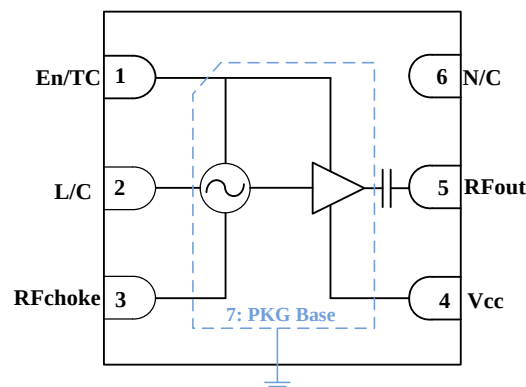


Features

- Operating Frequency 2.5GHz to 7.2GHz
- Pout: ≥ 8 dBm
- Harmonics 2nd: ≤ -24 dBc; Harmonics 3rd: ≤ -25 dBc
- Phase Noise: ≤ -75 dBc/Hz@10kHz, -105 dBc/Hz @100kHz
- Supply Voltage: 2.8V~7.2V
- Device Current: 12mA@2.8V~36mA@7.2V
- Integrated Active Bias Circuit with thermal compensation
- En/TC: Enabling device, stabilizing current and thermal compensation
- Frequency Drift Rate: ≤ 500 kHz/°C@6GHz, ≤ 300 kHz/°C@3GHz
- Industry Standard DFN 2x2 6L Package
- ESD protection all ports above 1000V HBM



Functional Block Diagram

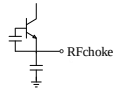
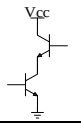
Applications

- Voltage controlled oscillator (VCO)
- 5G
- WIFI 6E
- Signal generator
- ISM
- IEEE 802.11a/n/ac wireless communication

Product Description

The YV257208 is an InGaP/GaAs Heterojunction Bipolar Transistor(HBT) MMIC Oscillator with negative resistance devices, buffer amplifiers, filters and active biasing networks. The YV257208's phase noise performance and harmonic suppression are excellent due to the filters and monolithic structures. En/TC pin's function is enabling device with voltage higher than 2.5V. YV257208 is internally matched to 50Ω. YV257208 is packaged in an industry standard leadless DFN 2x2 surface mount package.

Pin Description

Pin No.	Symbol	Description	Interface schematic
1	En/TC	Thermal Compensation and Enabling device >2.5V	
2	L/C	External L/C	
3	RF choke	External RF choke connected to ground	
4	Vcc	Supply Voltage 2.8V~7.2V	
5	RFOUT	RF output	
6	N/C	No Connection	
7	PKG base	GND ^[2]	

Note1: Oscillation frequency mainly depends on the external L/C.

Note2: Exposed Package Ground Paddle is RF and DC Ground.

Electrical Specifications@25°C

Parameter	Specification			Units	Condition
	Min.	Typ.	Max.		
Frequency range	2.5-7.2			GHz	
Output Power		7.6		dBm	2.65G @ Vcc=3.3V, V _{En/TC} =2.8V
		8.1		dBm	3.45G @ Vcc=5V, V _{En/TC} =3.5V
		7.6		dBm	4.85G @ Vcc=5V, V _{En/TC} =5V
		8.2		dBm	5.85G @ Vcc=5V, V _{En/TC} =5V
SSB Phase Noise@10kHz		-82		dBc/Hz	2.65G @ Vcc=3.3V, V _{En/TC} =2.8V
		-75		dBc/Hz	3.45G @ Vcc=5V, V _{En/TC} =3.5V
		-87		dBc/Hz	4.85G @ Vcc=5V, V _{En/TC} =5V
		-86		dBc/Hz	5.85G @ Vcc=5V, V _{En/TC} =5V
SSB Phase Noise@100kHz		-103		dBc/Hz	2.65G @ Vcc=3.3V, V _{En/TC} =2.8V
		-108		dBc/Hz	3.45G @ Vcc=5V, V _{En/TC} =3.5V
		-108		dBc/Hz	4.85G @ Vcc=5V, V _{En/TC} =5V
		-108		dBc/Hz	5.85G @ Vcc=5V, V _{En/TC} =5V
Harmonics 2nd		-24		dBc	2.65G @ Vcc=3.3V, V _{En/TC} =2.8V
		-24		dBc	3.45G @ Vcc=5V, V _{En/TC} =3.5V
		-24		dBc	4.85G @ Vcc=5V, V _{En/TC} =5V
		-25		dBc	5.85G @ Vcc=5V, V _{En/TC} =5V

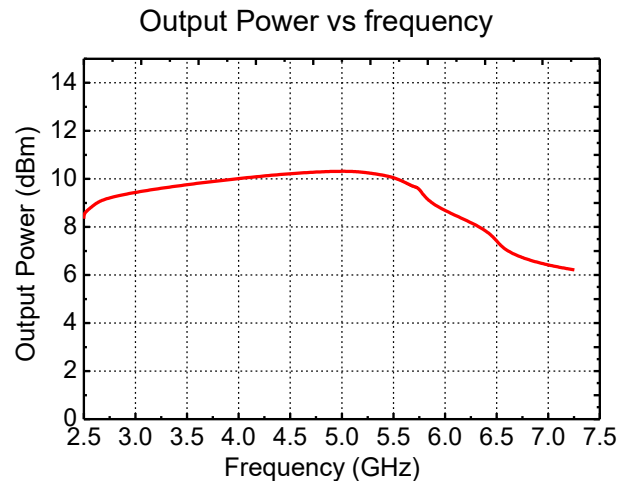
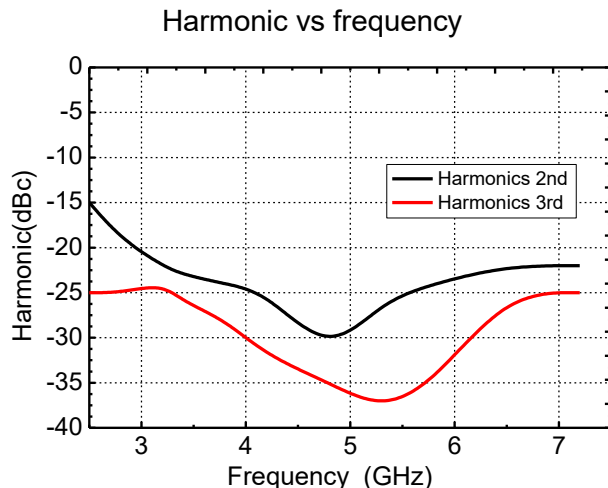
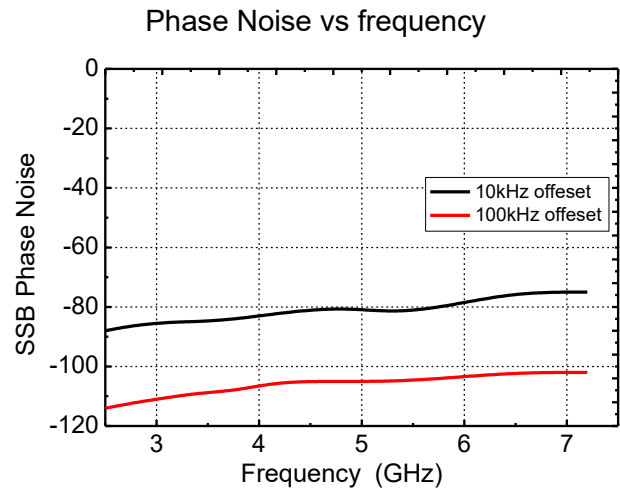
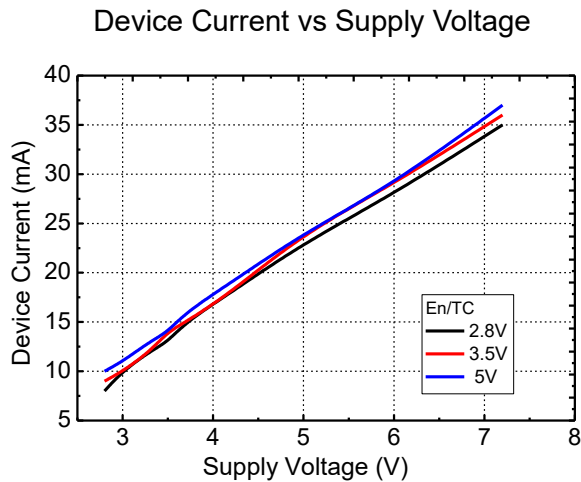
Harmonics 3rd		-26		dBc	2.65G @V _{cc} =3.3V, V _{En/TC} =2.8V
		-28		dBc	3.45G @V _{cc} =5V, V _{En/TC} =3.5V
		-46		dBc	4.85G @V _{cc} =5V, V _{En/TC} =5V
		-46		dBc	5.85G @V _{cc} =5V, V _{En/TC} =5V
Device Current ¹⁾		25		mA	V _{cc} =5V, V _{En/TC} =5V

1) Device current depends on V_{cc} and En/TC voltage.

Typical Device Current vs. V_{cc} & En/TC voltage

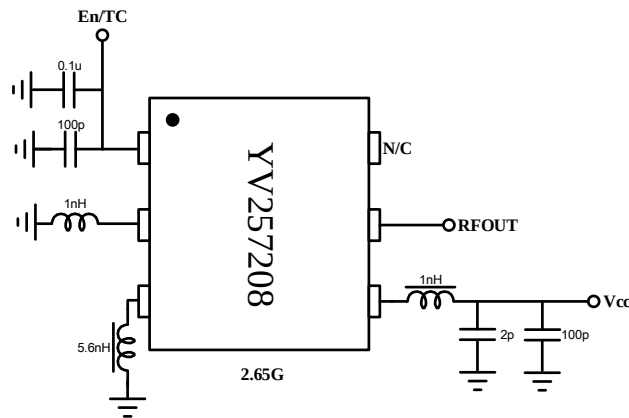
V _{cc} En/TC	2.8V	3V	3.3V	3.5V	3.7V	4.2V	5V	6V	7.2V
≤ 2.5V	0	0	0	0	0	0	0	0	0
2.8V	8	10	12	13	15	18	23	28	35
3V	8	10	12	13	15	18	23	28	35
3.5V	9	10	12	14	15	18	24	29	36
5V	10	11	13	14	16	19	24	29	37

Units: Device current (mA)

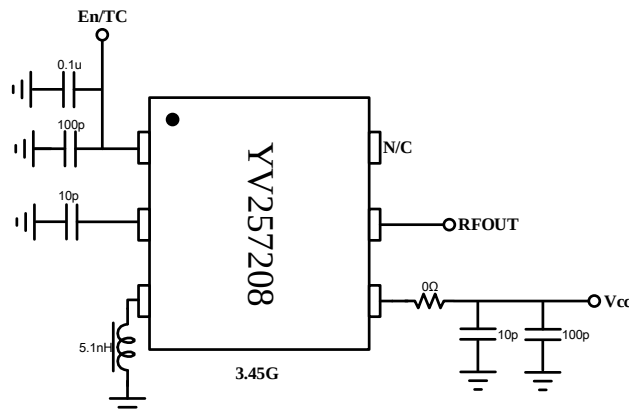


Oscillator Application Circuit

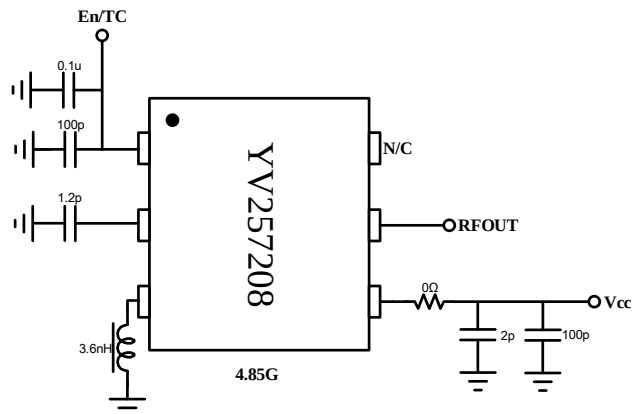
2.65GHz Oscillator Application:



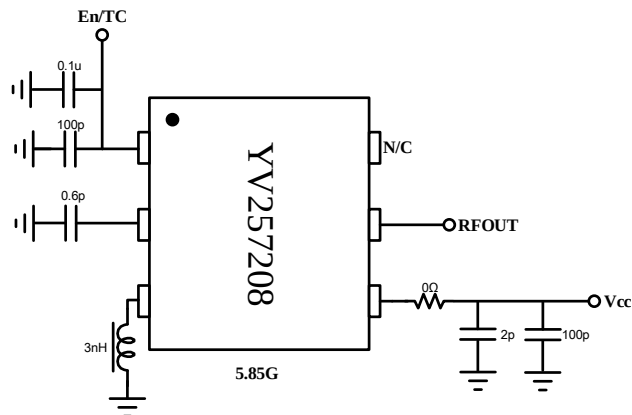
3.45GHz Oscillator Application:



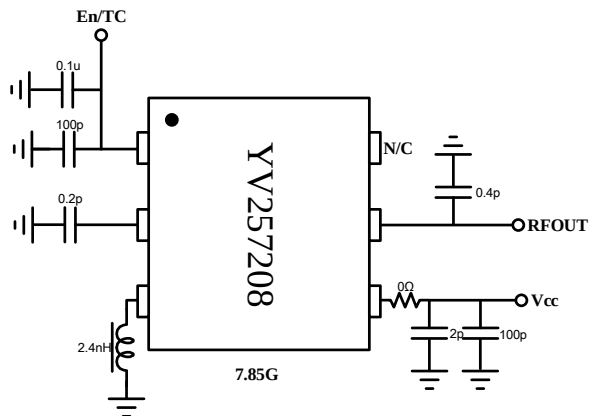
4.85GHz Oscillator Application:



5.85GHz Oscillator Application:

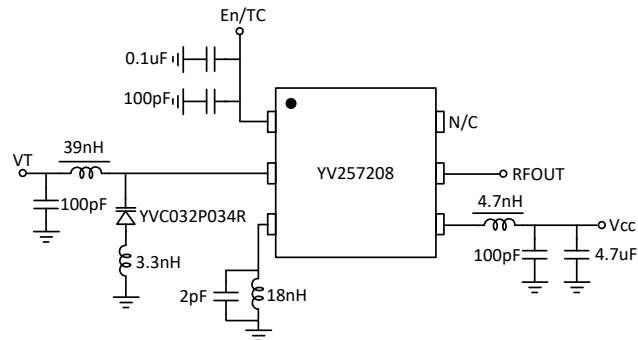


7.85GHz Oscillator Application:



VCO Application Circuit

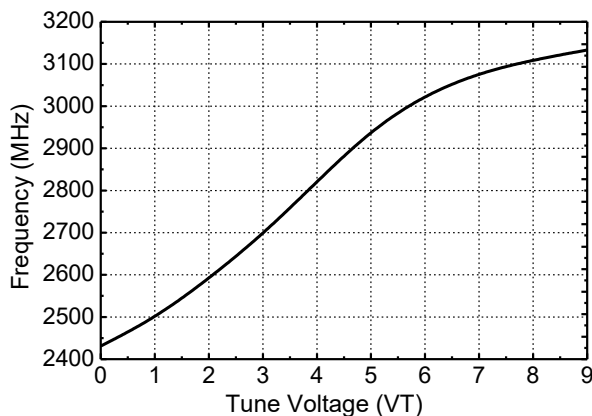
2500-2700MHz VCO Application:



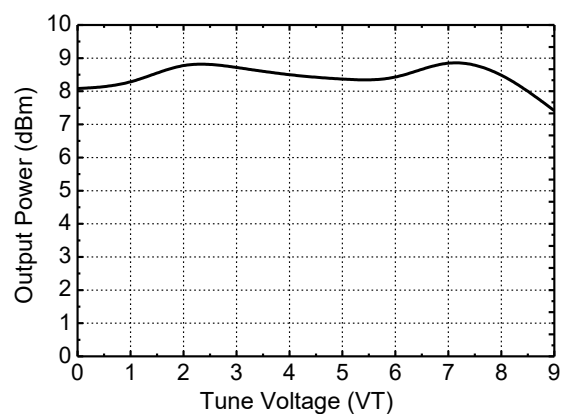
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{CC}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	2431-3133			MHz
Power Output	7.5	8.4	9.0	dBm
Tune Voltage (VT)	0		9	V
Supply Current		23		mA
Leakage Current		8		uA
Harmonics@2650MHz				
2rd		-16		dBc
3rd		-28		dBc
SSB Phase Noise				
10kHz offset		-88		dBc/Hz
100kHz offset		-114		dBc/Hz
Pushing		4		MHz/V
Pulling VSWR=2.0:1		3		MHz pp
Frequency Drift Rate		0.3		MHz/°C
Load impedance		50		Ω

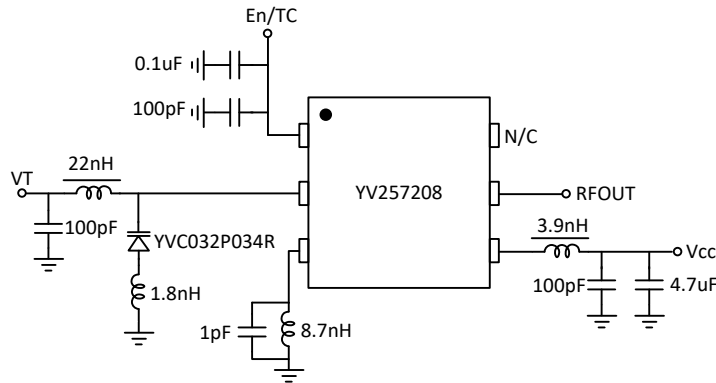
Frequency vs Tune Voltage



Output Power vs Tune Voltage



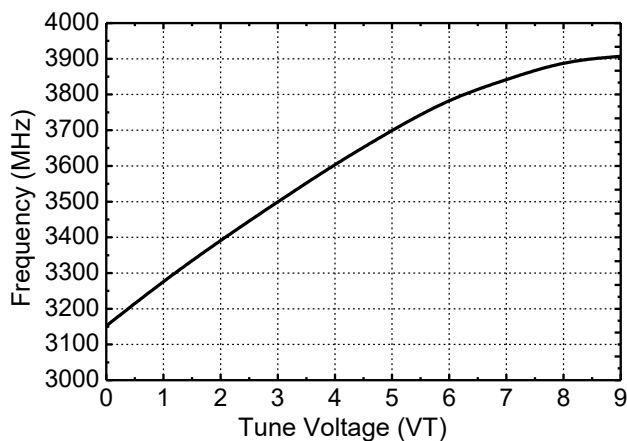
3200-3600MHz VCO Application:



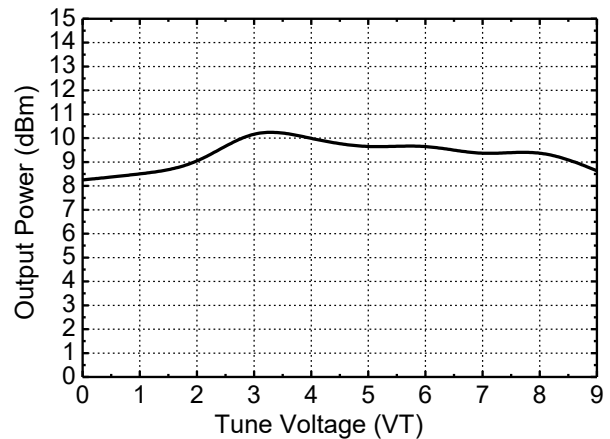
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V(\text{En/TC}) = 5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	3150-3900			MHz
Power Output	8.2	9.5	10.5	dBm
Tune Voltage (VT)	0		9	V
Supply Current		25		mA
Leakage Current		8		uA
Harmonics@3450MHz				
2rd		-22		dBc
3rd		-31		dBc
SSB Phase Noise				
10kHz offset		-85		dBc/Hz
100kHz offset		-109		dBc/Hz
Pushing		5		MHz/V
Pulling VSWR=2.0:1		7		MHz pp
Frequency Drift Rate		0.4		MHz/ $^\circ\text{C}$
Load impedance		50		Ω

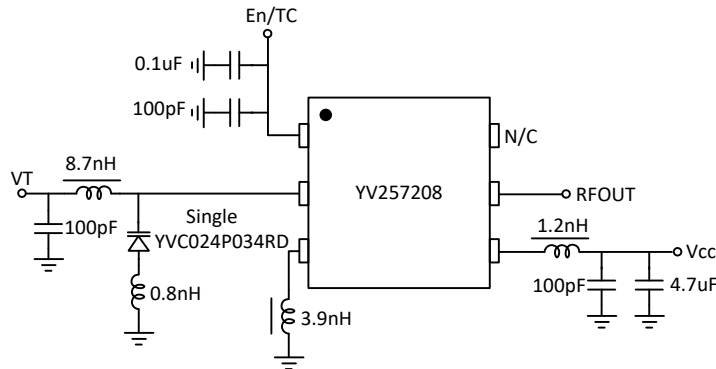
Frequency vs Tune Voltage



Output Power vs Tune Voltage



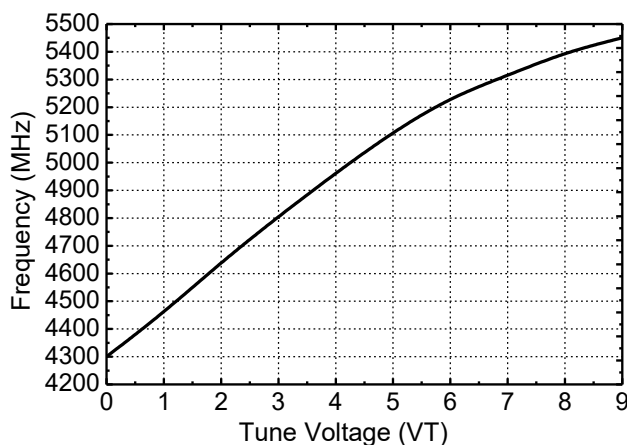
4500-5000MHz VCO Application:



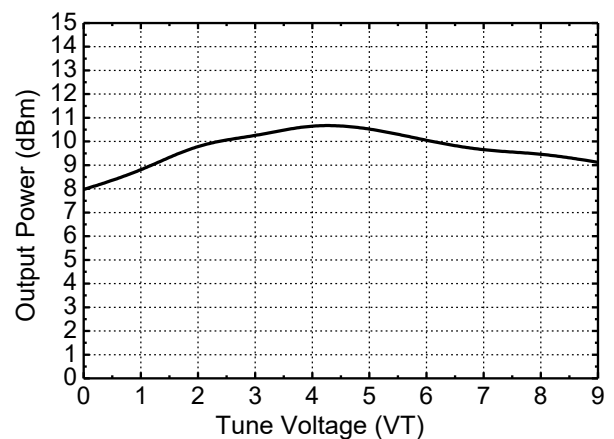
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	4300-5450			MHz
Power Output	7.9	10	10.7	dBm
Tune Voltage (VT)	0		9	V
Supply Current		27		mA
Leakage Current		8		uA
Harmonics@4850MHz				
2rd		-24		dBc
3rd		-46		dBc
SSB Phase Noise				
10kHz offset		-80		dBc/Hz
100kHz offset		-105		dBc/Hz
Pushing		12		MHz/V
Pulling VSWR=2.0:1		8		MHz pp
Frequency Drift Rate		0.5		MHz/ $^\circ\text{C}$
Load impedance		50		Ω

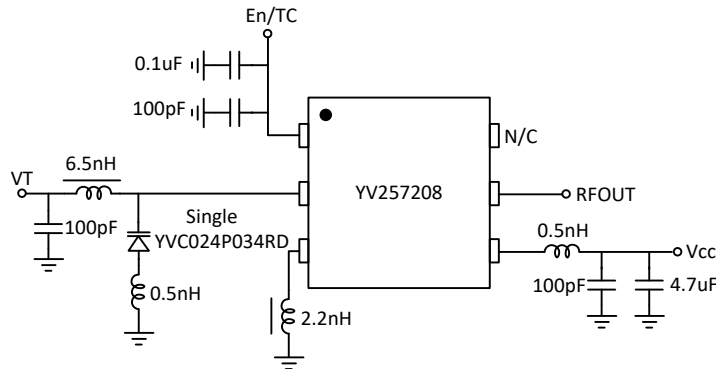
Frequency vs Tune Voltage



Output Power vs Tune Voltage



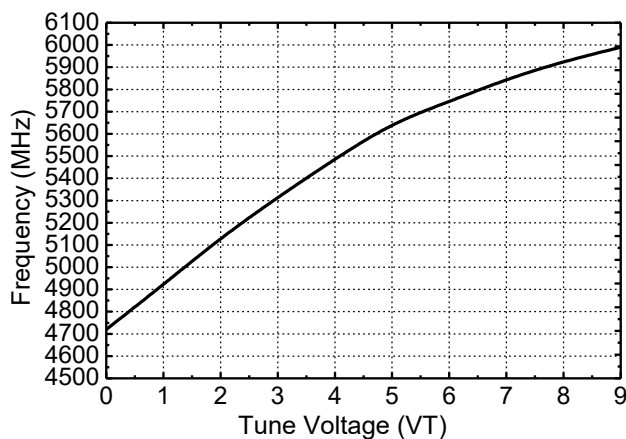
5000-5500MHz VCO Application:



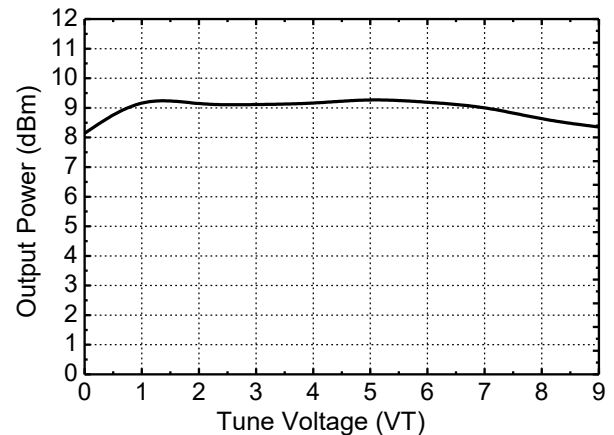
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	4700-5990			MHz
Power Output	8.1	9.1	9.3	dBm
Tune Voltage (VT)	0		9	V
Supply Current		21		mA
Leakage Current		8		uA
Harmonics@5250MHz				
2rd		-25		dBc
3rd		-37		dBc
SSB Phase Noise				
10kHz offset		-82		dBc/Hz
100kHz offset		-105		dBc/Hz
Pushing		12		MHz/V
Pulling VSWR=2.0:1		8		MHz pp
Frequency Drift Rate		0.6		MHz/ $^\circ\text{C}$
Load impedance		50		Ω

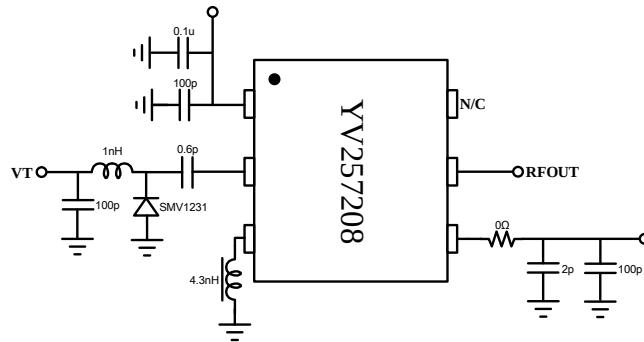
Frequency vs Tune Voltage



Output Power vs Tune Voltage



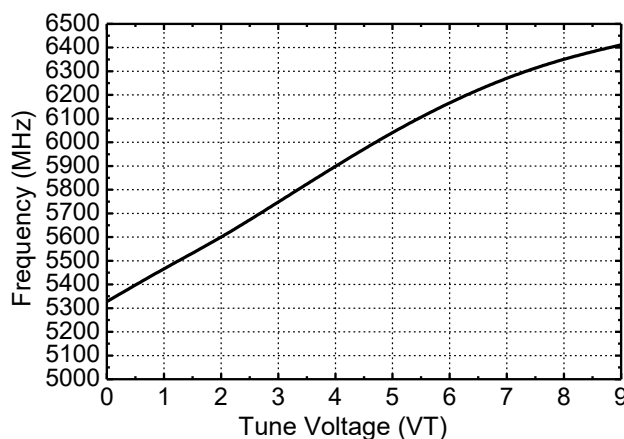
5500-6000MHz VCO Application:



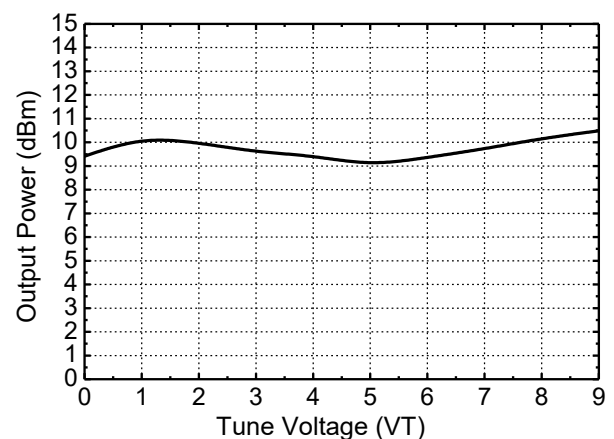
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V(\text{En}/\text{TC}) = 5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	5328-6412			MHz
Power Output	9.4	9.6	10.4	dBm
Tune Voltage (VT)	0		9	V
Supply Current		25		mA
Leakage current		8		uA
Harmonics@5800MHz				
2rd		-25		dBc
3rd		-46		dBc
SSB Phase Noise				
10kHz offset		-80		dBc/Hz
100kHz offset		-104		dBc/Hz
Pushing		12		MHz/V
Pulling VSWR=2.0:1		8		MHz pp
Frequency Drift Rate		0.6		MHz/°C
Load impedance		50		Ω

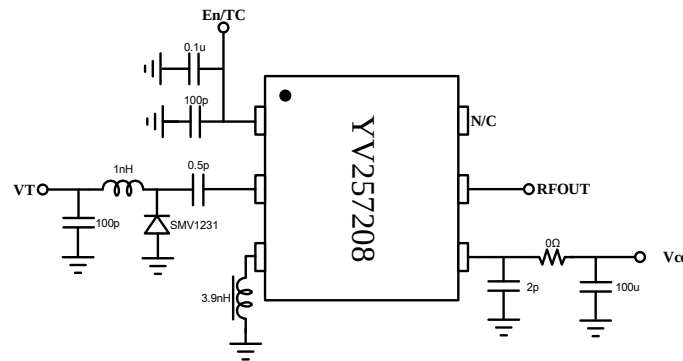
Frequency vs Tune Voltage



Output Power vs Tune Voltage



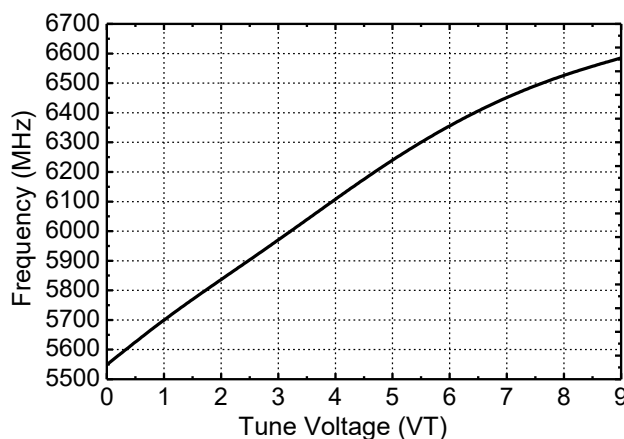
5800-6500MHz VCO Application:



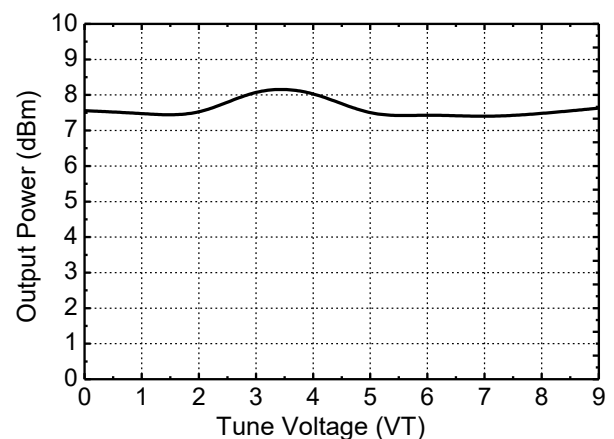
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	5549-6585			MHz
Power Output	7.3	7.5	8.2	dBm
Tune Voltage (VT)	0		9	V
Supply Current		24		mA
Harmonics@6225MHz				
2rd		-27		dBc
3rd		-43		dBc
SSB Phase Noise				
10kHz offset		-75		dBc/Hz
100kHz offset		-102		dBc/Hz
Pushing		25		MHz/V
Pulling VSWR=2.0:1		9		MHz pp
Frequency Drift Rate		0.6		MHz/°C
Load impedance		50		Ω

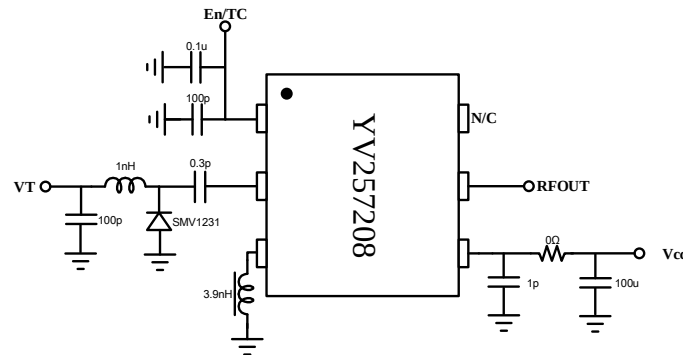
Frequency vs Tune Voltage



Output Power vs Tune Voltage



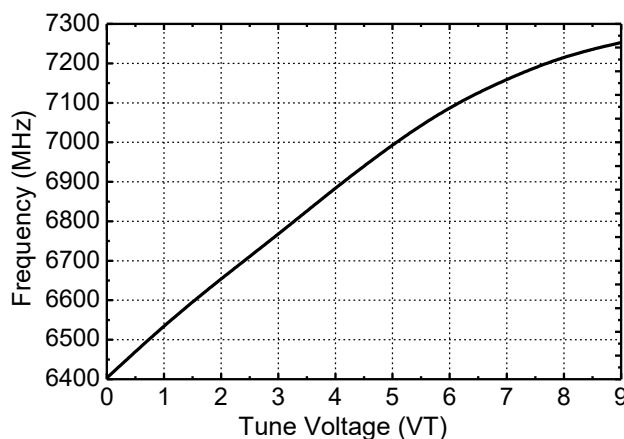
6500-7200MHz VCO Application:



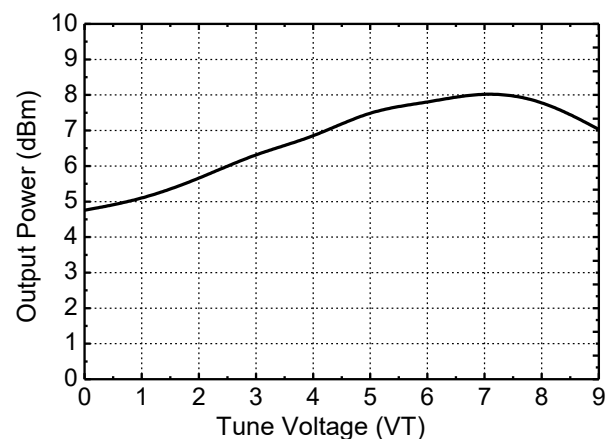
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{CC}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	6403-7253			MHz
Power Output	4.7	7.5	8.1	dBm
Tune Voltage (VT)	0		9	V
Supply Current		21		mA
Harmonics@6825MHz				
2rd		-44		dBc
3rd		-41		dBc
SSB Phase Noise				
10kHz offset		-75		dBc/Hz
100kHz offset		-102		dBc/Hz
Pushing		26		MHz/V
Pulling VSWR=2.0:1		9		MHz pp
Frequency Drift Rate		0.6		MHz/ $^\circ\text{C}$
Load impedance		50		Ω

Frequency vs Tune Voltage

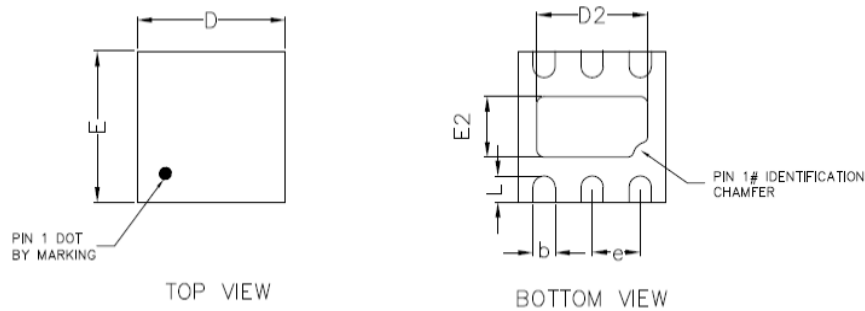


Output Power vs Tune Voltage



Package Diagram

(Units: millimeters)



COMMON DIMENSIONS(MM)			
PKG.	W:VERY VERY THIN		
REF.	MIN.	NOM.	MAX
A	0.70	0.75	0.80
A1	0.00	—	0.05
A3	0.2 REF.		
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D2	1.35	1.50	1.60
E2	0.65	0.80	0.90
L	0.25	0.35	0.45
b	0.25	0.30	0.35
e	0.65 BSC		