

Helping Customers Innovate, Improve & Grow



Frequency stabilities					
Parameter	Min	Typ	Max.	Units	Condition
vs. operating temperature range (reference to +25°C)	-75		+75	ppb	-10 ... +60°C
	-100		+100	ppb	-20 ... +70°C
	-150		+150	ppb	-40 ... +85°C
Initial tolerance for fixed frequency	-1.5		+1.5	ppm	at time of shipment
vs. supply voltage change	-15		+15	ppb	$V_s \pm 5\%$
vs. load change	-15		+15	ppb	Load $\pm 5\%$
vs. aging /1 day	-3		+3	ppb	after 7 days of operation
vs. aging /1st year	-300		+300	ppb	
vs. aging /10 year	-3000		+3000	ppb	
Warm-up Time @+25°C			120	seconds	to ± 1000 ppb of freq at 1hr after turn-on
			180	seconds	to ± 100 ppb of freq at 1hr after turn-on

Supply Voltage (Vs)					
Parameter	Min	Typ	Max.	Units	Condition
Supply voltage	3.13	3.3	3.47	VDC	
	4.75	5.0	5.25	VDC	
Power consumption			2.2	Watts	during warm-up
			0.7	Watts	steady state @ +25°C
			1.2	Watts	steady state @ -40°C

RF Output					
Parameter	Min	Typ	Max.	Units	Condition
Signal	HCMOS				
Load		15		pF	
Signal Level (Vol)			0.1	Vs	
Signal Level (Voh)	0.9			Vs	
Rise/Fall Time			+4	ns	(20-80%)
Duty cycle	40		60	%	(Voh-Vol)/2
Signal	Sinewave				
Load		50		Ohm	
Output Power (0dBm)	+0	+2	+4	dBm	50 Ohm load
Output Power (+3dBm)	+3	+5	+7	dBm	50 Ohm load
Output Power (+5dBm)	+5	+7	+9	dBm	50 Ohm load
Harmonics			-30	dBc	
Sub-Harmonics			-40	dBc	
Spurious			-80	dBc	Met by qualified

Frequency Tuning (EFC)					
Parameter	Min	Typ	Max.	Units	Condition
Tuning Range	Sufficient to compensate for 10 years aging				EFC (0V to Vref)
EFC Input DC Resistance	100		200	kOhm	
Vref	+2.4	+2.5	+2.6	VDC	source current 1 mA maximum

Additional Parameters [>55 to 120 MHz]					
Parameter	Min	Typ	Max.	Units	Condition
Phase Noise		-85	-80	dBc/Hz	10 Hz
		-115	-110	dBc/Hz	100 Hz
		-140	-135	dBc/Hz	1 KHz
		-145	-140	dBc/Hz	10 KHz
ADEV			5X10 ⁻¹¹		
G-Sensitivity (total gamma)			1	ppb/g	Test at 10g sine vibration at 100Hz

Environmental Conditions (Qualified to meet)	
Radiation Tolerant (operating)	Active devices are selected from a family of product that is inherently radiation tolerant to meet 100krad (SI) total dose
Mechanical Shock (non operating)***	MIL-STD-202, Test Method 213, Condition E (1000G, 0.5msec)
Vibration Random (non operating)***	MIL-STD-202, Test Method 214, Condition I-H (30Grms, 3 minutes/axis)
Vibration Sine (non operating)***	MIL-STD-202, Test Method 204, Condition D (20Gpk, 20 minutes/axis)
Storage Temperature***	-55°C minimum and +85°C maximum
Note: *** Met by qualification	

Screening Options		
Ordering Code	"S"	"B"
Test Inspection	S-Level Screening	B-Level Screening
Nondestructive Bond Pull	MIL-STD-883 Method 2023	N/A
Internal Visual	Internal Visual Per Mil-PRF-55310 Requirement	Internal Visual Per Mil-PRF-55310 Requirement
Stabilization Bake	MIL-STD-883 Method 1008, Condition C 150°C for 48hrs	MIL-STD-883 Method 1008, Condition C 150°C for 48hrs
Thermal Shock	MIL-STD-883 Method 1011, Condition A 0°C to 100°C for 15cycles	N/A
Temperature Cycling (1)	MIL-STD-883 Method 1010, Condition A -55°C to 85°C (2) for 10cycles	MIL-STD-883 Method 1010, Condition A -55°C to 85°C (2) for 10cycles
Constant Acceleration (1)	MIL-STD-883 Method 2001 1000g's (3) Y1 Only	MIL-STD-883 Method 2001 1000g's (3) Y1 Only
PIND	MIL-STD-883 Method 2020, Condition B 10g peak at 60Hz minimum	N/A
Electrical Test	Per Mil-PRF-55310 Requirement	Per Mil-PRF-55310 Requirement
Burn-in (1)	85°C (2) for 240hrs	85°C (2) for 240hrs
Radiographic	MIL-STD-883 Method 2012	N/A

Note:

- (1) These test inspections deviate from screening requirements for class 2 oscillator in MIL-PRF-55310
- (2) The maximum operating and storage temperature of the EX-219 is +85°C. The EX-219 shall not be exposed to temperature higher than +85°C indefinite time. However EX-219 can tolerate manufacturing process temperature up to +100°C maximum for a total of 168hrs total accumulative times
- (3) The design and construction of the EX-219 can withstand up to 1000g's constant acceleration

Group A Inspection

As standard, Group A Inspection is performed in accordance with Table V of MIL-PRF-55310

Subgroup 1: Electrical test

Subgroup 2: Visual and Mechanical inspection

Subgroup 3: Solderability

Group B Inspection

As standard, Group B Inspection consists of frequency aging test in accordance with MIL-PRF-55310

1st year aging projection is performed from the group B 30days aging data.

Group C Inspection

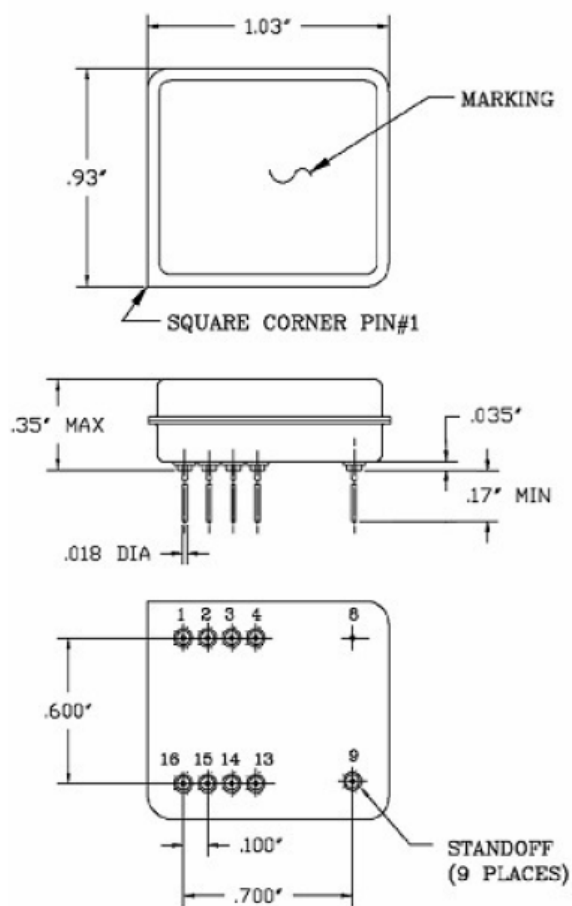
Group C Inspection is optional and shall be specified by customer purchasing order.

Group C Inspection can be performed in accordance with either MIL-PRF-55310 or MIL-PRF-38534

Other 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.

Outline Drawing / Enclosure



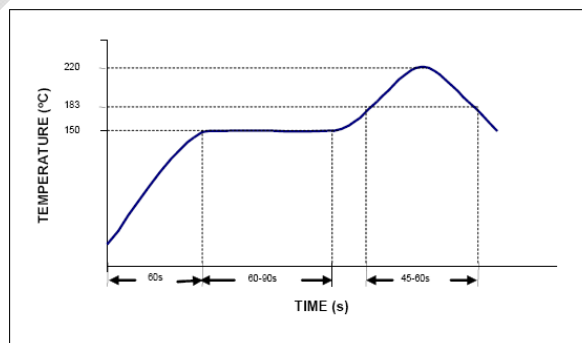
Dimensions in inches

Pin Connections		
Pin	EFC Option	Fixed Frequency Option
1	EFC Input	No Connection
2-4	No Connection	No Connection
8	Ground (Case)	Ground (Case)
9	RF Output	RF Output
13-14	No Connection	No Connection
15	Vref	No Connection
16	Supply Voltage Input (Vs)	Supply Voltage Input (Vs)

Pin numbers are for reference only- They are not marked on the part.

Recommended Solder Reflow

Maximum temperature is 230°C for 10 seconds



EX - 219 - C A F - 157 A S S - 100M000000

Product

EX: EMXO

Package Type

219: 24x26x9 mm

Supply Voltage

C: 5V

D: 3.3 V

RF Output

A: CMOS

G: Sinewave (0 dBm)

H: Sinewave (+3 dBm)

J: Sinewave (+5 dBm)

Temperature Range

K: -10 to +60°C

D: -20 to +70°C

F: -40 to +85°C

Frequency

Crystal Options

S: Swept Quartz

N: Non-Swept Quartz

Screening Options

S: "S" Level Screening

B: "B" Level Screening

E: "EM" Engineering Model

Other Options

A: Electrical Tuning

F: Fixed Frequency

Stability

508: ±50ppb

758: ±75ppb

107: ±100ppb

157: ±150ppb

Rev: 3/26/15 SEM

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