



VECTRON
INTERNATIONAL

A **DOVER** COMPANY

TX-700

Temperature Compensated Crystal Oscillator

Helping Customers Innovate, Improve & Grow



Features

- EFC Standard
- Small Size
- 100% RoHS Compliant
- Low Profile
- Frequency range of 6.4 - 52 MHz
- Standard Frequencies: 10, 12.8, 16.384, 19.44, 20, 20.48 MHz

Applications

- PCS Base Stations
- Land Mobile Radio
- Cellular Telephony
- Radio in the Local Loop

Previous Vectron Model Numbers - C2260

Performance Specifications

Frequency Stabilities ¹						
Parameter	Min	Typical	Max	Units	Condition	
vs. operating temperature range (referenced to +25°C)	-1.5		+1.5	ppm	-40 to +85°C	Options ⁵
	-1.0		+1.0	ppm	-40 to +85°C	
	-2.5		+2.5	ppm	-20 to +70°C	
	-1.0		+1.0	ppm	-20 to +70°C	
	-1.0		+1.0	ppm	0 to +50°C	
	-0.5		+0.5	ppm	0 to +50°C	
Initial tolerance	-2.5		+2.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-0.5		+0.5	ppm	V _s ±5%	
vs. load change	-0.2		+0.2	ppm	Load ±10%	
vs. aging / 1 Year	-1.0		+1.0	ppm	after 30 days of operation	
Frequency Stabilities ¹ (Stratum 3 TCXO) <32MHz						
vs. operating temperature range (referenced to +25°C)	-0.80		+0.80	ppm	-20 to +70°C	Options ⁵
	-0.28		+0.28	ppm	0 to +50°C	
	-0.28		+0.28	ppm	-20 to +70°C	
	-0.80		+0.80	ppm	-40 to +85°C	
	-0.28		+0.28	ppm	-30 to +85°C	
	-0.28		+0.28	ppm	-40 to +85°C	
Initial tolerance	-1.0		+1.0	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-0.2		+0.2	ppm	V _s ±5% static	
vs. load change	-0.1		+0.1	ppm	Load ±5% static	
vs. aging / 20 Years	-2.5		+2.5	ppm	Note:*Stratum 3 per GR-1244-CORE:	
Overall tolerance	-4.6		+4.6	ppm	≤±4.6ppm for all causes and 20 years aging, holdover: ≤±0.37ppm over 24 hours	

Performance Specifications

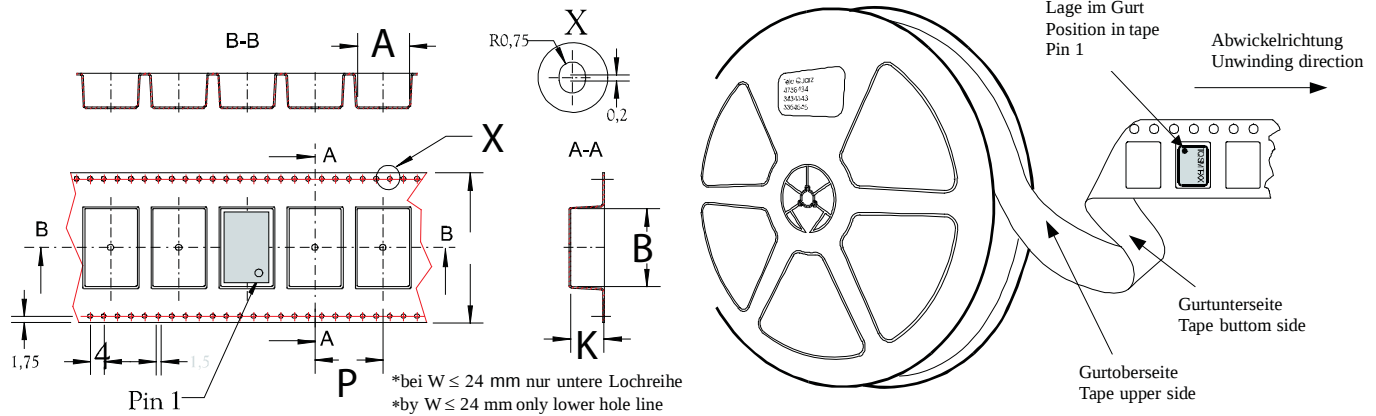
Frequency Stabilities ¹						
Parameter	Min	Typical	Max	Units	Condition	Options ⁵
vs. operating temperature range (referenced to +25°C) For 10, 12.8, 16.384, 20.26 MHz	-0.15		+0.15	ppm	0 to +50°C	
Initial tolerance	-1.0		+1.0	ppm	at time of shipment, nominal EFC $V_s \pm 5\%$ Load $\pm 10\%$ Note:*Stratum 3 per GR-1244-CORE: < ± 4.6 ppm for all causes and 20 years aging, holdover: < ± 0.37 ppm over 24 hours	
vs. supply voltage change	-0.2		+0.2	ppm		
vs. load change	-0.1		+0.1	ppm		
vs. aging / 20 Years	-2.5		+2.5	ppm		
Overall tolerance	-4.6		+4.6	ppm		

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard)	3.135	3.3	3.465	VDC		
Current consumption			6	mA	steady state @ +25°C	
RF Output (Clipped Sinewave)						
Load R	9	10	11	kΩ		
C	9	10	11	pF		
Output Power	0.7			V _{pp}	@ 10kΩ 10pF	
RF Output (HCMOS)						
Load	13.5	15	16.5	pF		
Signal Level (Vol)			0.3	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	3.0			VDC	with Vs=3.3V and 15pF Load	
Rise and Fall time			5	ns		
Duty Cycle	40	50	60	%	@ (Voh-Vol)/2	
Frequency Tuning (EFC)						
Tuning Range	Fixed TCXO; No adjust					Option ⁵
Tuning Range for Stability: 807, 287, 157 / Stratum 3 Version	±5.0	±14.0	±20.0	ppm		
Tuning Range	±8.0	±14.0	±20.0	ppm		
Linearity	10%					
Tuning Slope	Positive					
Control Voltage Range	0.3	1.65	3.0	VDC	with Vs=3.3V	
Freq. control input impedance	10			kΩ		
Enable (instead of EFC)	True table Pin 2 High Open Low		RF_out Pin 3 Data Data High Tristate			
Additional Parameters						
Phase Noise ³			-65 -95 -120 -140 -145	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz	@ 10MHz
Weight			8.0 g			
Processing & Packing	Handling & Processing Note					
Absolute Maximum Ratings						
Supply voltage (Vs)			6.0	V		
Control Voltage	0		Vs	V		
Operable Temperature Range	-40		+85	°C		
Storage Temperature Range	-55		+125	°C		

Cross Reference List

Vectron Part	Frequency (MHz)	Temp Range (°C)	Temp Stability (ppm)	Holdover Stability (ppm)	Overall Stability (ppm)	Supply (V)	
C2260A1-0028	12.8	-20 to +70	±0.28	±0.37	±4.6	3.3	Semtech
C2260A1-0032	12.8	-40 to +85	±0.28	±0.37	±4.6	3.3	Semtech
C2260A1-0029	12.8	-40 to +85		±4.60	±20	3.3	Semtech
C2260A1-0021	20	-20 to +70	±0.28		±4.6	3.3	Semtech
C2260A1-0009	20	-20 to +80	±0.28		±4.6	3.3	Semtech
C2260A1-0015	20	-40 to +85		±4.6	±20	3.3	Semtech

Standard Shipping Method

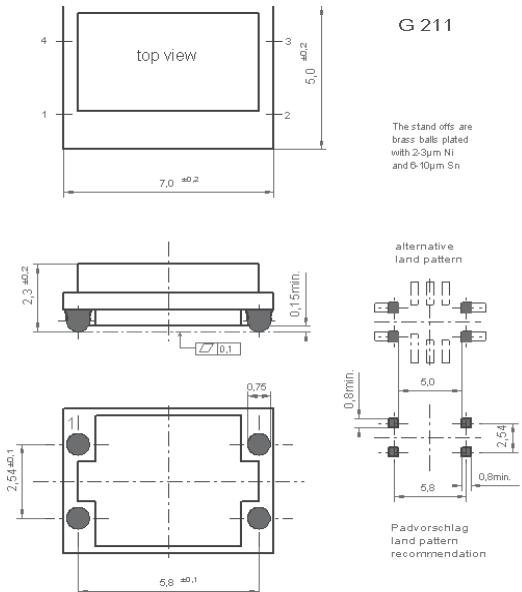
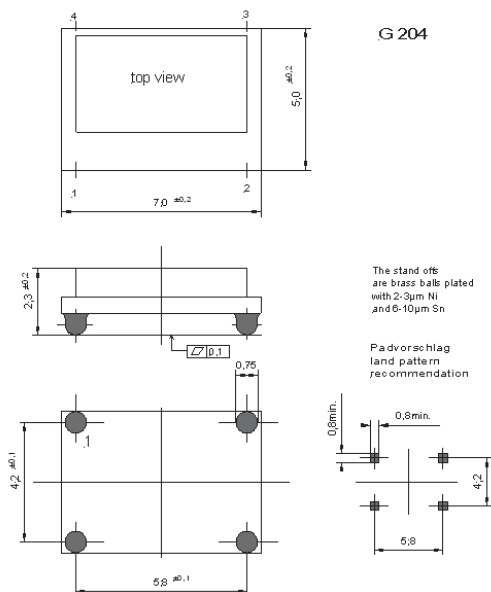


Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
G204/G211	12	150.	750.	8

Standard Shipping Method

Package Codes: 700		
Type	Height "H"	Pin Length "L"
G204	2.5	NA

Package Codes: 701	
Type	Height "H"
G204	2.5



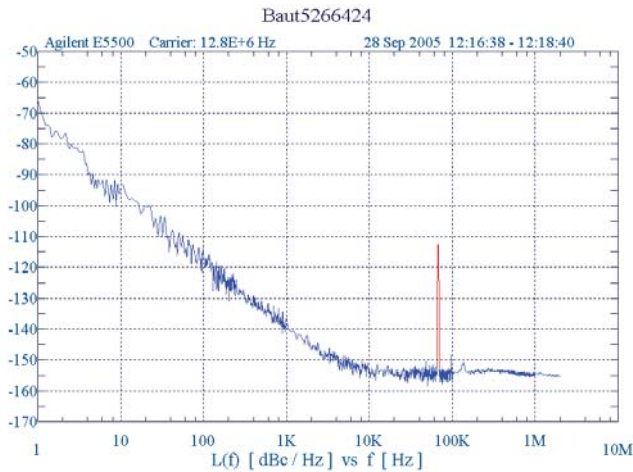
Pin Connections	
1	Voltage Control (Vc) / Enable / N.C
2	Ground (Case)
3	RF Output
4	Supply Voltage Input (Vs)

Marking	
TX-700	
Frequency	
● AYYWW	

Standard Shipping Method

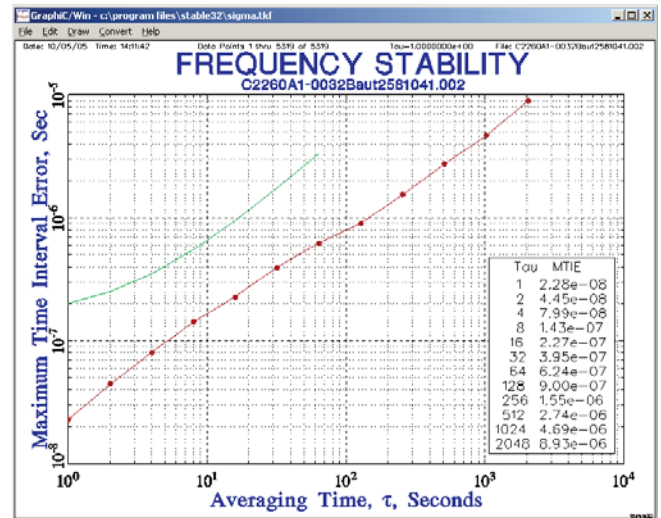
Phase Noise

C2260 @ 12.8 MHz



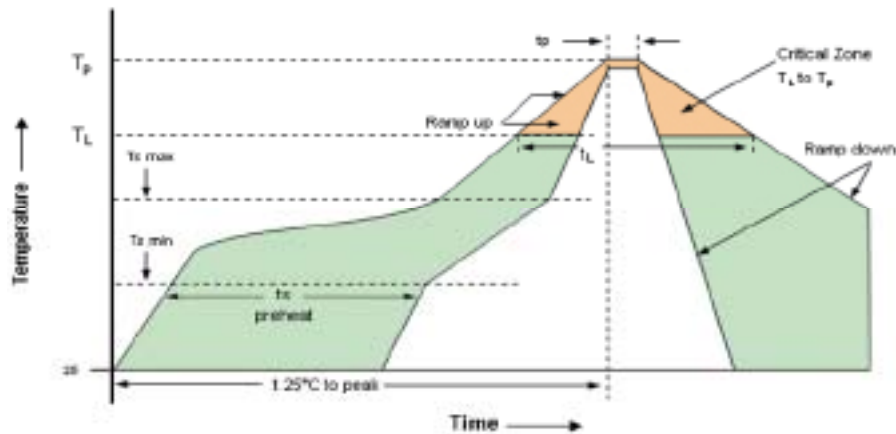
MTIE according-1244-CORE:

C2260 @ 12.8 MHz



Recommended Reflow Profile

Solderprofile:



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 $T_{s \text{ min}}$ -Temperature Min $T_{s \text{ max}}$ -Time (min to max) t_s	150°C 200°C 60-180 seconds	Time maintained above -Temperature (T_L) -Time (t_L)	217°C 60-150 seconds
$T_{s \text{ max}}$ 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 (t_p)	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.

Ordering Information

TX-70X 0 - E A J - 256 0 - 10M0000000

Model Code

700: Enclosure G204
701: Enclosure G211

Height

0: 2.5mm

Supply Voltage

E: 3.3V

RF Output Code

A: HCMOS
F: Clipped Sinewave

Temperature Range

E: -40°C to +85°C
H: -30°C to +85°C
J: -20°C to +70°C
P: 0°C to +50°C

Frequency

Frequency Control

0: No Tuning
1: ± 5.0 to ± 20 ppm
2: ± 8.0 to ± 20 ppm
3: Enable

Stability Code

256: ± 2.5 ppm
156: ± 1.5 ppm
106: ± 1.0 ppm
807: ± 0.8 ppm
507: ± 0.5 ppm
287: ± 0.28 ppm
157: ± 0.15 ppm

Notes:

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

For Additional Information, Please Contact

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