



Helping Customers Innovate, Improve & Grow



OX-280

Features

- Surface Mount Package
- AT-CUT and SC_CUT Crystal Options
- Low Profile Compact Package
- Compact Package

Applications

- Base stations
- Test equipment
- Synthesizers
- Military communication equipment
- Digital Switching

Performance Specifications

Frequency Stabilities ¹ (AT-Cut Crystal-Standard 10 to 160 MHz-)						
Parameter	Min	Typical	Max	Units	Condition	Options ⁵
vs. operating temperature range (referenced to +25°C)	-50 -100 -100		+50 +100 +100	ppb ppb ppb	-20 to +70°C -20 to +70°C -40 to +85°C	
Initial tolerance	-0.5		+0.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-10		+10	ppb	V _s ±5% static	
vs. load change	-10		+10	ppb	Load ±5% static	
vs. aging / day	-5		+5	ppb	after 30 days of operation	
vs. aging / year	-250		+250	ppb	after 30 days of operation	
Warm-up time			5	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C	
Frequency Stabilities ¹ (SC-Cut Crystal-Option - 10 to 52 MHz)						
vs. operating temperature range (referenced to +25°C)	-10 -20 -20		+10 +20 +20	ppb ppb ppb	-20 to +70°C -20 to +70°C -40 to +85°C	
Initial tolerance	-0.2		+0.2	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-2		+2	ppb	V _s ±5% static	
vs. load change	-2		+2	ppb	Load ±5% static	
vs. aging / day	-1		+1	ppb	after 30 days of operation	
vs. aging / year	-75		+75	ppb	≤ 60 MHz; after 30 days of operation	
Warm-up time			5	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C	

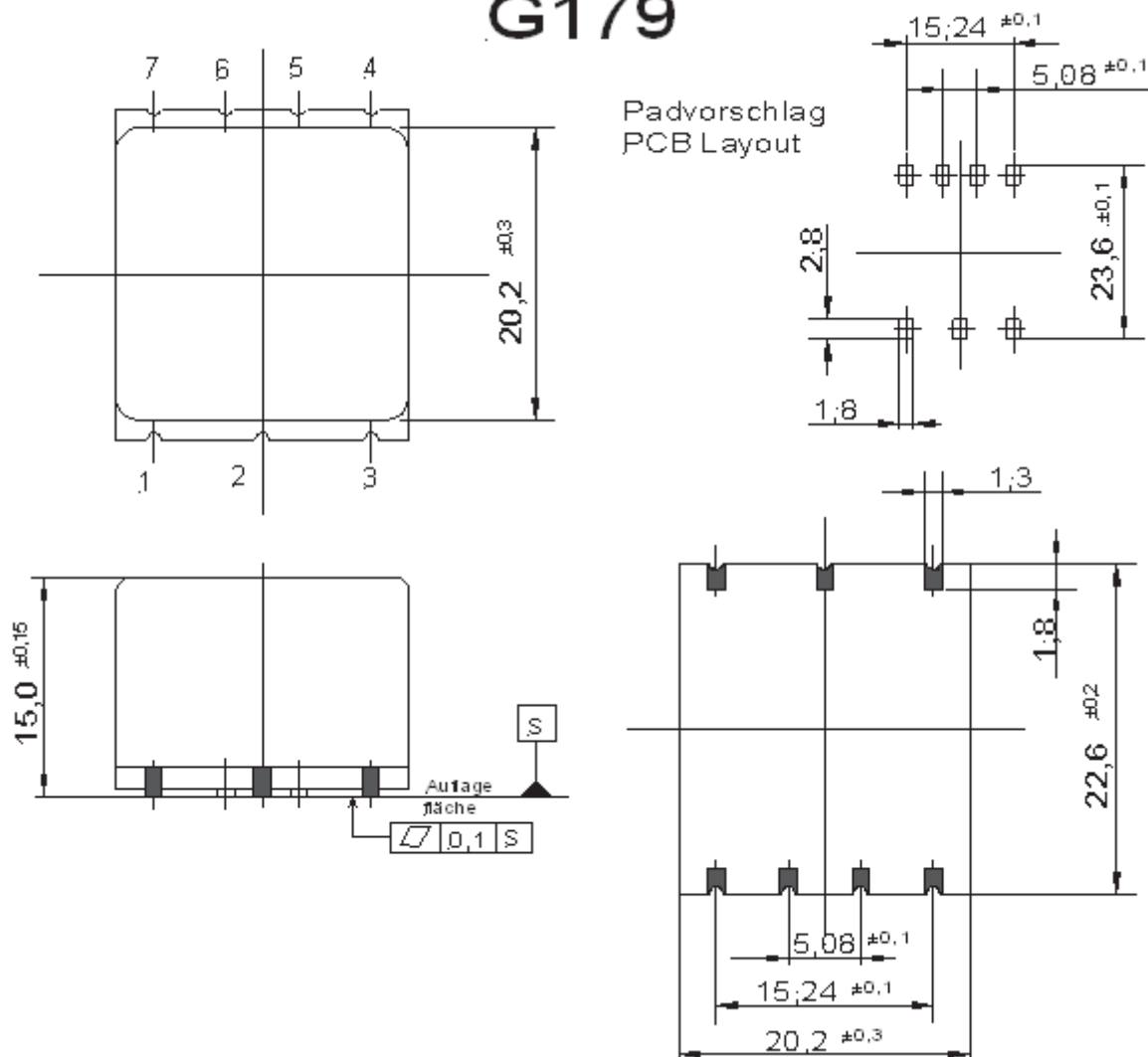
Performance Specifications

Supply Voltage (Vs)					
Parameter	Min	Typical	Max	Units	Condition
Supply voltage (standard)	3.135	3.3	3.465	VDC	
	4.75	5.0	5.25	VDC	
	11.4	12.0	12.6	VDC	
Power consumption			3.0	Watts	during warm-up
			1.0	Watts	steady state @ +25°C
RF Output					
Signal [standard]	HCMOS				
Load		15		pF	
Signal Level (Vol)			0.4	VDC	with Vs=3.3V and 15pF Load
Signal Level (Vol)			0.5		with Vs=5.0V & 12V and 15pF Load
Signal Level (Voh)	2.4			VDC	with Vs=3.3V and 15pF Load
Signal Level (Voh)	3.5				with Vs=5.0V & 12V and 15pF Load
Duty Cycle	45		55	%	@ (Voh-Vol)/2
Signal	Sine Wave				
Load		50		Ω	
Output Power @3,3V	2	5	8	dBm	50 Ω load
Putput Power @ 5.0V	5	8	11	dBm	50 Ω load
Harmonics			-30	dBm	50 Ω load
Frequency Tuning (EFC)					
Tuning Range	Fixed OCXO; No adjust				Option ⁵
Tuning Range	±3.0		±8	ppm	
	±1.0		±2.5	ppm	
Linearity	10%				
Tuning Slope	Positive				
Control Voltage Range	0.0	1.4	2.8	VDC	with Vs=3.3V
	0.0	2.0	4.0		with Vs=5.0V
	0.0	2.0	4.0	VDC	with Vs=12.0V
Reference Voltage output (Vref)					
Reference Voltage	2.75	2.8	2.85	VDC	with Vs = 3.3 VDC
	3.92	4.0	4.08	VDC	with Vs = 5.0 VDC
	4.9	5.0	5.1	VDC	with Vs = 12 VDC
Additional Parameters					
Phase Noise ³			-90	dBc/Hz	1 Hz
			-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
			-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					
supply voltage (Vs)			6.5	V	with Vs=3.3 & 5.0 VDC
			15.0	V	with Vs= 12 VDC
Output Load			50	pF	
Operable Temperature Range	-55		+85	°C	
Storage Temperature Range	-55		+125	°C	

Outline Drawing / Enclosure

G179

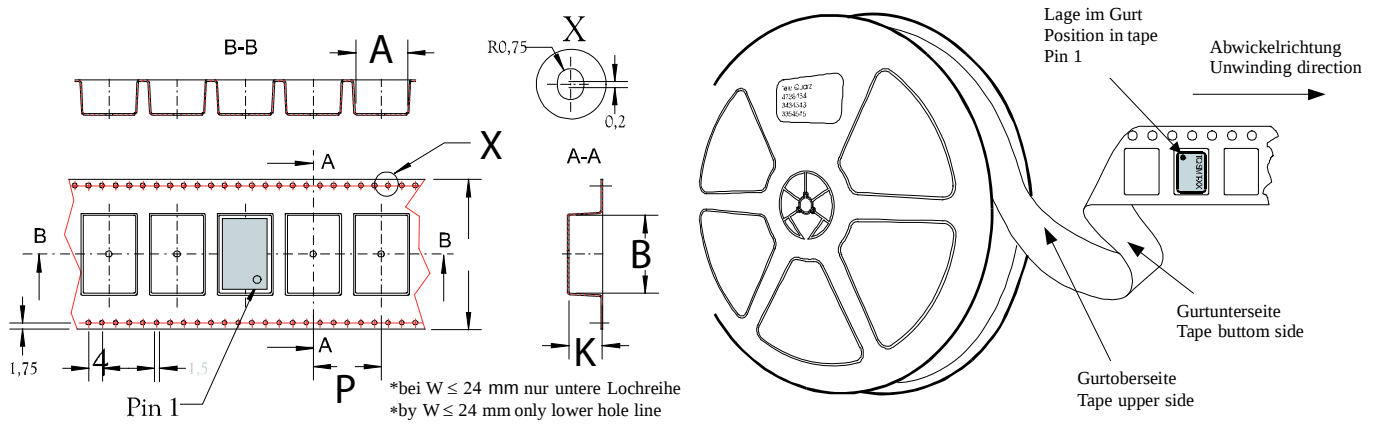


OX-301	
Height "H"	Pin Length "L"
15	N.A

Pin Connections	
1	RF Output
2	Ground (Case)
3	Electronic Frequency Control Input (EFC)
4	Reference Voltage Output
5	Oven Control Output
6	Ground (Case)
7	Supply Voltage Input (VS)

Dimensions in mm

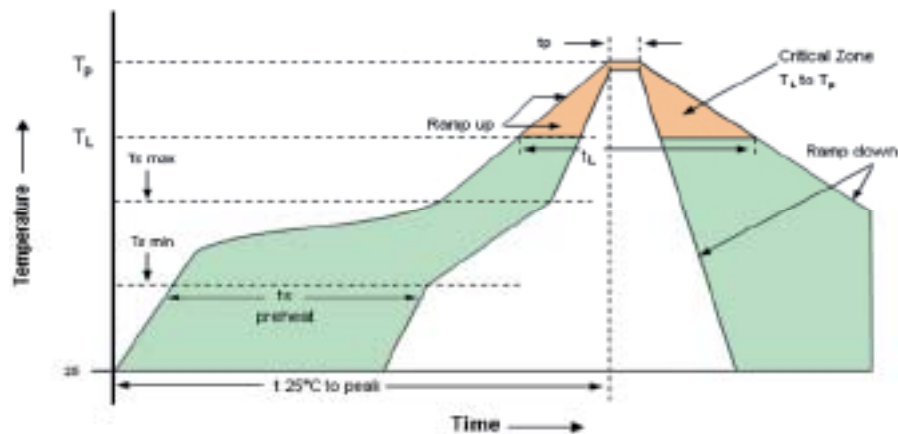
Standard Shipping Method (OX-280)



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
Typ OX-401	44	37.5	280	32

Recommended Reflow Profile

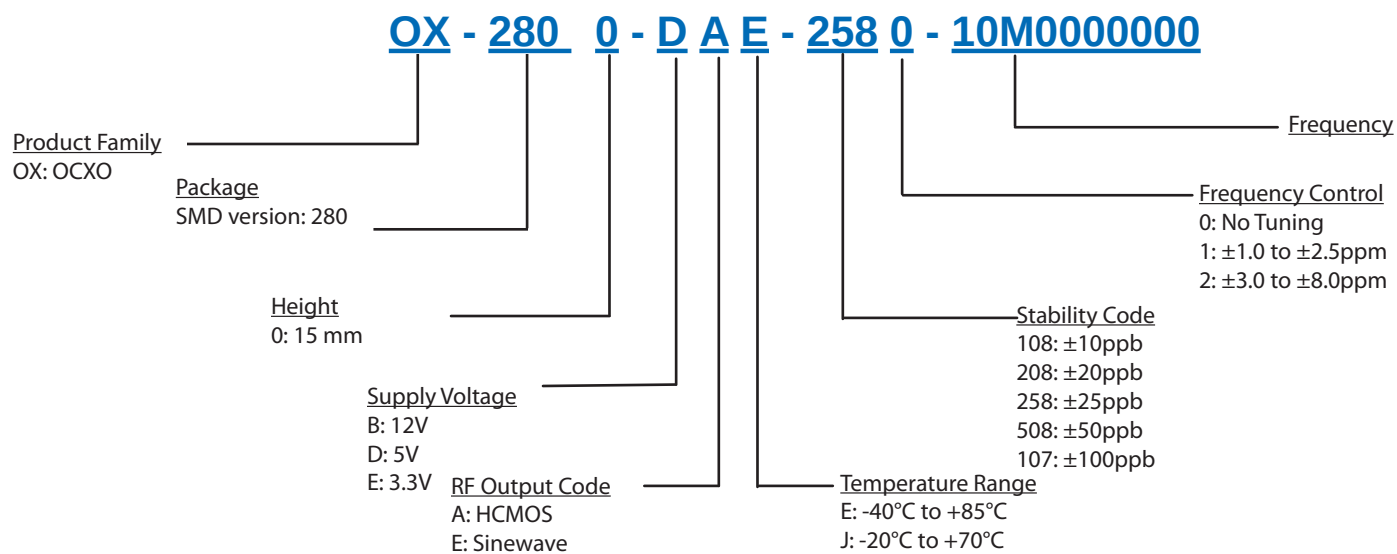
Solderprofile:



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_{smin} -Temperature Min T_{smax} -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_{smax} 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



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.

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