

## Typical Applications

Base Stations  
 Test Equipment  
 Synthesizers  
 Digital Switching

## Previous Vectron Model Numbers

## Frequency range

10 MHz – 160 MHz

## Standard frequencies

10; 12.8; 16.384; 19.2 ; 20; 26, 30.72, 38.4, 52 MHz

## Features

Surface Mount Package  
 Reflow Process Compatible  
 AT-Cut and SC-Cut Crystal Options  
 Low Profile Compact Package  
 OCO1000, C4500



## Frequency stabilities<sup>1</sup> [AT Cut Crystal – 10 MHz to 160MHz]

| Parameter                                                | Min  | Typ | Max. | Units   | Operating temp range                                    | Ordering Code |
|----------------------------------------------------------|------|-----|------|---------|---------------------------------------------------------|---------------|
| vs. operating temperature range<br>(Referenced to +25°C) | -100 |     | +100 | ppb     | -20 ... +70°C                                           | D107          |
|                                                          | -250 |     | +250 | ppb     | -20 ... +70°C                                           | D257          |
|                                                          | -250 |     | +250 | ppb     | -40 ... +85°C                                           | F257          |
| Parameter                                                | Min  | Typ | Max. | Units   | Condition                                               |               |
| Initial tolerance                                        | -500 |     | +500 | ppb     | at time of shipment, nominal EFC                        |               |
| vs. supply voltage change                                | -20  |     | +20  | ppb     | V <sub>s</sub> ± 5%                                     |               |
| vs. load change                                          | -10  |     | +10  | ppb     | Load ± 5%                                               |               |
| vs. aging / day                                          | -10  |     | +10  | ppb     | after 30 days of operation                              |               |
| vs. aging / year                                         | -300 |     | +300 | ppb     | ≤ 60MHz; after 30 days of operation                     |               |
| vs. aging / year                                         | -500 |     | +500 | ppb     | >60MHz; after 30 days of operation                      |               |
| Warm-up Time                                             |      |     | 3    | minutes | to ± 100ppb of final frequency (1 hour reading) @ +25°C |               |

## Frequency stabilities<sup>1</sup> [SC Cut Crystal – 15 to 40 MHz]

| Parameter                                                | Min  | Typ | Max. | Units   | Operating temp range                                   | Ordering Code |
|----------------------------------------------------------|------|-----|------|---------|--------------------------------------------------------|---------------|
| vs. operating temperature range<br>(Referenced to +25°C) | -25  |     | +25  | ppb     | -20 ... +70°C                                          | D258          |
|                                                          | -50  |     | +50  | ppb     | -40 ... +85°C                                          | F508          |
| Parameter                                                | Min  | Typ | Max. | Units   | Condition                                              |               |
| Initial tolerance                                        | -200 |     | +200 | ppb     | at time of shipment, nominal EFC                       |               |
| vs. supply voltage change                                | -5.0 |     | +5.0 | ppb     | V <sub>s</sub> ± 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 / 1 Year                                       | -100 |     | +100 | ppb     | after 30 days of operation                             |               |
| vs. aging / year (following Years)                       | -80  |     | +80  | ppb     |                                                        |               |
| 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]   | 3.135 | 3.3 | 3.465 | VDC   |                      | SV033         |
| Power consumption         |       |     | 2.5   | 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=5.0V and 15pF load<br>with Vs=3.3V and 15pF load<br>with Vs= 5.0V and 15pF load<br>with Vs=3.3V and 15pF load<br>@ (Voh-Vol)/2 |               |
| Signal Level (Vol) |          |      | 0.5  | VDC   |                                                                                                                                        |               |
| Signal Level (Voh) | 3.7      |      | 0.3  | VDC   |                                                                                                                                        |               |
| Duty cycle         | 2.4      |      |      | VDC   |                                                                                                                                        |               |
|                    | 45       |      | 55   | %     |                                                                                                                                        |               |
| Signal [Option]    | Sinewave |      |      |       |                                                                                                                                        | RFS           |
| Load               |          | 50   |      | Ω     |                                                                                                                                        |               |
| Output Power       | +0       | +2.5 | +5.0 | dBm   | 50 Ohm load                                                                                                                            |               |
| Harmonics          |          |      | -30  | dBc   | 50 Ohm load                                                                                                                            |               |

## Frequency Tuning (EFC)

| Parameter             | Min                   | Typ   | Max. | Units | Condition           | Ordering Code <sup>5</sup> |
|-----------------------|-----------------------|-------|------|-------|---------------------|----------------------------|
| 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                   | 1.4   | 2.8  | VDC   | with Vs=3.3VDC      |                            |

## Reference Voltage Output (Vref)

| Parameter         | Min  | Typ | Max. | Units | Condition      |
|-------------------|------|-----|------|-------|----------------|
| Reference Voltage | 3.85 | 4.0 | 4.15 | VDC   | with Vs=5.0VDC |
|                   | 2.7  | 2.8 | 2.9  | VDC   | with Vs=3.3VDC |

## Additional parameters

| Parameter                | Min                        | Typ  | Max. | Units  | Condition |
|--------------------------|----------------------------|------|------|--------|-----------|
| Phase Noise <sup>3</sup> |                            | -75  |      | dBc/Hz | 1 Hz      |
|                          |                            | -110 |      | dBc/Hz | 10 Hz     |
|                          |                            | -135 |      | dBc/Hz | 100 Hz    |
|                          |                            | -150 |      | dBc/Hz | 1 kHz     |
|                          |                            | -150 |      | dBc/Hz | 10 kHz    |
| Phase Noise <sup>3</sup> |                            | -75  |      | dBc/Hz | 10 Hz     |
|                          |                            | -105 |      | dBc/Hz | 100 Hz    |
|                          |                            | -130 |      | dBc/Hz | 1 kHz     |
|                          |                            | -155 |      | dBc/Hz | 10 kHz    |
|                          |                            | -160 |      | dBc/Hz | 100 kHz   |
| Weight                   |                            |      | 10   | g      |           |
| Processing & Packing     | Handling & processing note |      |      |        |           |

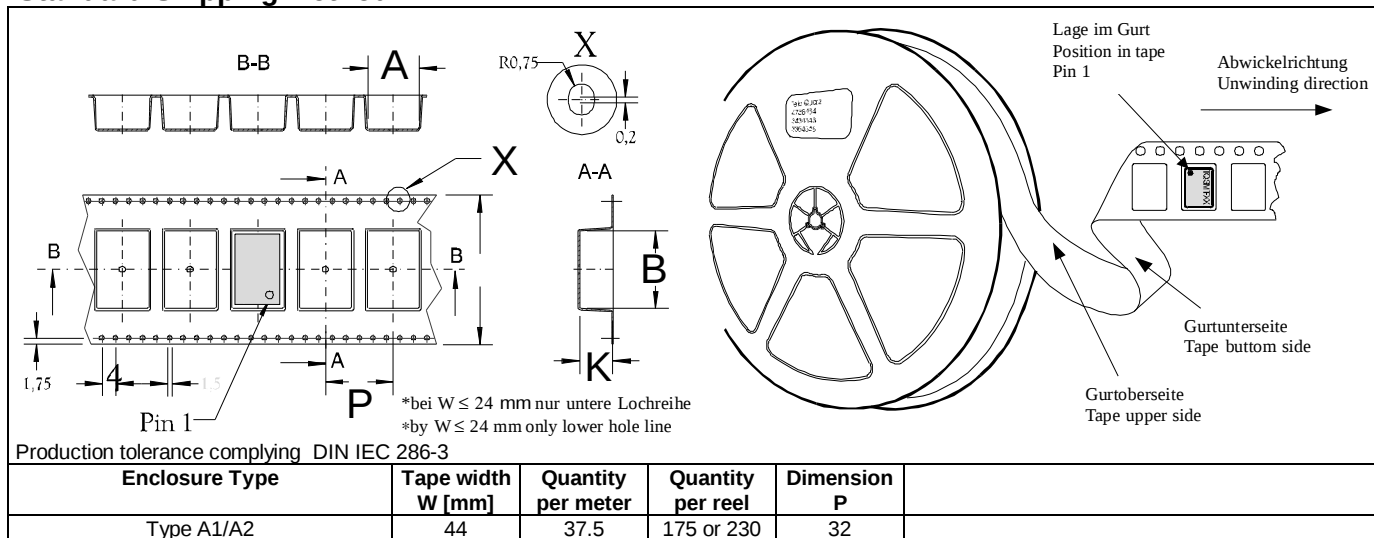
## Absolute Maximum Ratings

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

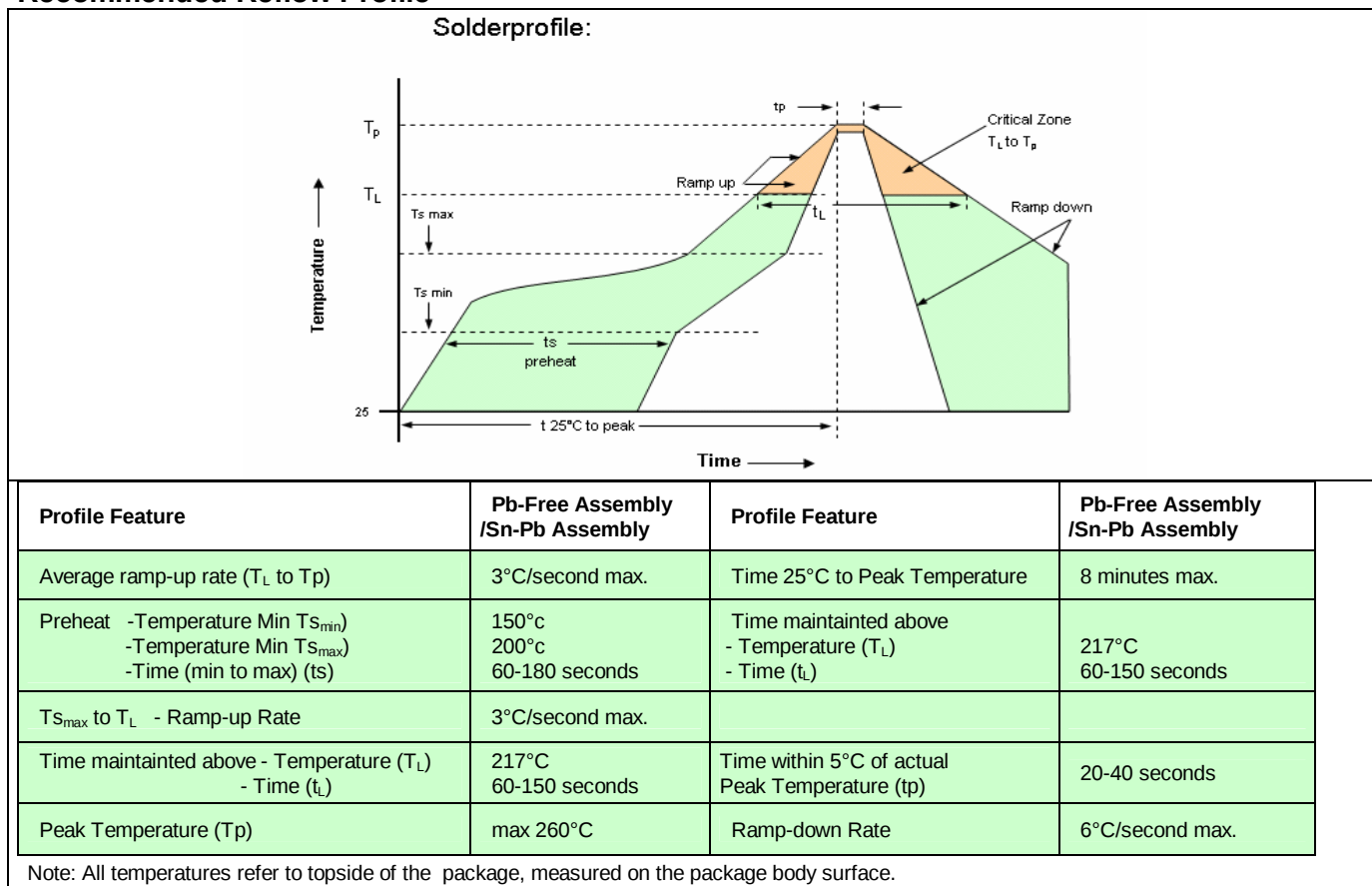
## Enclosures

| Type A, for HCMOS output |            |       | Type B, for Sinewave output,<br>only with reduced AT-stabilities<br>available |            |       | Type C, for HCMOS output |            |       |
|--------------------------|------------|-------|-------------------------------------------------------------------------------|------------|-------|--------------------------|------------|-------|
| Package Codes:           |            |       |                                                                               |            |       |                          |            |       |
| Code                     | Height "H" |       | Code                                                                          | Height "H" |       | Code                     | Height "H" |       |
| A1                       | 12.1       | G185C | B1                                                                            | 12.1       | G185C | C1                       | 12.1       | G270C |
| A2                       | 7.8        | G185D | B2                                                                            | 7.8        | G185D | C2                       | 7.8        | G270C |
|                          |            |       |                                                                               |            |       |                          |            |       |

## Standard Shipping Method



## Recommended Reflow Profile



## Processing note:

This FR 4 based SMD OCXO is a non-hermetic construction for use in No-Clean reflow processes and is 6/6 RoHS compliant. If you intend to wash this SMD OCXO, please contact your Sales representative to discuss the possibility.

## 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 |
| C4530  | D107                                                                                     | SV050               | RFH            | A1           | 1                         | 10MHz     |

### Vs.operat. Temp. Range

|       |         |              |
|-------|---------|--------------|
| D107: | ±100ppb | -20 ...+70°C |
| D257: | ±250ppb | -20 ...+70°C |
| F257: | ±250ppb | -40 ...+85°C |
| D258: | ±25ppb  | -20 ...+70°C |
| F508: | ±50ppb  | -40 ...+85°C |

### Signal:

RFH: HCMOS  
RFS: Sinewave

### Tuning Range:

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

### Supply:

SV050: 5V  
SV033: 3.3V

### Enclosure:

A1: G185C  
A2: G185D  
B1: G185C  
B2: G185D  
C1: G270D  
C2: G270D

| Step 2 | The factory representative will then respond with a Vectron Model Number in the following configuration: |      |                                    |
|--------|----------------------------------------------------------------------------------------------------------|------|------------------------------------|
| Model  | Package Code                                                                                             | Dash | Dash Number                        |
| C4530  | [Customer Specified Package Code]                                                                        | -    | [Factory Generated 4 digit number] |

Typical P/N = C4530A1-0001

## 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.

| Vectron International · <a href="http://www.vectron.com">www.vectron.com</a>                                                                        |                                                                                                                                             | v.2006-11-10 · page 5 of 5                                                                                                                             |                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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