## Typical Applications

*Military Systems*
*Avionics and Instrumentation*
*Test Equipment*
*Medical Equipment*

## Features

*5X7 Surface Mount Package*
*Reflow Process Compatible*
*ACMOS, TTL, LVPECL and LVDS*
*MIL-PRF-55310 Class B Screening (optional)*
*Military Operating Temperature Range (optional)*

## Frequency Range

**1 to 800 MHz** (ACMOS and TTL outputs available up to 125 MHz. LVPECL and LVDS output frequencies above 220 MHz are achieved through the use of a PLL multiplier.)

## Frequency Stabilities[1]

| Parameter | Min | Typ | Max | Units | Condition | Ordering Code[5] |
|---|---|---|---|---|---|---|
| Operating temperature range (referenced to +25°C) | -100 | | +100 | ppm | 0 … +70°C | **C104** |
| | -50 | | +50 | ppm | 0 … +70°C | **C505** |
| | -25 | | +25 | ppm | 0 … +70°C | **C255** |
| | -15 | | +15 | ppm | 0 … +70°C | **C155** |
| | -100 | | +100 | ppm | -40 … +85°C | **F104** |
| | -50 | | +50 | ppm | -40 … +85°C | **F505** |
| | -25 | | +25 | ppm | -40 … +85°C | **F255** |
| | -100 | | +100 | ppm | -55 … +125°C | **M104** |
| | -65 | | +65 | ppm | -55 … +125°C | **M655** |
| Initial accuracy (do not use with overall tolerance code below) | -15 | | +15 | ppm | @ 25°C | **T155** |
| | -25 | | +25 | ppm | @ 25°C | **T255** |
| | -50 | | +50 | ppm | @ 25°C | **T505** |
| | -100 | | +100 | ppm | @ 25°C | **T104** |
| **Parameter** | **Min** | **Typ** | **Max** | **Units** | **Condition** | **Ordering Code[5]** |
| Overall tolerance (includes operating temperature and initial accuracy)[7] | -100 | | +100 | ppm | 0 … +70°C | **TC104** |
| | -50 | | +50 | ppm | 0 … +70°C | **TC505** |
| | -25 | | +25 | ppm | 0 … +70°C | **TC255** |
| | -100 | | +100 | ppm | -40 … +85°C | **TF104** |
| | -50 | | +50 | ppm | -40 … +85°C | **TF505** |
| | -100 | | +100 | ppm | -55 … +125°C | **TM104** |
| | -80 | | +80 | ppm | -55 … +125°C | **TM805** |
| Additional stability parameters: | | | | | | |
| vs. Supply voltage change | -2 | | +2 | ppm | $V_S$ ± 5% | |
| vs. Load change | -1 | | +1 | ppm | Load ± 5% | |
| vs. Aging / 1st year | -3 | | +3 | ppm | | |
| vs. Aging / year (following years) | -1 | | +1 | ppm | | |

## Supply Voltage (Vs)

| Parameter | Min | Typ | Max | Units | Condition | Ordering Code[5] |
|---|---|---|---|---|---|---|
| **Supply voltage** | 4.75 | 5.0 | 5.25 | VDC | | **SV050** |
| Current consumption (+5 VDC) | | | 15 | mA | ACMOS or TTL 1.0 to 23.9 MHZ | |
| | | | 20 | mA | ACMOS or TTL 24 to 49.9 MHz | |
| | | | 40 | mA | ACMOS or TTL 50 to 125.00 MHz | |
| **Supply voltage** | 3.135 | 3.3 | 3.465 | VDC | | **SV033** |
| **Supply voltage** | 2.375 | 2.5 | 2.625 | VDC | | **SV025** |
| Current consumption (+3.3 VDC or +2.5 VDC) | | | 6 | mA | ACMOS 1.0 to 14.90 MHZ | |
| | | | 8 | mA | ACMOS 15.0 to 39.9 MHz | |
| | | | 16 | mA | ACMOS 40.0 to 84.9 MHz | |
| | | | 40 | mA | ACMOS 85.0 to 125.0 MHz | |
| | | | 75 | mA | LVPECL or LVDS No load <200 MHz | |
| | | | 100 | mA | LVPECL or LVDS No load >200 MHz | |

## RF Output



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| Parameter | Min | Typ | Max | Units | Condition | Ordering Code[5] |
|---|---|---|---|---|---|---|
| **Signal** | **ACMOS** | | | | | **RFA** |
| Load | | 15 | 50 | pF | | |
| Signal Level (Vol) | | | 0.5<br>0.3<br>0.25 | VDC<br>VDC<br>VDC | Vs= 5.0V and 15pF load<br>Vs=3.3V and 15pF load<br>Vs=2.5V and 15pF load | |
| Signal Level (Voh) | 4.5<br>3.0<br>2.25 | | | VDC<br>VDC<br>VDC | Vs= 5.0V and 15pF load<br>Vs=3.3V and 15pF load<br>Vs=2.5V and 15pF load | |
| Rise and fall times for ACMOS (measured 10% to 90%) | | | 10<br>6<br>3 | ns<br>ns<br>ns | 1.0 to 23.9 MHz<br>24.0 to 79.9 MHz<br>80.0 to 125.0MHz | |
| Duty cycle | 45<br>40 | | 55<br>60 | %<br>% | @ 50% Vs< 15 MHz<br>@ 50% Vs ≥ 15 MHz | |
| **Signal** | **TTL** | | | | | **RFT** |
| Load | | | 10 | | | |
| Signal Level (Vol) | | | 0.4 | VDC | Vs= 5.0V and 15pF load | |
| Signal Level (Voh) | 2.4 | | | VDC | Vs= 5.0V and 15pF load | |
| Rise and fall times for TTL (measured 0.8V to 2.0V) | | | 5<br>3 | ns<br>ns | 1.0 to 23.9 MHz<br>24 to 125 MHz | |
| Duty Cycle | 45<br>40 | | 55<br>60 | %<br>% | @ 1.4V < 15 MHz<br>@ 1.4V ≥ 15 MHz | |
| **Signal** | **LVPECL** | | | | | **RFP** |
| Load | | | 50 | Ω | Into Vcc-2V or Thevenin Equivalent | |
| Signal Level (Vol) | | | Vs -1.62 | VDC | -40 … +85°C operating temp | |
| Signal Level (Voh) | Vs- 1.025 | | | VDC | -40 … +85°C operating temp | |
| Rise and fall times (measured @ 20% to 80%) | | | 1000<br>600 | ps<br>ps | <100 MHz<br>≥ 100 MHz | |
| Duty cycle LVPECL | 45 | | 55 | % | @ 50% Vdd | |
| Jitter (rms) | | | 10<br>0.5 | ps<br>ps | BW = 10Hz to 20 MHz<br>BW = 12 kHz to 20 MHz | |
| Period Jitter (pk-pk) | | | 40 | ps | 10,000 Samples - Rising edge | |
| **Signal** | **LVDS** | | | | | **RFL** |
| Load | 60 | 100 | 140 | Ω | Between outputs | |
| Signal Level (Vol) | | 1.2 | | VDC | | |
| Signal Level (Voh) | | 1.4 | | VDC | | |
| Differential Voltage (Vod) | 240 | 330 | 460 | mVpeak | | |
| Common Mode (Offset) Voltage (Vos) | 1.125 | 1.2 | 1.375 | V | | |
| Start-up Time | | | 10 | mS | | |
| Rise and fall times | | 600 | 1000 | ps | measured @ 20% to 80% of Vod | |
| Duty cycle | 45 | | 55 | % | @ 50% of Vod | |
| Jitter (rms) | | | 5<br>1 | ps<br>ps | BW = 10Hz to 20 MHz<br>BW = 12 kHz to 20 MHz | |
| Period Jitter (pk-pk) | | | 40 | ps | 10,000 Samples - Rising edge | |

## Additional Parameters

| **Screening** | **Vectron Verification**[9] | **V** |
|---|---|---|
| **Screening** | **Class B, MIL-PRF-55310, Rev.D** | **B** |
| Output Enable[6] | Logic "0" input = Outputs disabled (Tri-state)<br>Logic "1" or floating input = Outputs enabled**)** | Standard ACMOS,TTL and LVDS |
| | Logic "0" or floating input = Outputs enabled<br>Logic "1" input = Outputs disabled (Tri-state**)** | Standard LVPECL |
| Weight | < 2 grams | |
| Processing & Packing | Handling & processing note | |



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## Standard Environmentals

| Parameter | Test Condition |
|---|---|
| Vibration | MIL-STD-202, Method 204, Condition G (30 G, 10Hz-2000Hz) |
| Shock | MIL-STD-202, Method 213, Condition I (100 G, 6ms, Sawtooth) |
| Acceleration | MIL-STD-883, Method 2001, Condition A (5000 G, Y1 Plane) |
| Temperature Cycling | MIL-STD-883, Method 1010, Condition B |
| Thermal Shock | MIL-STD-883, Method 107, Condition B |
| Solderability | MIL-STD-202, Method 208 |
| Leak Test (Fine and Gross) | MIL-STD-883, Method 1014, Condition A1 and C1 |

## Absolute Maximum Ratings

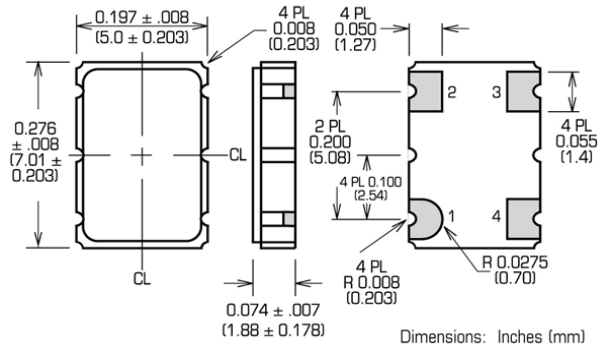
| Parameter | Min | Typ | Max | Units | Condition |
|---|---|---|---|---|---|
| Supply voltage (Vs) | | | 7.0 | V | Vs=5.0VDC |
| | | | 7.0 | V | Vs=3.3VDC |
| Operable temperature range | -55 | | +125 | °C | |
| Storage temperature range | -62 | | +125 | °C | |

## Enclosures

### Type A – ACMOS or TTL

Package Codes:

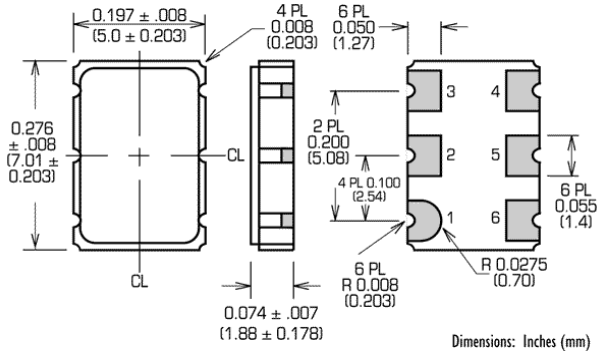
| Codes | Height | |
|---|---|---|
| **A1** = 4 leads | 0.074 ± 0.007 | |
| **E1** = Enable/Disable pin 1<br>**X** = N/C pin 1 | (1.88 ± 0.178) | |
| **T**= Tinned leads [8]<br>**X**= No Tinning | | |




| Pin Connections | |
|---|---|
| 1 – Enable/Disable or N/C | 3 – RF Output |
| 2 – Ground (case) | 4 – Supply Voltage |

### Type B – LVPECL or LVDS

| Codes | Height | |
|---|---|---|
| **B1** = 6 leads | 0.074 ± 0.007 | |
| **E1** = Enable/Disable pin 1<br>**E2** = Enable/Disable pin 2<br>**X** = N/C pin 1 and pin 2 | (1.88 ± 0.178) | |
| **T**= Tinned leads [8]<br>**X** = No Tinning | | |




| Pin Connections | |
|---|---|
| 1 – Enable/Disable or N/C | 4 – RF Output |
| 2 – Enable/Disable or N/C | 5 – Complementary Output |
| 3 – Ground (Case) | 6 – Supply Voltage |



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## How to Order this Product: [10]

| Step 1 | Use this worksheet to forward the following information to your factory representative (example follows): | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Model** | **Stability Code** | **Initial Accuracy Code (if required)** | **Supply Voltage Code** | **RF Output Code** | **Screening Code** | **Package Code** | **Enable/Disable Code** | **Tinning Code** |
| | | | | | | | | |
| C1250 | C505 | T505 | SV033 | RFA | V | A1 | E1 | T |

| Step 2 | The factory representative will then respond with a Vectron Part Number in the following configuration: | | |
|---|---|---|---|
| **Model** | **Package Code** | **Dash** | **Dash Number** |
| C1250 | [Customer Specified Package Code] | - | [Factory Generated 4 digit number] |

*Typical P/N C1250A1-0001*

**Notes:**

1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies, RF outputs and supply voltages.
2 Unless otherwise stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3 Phase noise degrades with increasing output frequency.
4 Subject to technical modification.
5 Contact factory for availability.
6 Contact factory for other options.
7 Overall stabilities do not require an initial accuracy code.
8 Leads tinned IAW Vectron International standard procedure (GR-37409).
9 Vectron Verification IAW Vectron International standard process (HK-69314).
10 Please be sure to specify nominal frequency.



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