










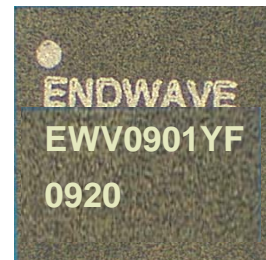


## EWV0901YF

### Features

-  Dual Output Frequencies
-  Push-push Architecture
-  Phase Noise : -115 dBc/Hz @ 100 kHz
-  Output Power at  $f_{out}$ : +12 dBm, typical
-  Output Power at  $f_{out/2}$ : +10 dBm, typical
-  Integrated Divide by 2 Prescaler
-  HBM Class 1A – ESD Protection Bias Circuitry
-  Package: 5 x 5 mm, 32 Lead, plastic overmold QFN
-  100% RF and DC tested
-  Also available in bare die format
-  RoHS Compliant

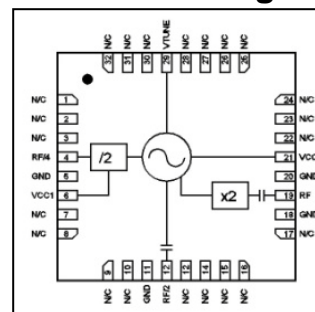
### Device Photo



### Description

The Endwave *EWV0901YF* is a high performance InGaP/GaAs HBT MMIC voltage controlled oscillator which provides a set of dual outputs ideal for applications which require 4.225 to 4.775 or 8.45 to 9.55 GHz outputs. The device boasts state of the art phase noise at better than -115 dBc/Hz at a 100 kHz offset. The device has integrated ESD Protection Bias Circuitry and can be used for a wide range of applications from defense electronics to commercial communication systems. All parts are 100% DC and RF tested and visually inspected to IPC-A-610.

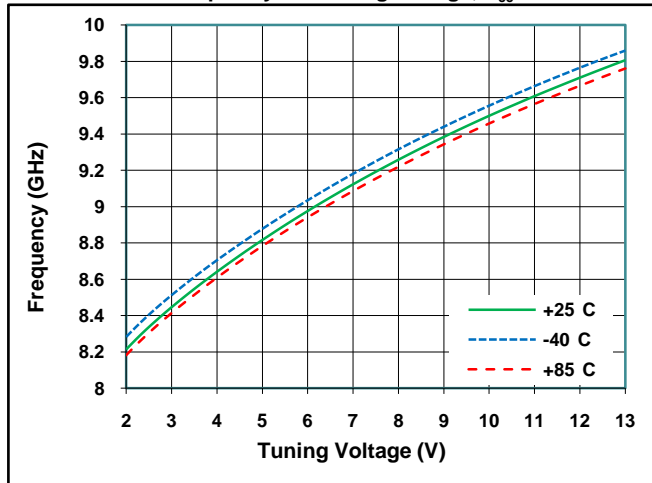
### Functional Diagram



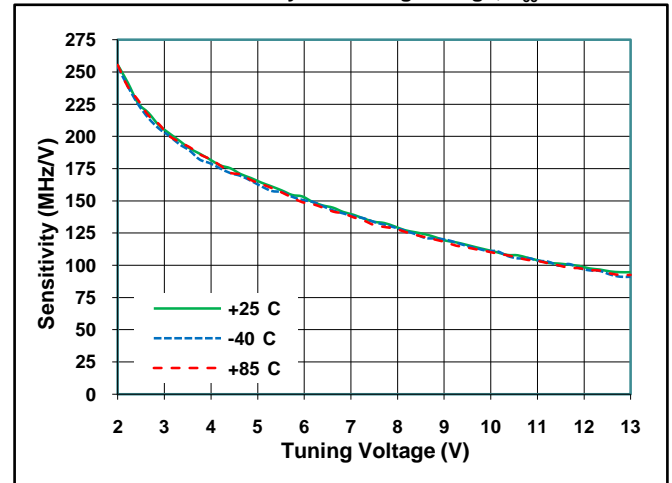
### Electrical Characteristics (Temperature = +25 °C, $V_{cc}=+5V$ )

Parameter	Min.	Typ.	Max.	Units
Frequency Range ( $f_{out}$ )	8.45		9.55	GHz
Frequency Range ( $f_{out/2}$ )	4.225		4.775	GHz
Output Power ( $f_{out}$ )	+8	+12	+14	dBm
Output Power ( $f_{out/2}$ )	+6	+10	+14	dBm
Output Power ( $f_{out/4}$ )	-3	+2	+3	dBm
Phase Noise @ $f_{out}$ 100 kHz Offset, $V_t = +5V$		-115		dBc/Hz
Tune Voltage	2		13	V
Supply Current				
VCO	230	260	290	mA
Prescaler (Optional)	35	45	55	mA
Tune Port Leakage Current, $V_{tune} = 13V$			10	uA
Output Return Loss		5		dB
Harmonic / Subharmonics				
$\frac{1}{2}$		40		dBc
$2^{nd}$		10		dBc
Pulling (into a 2:1 VSWR)		5		MHz pp
Pushing @ $V_{tune} = 5V$		12		MHz/V
Frequency Drift Rate			-1.0	MHz/ C

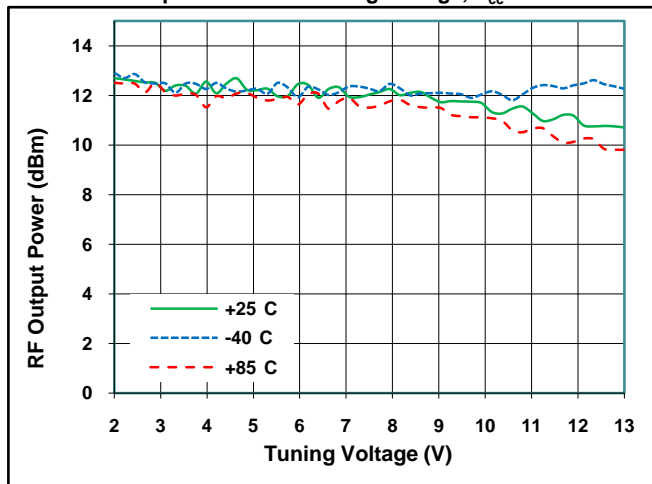
RF Frequency vs. Tuning Voltage,  $V_{cc} = 5V$



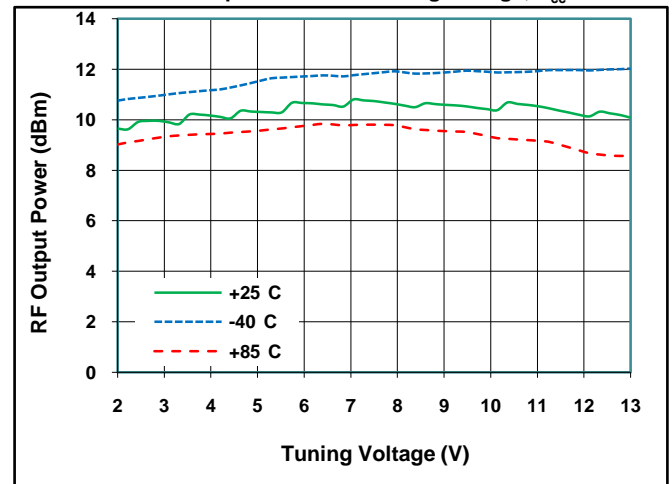
RF Sensitivity vs. Tuning Voltage,  $V_{cc} = 5V$



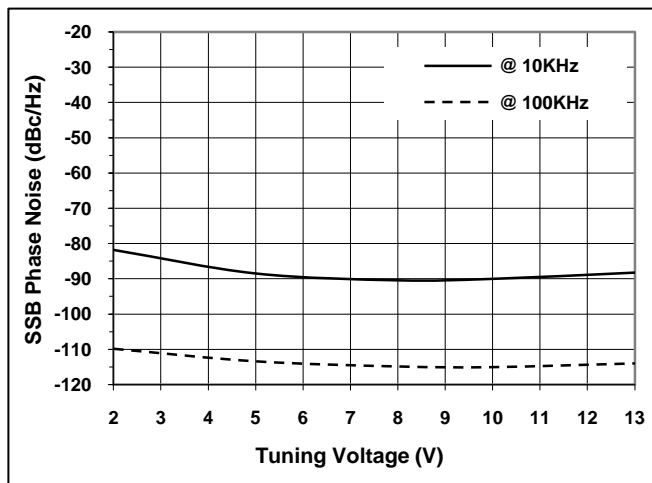
RF Output Power vs. Tuning Voltage,  $V_{cc} = 5V$



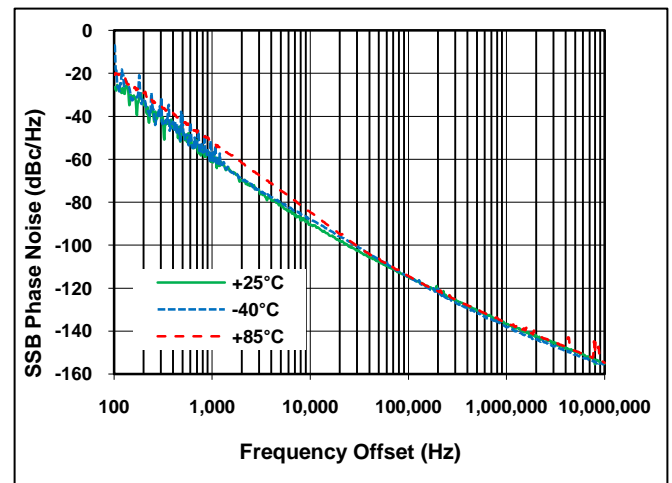
RF/2 Output Power vs. Tuning Voltage,  $V_{cc} = 5V$



SSB Phase Noise @ RF Output vs. Tuning Voltage



SSB Phase Noise @ RF Output vs.  $V_{tune} = 8V$



Voltage Controlled Oscillators - Package

### DC & RF Pinout

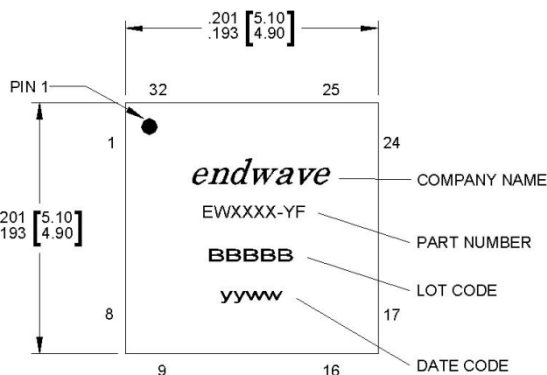
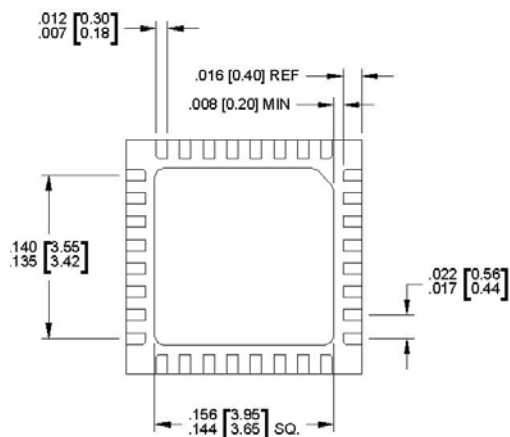
Pin Number	Function
1-3, 7-10, 13-17, 22-28, 30-32	No Connection
5, 11, 18, 20	Ground (or no connection)
19	RF Output ( $f_{out}$ )
12	RF/2 Output ( $f_{out/2}$ ) <small>Note 1</small>
4	RF/4 Output ( $f_{out/4}$ ) <small>Note 2</small>
6	$V_{cc1}$ for Prescaler
21	$V_{cc}$ for VCO
29	$V_{tune}$

Note 1 It is recommended that RF/2 Output be terminated with a 50 ohm load if not used.

Note 2 DC block must be used at RF/4 output port. 100pf 0402 capacitor is used on ENWV eval boards.

### Outline Drawings

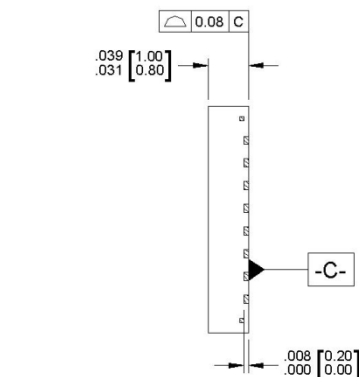
“F” Package – 5 x 5mm, 32 lead



 Electrostatic Sensitive Device  
 Observe Handling Precautions

**Notes:**

1. Lead frame material is a copper alloy.
2. Dimensions are in inches (mm).
3. Min and max dimensions indicated.
4. Ground paddle must be soldered to ground. Damage will result if not properly connected.



Voltage Controlled Oscillators - Package

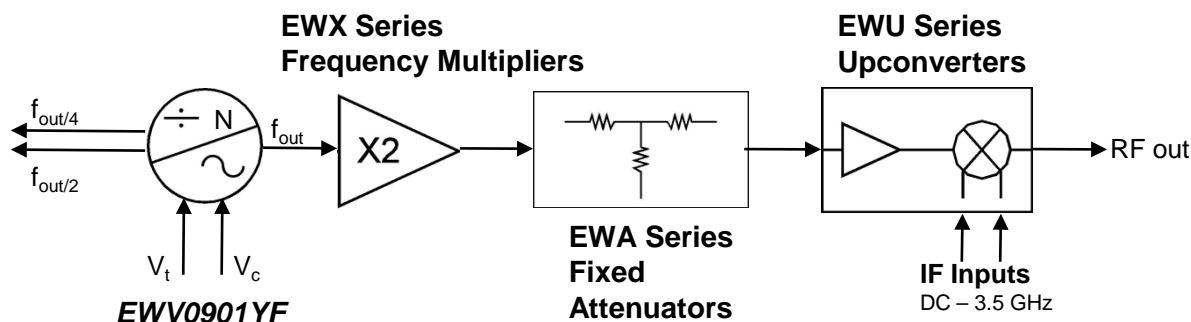
**Absolute Maximum Ratings**

Supply Voltage, $V_{cc}$	+5.5V
Tune Voltage, $V_t$	+0 to +15 V
Channel Temperature	135°C
Continuous Power Dissipation at 25°C	1.32 W
Supply Current, VCO	330 mA
Supply Current, Prescaler	60 mA
Storage Temperature	-65 to +150°C
Operating Temperature	-40 to +85°C

**Typical Supply Current**

$V_{cc}$	$I_{cc}$
4.8 V	237 mA
5.0 V	260mA
5.2 V	283 mA

**Typical Application**



**Support Documentation**

Support documentation including Assembly Notes, Application Notes and Qualification Procedures can be found on our website at [www.endwave.com](http://www.endwave.com).

**Ordering Information**

Part Number	Description
EWV0901YF	RoHS compliant 5 x 5mm, 32 lead, QFN "F" Package
EWV0901YF-EV	EWV0901YF on an Evaluation Board
EWV0901ZZ	RoHS compliant bare die in wafer or gel packs
EWV0901ZZ-EV	EWV0901ZZ in a connectorized test fixture