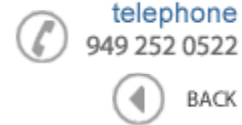




Data Sheet



Product Category: SMD Quartz Crystal

Series Number	Package	Description	Last Modified
224	Ultra Slim	32.768 KHz Crystal	Jan. 02 2005

FEATURES

- Ultra slim package
- Low profile
- Tape & Reel
- Long term stability
- Industry standard footprint
- Excellent shock resistance
- Excellent environmental characteristics
- RoHs / Lead Free compliant



OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS		CHARACTERISTICS	UNITS
Nominal Frequency	f_O	32.768 (typ.)	KHz
Turnover Temperature	T_O	+25 $\pm$ 5	$^{\circ}$ C
Operating Temperature	T_{OPR}	-40 ~ +85	$^{\circ}$ C
Storage Temperature	T_{STG}	-55 ~ +125	$^{\circ}$ C
Equivalent Series Resistance	R_1	65 max.	Kohm
Load Capacitance	C_L	12.5 (typ.) / 7.0 (Optional)	pF
Motional Capacitance	C_1	1.9 (typ.)	fF
Shunt Capacitance	C_0	0.8 (typ.)	pF
Temperature Coefficient	K	-0.000000040 / $^{\circ}$ C ² max.	-
Drive Level	D_L	1 max.	μ W
Insulation Resistance	IR	500 min. DC 100V	Mohm
Aging (First Year)	$\Delta f/f_0$	$\pm$ 3 PPM max. @25 $^{\circ}$ C	PPM
Frequency Tolerance	@25 $^{\circ}$ C	$\pm$ 20	PPM
Q Factor	Q	40,000 min.	-

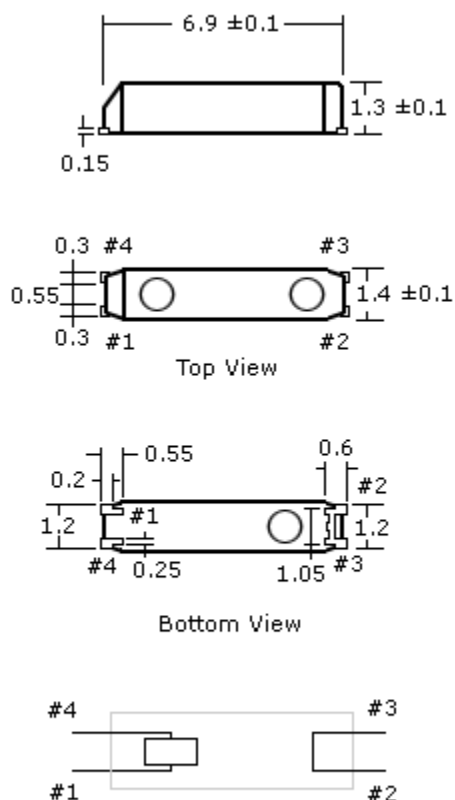
PACKAGE DIMENSIONS (mm)

Figure 1) Pin Connection

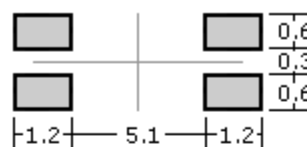
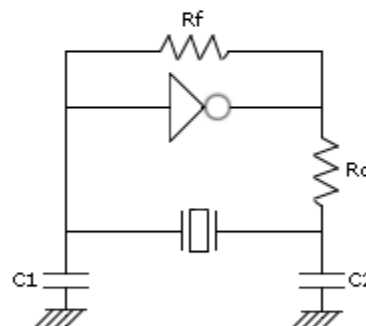


Figure 2) Land Pattern - Top View

RECOMMENDED OSCILLATION CIRCUIT**ELECTRICAL CHARACTERISTICS**

IC: 74HCU04AP
 Rf: 10 Megohms
 Rd: 330 Kohms
 C1 = 14pF
 C2 = 14pF
 Vdd = 3.0V

PART NUMBER GUIDE

Size	Figure No.	Frequency	Load Capacitance	Part Number	Packaging**
SMD	1, & 2	32.768	12.5	224-000312-20	Blank* = Bulk -TR = Tape/ Reel
			7.0	224-000307-20	

NOTE: - Deviations on all parameters available. Please consult Oscilent for details.

DEFINITIONS: - Click on the characteristic names above, for definitions of the particular characteristic.

***STANDARDS:** - "Blank" part number selections, indicate standard variables for the particular characteristic.

****PACKAGING:** - Click on the packaging name above for tape/reel specifications

Oscilent Corporation - CALL **949.252.0522**

Series No.: **224**

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