

## QUARTZ CRYSTALS

### FEATURES

- Cost effective
- Excellent aging
- Wide frequency range
- Low profile
- Excellent reliability
- Tape and Reel (1,000 pcs)

UM 1, 5, 4 quartz crystals are ideal for use in compact communication equipment.

### PART NUMBERING GUIDE "EXAMPLE"

PART NUMBER	LOAD CAPACITANCE*	FREQUENCY
UM1	- 20	- 6.144 MHz

\* Load capacitance (xx=xx pF, S= series resonance)

Note: See Product Selection Guide for additional options.

### OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS		UM-1	UM-5	UM-4
FREQUENCY RANGE	FUNDAMENTAL	10.000 ~ 30.000 MHz		
	3RD OVERTONE	25.000 ~ 90.000 MHz	30.000 ~ 90.000 MHz	
FREQUENCY TOLERANCE (@ +25°C)		See Table 1		
FREQUENCY-TEMPERATURE TOLERANCE (@ +25°C)		See Table 2		
OPERATING TEMPERATURE RANGE	T <sub>OPR</sub>	See Table 2		
STORAGE TEMPERATURE RANGE	T <sub>STG</sub>	-40 ~ +90°C		
LOAD CAPACITANCE	(C <sub>L</sub> )	10pF – Series (Customer Specified) (18pF Std)		
SHUNT CAPACITANCE	(C <sub>0</sub> )	7 pF max.		
DRIVE LEVEL	(D <sub>L</sub> )	500 μW max.		
CRYSTAL CUT		AT-cut		

### PACKAGE DIMENSIONS (mm)

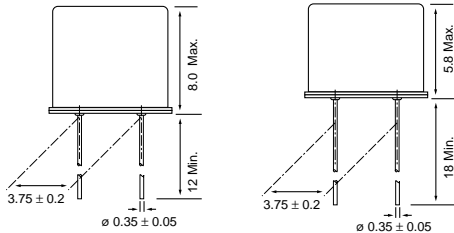


Figure 1) UM-1 Crystal Unit Side and Bottom view

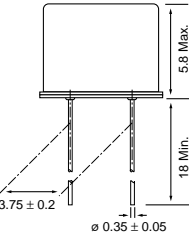


Figure 2) UM-5 Crystal Unit Side and Bottom view

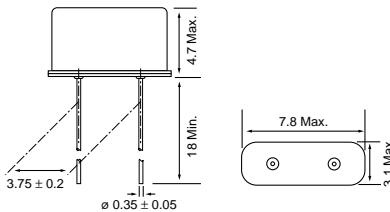


Figure 3) UM-4 Crystal Unit Side and Bottom view

TABLE 1 FREQUENCY TOLERANCE (@ +25°C)

Tolerance (x 10 <sup>-6</sup> )				
±10	±15	±20	±30	±50
●	●	○	○	○

● recommended  
○ available

TABLE 2 FREQUENCY-TEMPERATURE TOLERANCE (@ +25°C)

FREQUENCY	Tolerance (x 10 <sup>-6</sup> )						
	±3.0	±5.0	±7.5	±10	±15	±20	±30
0 ~ +50°C	○	○	○	○			
-10 ~ +60°C		○	○	●	○		
-20 ~ +70°C			○	○	○	○	
-30 ~ +75°C					○	○	○
-30 ~ +80°C					○	○	●
-35 ~ +80°C						○	○
-40 ~ +85°C						○	○

TABLE 3 EQUIVALENT SERIES RESISTANCE / MODE OF OSCILLATION

NOMINAL FREQUENCY (MHz)	MODE	ESR (Ω)	
		UM-1	UM-5, UM-4
10 ~ 15	FUNDAMENTAL	40 max.	50 max.
15 ~ 30	FUNDAMENTAL	25 max.	30 max.
25 ~ 30	3rd	50 max.	60 max.
30 ~ 90	3rd	45 max.	60 max.