

Typical Applications

Base Stations
 Test Equipment
 Synthesizers
 Digital Switching

Features

Surface Mount Package Optional
 Reflow Process Compatible Optional
 AT-Cut and SC-Cut Crystal Options
 Low Profile Compact Package



Previous Vectron Model Numbers

OCO50, OCO1000, MC4004X4

Frequency range

6 MHz – 60 MHz

Standard frequencies

8.192; 10; 12, 12.8; 16.384;20; 32.768; 38.88MHz

Frequency stabilities¹ [AT Cut Crystal – Standard]

| Parameter | Min | Typ | Max. | Units | Operating temp range | Ordering Code |
|--|------|-----|------|---------|---|---------------|
| vs. operating temperature range (Referenced to +25°C) | -50 | | +50 | ppb | -20 ... +70°C | D508 |
| | -100 | | +100 | ppb | -20 ... +70°C | D107 |
| | -100 | | +100 | ppb | -40 ... +85°C | F107 |
| Parameter | Min | Typ | Max. | Units | Condition | |
| Initial tolerance | -500 | | +500 | ppb | at time of shipment, nominal EFC | |
| vs. supply voltage change | -10 | | +10 | ppb | V _S ± 5% | |
| vs. load change | -10 | | +10 | ppb | Load ± 5% | |
| vs. aging / day | -5.0 | | +5.0 | ppb | after 30 days of operation | |
| vs. aging / year | -250 | | +250 | ppb | after 30 days of operation | |
| Warm-up Time | | | 3 | minutes | to ± 100ppb of final frequency (1 hour reading) @ +25°C | |

Frequency stabilities¹ [SC Cut Crystal – Option]

| Parameter | Min | Typ | Max. | Units | Operating temp range | Ordering Code |
|--|------|-----|------|---------|--|---------------|
| vs. operating temperature range (Referenced to +25°C) | -10 | | +10 | ppb | -20 ... +70°C | D108 |
| | -20 | | +20 | ppb | -20 ... +70°C | D208 |
| | -20 | | +20 | ppb | -40 ... +85°C | F258 |
| Parameter | Min | Typ | Max. | Units | Condition | |
| Initial tolerance | -200 | | +200 | ppb | at time of shipment, nominal EFC | |
| vs. supply voltage change | -2.0 | | +2.0 | ppb | V _S ± 5% | |
| vs. load change | -5.0 | | +5.0 | ppb | Load ± 5% | |
| vs. aging / day | -1.0 | | +1.0 | ppb | after 30 days of operation | |
| vs. aging / year | -75 | | +75 | ppb | after 30 days of operation | |
| Warm-up Time | | | 3 | minutes | to ± 10ppb of final frequency (1 hour reading) @ +25°C | |

Supply voltage (Vs)

| Parameter | Min | Typ | Max. | Units | Condition | Ordering Code |
|---------------------------|-------|------|-------|-------|----------------------|---------------|
| Supply voltage [Standard] | 4.75 | 5 | 5.25 | VDC | | SV050 |
| Supply voltage [Option] | 11.4 | 12.0 | 12.6 | VDC | | SV120 |
| Supply voltage [Option] | 3.135 | 3.3 | 3.465 | VDC | | SV033 |
| Power consumption | | | 3.0 | Watts | during warm-up | |
| | | | 1.0 | Watts | steady state @ +25°C | |

RF output

| Parameter | Min | Typ | Max. | Units | Condition | Ordering Code |
|--------------------------------|----------|-----|------|-------|---|---------------|
| Signal [Standard] | HCMOS | | | | | RFH |
| Load | | 15 | | pF | with Vs=12.0V or 5.0V and 15pF load with Vs=3.3V and 15pF load with Vs=12.0V or 5.0V and 15pF load with Vs=3.3V and 15pF load @ (Voh-Vol)/2 | |
| Signal Level (Vol) | | | 0.5 | VDC | | |
| Signal Level (Voh) | 4.5 | | 0.3 | VDC | | |
| Duty cycle | 3.0 | | | VDC | | |
| Signal [Option] | Sinewave | | | | | RFS |
| Load | | 50 | | Ω | | |
| Output Power@3.3V supply volt. | 2 | 5 | 8 | dBm | 50 Ohm load | |
| Harmonics | | | -30 | dBc | 50 Ohm load | |
| Power@5V | 5 | 8 | 11 | dBm | 50 Ohm load | |

Frequency Tuning (EFC)

| Parameter | Min | Typ | Max. | Units | Condition | Ordering Code ⁵ |
|-----------------------|-----------------------|-------|------|-------|---------------------|----------------------------|
| Tuning Range | Fixed OCXO; No adjust | | | | | 0 |
| Tuning Range | ±1.0 | ±1.75 | ±2.5 | ppm | with SC Cut Crystal | 1 |
| | ±3.0 | ±5.0 | ±8 | ppm | with AT Cut Crystal | 1 |
| Linearity | | | 5 | % | | |
| Tuning Slope | Positive | | | | | |
| Control Voltage Range | 0.0 | 2.0 | 4.0 | VDC | with Vs=5.0VDC | |
| | 0.0 | 2.0 | 4.0 | VDC | with Vs=12VDC | |
| | 0.0 | 1.4 | 2.8 | VDC | with Vs=3.3VDC | |

Reference Voltage Output (Vref)

| Parameter | Min | Typ | Max. | Units | Condition |
|-------------------|------|-----|------|-------|----------------|
| Reference Voltage | 3.92 | 4.0 | 4.08 | VDC | with Vs=5.0VDC |
| | 4.9 | 5.0 | 5.1 | VDC | with Vs=12VDC |
| | 2.75 | 2.8 | 2.85 | VDC | with Vs=3.3VDC |

Additional parameters

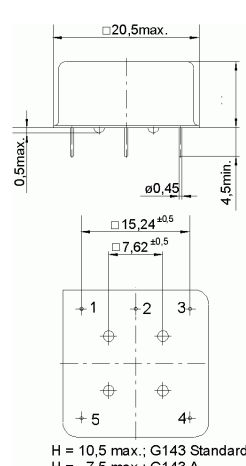
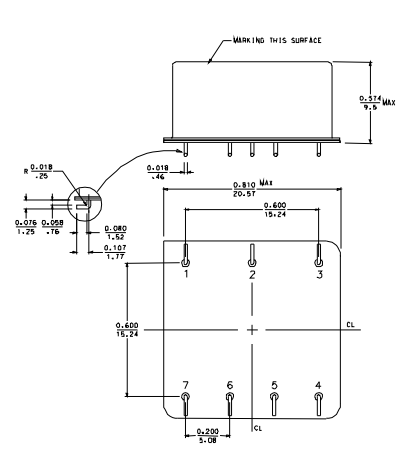
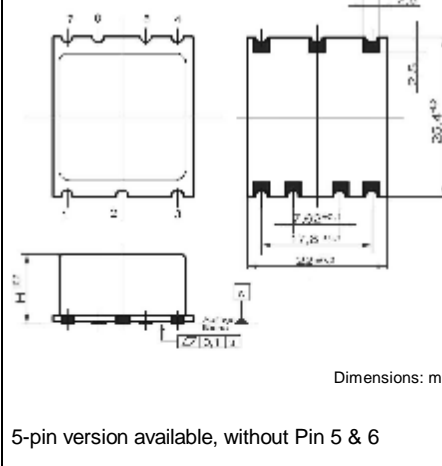
| Parameter | Min | Typ | Max. | Units | Condition |
|--------------------------|----------------------------|-----|------|--------|-------------------------|
| Phase Noise ³ | | | -90 | dBc/Hz | 1 Hz with 10 MHz SC Cut |
| | | | -120 | dBc/Hz | 10 Hz |
| | | | -140 | dBc/Hz | 100 Hz |
| | | | -145 | dBc/Hz | 1 kHz |
| | | | -150 | dBc/Hz | 10 kHz |
| Phase Noise ³ | | | -75 | dBc/Hz | 1 Hz with 10 MHz AT Cut |
| | | | -105 | dBc/Hz | 10 Hz |
| | | | -130 | dBc/Hz | 100 Hz |
| | | | -140 | dBc/Hz | 1 kHz |
| | | | -150 | dBc/Hz | 10 kHz |
| Weight | | | 14 | g | |
| Processing & Packing | Handling & processing note | | | | |

Absolute Maximum Ratings

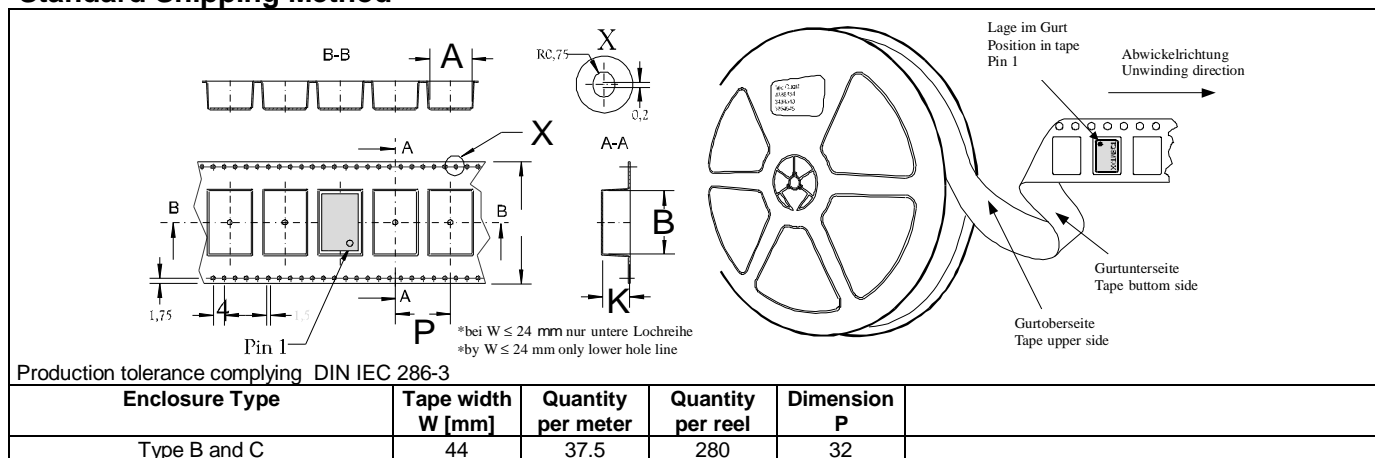
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| Vectron International Headquarters 267 Lowell Road Hudson, New Hampshire 03051 +1-888-328-7661 tel +1-888-329-8328 fax | Vectron International LLC. 100 Watts Street Mount Holly Springs, PA 17065 USA +1-717-486-3411 tel +1-717-486-5920 fax | Vectron international GmbH & Co. KG Landstrasse D-74924 Neckarbischofsheim Germany +49-07268-801-0 tel +49-07268-801-281 fax | Vectron Asia Pacific Sales Office 1F-2F, No 8 Workshop, No 308 Fenju Road, WaiGaoQiao Free Trade Zone, Pudong, Shanghai, P.R. China 200131 +86 21 5048 0777 tel. +86 21 5048 1881 fax | | |

| Parameter | Min | Typ | Max. | Units | Condition |
|----------------------------|-----|-----|--------------------|-------------|---|
| Supply voltage (Vs) | | | 7.0 15.0 7.0 | V V V | with Vs=5.0VDC with Vs=12VDC with Vs=3.3VDC |
| Output Load | | | 50 | pF | |
| Operable temperature range | -55 | | +85 | °C | |
| Storage temperature range | -55 | | +125 | °C | |

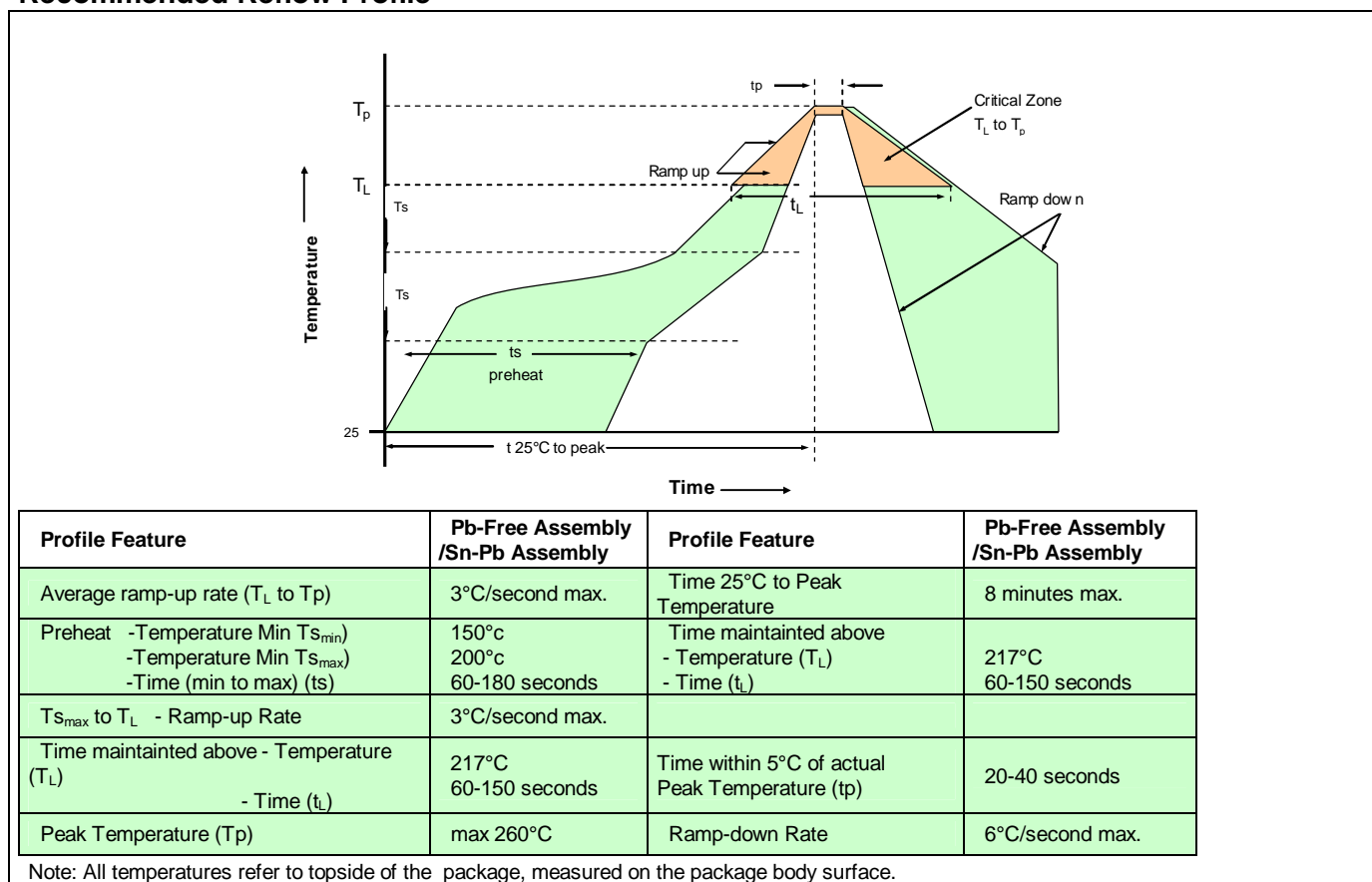
Enclosures

| Type A | | | Type B | | | Type C | | |
|--|--------------------|----------------------------|--|--------------------|----------------------|--|----------------------------|----------------------------|
| Package Codes: | | | | | | | | |
| Code A1 | Height "H" 10.5 | Pin Length "L" 4.5 min. | Code B1 | Height "H" 12.7 | Pin Length "L" NA | Code C1 C2 | Height "H" 11.3 15.0 | Pin Length "L" NA NA |
|  <p>H = 10,5 max.; G143 Standard H = 7,5 max.; G143 A Dimensions: mm</p> | | |  <p>Dimensions: mm</p> | | |  <p>Dimensions: mm</p> | | |
| Pin Connections | | | Pin Connections | | | Pin Connections | | |
| 1 Supply Voltage Input (Vs) 2 RF Output 3 Ground (Case) 4 Electronic Frequency Control Input (EFC) 5 N.C. or Reference Voltage Output Version with 7 pins available see Type B * Pin 5 must be remain unconnected. | | | 1 Supply Voltage Input (Vs) 2 RF Output 3 Ground (Case) 4 Electronic Frequency Control Input (EFC) 5 N/C* 6 RF Output Enable (Option) 7 Reference Voltage Output *Pin 5 must be remain unconnected. | | | 1 Electronic Frequency Control Input (EFC) 2 Reference Voltage Output 3 Supply Voltage Input (Vs) 4 RF Output 5 N/C* 6 N.C. or RF Output Enable (Option) 7 Ground (Case) *Pin 5 must be remain unconnected. | | |

Standard Shipping Method



Recommended Reflow Profile



How to order this product:

| Step 1 | Use this worksheet to forward the following information to your factory representative: | | | | | |
|--------|---|---------------------|----------------|--------------|---------------------------|-----------|
| Model | Stability Code | Supply Voltage Code | RF Output Code | Package Code | Frequency Control/ Enable | Frequency |
| C4500 | D508 | SV050 | RFH | A1 | 1 | 6MHz |

Vs.operat. Temp. Range

| | | |
|-------|---------|--------------|
| C508: | ±50ppb | -20 ...+70°C |
| D107: | ±100ppb | -20 ...+70°C |
| F157: | ±100ppb | -40 ...+85°C |
| D108: | ±10ppb | -20 ...+70°C |
| D208: | ±20ppb | -20 ...+70°C |
| F258: | ±20ppb | -40 ...+85°C |

Signal:

RFH: HCMOS

Tuning Range:

0: Fixed OCXO; No adjust
 1: ±1.0 ppm ..±2.5 ppm(SC)
 1: ±3.0 ppm ..±8.0 ppm(AT)

Enclosure:

A1: H: 10.5 L: 4.5min
 B1: H: 12.7 L: NA
 C1: H: 11.3 L: NA
 C2: H: 15.0 L: NA

Supply:

SV050: 5V
 SV120: 12V
 SV033: 3.3V

| Step 2 | The factory representative will then respond with a Vectron Model Number in the following configuration: | | |
|--------|--|------|------------------------------------|
| Model | Package Code | Dash | Dash Number |
| C4500 | [Customer Specified Package Code] | - | [Factory Generated 4 digit number] |

Typical P/N = C4500A1-0001

Notes:

- 1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
- 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.

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