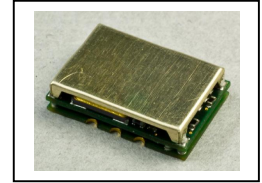


Typical Applications

Base Stations
 Test Equipment
 Switching
 Portable Equipment

Features

Surface Mount Package
 Reflow Process Compatible
 AT-Cut Crystal
 Low Phase Noise
 Tight Stability



Frequency range

50 MHz – 800 MHz (Dual Frequency)

Standard frequencies

61.44; 68.736; 77.760; 76.8 MHz
 81.92; 92.16; 100; 112; 122.88; 125; 134.4; 153.6; 155.52 MHz
 156.25; 160; 179.2; 184.32; 245.76; 312.5; 320; 368.64 MHz
 400; 448; 491.52; 622.08; 672 MHz

Frequency stabilities¹

| Parameter | Min | Typ | Max. | Units | Operating temp range | Ordering Code ⁵ |
|---|-------|-----|-------|-------|----------------------|----------------------------|
| vs. operating temperature range (Referenced to +25°C) | -15.0 | | +15.0 | ppm | -20 ... +70°C | D105 |
| Parameter | Min | Typ | Max. | Units | Condition | |
| Initial tolerance | -10.0 | | +10.0 | ppm | @vc=Vs/2 | |
| vs. supply voltage change | -3.0 | | +3.0 | ppm | Vs ± 5% | |
| vs. load change | -1.0 | | +1.0 | ppm | Load ± 10% | |
| vs. aging /1. Year | -3.0 | | +3.0 | ppm | | |
| vs. aging / year (following Years) | -1.0 | | +1.0 | ppm | | |

Frequency stabilities¹

| Parameter | Min | Typ | Max. | Units | Operating temp range | Ordering Code ⁵ |
|---|-------|-----|-------|-------|----------------------|----------------------------|
| vs. operating temperature range (Referenced to +25°C) | -30.0 | | +30.0 | ppm | -40 ... +85°C | F305 |
| Parameter | Min | Typ | Max. | Units | Condition | |
| Initial tolerance | -15.0 | | +15.0 | ppm | @vc=Vs/2 | |
| vs. supply voltage change | -3.0 | | +3.0 | ppm | Vs ± 5% | |
| vs. load change | -2.0 | | +2.0 | ppm | Load ± 10% | |
| vs. aging /1. Year | -3.0 | | +3.0 | ppm | | |
| vs. aging / year (following Years) | -1.0 | | +1.0 | ppm | | |

Supply voltage

| Parameter | Min | Typ | Max. | Units | Condition | Ordering Code ⁵ |
|---------------------|-------|-----|-------|-------|-----------|----------------------------|
| Supply voltage (Vs) | 3.135 | 3.3 | 3.465 | VDC | | SV033 |
| Current consumption | | | 100 | mA | @ LVPECL | |
| Current consumption | | | 100 | mA | @ LVDS | |

RF output

| Parameter | Min | Typ | Max. | Units | Condition | Ordering Code ⁵ |
|--------------------|-----|------|------|-------|------------|----------------------------|
| Signal | | PECL | | | | RFP |
| Load | | 50 | | Ω | Vs - 2V | |
| Rise and Fall time | | | 1 | ns | 20 to 80 % | |
| Duty cycle | 45 | | 55 | % | | |
| Signal | | LVDS | | | | RFL |
| Load | | 100 | | Ω | 10 to 90 % | |
| Rise and Fall time | | | 1 | ns | | |
| Duty cycle | 40 | | 60 | % | | |

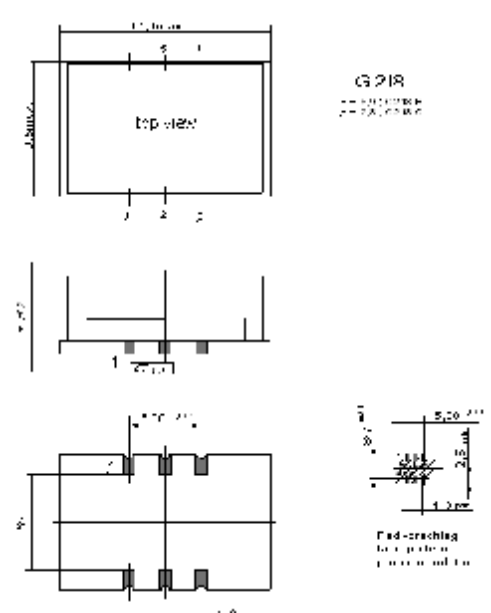
Frequency Tuning (EFC)

| Parameter | Min | Typ | Max. | Units | Condition |
|-----------------------------------|-------|----------|--------|-------|----------------|
| Tuning Range | ±75.0 | ±90.0 | +250.0 | ppm | |
| Linearity | | | 10 | % | |
| Tuning Slope | | Positive | | | |
| Control Voltage Range | 0.0 | 1.65 | 3.3 | VDC | with Vs=3.3VDC |
| Frequency control input impedance | 10 | | | k Ω | |

Additional parameters

| Parameter | Min | Typ | Max. | Units | Condition |
|----------------------|--------------------------|------|------|--------|--------------------|
| Phase Noise | | -80 | | dBc/Hz | 10 Hz @155,52 MHz |
| | | -105 | | dBc/Hz | 100 Hz PECL |
| | | -135 | | dBc/Hz | 1 kHz 3,3V |
| | | -143 | | dBc/Hz | 10 kHz |
| | | -143 | | dBc/Hz | 100 kHz |
| Jitter | | 0,2 | | ps RMS | @ 12 kHz to 20 MHz |
| Phase Noise | | -80 | | dBc/Hz | 10 Hz @155,52 MHz |
| | | -112 | | dBc/Hz | 100 Hz LVDS |
| | | -130 | | dBc/Hz | 1 kHz 3,3V |
| | | -150 | | dBc/Hz | 10 kHz |
| | | -155 | | dBc/Hz | 100 kHz |
| Jitter | | 0,2 | | ps RMS | @ 12 kHz to 20 MHz |
| Phase Noise | | -55 | | dBc/Hz | 10 Hz @622,08 MHz |
| | | -85 | | dBc/Hz | 100 Hz PECL |
| | | -115 | | dBc/Hz | 1 kHz 3,3V |
| | | -140 | | dBc/Hz | 10 kHz |
| | | -150 | | dBc/Hz | 100 kHz |
| Jitter | | 0,05 | | ps RMS | @ 12 kHz to 20 MHz |
| Weight | | | 2 | g | |
| Processing & Packing | handling&processing note | | | | |

Enclosures

| | | | Type G218B PECL; LVPECL and LVDS Version | | |
|----------------|--|--|---|-------------------|----------------------|
| Package Codes: | | | | | |
| | | | Code B1 | Height "H" 5,9 | Pin Length "L" NA |
| | | |  | | |
| Dimensions: mm | | | | | |

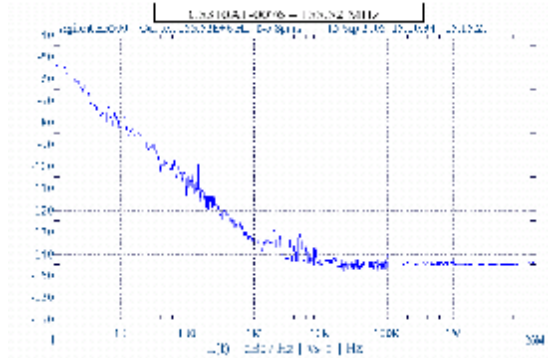
| | | Pin Connections |
|--|--|--|
| | | 1 Control Voltage (Vc) 2 Frequency Select 3 Ground (Case) 4 RF Output 5 RF Output complementary 6 Supply Voltage Input (Vs) Outline Drawing: G218B |
| Marking | | |
| VX-501-xxxx frequency * VI AYYWW | | |

Absolute Maximum Ratings

| Parameter | Min | Typ | Max. | Units | Condition |
|----------------------------|-----|-----|------|-------|-----------|
| Supply voltage (Vs) | | | 7 | V | |
| Operable temperature range | -40 | | +85 | °C | |
| Storage temperature range | -55 | | +105 | °C | |

Typical Phase Noise and Jitter

(155,52 MHz; PECL output)

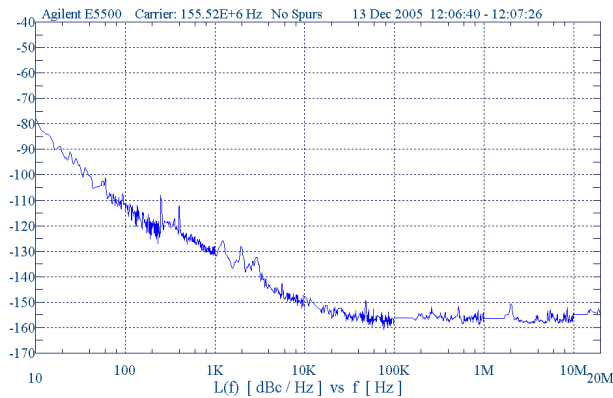


| Frequency range [Hz] | S ϕ (f) [dB] | Jitter [ps rms] |
|----------------------|-------------------|-----------------|
| 12kHz to 20MHz | -65.34dB | 0.2ps |

Typical Phase Noise and Jitter

(155,52MHz; LVDS output)

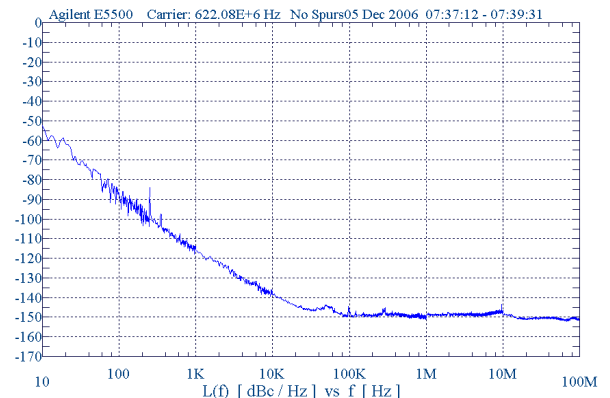
C5310A1-0103



| Frequency range [Hz] | S ϕ (f) [dB] | Jitter [ps rms] |
|----------------------|-------------------|-----------------|
| 12kHz to 20MHz | -76dB | 0.162ps |

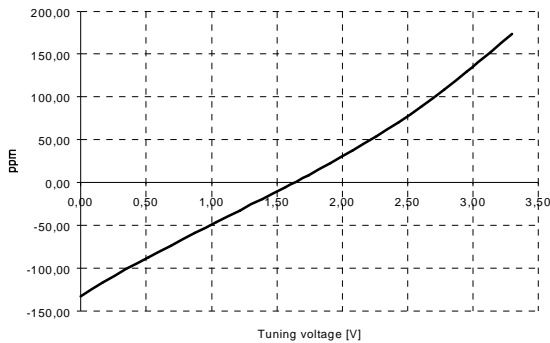
(622,08MHz; PECL output)

C5310A1-0096

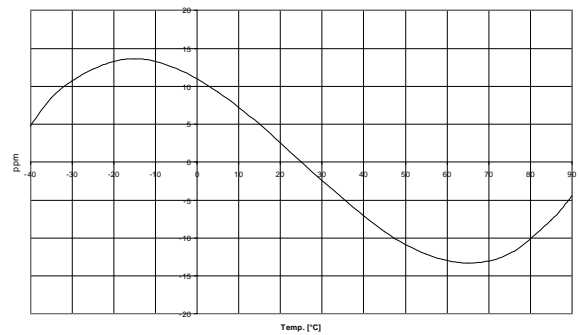


| Frequency range [Hz] | S ϕ (f) [dB] | Jitter [ps rms] |
|----------------------|-------------------|-----------------|
| 12kHz to 20MHz | -70dB | 0.05ps |

Typical tuning slope



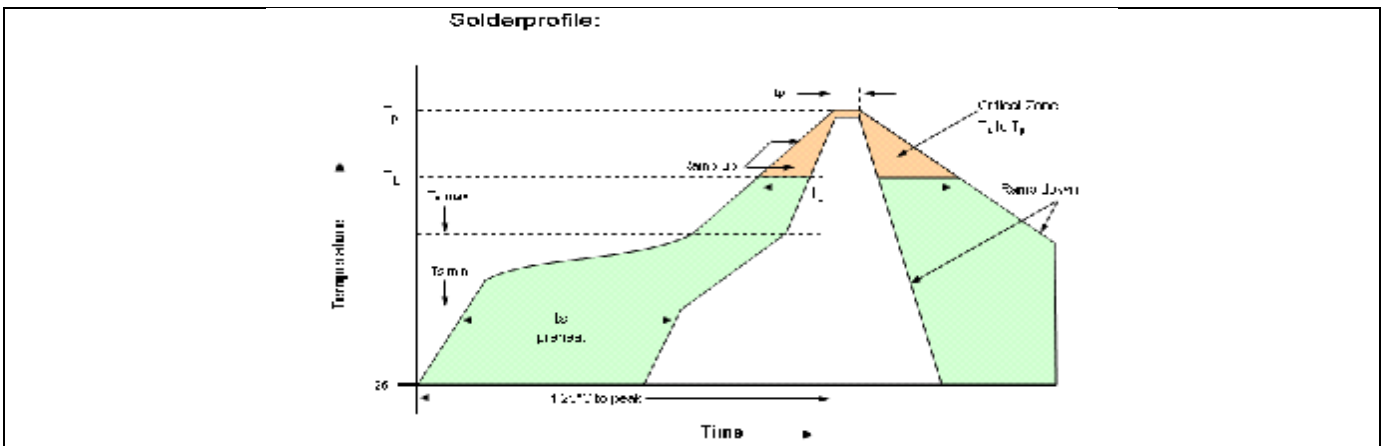
Typical frequency stability vs tp



Standard Shipping Method

| Enclosure Type | Tape width W [mm] | Quantity per meter | Quantity per reel | Dimension P | Production tolerance complying DIN IEC 286-3 |
|----------------|-------------------|--------------------|-------------------|-------------|--|
| G218B | 24 | 83,3 | 850 | 12 | |

Recommended Reflow Profile



| Profile Feature | Pb-Free Assembly /Sn-Pb Assembly | Profile Feature | Pb-Free Assembly /Sn-Pb Assembly |
|--|----------------------------------|--|----------------------------------|
| Average ramp-up rate (T _L to T _p) | 3°C/second max. | Time 25°C to Peak Temperature | 8 minutes max. |
| Preheat -Temperature Min T _{Smin} -Temperature Min T _{Smax} -Time (min to max) (ts) | 150°C 200°C 60-180 seconds | Time maintained above - Temperature (T _L) - Time (t _L) | 217°C 60-150 seconds |
| T _{Smax} to T _L - Ramp-up Rate | 3°C/second max. | | |
| Time maintained above - Temperature (T _L) - Time (t _L) | 217°C 60-150 seconds | Time within 5°C of actual Peak Temperature (tp) | 20-40 seconds |
| Peak Temperature (T _p) | max 260°C | Ramp-down Rate | 6°C/second max. |

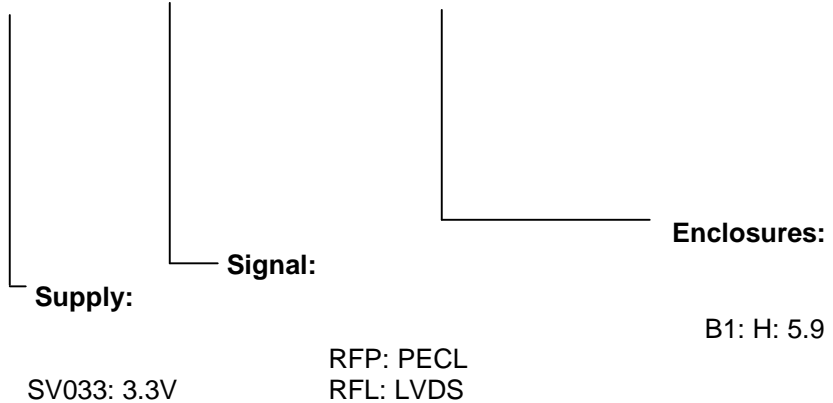
Note: All temperatures refer to topside of the package, measured on the package body surface.
 SMD oscillators must be on the top side of the PCB during the reflow process.

How to Order this Product:

| Model | Stability Code | Supply Voltage Code | RF Output Code | Package Code | Frequency 1 | Frequency 2 |
|--------|----------------|---------------------|----------------|--------------|-------------|-------------|
| VX-501 | D105 | SV033 | RFP | B1 | | |

vs.operat. temp. range:

D105: ±15ppm -20 ... +70°C
 F305: ±30ppm -40 ... +85°C



Dimension: mm