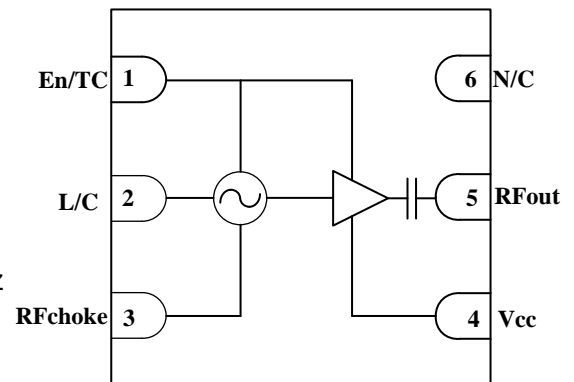


Features

- 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

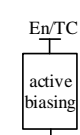
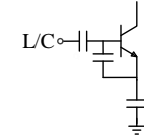
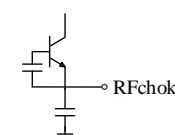
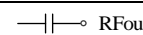
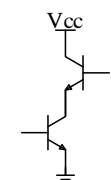
Applications

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

Product Description

The YV257208 is a 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 is excellent due to the filters and monolithic structure. En/TC pin's enable device with voltage higher than 2.5V. The YV257208 is internally matched to 50Ω. The 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 within 0V~7.2V	
2	L/C	External L/C	
3	RFchoke	External RFchoke connected to ground	
4	N/C	No Connection	
5	RFOUT	RF output	
6	Vcc	Supply Voltage 2.8V~7.2V	

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

Electrical Specifications@25°C

Parameter	Specification			Units	Condition
	Min.	Typ.	Max.		
Frequency range	2.5-7.2			GHz	
Output Power		7.68		dBm	2.65G @ Vcc=3.3V, VEn/TC=2.8V
		8.15		dBm	3.45G @ Vcc=5V, VEn/TC=3.5V
		7.63		dBm	4.85G @ Vcc=5V, VEn/TC=5V
		8.2		dBm	5.85G @ Vcc=5V, VEn/TC=5V
SSB Phase Noise@10kHz		-82		dBc/Hz	2.65G @ Vcc=3.3V, VEn/TC=2.8V
		-75		dBc/Hz	3.45G @ Vcc=5V, VEn/TC=3.5V
		-87		dBc/Hz	4.85G @ Vcc=5V, VEn/TC=5V
		-86		dBc/Hz	5.85G @ Vcc=5V, VEn/TC=5V
SSB Phase Noise@100kHz		-103		dBc/Hz	2.65G @ Vcc=3.3V, VEn/TC=2.8V
		-108		dBc/Hz	3.45G @ Vcc=5V, VEn/TC=3.5V
		-108		dBc/Hz	4.85G @ Vcc=5V, VEn/TC=5V
		-108		dBc/Hz	5.85G @ Vcc=5V, VEn/TC=5V
Harmonics 2nd		-24		dBc	2.65G @ Vcc=3.3V, VEn/TC=2.8V
		-24		dBc	3.45G @ Vcc=5V, VEn/TC=3.5V

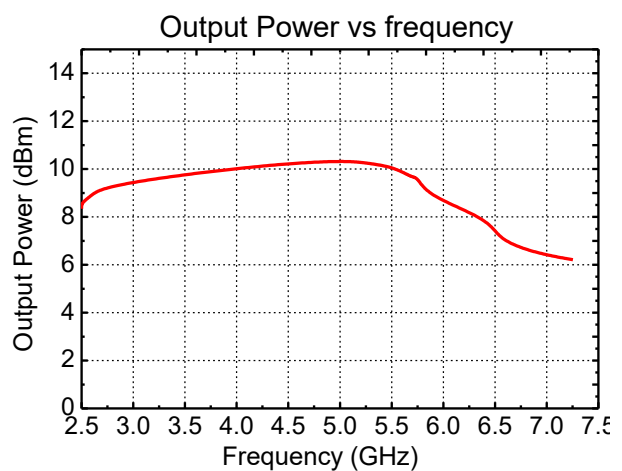
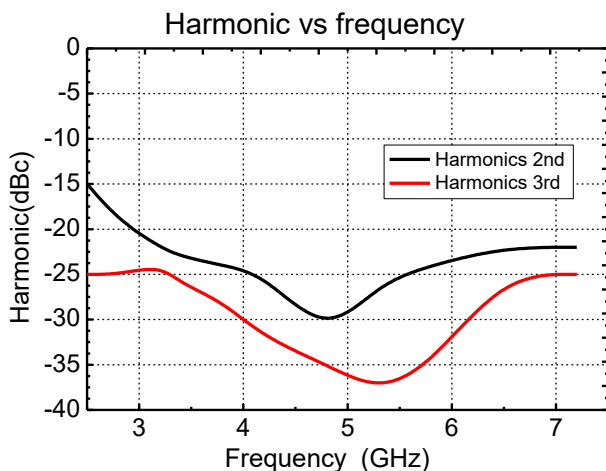
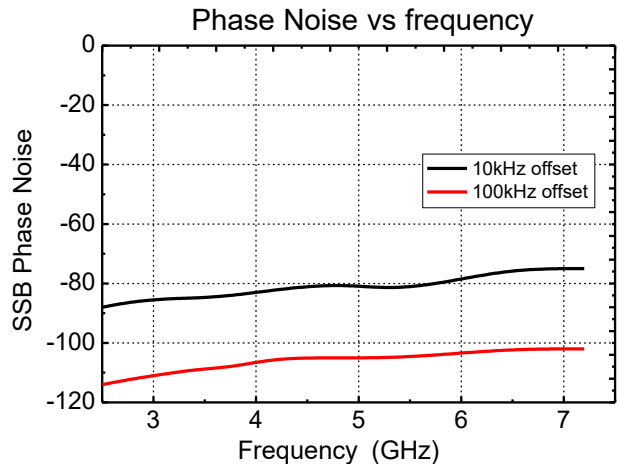
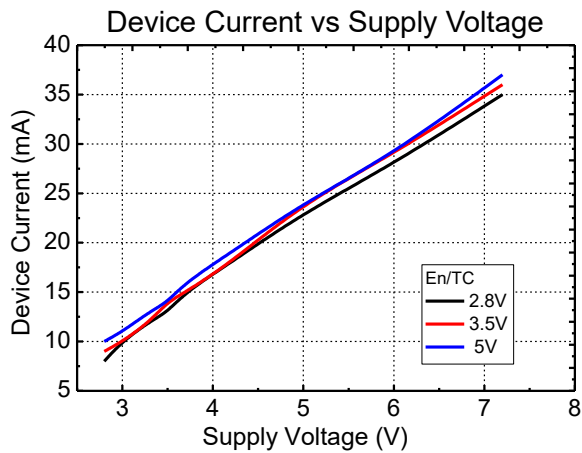
		-30		dBc	4.85G @V _{CC} =5V, V _{En/TC} =5V
		-25		dBc	5.85G @V _{CC} =5V, V _{En/TC} =5V
Harmonics 3rd		-26		dBc	2.65G @V _{CC} =3.3V, V _{En/TC} =2.8V
		-28		dBc	3.45G @V _{CC} =5V, V _{En/TC} =3.5V
		-31		dBc	4.85G @V _{CC} =5V, V _{En/TC} =5V
		-25		dBc	5.85G @V _{CC} =5V, V _{En/TC} =5V
Device Current		25		mA	V _{CC} =5V, V _{En/TC} =5V

1) Device current depend on the V_{CC} and En/TC voltage, it is a dependent variable.

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

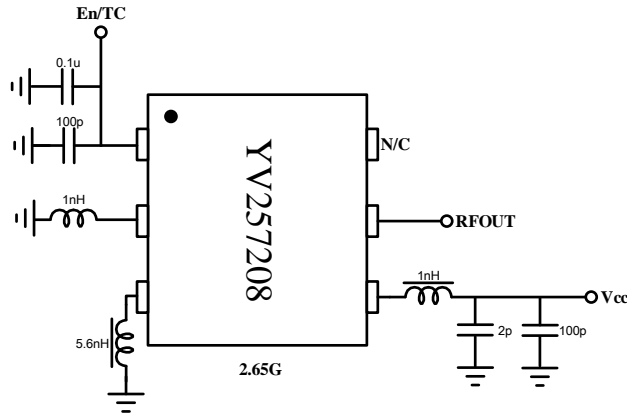
En/TC \ V _{CC}	V _{CC}								
	2.8V	3V	3.3V	3.5V	3.7V	4.2V	5V	6V	7.2V
≤2.5V	0	0	0	0	0	0	0	0	0
2.8V	8	10	12	13	15	18	23	28	35
3V	8	10	12	13	15	18	23	28	35
3.5V	9	10	12	14	15	18	24	29	36
5V	10	11	13	14	16	19	24	29	37

Units: Device current (mA)

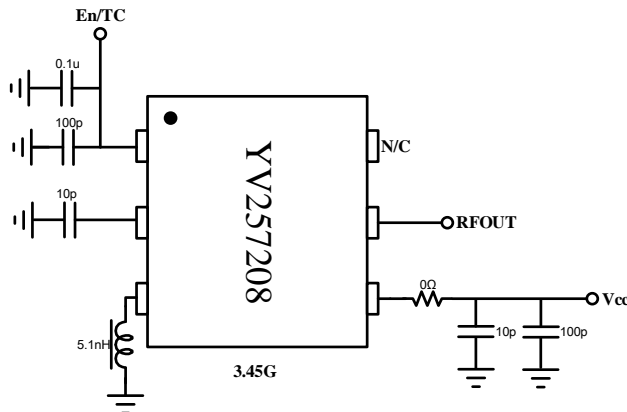


Oscillator Application Circuit

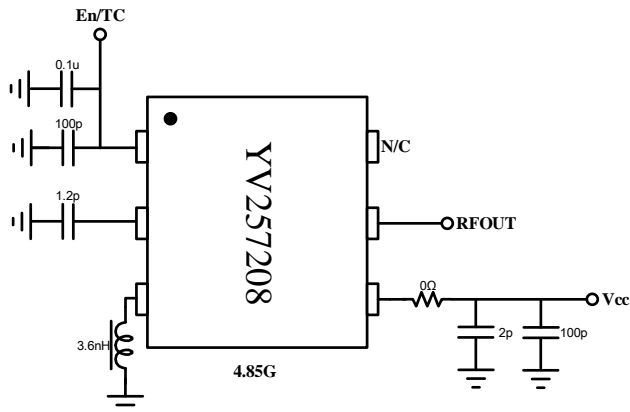
2.65GHz Oscillator Application:



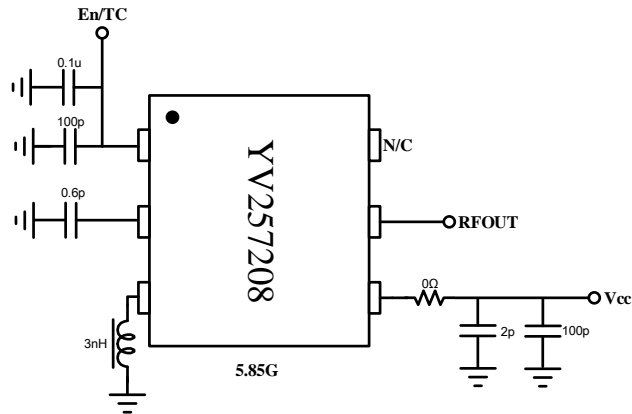
3.45GHz Oscillator Application:



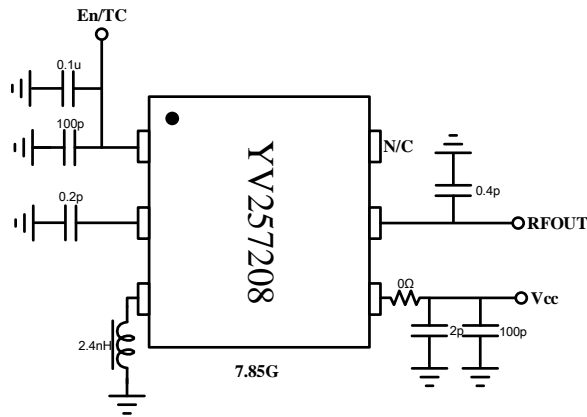
4.85GHz Oscillator Application:



5.85GHz Oscillator Application:

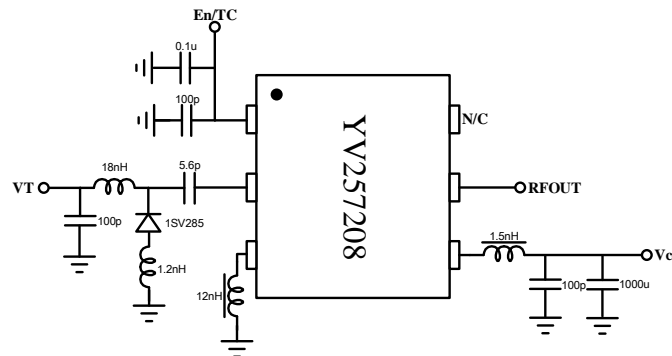


7.85GHz Oscillator Application:



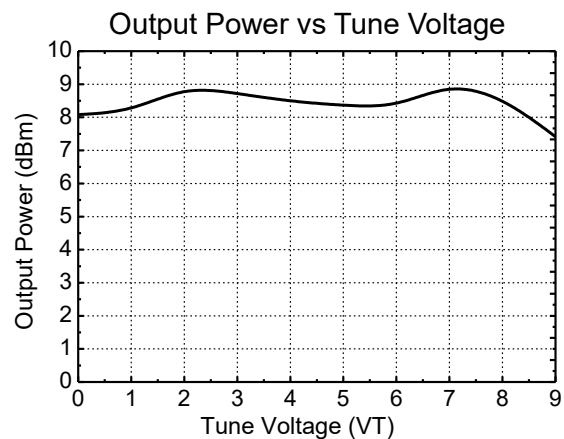
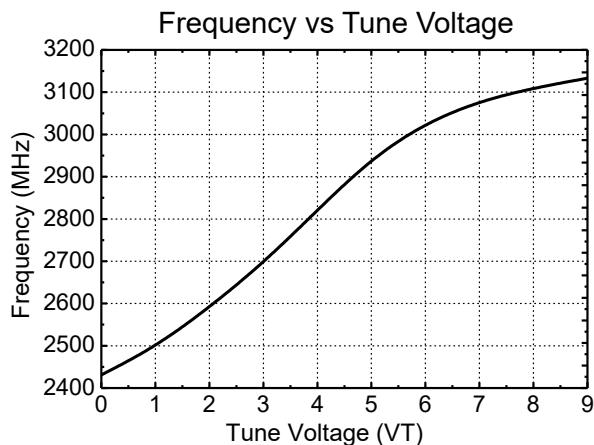
VCO Application Circuit

2500-2700MHz VCO Application:

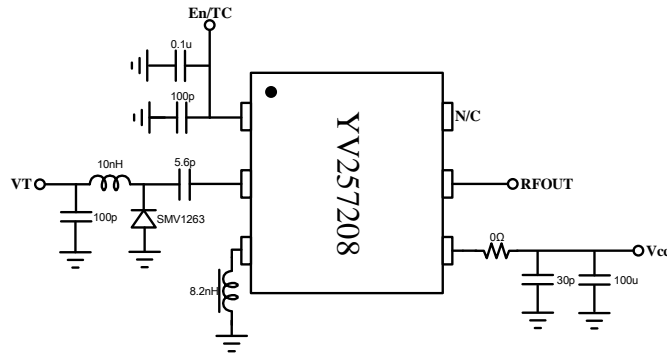


Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	2431-3133			MHz
Power Output	7.5	8.4	9.0	dBm
Tune Voltage (VT)	0		10	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/ $^\circ\text{C}$
Load impedance		50		Ω

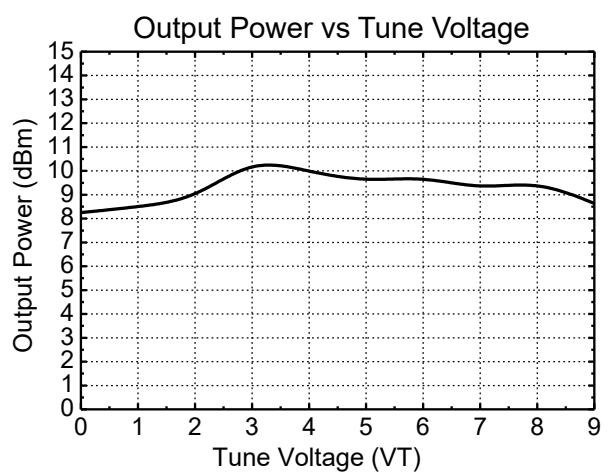
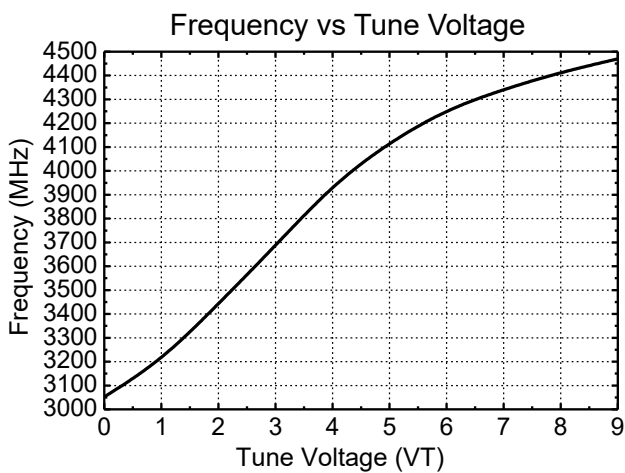


3200-3800MHz VCO Application:

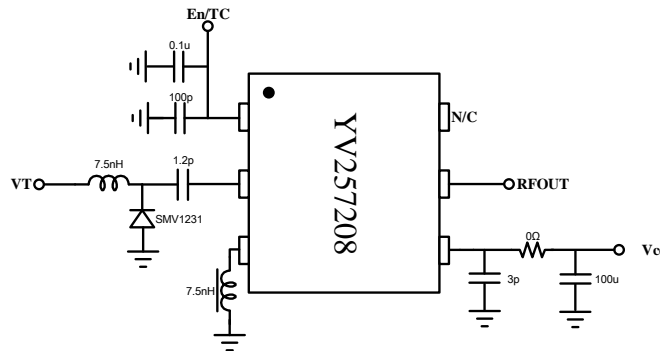


Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V(\text{En/TC}) = 5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	3052-4470			MHz
Power Output	8.2	9.5	10.5	dBm
Tune Voltage (VT)	0		10	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/°C
Load impedance		50		Ω



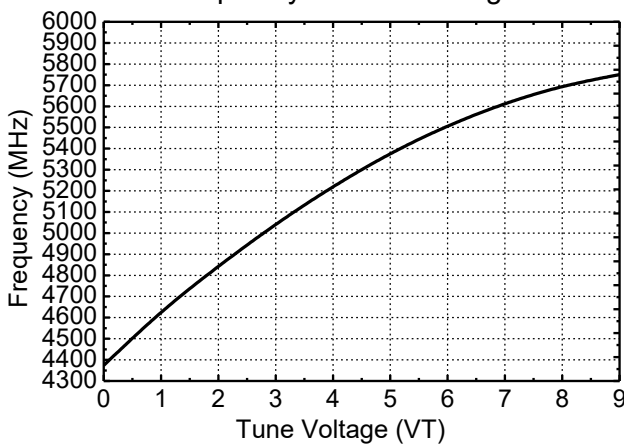
4500-5000MHz VCO Application:



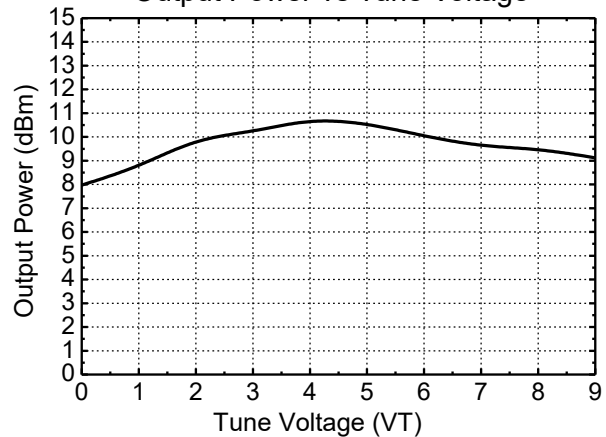
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc} = 5\text{V}$, $V(\text{En/TC}) = 5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	4374-5750			MHz
Power Output	7.9	10	10.7	dBm
Tune Voltage (VT)	0		10	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/°C
Load impedance		50		Ω

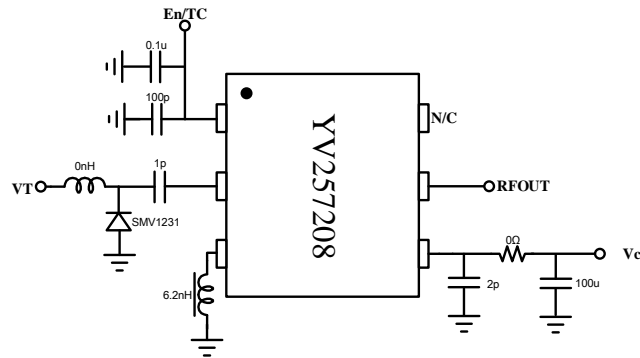
Frequency vs Tune Voltage



Output Power vs Tune Voltage

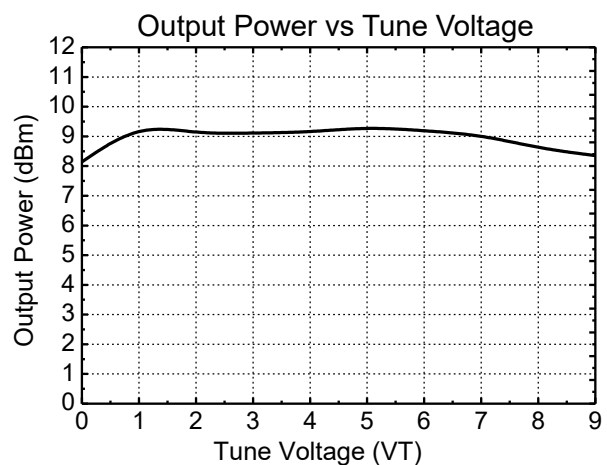
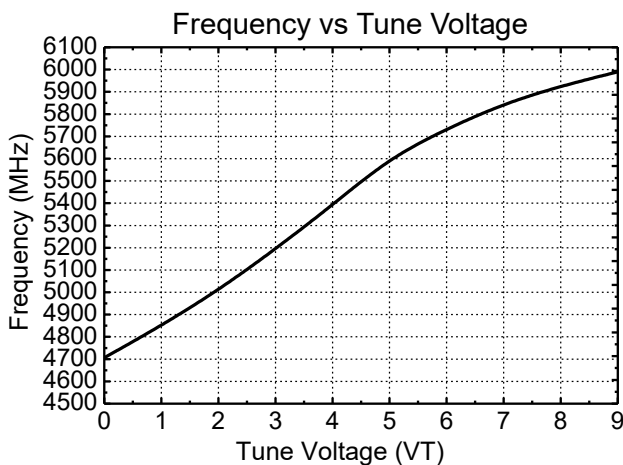


5000-5500MHz VCO Application:

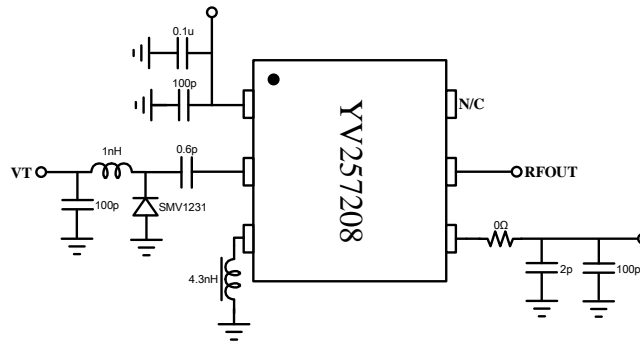


Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	4700-5990			MHz
Power Output	8.1	9.1	9.3	dBm
Tune Voltage (VT)	0		10	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

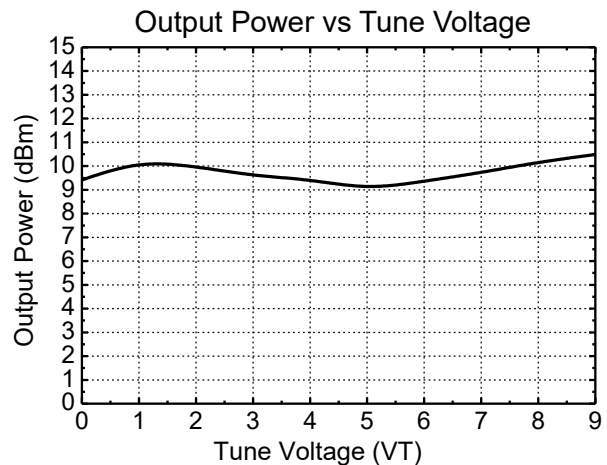
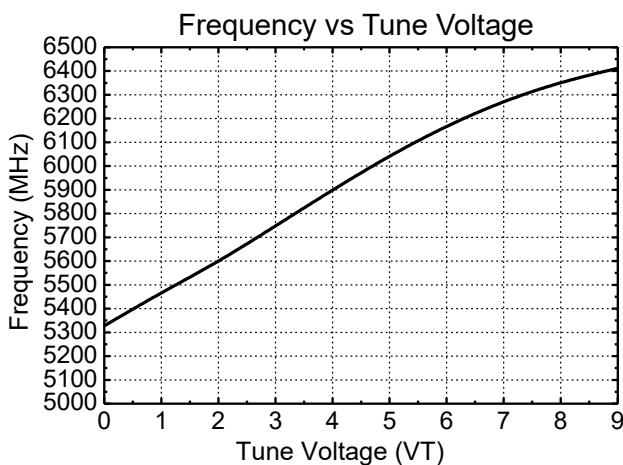


5500-6000MHz VCO Application:

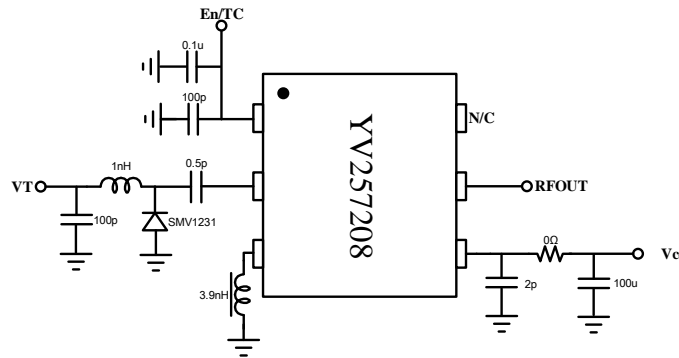


Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$, $V(\text{En}/\text{TC}) = 5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	5328-6412			MHz
Power Output	9.4	9.6	10.4	dBm
Tune Voltage (VT)	0		10	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/ $^\circ\text{C}$
Load impedance		50		Ω

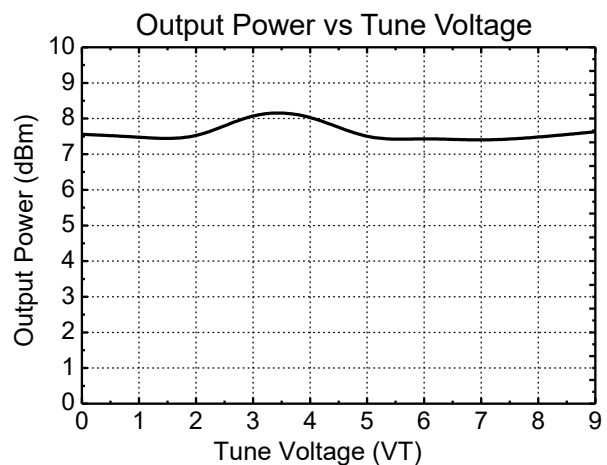
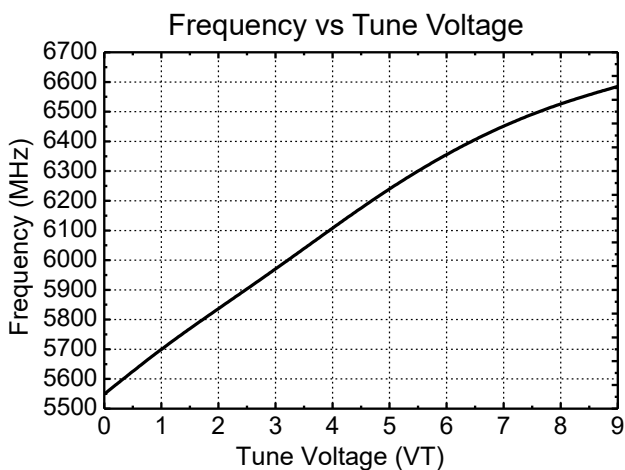


5800-6500MHz VCO Application:

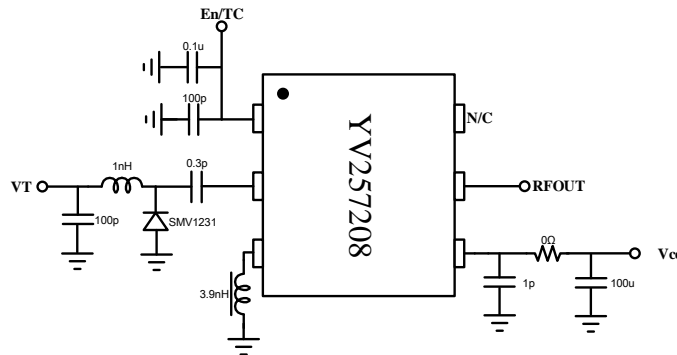


Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	5549-6585			MHz
Power Output	7.3	7.5	8.2	dBm
Tune Voltage (VT)	0		10	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/ $^\circ\text{C}$
Load impedance		50		Ω

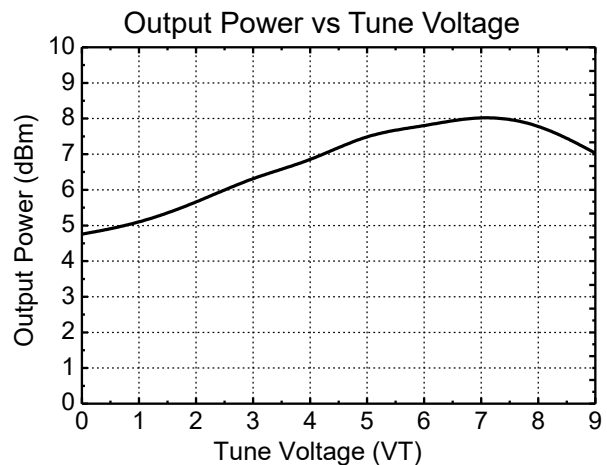
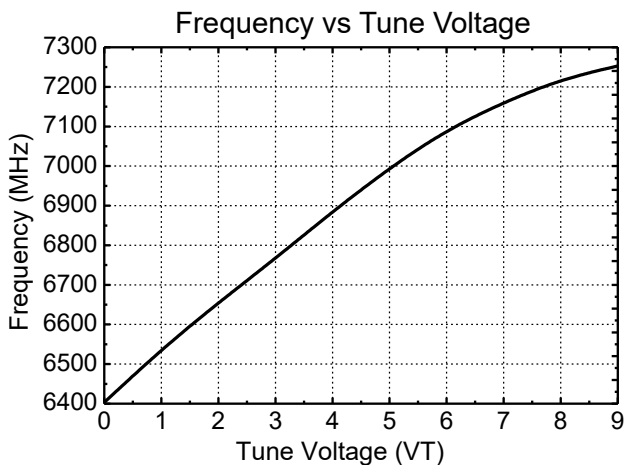


6500-7200MHz VCO Application:



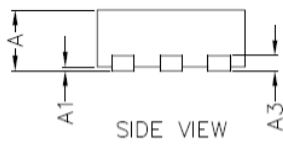
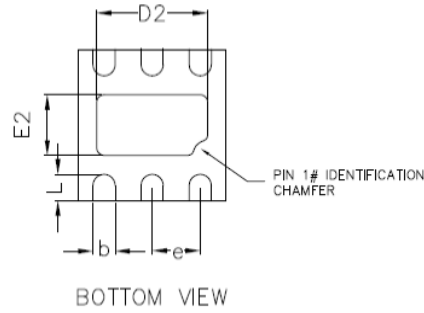
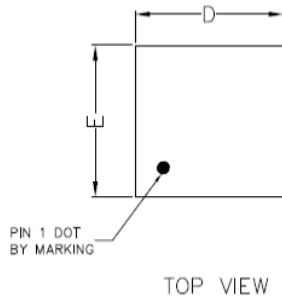
Electrical Specifications, $T_A = 25^\circ\text{C}$, $V_{cc}=5\text{V}$, $V(\text{En/TC})=5\text{V}$

Parameter	Specification			Units
	Min.	Typ.	Max.	
Frequency range	6403-7253			MHz
Power Output	4.7	7.5	8.1	dBm
Tune Voltage (VT)	0		10	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



Package Diagram

(Units: millimeters)



COMMON DIMENSIONS(MM)			
PKG. REF.	W:VERY VERY THIN		
	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
F	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		