

# Frequency Synthesizer

KSN-2280A-119+

50Ω 2151.76 to 2271.76 MHz

## The Big Deal

- Fractional N synthesizer
- Low phase noise and spurious
- Robust design and construction
- Small size 0.80" x 0.58" x 0.15"



CASE STYLE: DK1042

## Product Overview

The KSN-2280A-119+ is a Frequency Synthesizer, designed to operate from 2151.76 to 2271.76 MHz for TD-SCDMA application. The KSN-2280A-119+ is packaged in a metal case (size of 0.80" x 0.58" x 0.15") to shield against unwanted signals and noise.

## Key Features

| Feature                                                                                                                                                                                                                                                          | Advantages                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low phase noise and spurious: <ul style="list-style-type: none"><li>• Phase Noise: -97 dBc/Hz typ. @ 10 kHz offset</li><li>• Step Size Spurious: -78 dBc typ.</li><li>• Comparison Spurious: -100 dBc typ.</li><li>• Reference Spurious: -100 dBc typ.</li></ul> | Low phase noise and spurious improve system EVM (Error Vector Magnitude).                                                                                                                                                  |
| Robust design and construction                                                                                                                                                                                                                                   | To enhance the robustness of KSN-2280A-119+, each internal component is secured to the substrate with chip bonder, thereby eliminating the risk of tombstoning during subsequent solder reflow operations by the customer. |
| Small size, 0.80" x 0.58" x 0.15"                                                                                                                                                                                                                                | The small size enables the KSN-2280A-119+ to be used in compact designs.                                                                                                                                                   |



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# Frequency Synthesizer

KSN-2280A-119+

50Ω 2151.76 to 2271.76 MHz

## Features

- Fractional N synthesizer
- Integrated VCO + PLL
- Low phase noise and spurious
- Robust design and construction
- Low operating voltage (VCC VCO=+5V, VCC PLL=+5V)
- Small size 0.80" x 0.58" x 0.15"

## Applications

- TD-SCDMA

## General Description

The KSN-2280A-119+ is a Frequency Synthesizer, designed to operate from 2151.76 to 2271.76 MHz for TD-SCDMA application. The KSN-2280A-119+ is packaged in a metal case (size of 0.80" x 0.58" x 0.15) to shield against unwanted signals and noise. To enhance the robustness of KSN-2280A-119+, each internal component is secured to the substrate with chip bonder, thereby eliminating the risk of tombstoning during subsequent solder reflow operations by the customer.



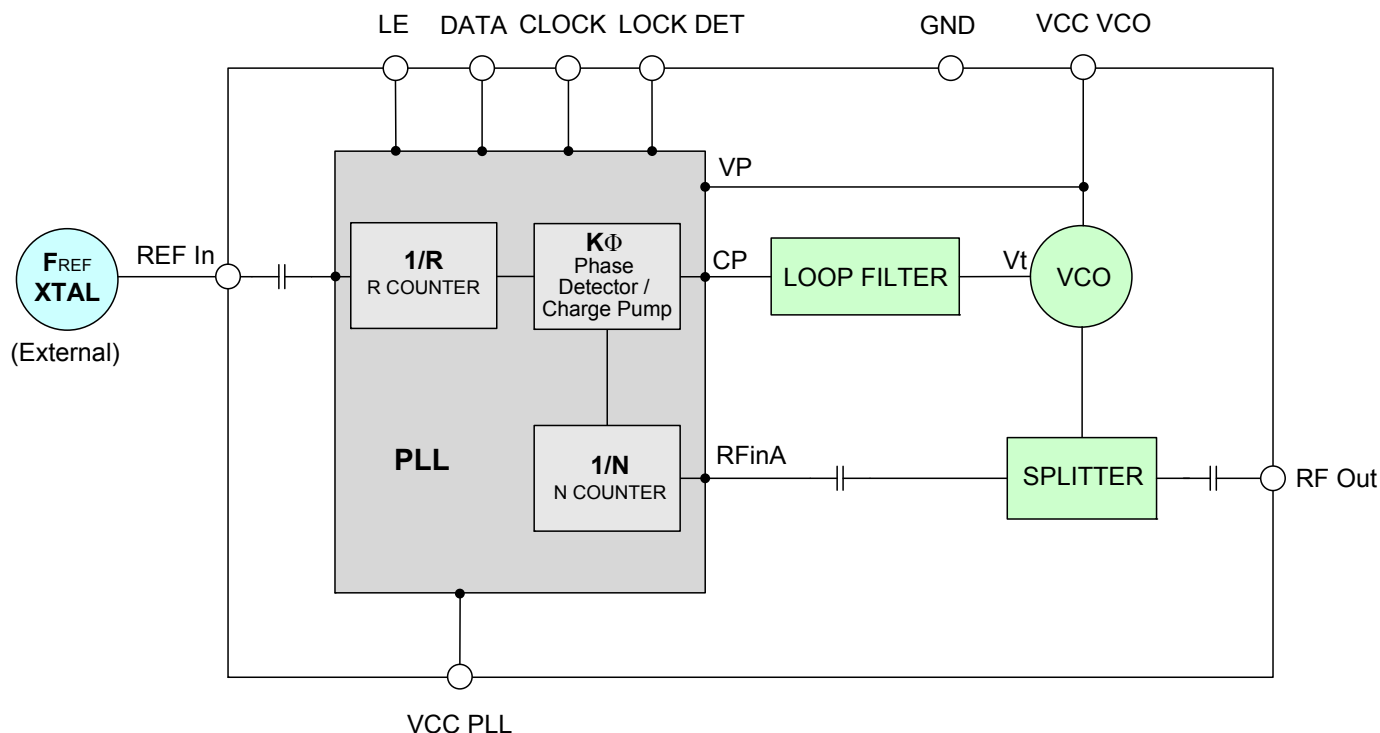
CASE STYLE: DK1042

PRICE: \$29.95 ea. QTY (1-9)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

*The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.*

## Simplified Schematic



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REV. A  
M129826  
EDR-9435F1  
KSN-2280A-119+  
Category-A2  
RAV  
101207  
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**Electrical Specifications** (over operating temperature -40°C to +85°C)

| Parameters                          | Test Conditions            | Min.                  | Typ.                                 | Max.    | Units            |
|-------------------------------------|----------------------------|-----------------------|--------------------------------------|---------|------------------|
| Frequency Range                     | -                          | 2151.76               | -                                    | 2271.76 | MHz              |
| Step Size                           | -                          | -                     | 20                                   | -       | kHz              |
| Comparison Frequency                | -                          | -                     | 15.36                                | -       | MHz              |
| Settling Time                       | Within $\pm 1$ kHz         | -                     | 25                                   | -       | mSec             |
| Output Power                        | -                          | +2                    | +5                                   | +7      | dBm              |
| SSB Phase Noise                     | @ 100 Hz offset            | -                     | -75                                  | -       | dBc/Hz           |
|                                     | @ 1 kHz offset             | -                     | -82                                  | -75     |                  |
|                                     | @ 10 kHz offset            | -                     | -97                                  | -89     |                  |
|                                     | @ 100 kHz offset           | -                     | -127                                 | -122    |                  |
|                                     | @ 1 MHz offset             | -                     | -148                                 | -142    |                  |
| Integrated SSB Phase Noise          | @ 1 kHz to 5MHz            | -                     | -46                                  | -41     | dBc              |
| Step Size Spurious Suppression      | Step Size 20 kHz           | -                     | -78                                  | -60     | dBc              |
| 0.5 Step Size Spurious Suppression  | 0.5 Step Size 10 kHz       | -                     | -68                                  | -57     |                  |
| Reference Spurious Suppression      | Ref. Freq. 30.72 MHz       | -                     | -100                                 | -75     |                  |
| Comparison Spurious Suppression     | Comp. Freq. 15.36 MHz      | -                     | -100                                 | -77     |                  |
| Non - Harmonic Spurious Suppression | -                          | -                     | -90                                  | -       |                  |
| Harmonic Suppression                | -                          | -                     | -36                                  | -22     | V                |
| VCO Supply Voltage                  | +5.00                      | +4.75                 | +5.00                                | +5.25   |                  |
| PLL Supply Voltage                  | +5.00                      | +4.75                 | +5.00                                | +5.25   | mA               |
| VCO Supply Current                  | -                          | -                     | 45                                   | 51      |                  |
| PLL Supply Current                  | -                          | -                     | 39                                   | 46      |                  |
| Reference Input<br>(External)       | Frequency                  | 30.72 (square wave)   | -                                    | 30.72   | MHz              |
|                                     | Amplitude                  | 1                     | -                                    | 1       | V <sub>P-P</sub> |
|                                     | Input impedance            | -                     | -                                    | 100     | K $\Omega$       |
|                                     | Phase Noise @ 1 kHz offset | -                     | -                                    | -130    | dBc/Hz           |
| RF Output port Impedance            | -                          | -                     | 50                                   | -       | $\Omega$         |
| Input Logic Level                   | Input high voltage         | -                     | 2.7                                  | -       | V                |
|                                     | Input low voltage          | -                     | -                                    | 0.6     | V                |
| Digital Lock Detect                 | Locked                     | -                     | 2.6                                  | -       | V                |
|                                     | Unlocked                   | -                     | -                                    | 0.4     | V                |
| Frequency Synthesizer PLL           | -                          | ADF4153               |                                      |         |                  |
| PLL Programming                     | -                          | 3-wire serial 3V CMOS |                                      |         |                  |
| Register Map @ 2271.76MHz           | R0_Register                | -                     | (MSB) 001001001100101011010000 (LSB) |         |                  |
|                                     | R1_Register                | -                     | (MSB) 000101001000110000000001 (LSB) |         |                  |
|                                     | R2_Register                | -                     | (MSB) 0000000111100010 (LSB)         |         |                  |
|                                     | R3_Register                | -                     | (MSB) 000000000011 (LSB)             |         |                  |

**Absolute Maximum Ratings**

| Parameters                               | Ratings            |
|------------------------------------------|--------------------|
| VCO Supply Voltage                       | 5.8V               |
| PLL Supply Voltage                       | 5.8V               |
| VCO Supply Voltage to PLL Supply Voltage | -0.3V to +5.8V     |
| Reference Frequency Voltage              | -0.3Vmin, +3.3Vmax |
| Data, Clock, LE Levels                   | -0.3Vmin, +3.3Vmax |
| Operating Temperature                    | -40°C to +85°C     |
| Storage Temperature                      | -55°C to +100°C    |

Permanent damage may occur if any of these limits are exceeded



## Typical Performance Data

| FREQUENCY<br>(MHz) | POWER OUTPUT<br>(dBm) |       |       | VCO CURRENT<br>(mA) |       |       | PLL CURENT<br>(mA) |       |       |
|--------------------|-----------------------|-------|-------|---------------------|-------|-------|--------------------|-------|-------|
|                    | -45°C                 | +25°C | +85°C | -45°C               | +25°C | +85°C | -45°C              | +25°C | +85°C |
| 2151.76            | 4.99                  | 5.11  | 4.97  | 42.55               | 44.53 | 45.62 | 37.35              | 38.65 | 40.13 |
| 2169.00            | 5.08                  | 5.17  | 5.02  | 42.59               | 44.58 | 45.66 | 37.44              | 38.76 | 40.23 |
| 2192.00            | 5.18                  | 5.26  | 5.11  | 42.67               | 44.65 | 45.72 | 37.43              | 38.75 | 40.22 |
| 2215.00            | 5.18                  | 5.25  | 5.12  | 42.77               | 44.73 | 45.79 | 37.45              | 38.77 | 40.25 |
| 2238.00            | 5.01                  | 5.08  | 4.92  | 42.84               | 44.80 | 45.86 | 37.48              | 38.82 | 40.30 |
| 2261.00            | 5.02                  | 5.06  | 4.84  | 42.90               | 44.86 | 45.92 | 37.46              | 38.79 | 40.27 |
| 2271.76            | 5.08                  | 5.11  | 4.89  | 42.93               | 44.89 | 45.95 | 37.40              | 38.75 | 40.22 |

| FREQUENCY<br>(MHz) | HARMONICS (dBc) |        |        |        |        |        |
|--------------------|-----------------|--------|--------|--------|--------|--------|
|                    | F2              |        |        | F3     |        |        |
|                    | -45°C           | +25°C  | +85°C  | -45°C  | +25°C  | +85°C  |
| 2151.76            | -35.05          | -42.43 | -38.35 | -33.21 | -35.43 | -38.00 |
| 2169.00            | -32.06          | -40.48 | -38.69 | -33.97 | -36.87 | -39.59 |
| 2192.00            | -31.73          | -38.34 | -40.39 | -33.92 | -36.09 | -38.34 |
| 2215.00            | -31.82          | -40.76 | -38.28 | -33.03 | -37.32 | -40.88 |
| 2238.00            | -28.76          | -34.28 | -41.34 | -33.20 | -36.51 | -38.99 |
| 2261.00            | -32.48          | -37.85 | -37.96 | -37.07 | -39.98 | -42.13 |
| 2271.76            | -32.27          | -38.08 | -36.81 | -39.59 | -43.57 | -45.22 |

| FREQUENCY<br>(MHz) | PHASE NOISE (dBc/Hz) @ OFFSETS |        |        |         |         |
|--------------------|--------------------------------|--------|--------|---------|---------|
|                    | +25°C                          |        |        |         |         |
|                    | 100Hz                          | 1kHz   | 10kHz  | 100kHz  | 1MHz    |
| 2151.76            | -77.31                         | -83.26 | -96.72 | -126.59 | -146.74 |
| 2169.00            | -77.39                         | -83.14 | -98.44 | -126.69 | -147.26 |
| 2192.00            | -76.14                         | -83.15 | -98.02 | -127.00 | -147.69 |
| 2215.00            | -76.22                         | -84.18 | -97.27 | -127.25 | -147.59 |
| 2238.00            | -73.89                         | -82.66 | -97.29 | -127.52 | -147.86 |
| 2261.00            | -76.24                         | -82.94 | -97.01 | -127.55 | -148.00 |
| 2271.76            | -74.47                         | -82.08 | -96.65 | -127.54 | -148.05 |

| FREQUENCY<br>(MHz) | PHASE NOISE (dBc/Hz) @ OFFSETS |        |        |         |         |
|--------------------|--------------------------------|--------|--------|---------|---------|
|                    | -45°C                          |        |        |         |         |
|                    | 100Hz                          | 1kHz   | 10kHz  | 100kHz  | 1MHz    |
| 2151.76            | -74.14                         | -84.72 | -95.37 | -127.11 | -147.55 |
| 2169.00            | -77.14                         | -83.22 | -95.99 | -127.50 | -147.89 |
| 2192.00            | -76.43                         | -82.71 | -95.50 | -127.83 | -148.29 |
| 2215.00            | -75.10                         | -85.97 | -94.68 | -128.11 | -148.60 |
| 2238.00            | -76.71                         | -84.42 | -94.72 | -128.33 | -149.14 |
| 2261.00            | -75.62                         | -83.02 | -94.19 | -128.16 | -149.28 |
| 2271.76            | -76.53                         | -84.48 | -93.43 | -128.04 | -149.06 |

| FREQUENCY<br>(MHz) | PHASE NOISE (dBc/Hz) @ OFFSETS |        |        |         |         |
|--------------------|--------------------------------|--------|--------|---------|---------|
|                    | +85°C                          |        |        |         |         |
|                    | 100Hz                          | 1kHz   | 10kHz  | 100kHz  | 1MHz    |
| 2151.76            | -80.21                         | -83.54 | -95.90 | -125.37 | -145.77 |
| 2169.00            | -79.37                         | -83.58 | -97.85 | -125.69 | -146.17 |
| 2192.00            | -78.66                         | -83.84 | -97.65 | -126.02 | -146.28 |
| 2215.00            | -80.24                         | -85.06 | -96.56 | -126.27 | -146.68 |
| 2238.00            | -78.26                         | -82.99 | -96.36 | -126.40 | -146.99 |
| 2261.00            | -81.55                         | -83.32 | -96.00 | -126.47 | -146.96 |
| 2271.76            | -77.84                         | -83.50 | -95.50 | -126.48 | -147.04 |



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| COMPARISON<br>SPURIOUS<br>ORDER | COMPARISON SPURIOUS<br>@Fcarrier<br>2151.76MHz+(n*Fcomparison)<br>(dBc) note 1 |         |         | COMPARISON SPURIOUS<br>@Fcarrier<br>2211.76MHz+(n*Fcomparison)<br>(dBc) note 1 |         |         | COMPARISON SPURIOUS<br>@Fcarrier<br>2271.76MHz+(n*Fcomparison)<br>(dBc) note 1 |         |         |
|---------------------------------|--------------------------------------------------------------------------------|---------|---------|--------------------------------------------------------------------------------|---------|---------|--------------------------------------------------------------------------------|---------|---------|
|                                 | -45°C                                                                          | +25°C   | +85°C   | -45°C                                                                          | +25°C   | +85°C   | -45°C                                                                          | +25°C   | +85°C   |
| -5                              | -100.66                                                                        | -99.94  | -109.31 | -116.98                                                                        | -112.22 | -107.86 | -106.68                                                                        | -101.27 | -111.65 |
| -4                              | -102.88                                                                        | -99.01  | -100.48 | -103.21                                                                        | -103.07 | -100.54 | -99.38                                                                         | -102.41 | -100.67 |
| -3                              | -112.02                                                                        | -109.80 | -105.30 | -109.08                                                                        | -113.42 | -104.96 | -103.42                                                                        | -108.05 | -105.77 |
| -2                              | -103.57                                                                        | -104.06 | -101.37 | -100.22                                                                        | -102.80 | -100.98 | -99.16                                                                         | -104.79 | -99.04  |
| -1                              | -102.32                                                                        | -99.24  | -98.58  | -98.79                                                                         | -99.90  | -101.25 | -98.57                                                                         | -99.28  | -97.88  |
| 0 note 2                        | -                                                                              | -       | -       | -                                                                              | -       | -       | -                                                                              | -       | -       |
| +1                              | -97.32                                                                         | -95.15  | -102.19 | -101.55                                                                        | -101.18 | -101.43 | -101.62                                                                        | -103.65 | -98.09  |
| +2                              | -93.27                                                                         | -92.60  | -94.48  | -95.38                                                                         | -95.12  | -95.01  | -95.55                                                                         | -97.82  | -93.66  |
| +3                              | -102.14                                                                        | -105.67 | -102.38 | -104.73                                                                        | -99.44  | -105.79 | -106.97                                                                        | -106.32 | -104.36 |
| +4                              | -105.66                                                                        | -107.73 | -103.84 | -103.59                                                                        | -102.00 | -102.93 | -108.80                                                                        | -110.30 | -101.24 |
| +5                              | -116.25                                                                        | -108.10 | -112.91 | -115.19                                                                        | -109.00 | -113.28 | -117.72                                                                        | -106.22 | -108.16 |

Note 1: Comparison frequency 15.36 MHz

Note 2: All spurs are referenced to carrier signal (n=0).

| REFERENCE<br>SPURIOUS<br>ORDER | REFERENCE SPURIOUS<br>@Fcarrier<br>2151.76MHz+(n*Freference)<br>(dBc) note 3 |         |         | REFERENCE SPURIOUS<br>@Fcarrier<br>2211.76MHz+(n*Freference)<br>(dBc) note 3 |         |         | REFERENCE SPURIOUS<br>@Fcarrier<br>2271.76MHz+(n*Freference)<br>(dBc) note 3 |         |         |
|--------------------------------|------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------|---------|---------|------------------------------------------------------------------------------|---------|---------|
|                                | -45°C                                                                        | +25°C   | +85°C   | -45°C                                                                        | +25°C   | +85°C   | -45°C                                                                        | +25°C   | +85°C   |
| -5                             | -93.32                                                                       | -96.98  | -95.61  | -94.96                                                                       | -97.55  | -103.09 | -94.17                                                                       | -94.71  | -100.26 |
| -4                             | -94.69                                                                       | -95.61  | -100.04 | -95.54                                                                       | -98.08  | -97.05  | -93.87                                                                       | -96.36  | -94.93  |
| -3                             | -107.10                                                                      | -101.35 | -110.49 | -107.00                                                                      | -113.97 | -129.19 | -102.95                                                                      | -99.32  | -108.43 |
| -2                             | -103.02                                                                      | -100.64 | -99.79  | -103.35                                                                      | -102.92 | -100.08 | -99.46                                                                       | -102.47 | -100.81 |
| -1                             | -103.65                                                                      | -106.85 | -103.40 | -100.14                                                                      | -103.41 | -99.57  | -98.86                                                                       | -104.49 | -97.84  |
| 0 note 4                       | -                                                                            | -       | -       | -                                                                            | -       | -       | -                                                                            | -       | -       |
| +1                             | -93.23                                                                       | -93.71  | -93.49  | -95.31                                                                       | -95.14  | -94.06  | -95.57                                                                       | -97.73  | -93.49  |
| +2                             | -106.23                                                                      | -110.28 | -104.29 | -103.79                                                                      | -102.08 | -102.45 | -108.62                                                                      | -109.86 | -101.58 |
| +3                             | -116.18                                                                      | -114.92 | -107.61 | -113.14                                                                      | -110.63 | -116.31 | -115.32                                                                      | -106.51 | -108.96 |
| +4                             | -98.33                                                                       | -97.51  | -107.70 | -101.23                                                                      | -106.38 | -105.00 | -100.52                                                                      | -103.17 | -101.12 |
| +5                             | -94.01                                                                       | -101.07 | -101.51 | -100.30                                                                      | -101.66 | -112.54 | -102.64                                                                      | -105.39 | -103.54 |

Note 3: Reference frequency 30.72 MHz

Note 4: All spurs are referenced to carrier signal (n=0).



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| STEP SIZE<br>SPURIOUS<br>ORDER<br><br>n | 0.5 STEP SIZE & STEP SIZE<br>SPURIOUS @Fcarrier<br>2151.76MHz+(n*Fstep size)<br>(dBc) note 5 |        |        | 0.5 STEP SIZE & STEP SIZE<br>SPURIOUS @Fcarrier<br>2211.76MHz+(n*Fstep size)<br>(dBc) note 5 |        |        | 0.5 STEP SIZE & STEP SIZE<br>SPURIOUS @Fcarrier<br>2271.76MHz+(n*Fstep size)<br>(dBc) note 5 |        |        |
|-----------------------------------------|----------------------------------------------------------------------------------------------|--------|--------|----------------------------------------------------------------------------------------------|--------|--------|----------------------------------------------------------------------------------------------|--------|--------|
|                                         | -45°C                                                                                        | +25°C  | +85°C  | -45°C                                                                                        | +25°C  | +85°C  | -45°C                                                                                        | +25°C  | +85°C  |
| -5.0                                    | -85.23                                                                                       | -86.64 | -86.43 | -88.52                                                                                       | -84.17 | -83.66 | -84.46                                                                                       | -87.90 | -83.31 |
| -4.5                                    | -84.08                                                                                       | -85.53 | -85.35 | -85.42                                                                                       | -85.17 | -84.98 | -85.30                                                                                       | -83.89 | -83.08 |
| -4.0                                    | -86.90                                                                                       | -85.31 | -83.36 | -69.94                                                                                       | -68.48 | -67.62 | -81.46                                                                                       | -84.51 | -86.31 |
| -3.5                                    | -84.82                                                                                       | -84.34 | -84.87 | -82.08                                                                                       | -84.62 | -82.76 | -82.33                                                                                       | -82.61 | -81.34 |
| -3.0                                    | -84.87                                                                                       | -86.36 | -86.49 | -83.75                                                                                       | -87.15 | -83.80 | -84.30                                                                                       | -88.81 | -87.12 |
| -2.5                                    | -84.63                                                                                       | -85.66 | -83.15 | -84.50                                                                                       | -85.18 | -86.72 | -82.43                                                                                       | -85.82 | -86.47 |
| -2.0                                    | -85.01                                                                                       | -85.26 | -82.28 | -85.70                                                                                       | -84.06 | -87.02 | -87.20                                                                                       | -80.64 | -83.25 |
| -1.5                                    | -82.11                                                                                       | -82.08 | -81.58 | -77.89                                                                                       | -82.19 | -80.66 | -80.07                                                                                       | -83.86 | -84.84 |
| -1.0                                    | -78.78                                                                                       | -79.85 | -79.88 | -77.35                                                                                       | -82.27 | -79.40 | -69.73                                                                                       | -72.51 | -70.99 |
| -0.5                                    | -68.53                                                                                       | -68.23 | -70.89 | -68.41                                                                                       | -70.07 | -69.53 | -66.25                                                                                       | -65.61 | -65.10 |
| 0 note 6                                | -                                                                                            | -      | -      | -                                                                                            | -      | -      | -                                                                                            | -      | -      |
| +0.5                                    | -68.89                                                                                       | -70.73 | -69.19 | -67.52                                                                                       | -70.40 | -68.89 | -65.61                                                                                       | -66.18 | -64.34 |
| +1.0                                    | -76.85                                                                                       | -81.89 | -78.70 | -78.46                                                                                       | -82.76 | -81.27 | -68.68                                                                                       | -71.10 | -70.81 |
| +1.5                                    | -81.71                                                                                       | -84.61 | -81.50 | -76.71                                                                                       | -82.67 | -82.37 | -78.84                                                                                       | -81.06 | -81.21 |
| +2.0                                    | -83.11                                                                                       | -87.05 | -83.31 | -87.82                                                                                       | -87.91 | -81.63 | -87.41                                                                                       | -85.11 | -84.01 |
| +2.5                                    | -83.22                                                                                       | -87.52 | -84.46 | -84.76                                                                                       | -87.10 | -86.89 | -84.34                                                                                       | -86.21 | -81.14 |
| +3.0                                    | -82.10                                                                                       | -82.96 | -84.95 | -85.38                                                                                       | -84.61 | -84.26 | -82.58                                                                                       | -87.83 | -81.87 |
| +3.5                                    | -81.54                                                                                       | -86.04 | -86.89 | -81.93                                                                                       | -85.75 | -86.57 | -85.20                                                                                       | -85.22 | -85.06 |
| +4.0                                    | -86.16                                                                                       | -84.03 | -86.89 | -69.93                                                                                       | -68.81 | -67.62 | -84.35                                                                                       | -87.22 | -85.78 |
| +4.5                                    | -86.94                                                                                       | -82.92 | -81.44 | -85.55                                                                                       | -87.13 | -86.43 | -85.14                                                                                       | -84.57 | -83.65 |
| +5.0                                    | -87.54                                                                                       | -83.80 | -82.14 | -85.61                                                                                       | -86.52 | -82.01 | -88.84                                                                                       | -86.32 | -84.77 |

Note 5: Step size 20 kHz

Note 6: All spurs are referenced to carrier signal (n=0).



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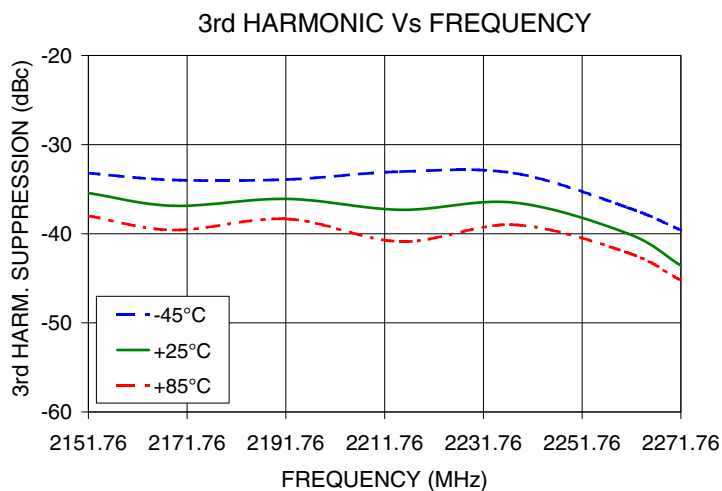
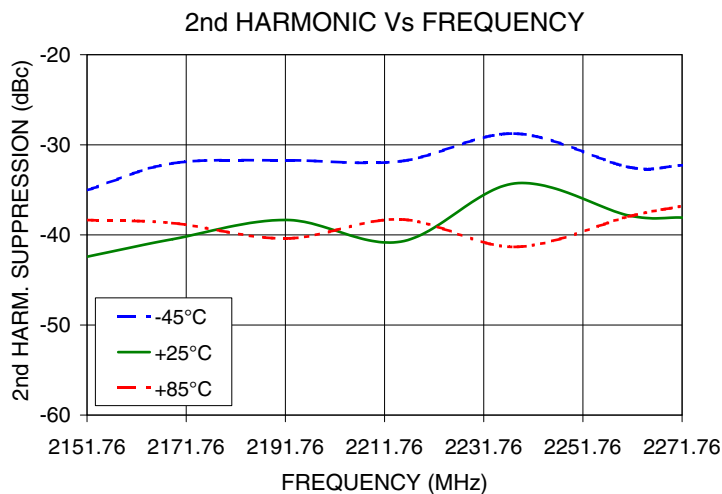
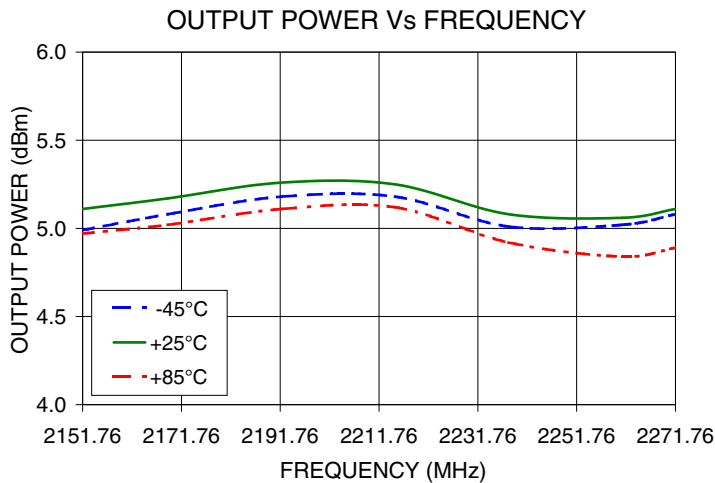


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Typical Performance Curves



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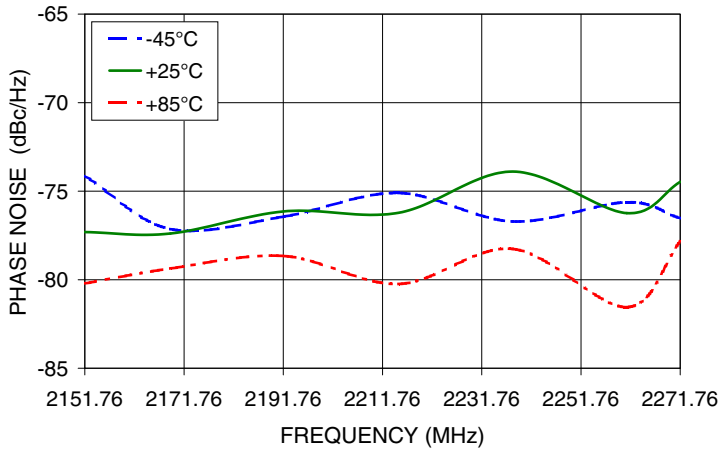


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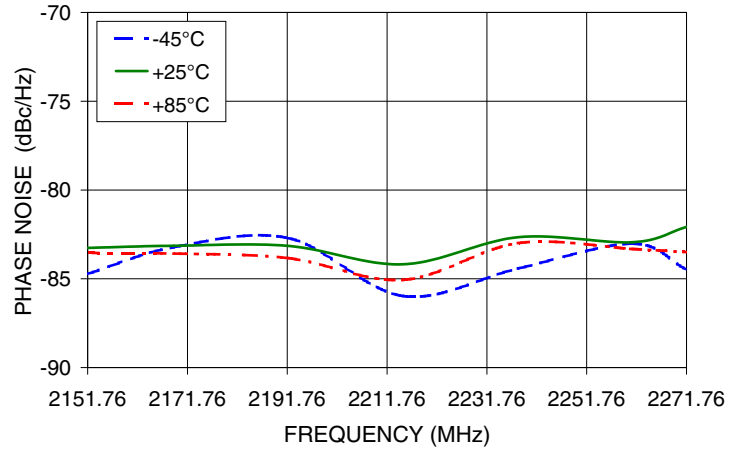


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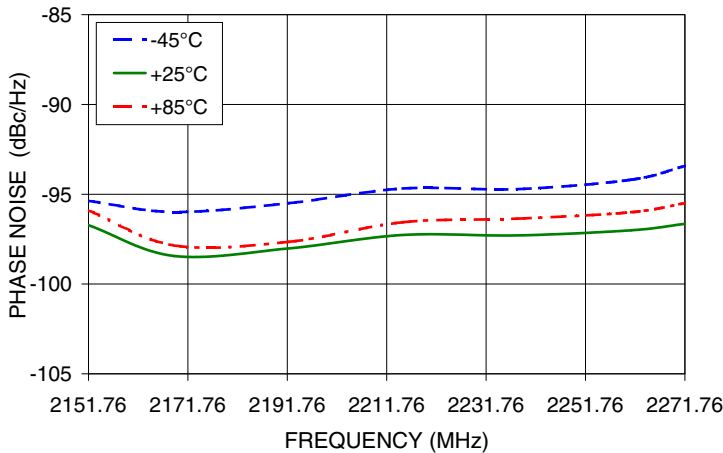
PHASE NOISE @100Hz offset



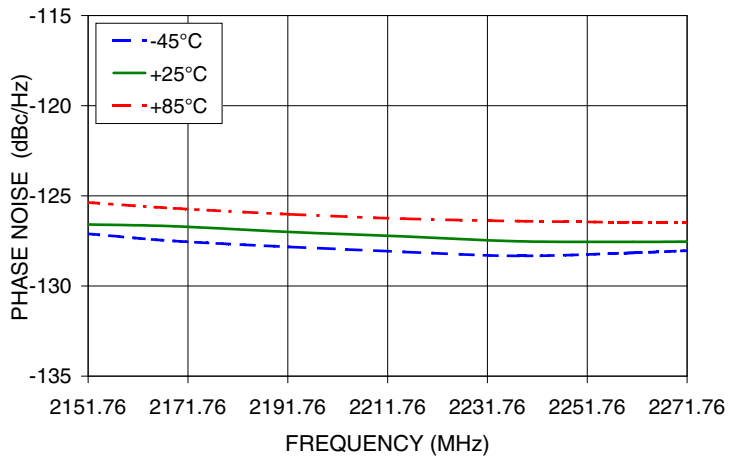
PHASE NOISE @1kHz offset



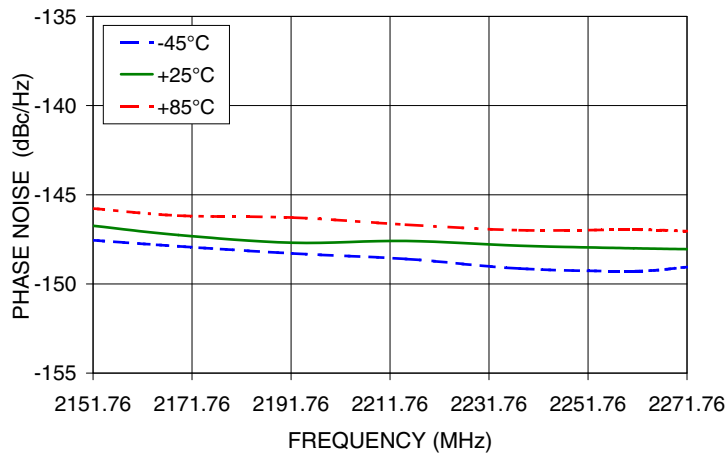
PHASE NOISE @10kHz offset



PHASE NOISE @100kHz offset



PHASE NOISE @1MHz offset



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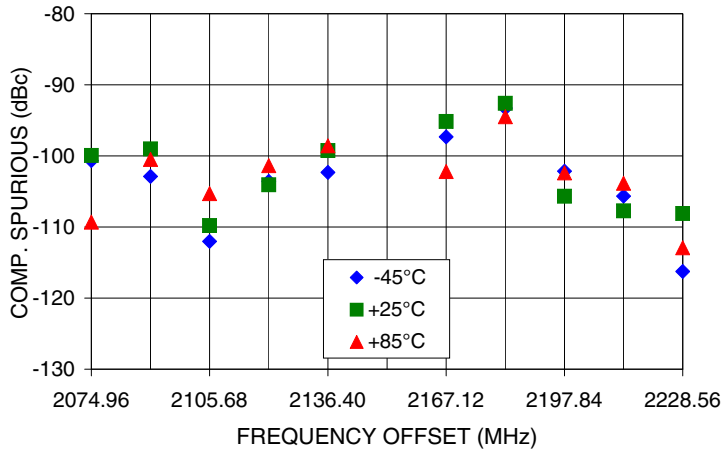


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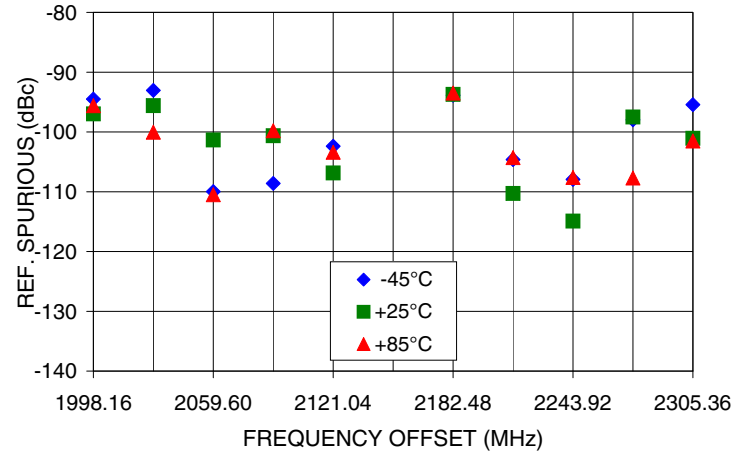


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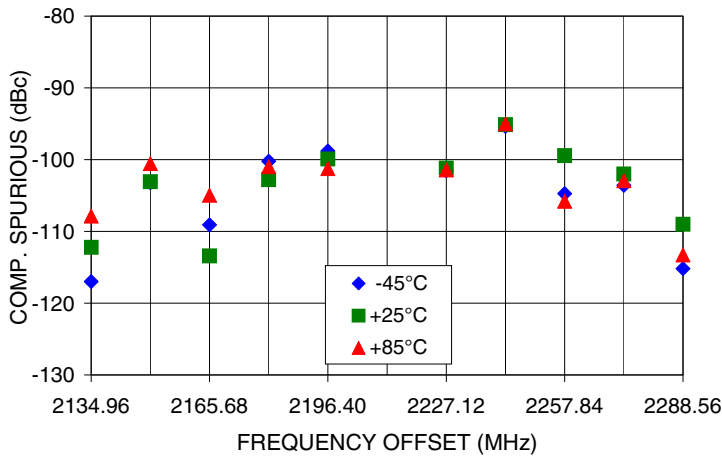
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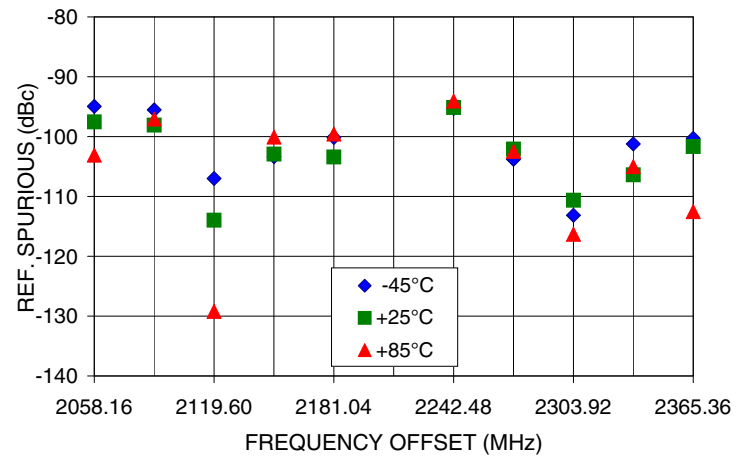
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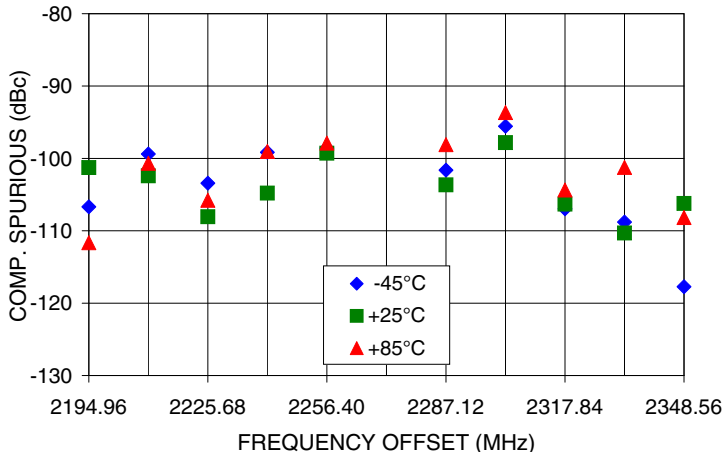
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Vs FREQ. OFFSET @ Fcar = 2211.76MHz



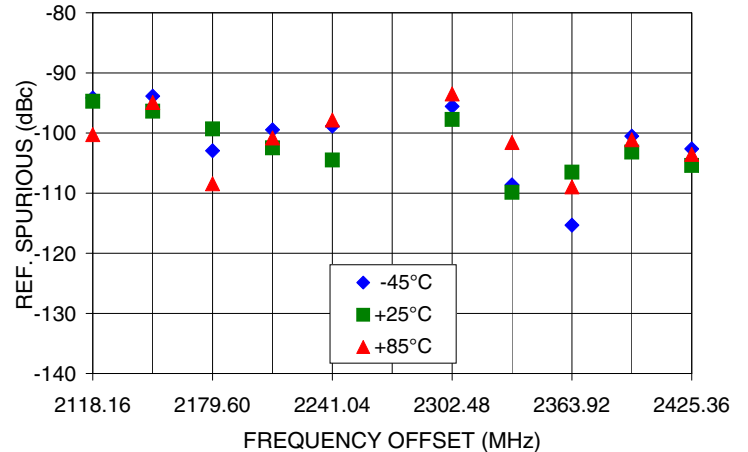
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Vs FREQ. OFFSET @ Fcar = 2211.76MHz



COMPARISON SPURIOUS  
Vs FREQ. OFFSET @ Fcar = 2271.76MHz



REFERENCE SPURIOUS  
Vs FREQ. OFFSET @ Fcar = 2271.76MHz



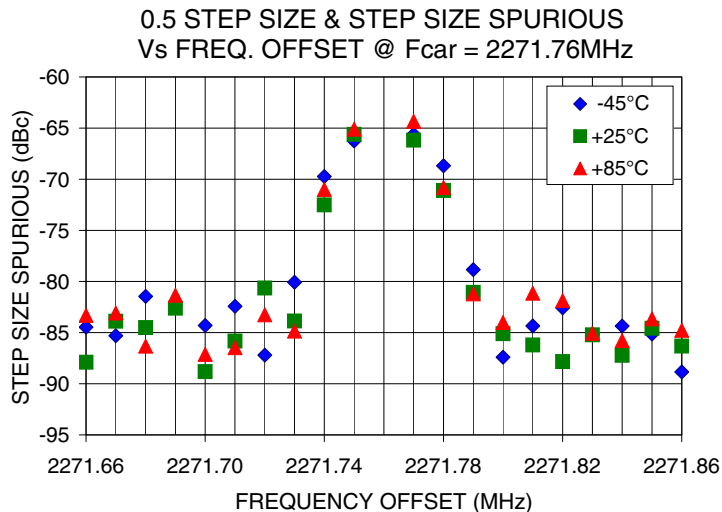
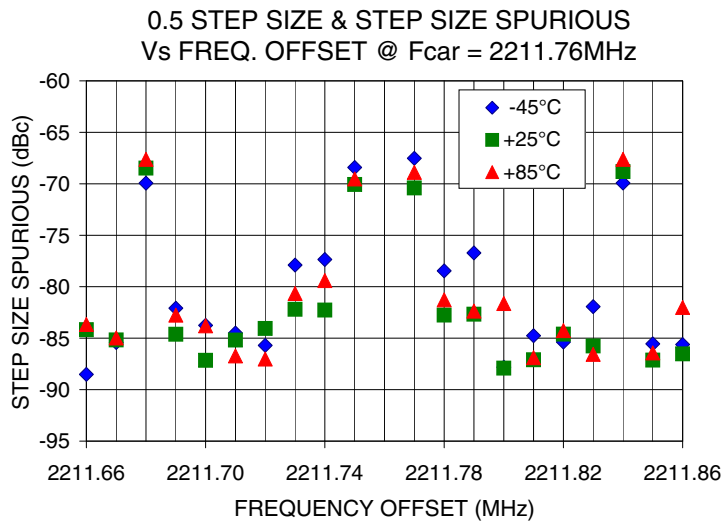
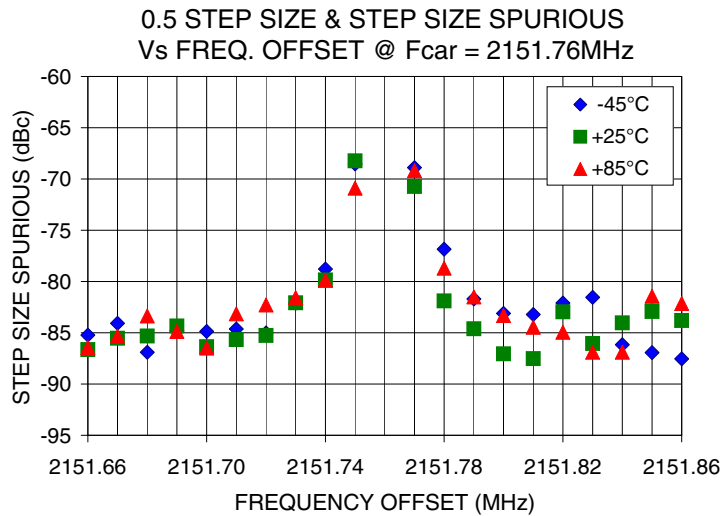
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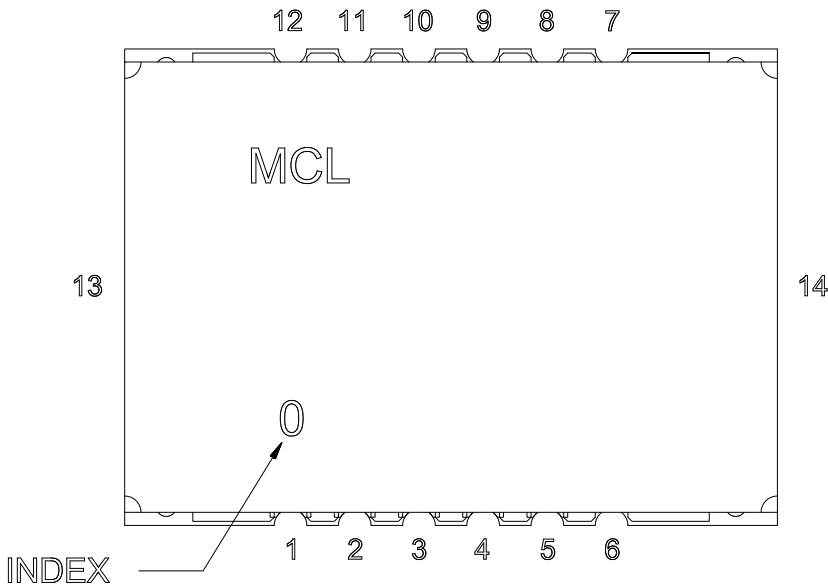


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Pin Configuration

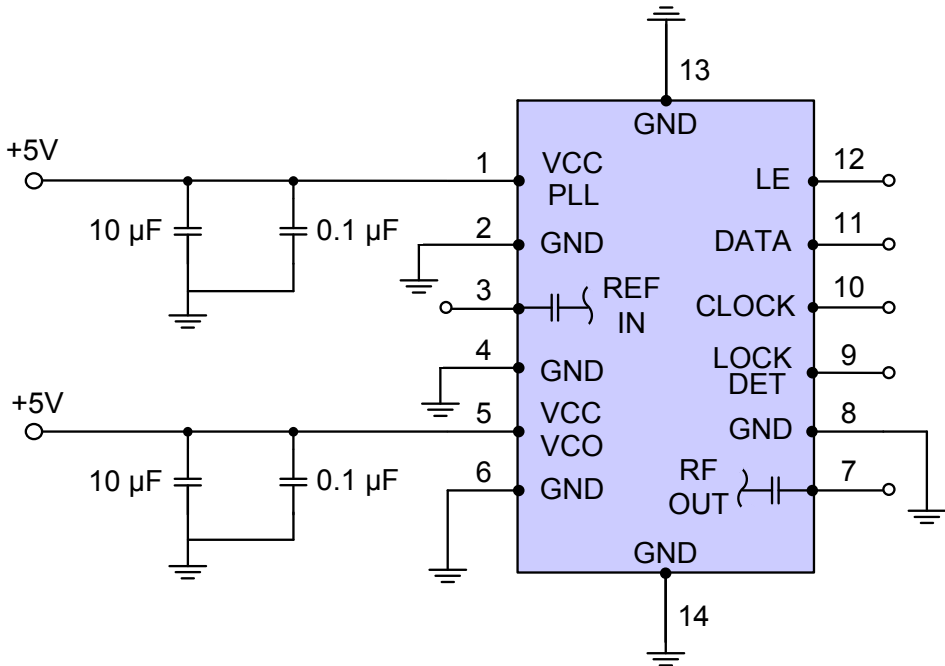


Pin Connection

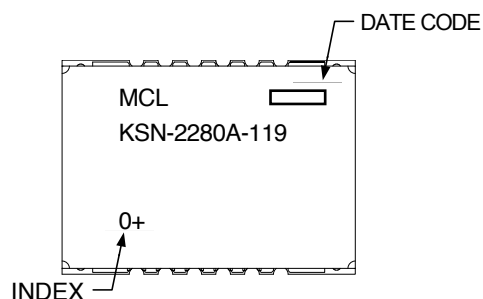
| Pin Number | Function |
|------------|----------|
| 1          | VCC PLL  |
| 2          | GND      |
| 3          | REF IN   |
| 4          | GND      |
| 5          | VCC VCO  |
| 6          | GND      |
| 7          | RF OUT   |
| 8          | GND      |
| 9          | LOCK DET |
| 10         | CLOCK    |
| 11         | DATA     |
| 12         | LE       |
| 13         | GND      |
| 14         | GND      |

Recommended Application Circuit

Note: REF IN and RF OUT ports are internally AC coupled.



## Device Marking

**Additional Detailed Technical Information**

Additional information is available on our web site. To access this information enter the model number on our web site home page.

**Case Style:** DK1042

**Tape & Reel:** TR-F28

**Suggested Layout for PCB Design:** PL-249

**Evaluation Board:** TB-567+

**Environment Ratings:** ENV03T2



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