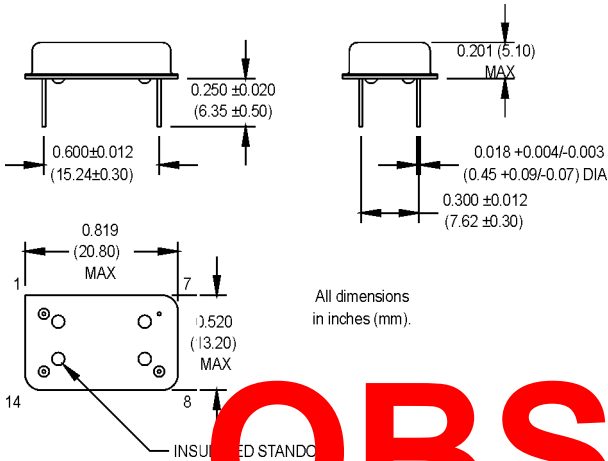


ML Series Micropower CMOS Oscillators



Ordering Information

Product Series ML 1 3 F A D 00.0000 MHz

Temperature Range
 1: 0°C to +70°C 2: -40°C to +85°C
 5: -10°C to +85°C 6: -20°C to +70°C

Stability
 2: ±500 ppm 3: ±100 ppm
 9: ±200 ppm

Output Type
 F: Fixed

Symmetry/Logic Compatibility
 A: 40/60 C: 45/55 CMOS (only on divider freq.)

Package/Lead Configurations
 D: DIP; Nickel Header
 G: Gull Wing; Nickel Header

Frequency (customer specified)

Available Stabilities vs. Temperature

OBSOLETE

Temp	Stability 2	Stability 3	Stability 9
A	A	N	A
N	A	N	N
5	A	N	N
6	A	N	N

See page 146 for gull wing configuration.

Pin Connections

PIN	FUNCTION(S)
1	N/C
7	Circuit/Case Ground
8	Output
14	+Vdd

Divider Output Frequencies

2048 Hz	128 Hz	4 Hz
1024 Hz	64 Hz	2 Hz
512 Hz	32 Hz	
256 Hz	8 Hz	

	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition	
Electrical Specifications	Frequency Range	F	2 Hz		32.768	kHz	See "Divider Output F frequencies" table for available frequencies	
	Frequency Stability	$\Delta F/F$	(See Ordering Information)					
	Operating Temperature	T _A	(See Ordering Information)					
	Storage Temperature	T _s	-55		+125		°C	
	Input Voltage	V _{cc}	3.0	5.0	6.0		V	
	Input Current ¹ 32.768 kHz only	I _{dd}			15		μA	V _{dd} = 3.0 V
					25		μA	V _{dd} = 5.0 V
					35		μA	V _{dd} = 6.0 V
	Symmetry (Duty Cycle)		40	50	60		%	½ V _{dd}
	Load ²				15		pF	
	Rise/Fall Time ³ < 32.768 kHz	Tr/Tf			50		ns	
			32.768 kHz			10		ns
	Logic "1" Level	V _{oh}	80%	V _{dd}			V	
Logic "0" Level	V _{ol}			20%	V _{dd}	V		
Startup Time	T _s		500			ms	@ 32.768 kHz	
Environmental	Mechanical Shock	Per MIL-STD-202, Method 213, Condition C						
	Vibration	Per MIL-STD-202, Method 201 & 204						
	Reflow Solder Conditions	See page 147						
	Hermeticity	Per MIL-STD-202, Method 112 (1 x 10 ⁻⁸ atm.cc/s of helium)						
	Solderability	Per EIAJ-STD-002						

1. Supply current for divided output is slightly higher than listed.
 2. See load circuit diagram #2 on page 148.
 3. Rise/Fall times are measured between 20% V_{dd} and 80% V_{dd}.

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