.15	0.29	0.48	11.34	-13.4	-18.0	-25.6	0.12	0.05	-85.55	-110.7	-131.6	-151.4	86.7	-130.06
2.75	20.28	459.0	456.1	454.1	-0.29	0.14	0.31	11.33	-13.3	-18.1	-25.2	0.05	0.10	-87.33	-110.8	-131.6	-151.2	100.0	-131.30
3.00	20.19	464.0	461.2	459.2	-0.42	-0.01	0.15	11.32	-13.2	-18.3	-25.7	0.01	0.14	-85.81	-110.3	-131.4	-151.2	148.1	-134.76
3.25	20.14	469.0	466.2	464.3	-0.56	-0.17	-0.01	11.31	-13.1	-18.5	-26.7	0.08	0.18	-85.99	-110.4	-131.1	-151.0	177.0	-136.46
3.50	20.13	473.9	471.3	469.3	-0.71	-0.33	-0.17	11.30	-12.8	-18.6	-26.8	0.14	0.22	-86.90	-109.8	-130.8	-150.8	211.6	-137.98
3.75	20.14	478.9	476.3	474.4	-0.86	-0.50	-0.34	11.29	-12.6	-19.0	-26.8	0.21	0.25	-86.30	-109.6	-130.4	-150.4	302.4	-141.19
4.00	20.15	483.9	481.3	479.5	-1.02	-0.66	-0.51	11.27	-12.4	-19.8	-27.8	0.27	0.27	-84.73	-109.2	-130.1	-150.0	361.5	-142.64
4.25	20.20	488.9	486.4	484.5	-1.18	-0.84	-0.69	11.26	-12.2	-20.2	-28.5	0.32	0.28	-83.13	-108.7	-129.8	-149.6	507.5	-145.53
4.50	20.24	493.9	491.4	489.6	-1.35	-1.01	-0.87	11.25	-12.2	-20.3	-28.4	0.38	0.28	-83.34	-108.3	-129.2	-149.3	606.7	-147.07
4.75	20.28	498.9	496.5	494.7	-1.53	-1.19	-1.05	11.24	-12.1	-20.3	-29.1	0.43	0.28	-85.41	-107.9	-128.9	-149.1	851.6	-149.90
5.00	20.30	504.0	501.5	499.8	-1.71	-1.38	-1.24	11.23	-12.0	-20.6	-30.6	0.47	0.28	-84.25	-107.4	-128.6	-148.4	1000.0	-151.06

*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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