

# CRYSTAL

Resistance Welded UM-1, 2, 4 & 5 *ECUM* Series



PART NUMBERING GUIDE		FREQUENCY STABILITY vs. TEMPERATURE										
<b>ECUM 1 - XXXX - X - 30.000M</b>		X = Available										
PACKAGE 1=UM-1 2=UM-2 4=UM-4 5=UM-5	FACTORY ASSIGNED CODE	FREQUENCY	FACTORY ASSIGNED MANUFACTURING CODE	±5	±7.5	±10	±15	±20	±30	±100		
				Operating Temp. Range (°C)	0 to 50	X	X	X	X	X	X	X
				-10 to 60		X	X	X	X	X	X	
				-20 to 60		X	X	X	X	X	X	
				0 to 70		X	X	X	X	X	X	
-10 to 70		X	X	X	X	X	X					
-20 to 70			X	X	X	X	X					
-30 to 60			X	X	X	X	X					
-20 to 85				X	X	X	X					
-30 to 70				X	X	X	X					
-30 to 85				X	X	X	X					
-40 to 85				X	X	X	X					
-40 to 90					X	X	X					
-40 to 105						X	X					

ELECTRICAL SPECIFICATIONS			
Frequency Range	10.000MHz to 150.000MHz		
Frequency Tolerance (at 25°C)	±5ppm, ±7.5ppm, ±10ppm, ±15ppm, ±20ppm, ±30ppm, ±50ppm, or ±100ppm		
Frequency Stability	See Frequency Stability vs. Temperature Table Above		
Operating Temperature Range	See Frequency Stability vs. Temperature Table Above		
Aging (at 25°C)	±1ppm / year Maximum, ±3ppm / year Maximum, or ±5ppm / year Maximum		
Storage Temperature Range	-55°C to 125°C		
Insulation Resistance	500 Megaohms Minimum at 100V <sub>DC</sub>		
Load Capacitance (C <sub>L</sub> )	8pF to 50pF, or Series Resonant		
Shunt Capacitance	7pF Maximum		
Drive Level	Fundamental	10.000MHz to 15.999MHz	50 μWatts Maximum
	Fundamental	16.000MHz to 40.000MHz	10 μWatts Maximum
	Third or Fifth Overtone	30.000MHz to 150.000MHz	100 μWatts Maximum

EQUIVALENT SERIES RESISTANCE (ESR) AND MODE OF OPERATION (MODE)					
UM-1 & UM-2			UM-4 & UM-5		
Frequency Range	ESR (Ω)	Mode	Frequency Range	ESR (Ω)	Mode
10.000MHz to 15.999MHz	50 Max	Fundamental	10.000MHz to 15.999MHz	60 Max	Fundamental
16.000MHz to 40.000MHz	40 Max	Fundamental	16.000MHz to 40.000MHz	50 Max	Fundamental
30.000MHz to 90.000MHz	70 Max	Third Overtone	30.000MHz to 90.000MHz	80 Max	Third Overtone
70.000MHz to 150.000MHz	100 Max	Fifth Overtone	70.000MHz to 150.000MHz	120 Max	Fifth Overtone

MECHANICAL DIMENSIONS	
<p>UM-1 UM-4 UM-5</p> <p>X Dimension UM-1 = 8.1 MAX UM-4 = 4.7 MAX UM-5 = 6.0 MAX</p> <p>Dimensions in mm</p>	<p>UM-2</p> <p>Dimensions in mm</p>

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Specifications subject to change without notice. •Contact factory for latest revision• 1/99• (CR10)(CR20)(CR11)(CR12)