










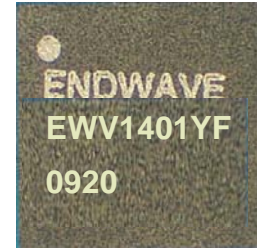


EWV1401YF

Features

-  Dual Output Frequencies
-  Push-push Architecture
-  Phase Noise: -109 dBc/Hz @ 100 kHz
-  Output Power at f_{out} : +10 dBm, typical
-  Output Power at $f_{out/2}$: +6 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

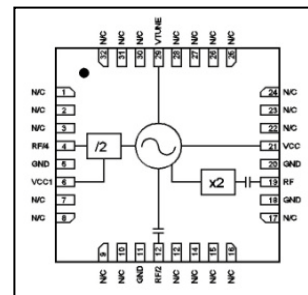
Device Photo



Description

The Endwave *EWV1401YF* is a high performance InGaP/GaAs HBT MMIC voltage controlled oscillator which provides a set of dual outputs ideal for applications which require 6.75 to 7.45 or 13.5 to 14.9 GHz outputs. The device boasts state of the art phase noise at better than -109 dBc/Hz at a 100 kHz offset. This 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.

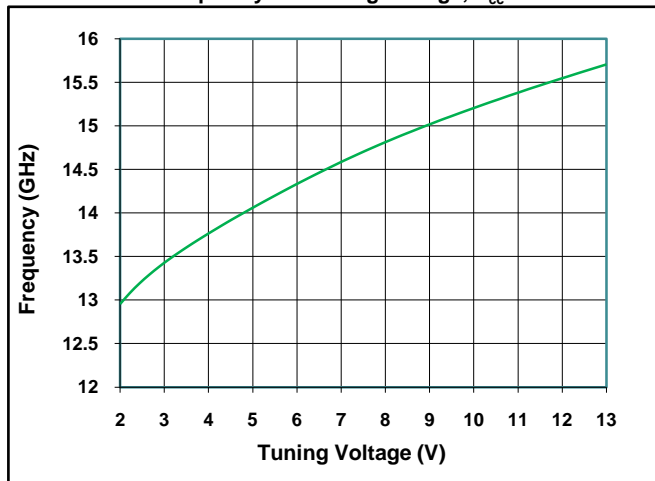
Functional Diagram



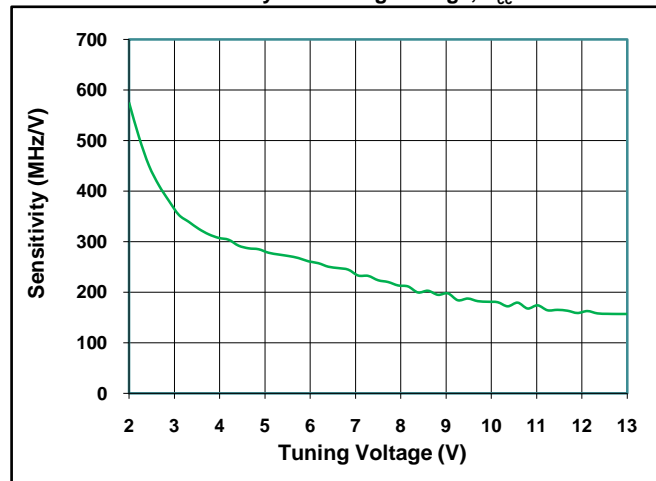
Electrical Characteristics (Temperature = +25°C, $V_{cc}=+5V$)

Parameter	Min	Typ	Max	Units
Frequency Range (f_{out})	13.5		14.9	GHz
Frequency Range ($f_{out/2}$)	6.75		7.45	GHz
Output Power (f_{out})	+6	+10	+14	dBm
Output Power ($f_{out/2}$)	+3	+6	+9	dBm
Output Power ($f_{out/4}$)	-5	-2	+1	dBm
Phase Noise @ f_{out} 100 kHz Offset, $V_t = +5V$		-109		dBc/Hz
Tune Voltage	2		13	V
Supply Current		270		mA
Tune Port Leakage Current, ($V_{tune} = 13V$)			10	uA
Output Return Loss		5		dB
Harmonic / Subharmonics				
	$\frac{1}{2}$	25		dBc
	2^{nd}	10		dBc
Pulling (into a 2:1 VSWR)		10		MHz pp
Pushing @ $V_{tune} = 5V$		15		MHz/V
Frequency Drift Rate			-1.0	MHz/ C

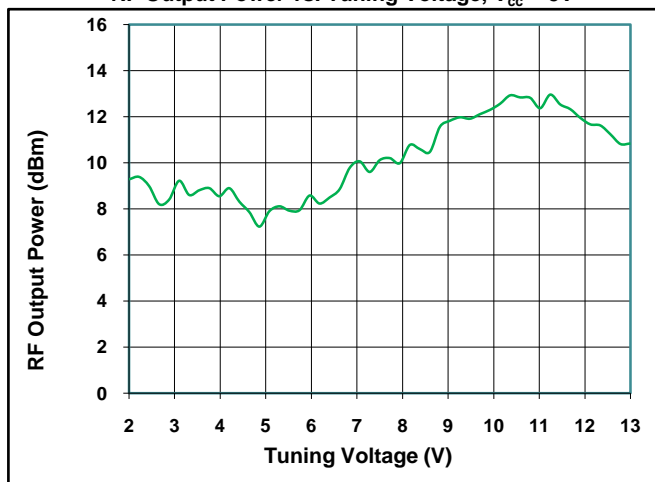
RF Frequency vs. Tuning Voltage, $V_{cc} = 5V$



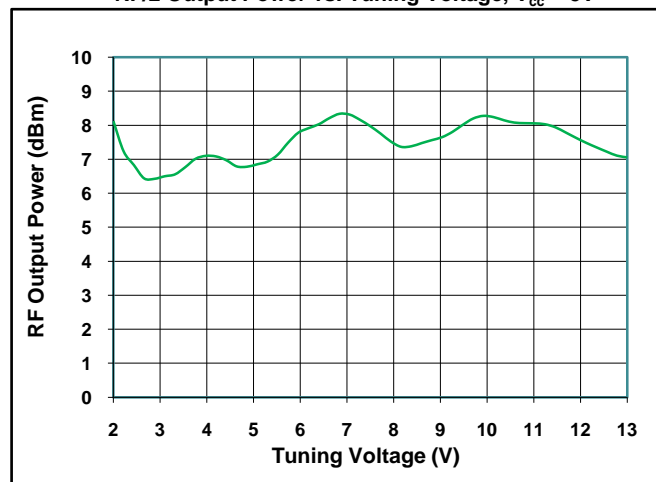
RF Sensitivity vs. Tuning Voltage, $V_{cc} = 5V$



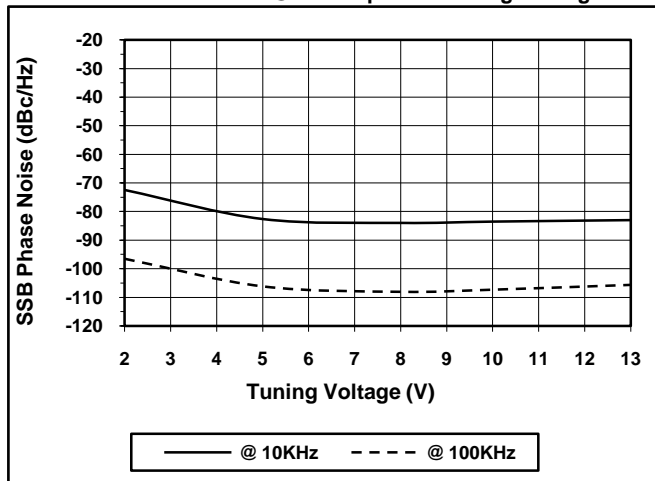
RF Output Power vs. Tuning Voltage, $V_{cc} = 5V$



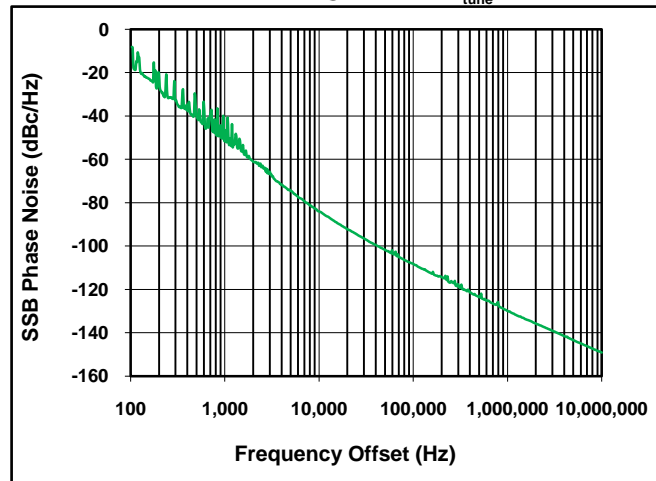
RF/2 Output Power vs. Tuning Voltage, $V_{cc} = 5V$



SSB Phase Noise @ RF Output vs. Tuning Voltage



SSB Phase Noise @ RF Port / $V_{tune} = 8V$



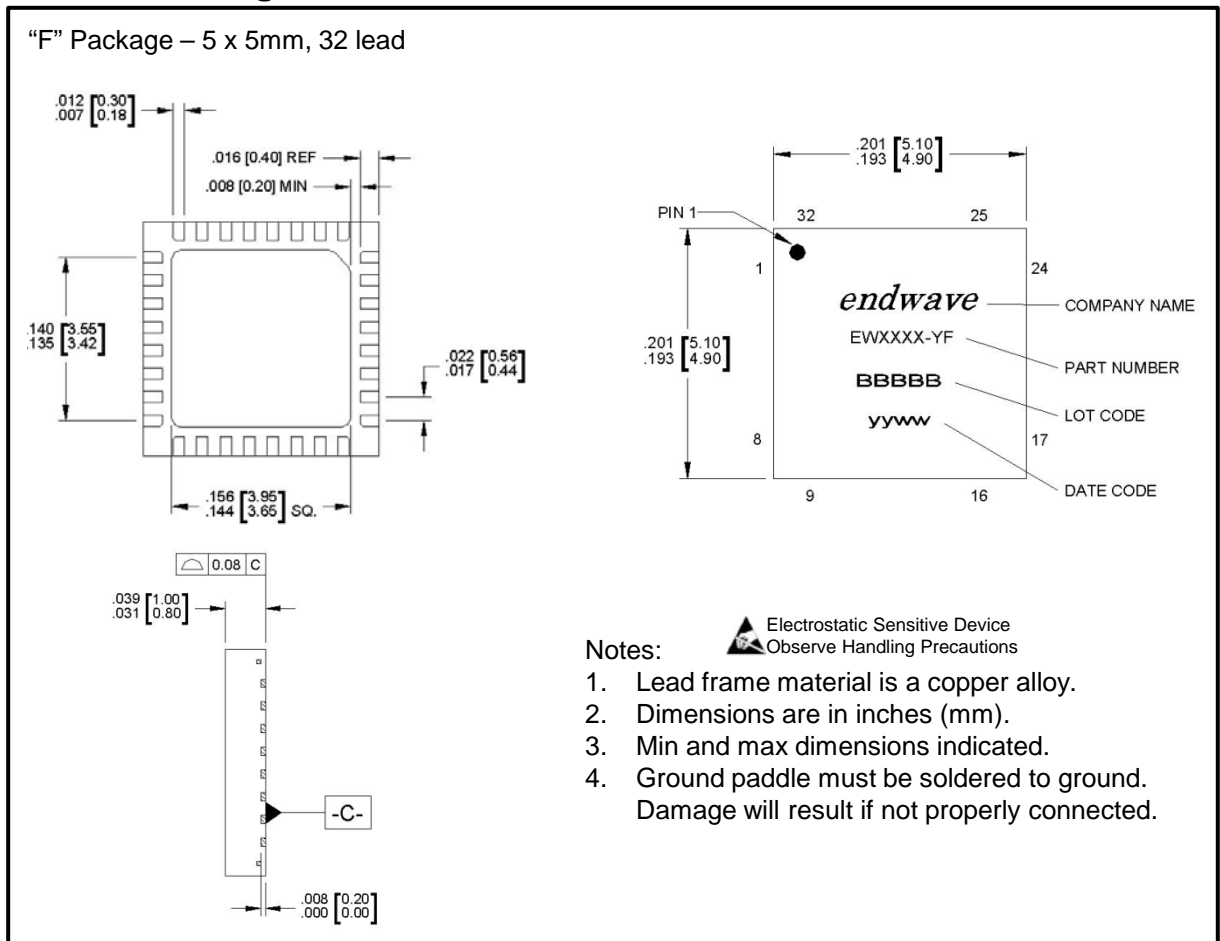
DC & RF Pinout

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 ($f_{out/2}$) ^{Note 1}
4	RF/4 Output ($f_{out/4}$) ^{Note 2}
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 ENVV eval boards.

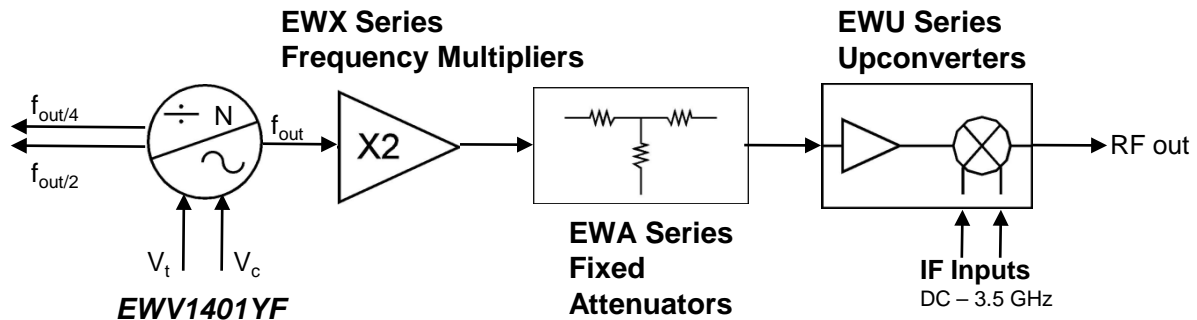
Outline Drawings



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 Application



Support Documentation

Support documentation including Assembly Notes, Application Notes and Qualification Procedures can be found on our website at www.endwave.com.

Ordering Information

Part Number	Description
EWV1401YF	RoHS compliant 5 x 5mm, 32 lead, QFN "F" Package
EWV1401YF-EV	EWV1401YF on an Evaluation Board
EWV1401ZZ	RoHS compliant bare die in waffle or gel packs
EWV1401ZZ-EV	EWV1401ZZ in a connectorized test fixture