

OSN4 Series
9.7 x 7.5 x 4.1 mm
4 Pad SMD Package

Features

- Ovenized Quartz Crystal High Precision Square Wave Generator
- HCMOS or Clipped Sinewave Output
- 3.3V nominal Supply Voltage
- 10.0MHz - 40MHz Frequency Range
- Voltage control option available

Applications

SONET / SDH / DWDM
Test & Measurement
Telecom Transmission & Switching Equipment
Base Stations / Picocell
Wireless Communication Equipment
Packet Timing Protocol (e.g. IEEE-1588)

Electrical Characteristics

Parameter	Min	Typ	Max	Unit	Condition
Frequency F_o	10	-	40	MHz	Standard frequencies: 10, 12.8, 19.2, 20, 25, and 30.72MHz
Frequency Stability vs Temperature	± 20	-	± 50	ppb	± 10 ppb available over temp range -20 to 70°C
Frequency Stability vs Supply	-	-	± 5	ppb	$\pm 5\%$ voltage change
Warm-up	-	-	± 0.1	ppm	In 5 minutes @ $+25^\circ\text{C}$, referenced to 1 hour
Aging	-	-	± 3	ppb	per day after 30 days
	-	-	± 0.6	ppm	per year
	-	-	± 3.0	ppm	10 years
Operating Temperature Range	-40	-	$+85$	$^\circ\text{C}$	
Supply Voltage ¹ V_{CC}	3.135	3.3	3.465	V	5.0V input voltage available
Current	-	-	350	mA	@turn on
Steady State	-	0.3	0.4	W	@ 25°C
Spurious	-	-	-60	dBc	
Phase Noise	10 Hz 100 Hz 1 kHz 10 kHz	-98 -126 -145 -152	-	dBc/Hz	$F_o = 20\text{MHz}$
Storage Temperature Range	-55	-	$+125$	$^\circ\text{C}$	
V_{control} Range	0	1.65	3.3	V	
Pullability	± 5	-	-	ppm	Slope positive

HCMOS

Parameter	Min	Typ	Max	Unit	Condition
Output Waveform	Squarewave				
"1" Level V_{OH}	2.4	-	-	V	
"0" Level V_{OL}	-	-	0.4	V	
Output Load	-	15	-	pF	
Duty Cycle	45	50	55	%	@0.5Vcc

Clipped Sinewave

Parameter	Min	Typ	Max	Unit	Condition
Output Waveform	Clipped Sinewave				
Output Level	0.8	-	-	Vp-p	
Output Load	10kOhm // 10pF				

Note: ¹ Place a 10nF power supply bypass capacitor next to device for correct operation



Device Marking

PLE
OSN4xxx
xx.xxM
YMDz
S/N: xxx

PLE = Pletronics
OSN4xxx = Model number/Part number*
xx.xxM = Frequency (M = MHz)
YMD = Date code (Year-Month-Day: See Table below)
z = Internal Factory Code
S/N: xxx = Serial number

* A unique number is assigned for your exact specifications.

Specifications such as part number, frequency stability, supply voltage and operating temperature range, etc. are not identified from marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Codes for Date Code YMD (Year Month Day)

Code	3	4	5	6	7	Code	A	B	C	D	E	F	G	H	J	K	L	M
Year	2023	2024	2025	2026	2027	Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Code	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	T	U	V	W	X	Y	Z
Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

Package Labeling

P/N Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII



RoHS Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial

RoHS Compliant

2nd Lvl Interconnect

Category=e4

Max Safe Temp=245C for 10s 2X Max

Pletronics Inc. certifies this device is in accordance with the RoHS and REACH directives.

Pletronics Inc. guarantees the device does not contain the following: Cadmium, Hexavalent Chromium, Lead, Mercury, PBB's, PBDE's

Moisture Sensitivity Level: 1 As defined in J-STD-020D

Second Level Interconnect code: e4

Product Weight: 0.36g

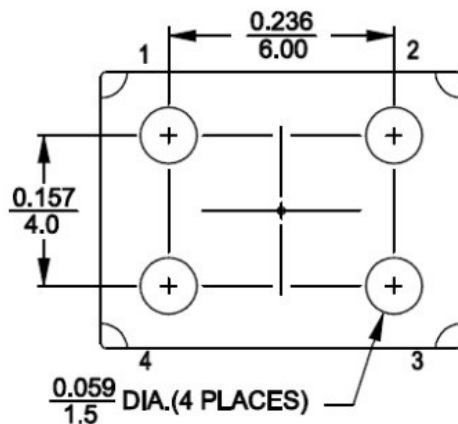
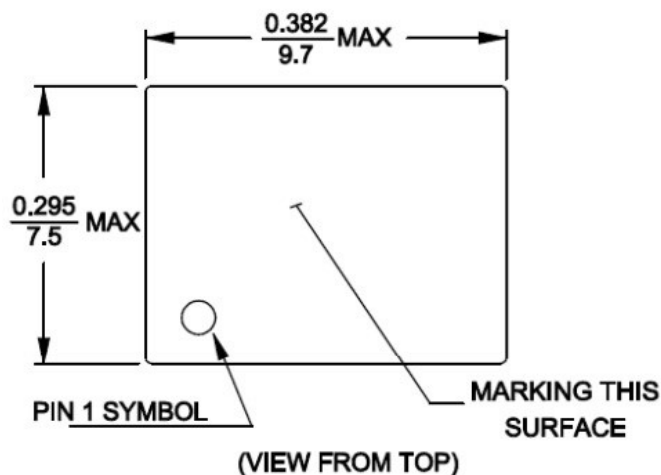
Environmental / ESD Ratings

Reliability: Environmental

Parameter	Ref Standard	Condition
Solderability	MIL-STD-202, Method 208	
Mechanical Shock	MIL-STD-202, Method 213 Test Cond J	30g, 11ms, half-sine
Vibration	MIL-STD-202, Method 201	0.06" Total p-p, 10 to 55 Hz
Thermal Shock	MIL-STD=202, Method 107 Test Cond B	5 cycles -65 to +125 Deg C

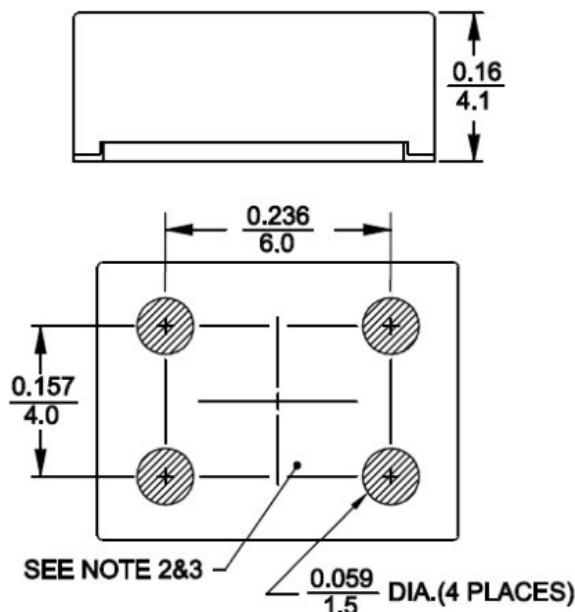
Model	Min Voltage
Human Body Model	2000V
Machine Model	200V

Mechanical Dimensions



Numbers for reference only.
(Not stamped on unit)

(VIEW FROM BOTTOM)



PIN CONNECTIONS	
PIN	FUNCTION
1 (See Note 1)	VCO INPUT or NOT CONNECTED
2	0 VOLTS & CASE
3	R. F. OUTPUT
4	+VDC

RECOMMENDED SOLDER PAD LAYOUT

Note 1. If the specification does not specify parameters for PIN 1 then PIN1 must remain unconnected.

Note 2. Copper in this area should be kept to a minimum to reduce heat loss from OCXO.

Note 3. Bottom side reflow is forbidden unless specified in the oscillator specification.

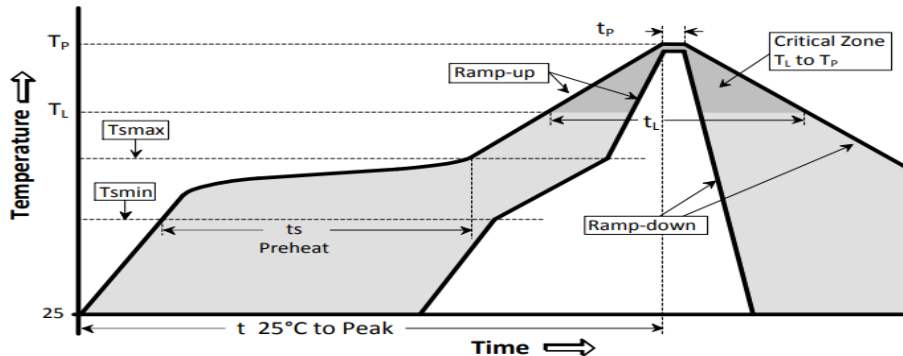
Note 4. Aqueous cleaning is FORBIDDEN

Note 5. Test condition : A 0.1uF and 10uF X7R decoupling capacitor is required close to the unit.

For Optimum Jitter Performance, Pletronics recommends:

- A ground plane under the device
- Do not route large transient signals (both current and voltage) under the device
- Do not place near a large magnetic field such as a high frequency switching power supply
- Do not place near piezoelectric buzzers or mechanical fans
- Minimize air flow across the device

Maximum Reflow Conditions in accordance with IPC/JEDEC J-STD-020C "Pb-free"

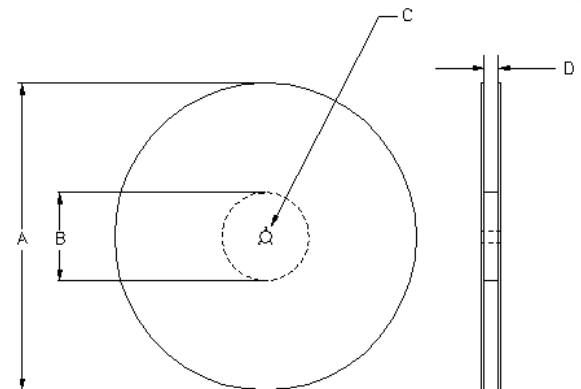
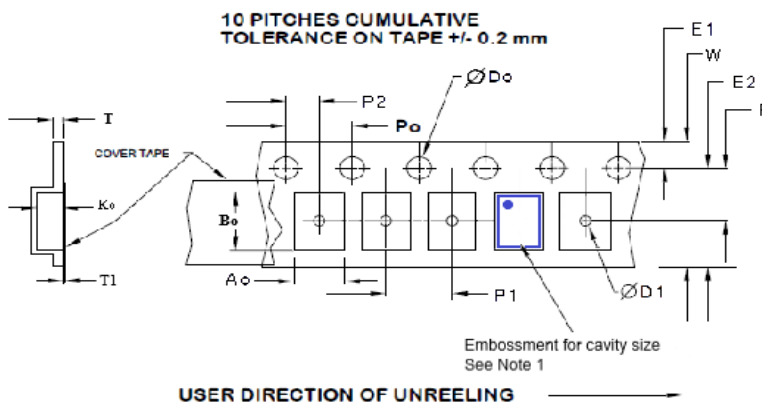


The part may be reflowed 2 times without degradation (typical for lead free processing).
NO AQUEOUS WASHING

Temperature Profile	Symbol	Condition	Unit
Average ramp-up rate	(Ts _{max} to Tp)	3°C / second max	°C / s
Ramp down Rate	T _{cool}	6°C / second max	°C / s
Time 25°C to Peak Temperature	T _{to-peak}	8 minutes max	min
Preheat			
Temperature min	TS _{min}	150	°C
Temperature max	TS _{max}	200	°C
Time TS _{min} to TS _{max}	ts	60 – 180	sec
Soldering above liquidus			
Temperature liquidus	T _L	217	°C
Time above liquidus	t _L	60 – 150	sec
Peak temperature			
Peak Temperature	T _p	260	°C
Time within 5°C of peak temperature	t _p	20 – 40	sec

Tape and Reel

Tape and Reel available for quantities of 250 to 500 per reel, cut tape for < 250. 24mm tape, 12mm pitch.



Tape Variable Dimensions Table 2

Part Size	Tape Size	E2 typ	F	P1	W max	Ao	Bo	Ko	Qty/reel standard
9775	24mm	22.25	11.5 ±0.05	12.0 ±0.1	24.2	7.8 ± 0.2	10.0 ± 0.2	4.6 ± 0.2	500

Dimensions in mm Drawings Not to scale
Note 1: Embossed cavity to conform to EIA-481-B

Tape Constant Dimensions Table 1

Tape Size	Do	D1 typ	E1	Po	P2	T typ	T1 max
24mm	1.5 +0.1 -0.0	1.5	1.75 ±0.1	4.0 ±0.1	2.0 ±0.1	0.4	0.1

Reel Dimensions (may vary) Table 3

	A		B		C	D
Reel Size	Inches	mm	Inches	mm	mm	mm
13	13.0	330	3.93	100	13.0 +0.5 -0.2	Tape size +0.4 +2.0 -0.0



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