C4550 OCXO

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 4853, 4853S, 4597, 4597S, 4859, 4859S, 4877, 4877S, OCO500, OC-260

Frequency range 10 MHz – 100 MHz

Standard frequencies 10; 12.8;13; 16.384;20; 32.768MHz; 100Mhz

Frequency stabilities[1] [AT Cut Crystal – Standard]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range	-50		+50	ppb	0 … +70°C	C508
(Referenced to +25°C)	-100		+100	ppb	-20 … +70°C	D107
	-150		+150	ppb	-40 … +70°C	E157
	-200		+200	ppb	-40 … +85°C	F207
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	-300		+300	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 /1 day	-2.0		+2.0	ppb	after 72 hours of operation	
vs aging /1 Year	-500		+500	ppb	after 72 hours of operation	
vs. aging / year (following Years)	-250		+250	ppb		
Warm-up Time			3	minutes	to ± 100ppb of final frequency (1 hour reading) @ +25°C	

Frequency stabilities[1] [SC Cut Crystal – Option]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range	-10		+10	ppb	0 … +70°C	C108
(Referenced to +25°C)	-20		+20	ppb	-20 … +70°C	D208
	-25		+25	ppb	-40 … +70°C	E258
	-30		+30	ppb	-40 … +85°C	F308
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	-100		+100	ppb	at time of shipment, nominal EFC	
vs. supply voltage change	-5.0		+5.0	ppb	V_S ± 5%	
vs. load change	-5.0		+5.0	ppb	Load ± 5%	
vs. aging /1 day	-1.0		+1.0	ppb	after 72 hours of operation	
vs aging /1 Year	-100		+100	ppb	after 72 hours of operation	
vs. aging / year (following Years)	-50		+50	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]	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	

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
Unit 3119 31st Floor, Jin Mao Tower, 88
Century Boulevard, Shanghai,
P.R. China 200120
+86 21 28909740 tel.
+86 21 28909240 fax

RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Signal [Standard]		HCMOS				RFH
Load		15		pF		
Signal Level (Vol)			0.5	VDC	with Vs=12.0V or 5.0V and 15pF load	
			0.3	VDC	with Vs=3.3V and 15pF load	
Signal Level (Voh)	4.5			VDC	with Vs=12.0V or 5.0V and 15pF load	
	3.0			VDC	with Vs=3.3V and 15pF load	
Duty cycle	45		55	%	@ (Voh-Vol)/2	
Signal [Option]		Sinewave				RFS
Load		50		Ω		
Output Power	+3.0	+5.5	+8.0	dBm	50 Ohm load	
Harmonics			-30	dBc	50 Ohm load	

Frequency Tuning (EFC)

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code[5]
Tuning Range		Fixed OCXO; No adjust				0
Tuning Range	±0.75	±1.25	±2.0	ppm	with SC Cut Crystal	1
	±6.0	±8.0	±12	ppm	with AT Cut Crystal	1
Linearity			20	%		
Tuning Slope		Positive				
Control Voltage Range	0.0	2.0	4.0	VDC	with Vs=5.0VDC	
	0.0	2.5	5.0	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]			-80	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
			-100	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

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

Vectron International Headquarters
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Hudson, New Hampshire 03051
+1-888-328-7661 tel
+1-888-329-8328 fax

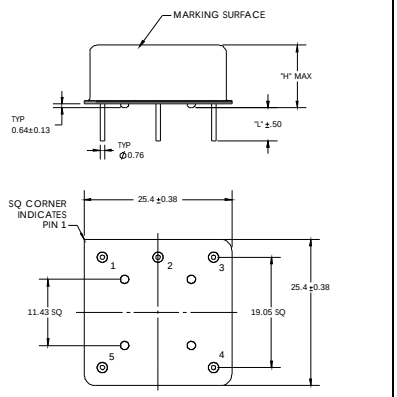
Vectron International LLC.
100 Watts Street
Mount Holly Springs, PA 17065
USA
+1-717-486-3411 tel
+1-717-486-5920 fax

Vectron international GmbH & Co. KG
Landstrasse
D-74924 Neckarbischofsheim
Germany
+49-07268-801-0 tel
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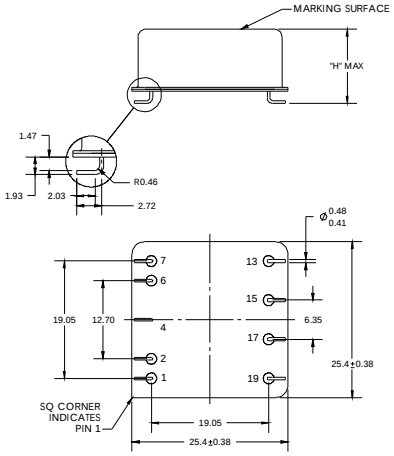
Vectron Asia Pacific Sales Office
Unit 3119 31st Floor, Jin Mao Tower, 88
Century Boulevard, Shanghai,
P.R. China 200120
+86 21 28909740 tel.
+86 21 28909240 fax

Enclosures

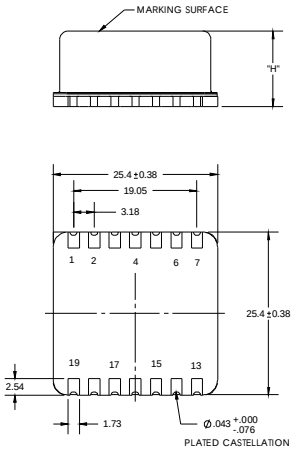
Type A			Type B			Type C		
Package Codes:								
Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"
A1	11.25	6.35	B1	12.70	NA	C1	15.24	NA
A2	13.40	6.35	B2	15.24	NA	C2	13.00	NA
A3[5]	10.00	6.35	B3	11.30	NA	C3	11.70	NA



Dimensions: mm



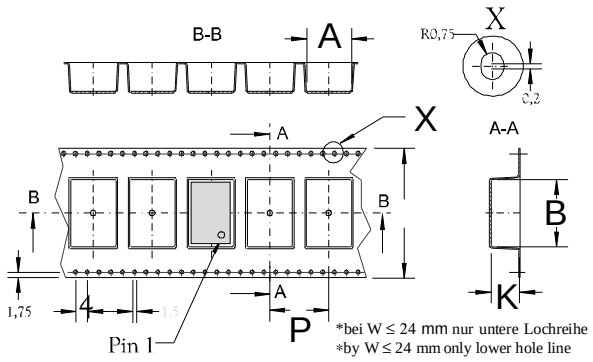
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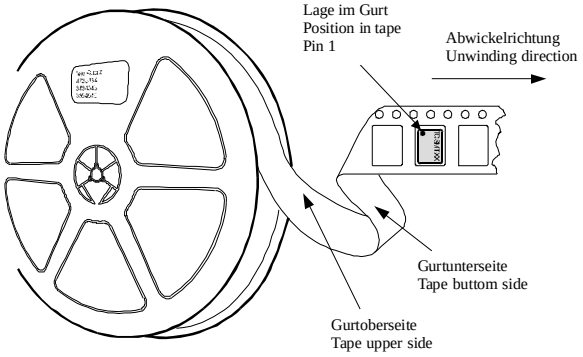


Dimensions: mm

Pin Connections	Pin Connections	Pin Connections
1 RF Output	1 RF Output	1 RF Output
2 Ground (Case)	2 N/C*	2 N/C*
3 Electronic Frequency Control Input (EFC)	4 Ground (Case)	4 Ground (Case)
4 Reference Voltage Output	6 N/C*	6 N/C*
5 Supply Voltage Input (Vs)	7 Electronic Frequency Control Input (EFC)	7 Electronic Frequency Control Input (EFC)
	13 Reference Voltage Output (Vref)	13 Reference Voltage Output (Vref)
	15 N/C*	15 N/C*
	17 N/C*	17 N/C*
	19 Supply Voltage Input (Vs)	19 Supply Voltage Input (Vs)

Standard Shipping Method (For SMD Type B and C Packages)





Production tolerance complying DIN IEC 286-3

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P	
Type B	44	33.3	250	34	
Type C	44	33.3	250	34	

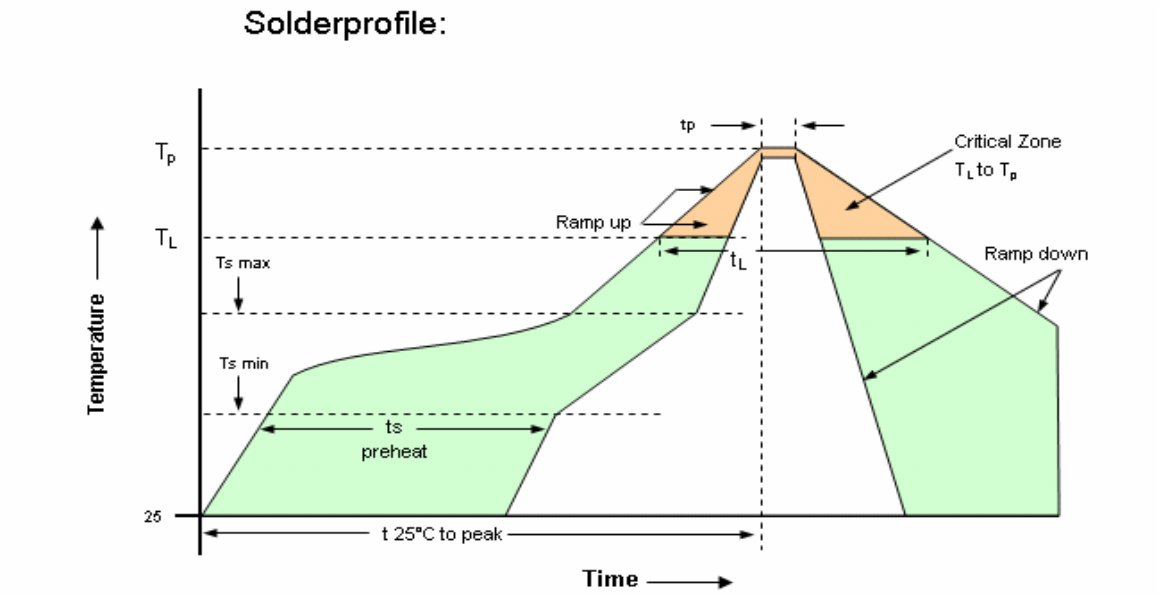
Vectron International Headquarters
267 Lowell Road
Hudson, New Hampshire 03051
+1-888-328-7661 tel
+1-888-329-8328 fax

Vectron International LLC.
100 Watts Street
Mount Holly Springs, PA 17065
USA
+1-717-486-3411 tel
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Vectron international GmbH & Co. KG
Landstrasse
D-74924 Neckarbischofsheim
Germany
+49-07268-801-0 tel
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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 Tp)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min Ts_{min}) -Temperature Min Ts_{max}) -Time (min to max) (ts)	150°c 200°c 60-180 seconds	Time maintainted above - Temperature (T_L) - Time (t_L)	 217°C 60-150 seconds
Ts_{max} to T_L - Ramp-up Rate	3°C/second max.		
Time maintainted 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 (Tp)	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.

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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**
C4550	D107	SV050	RFH	A1	1	10MHz

Vs.operat. Temp. Range

C508:	±50ppb	0 …+70°C
D107:	±100ppb	-20 …+70°C
E157:	±150ppb	-40 …+70°C
F207:	±200ppb	-40 …+85°C
C108:	±10ppb	0 …+70°C
D208:	±20ppb	-20 …+70°C
E258:	±25ppb	-40 …+70°C
F308:	±30ppb	-40 …+85°C

Supply:

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

Signal:

RFH: HCMOS
RFS: Sinewave

Enclosure:

A1: H: 11.25 L: 6.35
A2: H: 13.40 L: 6.35
A3: H: 10.00 L: 6.35
B1: H: 12.70 L: NA
B2: H: 15.24 L: NA
B3: H: 11.30 L: NA
C1: H: 15.24 L: NA
C2: H: 13.00 L: NA
C3: H: 11.70 L: NA

Tuning Range:

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

Step 2	The factory representative will then respond with a Vectron Model Number in the following configuration:		
Model	**Package Code**	**Dash**	**Dash Number**
C4550	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C4550A1-0001

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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