RALTRON
A RAMI TECHNOLOGY Company

Oven Controlled Crystal Oscillator

OX4115A-D3-2-24.576-3.3

RoHS Compliant

ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Nominal Frequency	f_o			24.576		MHz
Supply Voltage	V_s	Vs ±5% @ 25°C	3.135	3.3	3.465	V
Input Current	I_S	Steady state, @ 25°C			300	mA
	$I_{S,w}$	During warm-up ,@ 25°C			750	mA
Warm-up Time	t_W	Vs, Ta=+25°C, within ±100ppb of final frequency with reference after 1 hour on			5	min
Frequency Calibration	$\Delta f/f_0$	Ta=+25°C, after 15mins power on ref. to nominal frequency	-200		+200	ppb
Frequency Stability vs. Temperature	$\Delta f/f_0$ (T_a)	Ta= -40°C…+85°C, measurement referenced to (fmax+fmin)/2	-20		+20	ppb
Frequency Stability vs. Supply Voltage	$\Delta f/f_0$ (ΔV_{CC})	Ta=25°C, Vs±5%, load=15pF	-5		+5	ppb
Frequency Stability vs. Load Variation	$\Delta f/f_0$ (Δl)	Ta=25°C, Vs, load=15pF±5%	-5		+5	ppb
Aging, after 30 days of operation	$\Delta f/\Delta t_d$	Daily	-2.0		+2.0	ppb
	$\Delta f/\Delta t_y$	First year	-300		+300	ppb
	$\Delta f/\Delta t_y$	10 years	-2		+2	ppm
Operating Temperature	T_a		-40		+85	°C
Storage Temperature	$T_{(stg)}$	Absolute max	-40		+105	°C
Holdover Stability		24 hours, constant temp, still air, p-p			1	ppb
Free-run Accuracy		All causes 20 years life	-4.6		+4.6	ppm
Short Term Stability		τ=0.1s			0.05	ppb
Wander Compliance		G.8263 MTIE requirements met under min loop bandwidth of 0.05mHz (3200s max time constant) under G8263(amendment) appendix IV temp profile (±20˚Cexcursion at 0.5˚C/min)				

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PHASE NOISE

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
@1 Hz Offset	£ (Δf)				-80	dBc/Hz
@10 Hz Offset	£ (Δf)				-110	dBc/Hz
@100 Hz Offset	£ (Δf)				-130	dBc/Hz
@1 kHz Offset	£ (Δf)				-140	dBc/Hz
@10 kHz Offset	£ (Δf)				-145	dBc/Hz
@100 kHz Offset	£ (Δf)				-150	dBc/Hz
@1 MHz Offset	£ (Δf)				-155	dBc/Hz

CMOS OUTPUT CHARACTERISTICS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Output Levels	VOL	V_{CC} = 3.3V, load = 15pF			0.4	V
	VOH	V_{CC} = 3.3V, load = 15pF	2.4			
Duty Cycle	DC	load = 15pF	**45**		55	%
Rise/Fall Time	t_r/t_f	10% ~ 90% Vout			5	ns
Load				15		pF
Jitter		RMS, 12kHz – 5MHz		0.6		ps

ENVIRONMENTAL MECHANICAL CONDITIONS

Storage temperature range	-55°C to +105°C
Drop Test	The test shall be carried out as the provisions of the IEC60028-2-32 test Ed. 10cm height, 3 times on hard board with thickness of 3cm
Bumping Test	Device are bumped to three mutually perpendicular axes at peak acceleration of 400m/s^2, each 4000±10times, 6ms pulse duration time
Vibration Test	Frequency range: 1Hz-4Hz-100Hz-200Hz Acceleration: 0.0001g^2/Hz-0.01g^2/Hz-0.01g^2/Hz-0.001g^2/Hz Grms=1.15g Sweep time: 30 minutes (perpendicular axes each sweep time)
Mechanical Shock	100g, 6mS duration, 1/2 sine wave, 3 shocks each direction along 3 mutually perpendicular planes.
Thermal shock	0.5h@-40℃，0.5h@+85℃，Note: the changing time < 30 seconds, cycling for 100 times

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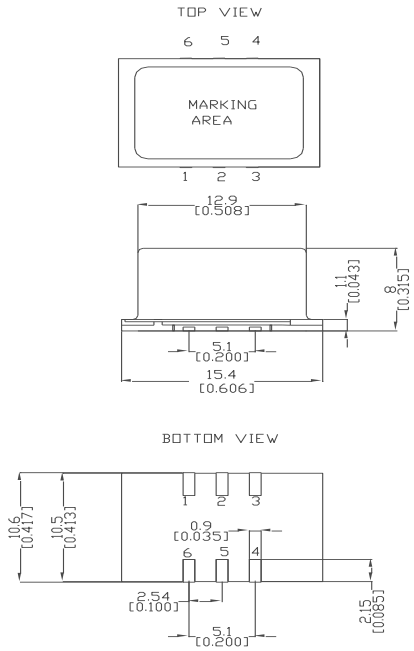
MECHANICAL DIMENSIONS AND PIN FUNCTIONING



PIN	SYMBOL	FUNCTION
1	N/C	No connect
2	N/C	No connect
3	GND	Case/Ground
4	OUTPUT	RF Output
5	N/C	No connect
6	Vs	Supply Voltage

RALTRON	Signed	Date
Created	LP	December 22, 2018
Eng. approved	SP	December 22, 2018
REV A Initial Release B CP, March 3, 2021 Updated to the current spec level		