

## WIDEBAND VCO WITH BUFFER AMPLIFIER MODULE, 38.4 - 43.2 GHz

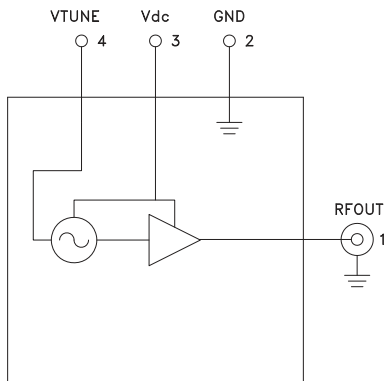


### Typical Applications

The HMC-C073 VCO Module is ideal for:

- OC-768 Fiber Optic Systems
- Test and Measurement Equipment
- Lab Instrumentation
- Industrial/Medical Equipment
- Millimeterwave Subsystems

### Functional Diagram



### Features

- Wideband Tuning Frequency: 38.4 - 43.2 GHz
- High Output Power: +13 dBm
- High Output Voltage: 3.5V pp
- Low Phase Noise: -98 dBc/Hz @ 100 kHz Offset
- Low Jitter: 37 fs
- Single Positive Supply: +5V @ 350 mA
- Operating Temperature: -55°C to + 85°C
- Ultra-Small Hermetic Module
- Field Replaceable 2.4mm Connector

### General Description

The HMC-C073 is a high performance VCO that operates over a 38.4 to 43.2 GHz band. An internal output buffer provides +13 dBm of output power and provides excellent frequency pulling performance. Phase noise is excellent at -98 dBc/Hz at 100 kHz offset and the unit provides exceptionally low jitter of 37 fs (calculated). The Vtune port accepts an analog tuning voltage from +2 to +13V. This robust VCO is housed in a very small hermetic module measuring 0.7" x 0.99" x 0.23". The module is supplied with a 2.4mm connector, which can be replaced by a GPO connector.

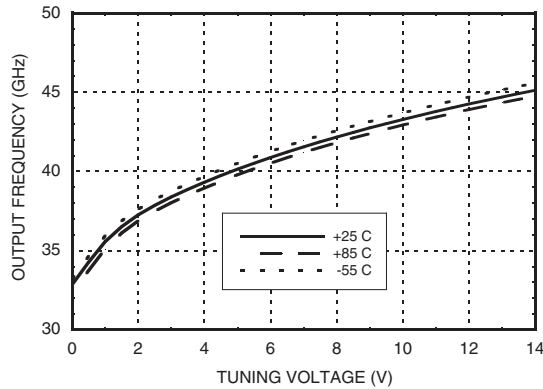
### Electrical Specifications, $T_A = +25^\circ\text{C}$ , $V_{dc} = +5\text{V}$

Parameter	Min.	Typ.	Max.	Units
Frequency Range	38.4 - 43.2			GHz
Power Output	10	13		dBm
SSB Phase Noise @ 10 kHz Offset		-74		dBc/Hz
SSB Phase Noise @ 100 kHz Offset		-98		dBc/Hz
Jitter (50 kHz to 80 MHz) (Calculated)		37		fs
Tune Voltage (Vtune)	2		13	V
Sub Harmonic (fo/4)		-40		dBc
Sub Harmonic (fo/2)		-30		dBc
Frequency Pushing		40		MHz/V
Frequency Pulling (into 2:0:1 Load)		5		kHz pp
Output Return Loss		17		dB
Voltage Supply (Vdc)	4.5	5	5.5	V
Supply Current		350	400	mA

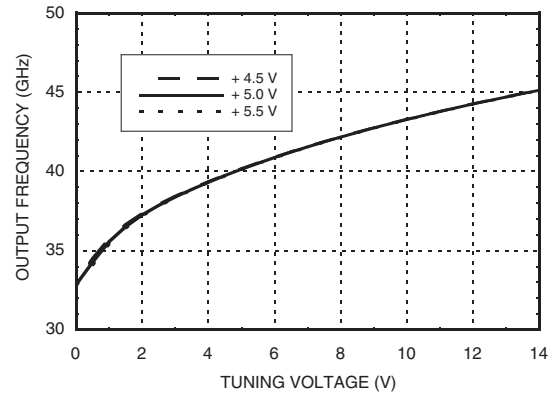
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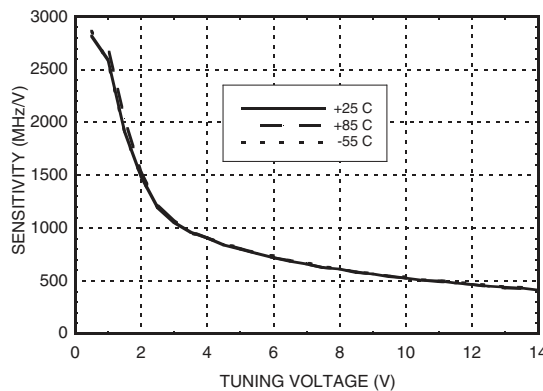
**Frequency vs. Tuning Voltage, Vdc = +5V**



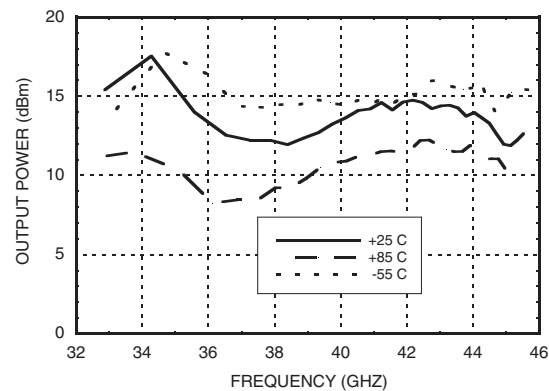
**Frequency vs. Tuning Voltage, T = +25°C**



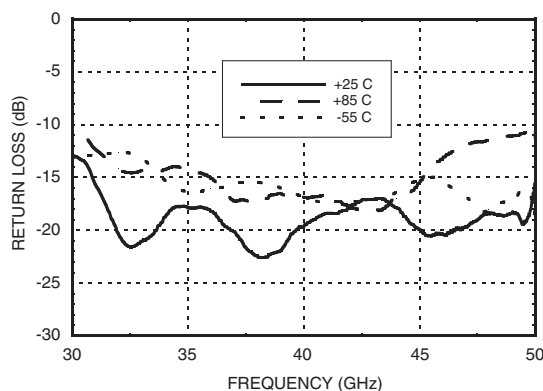
**Sensitivity vs. Tuning Voltage, Vdc = +5V**



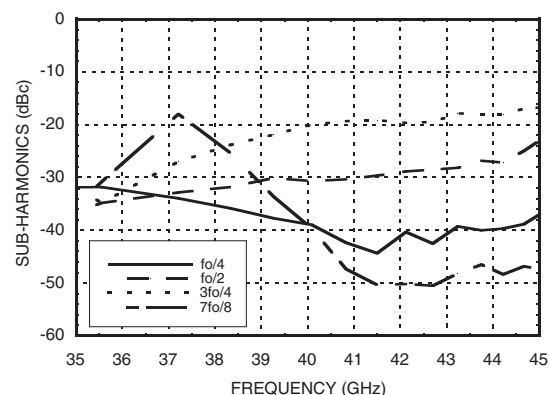
**Output Power vs. Frequency, Vdc = +5V**



**Output Return Loss vs. Frequency, Vdc = +5V**



**Sub-Harmonics vs. Frequency, Vdc = +5V**



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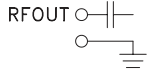

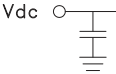
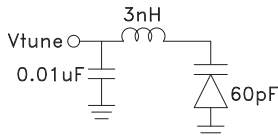
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**Absolute Maximum Ratings**

Vdc	+5.5V
Vtune	+15V
Storage Temperature	-65 to +150 °C
Operating Temperature	-55 to +85 °C
Max Junction Temperature	150 °C
Thermal Resistance	29 °C/W

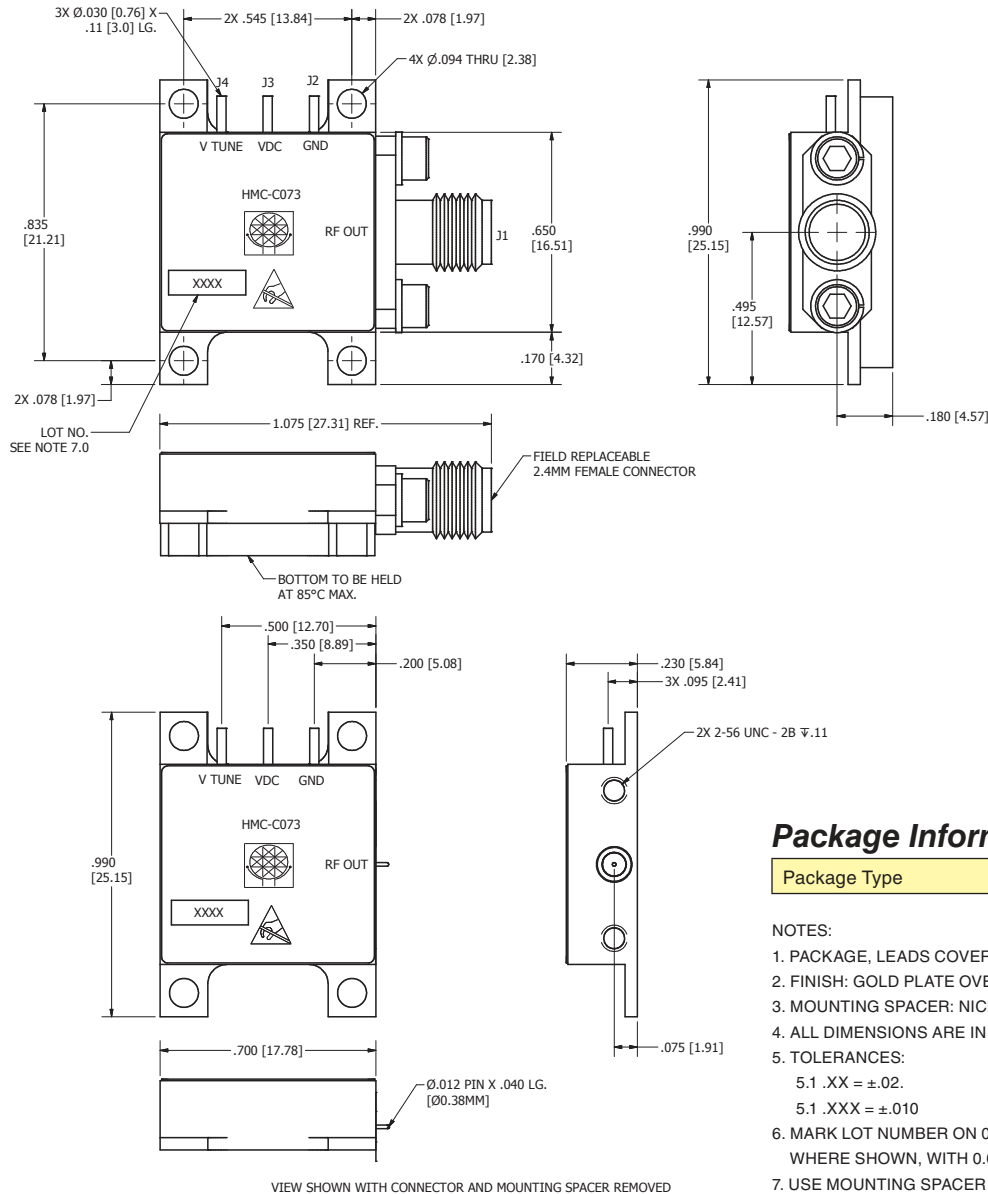
**Pin Descriptions**

Pin Number	Function	Description	Interface Schematic
1	RFOUT	RF output (AC coupled) uses a female 2.4mm connector.	
2	GND	Must be connected to power supply ground.	
3	Vdc	Supply Voltage Vdc = +4.5V to 5.5V	
4	VTUNE	2 to +13V	

**WIDEBAND VCO WITH BUFFER AMPLIFIER  
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**Outline Drawing**



**Package Information**

Package Type	C-19
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- NOTES:
1. PACKAGE, LEADS COVER MATERIAL: KOVAR
  2. FINISH: GOLD PLATE OVER NICKEL PLATE.
  3. MOUNTING SPACER: NICKEL PLATED ALUMINUM.
  4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
  5. TOLERANCES:
    - 5.1 .XX =  $\pm$ .02.
    - 5.1 .XXX =  $\pm$ .010
  6. MARK LOT NUMBER ON 0.080 X 0.250 LABEL WHERE SHOWN, WITH 0.030 MIN. TEXT HEIGHT.
  7. USE MOUNTING SPACER PART NUMBER 123399.