KoT cut OP AW Crystal Unit

High precision / 500 MHz to 800 MHz / 3.2 mm x 2.5 mm

FEATURES

- OPAW $^{\ensuremath{\text{B}}}$ resonator using the new patent-pending cut angle " KoT cut $^{\ensuremath{\text{B}}}$ " KoT: Kerfed orthogonal plate waves for zero Temperature coefficient OPAW: Orthogonal Plate Acoustic Waves
- · High fundamental frequency between 500 MHz to 800 MHz
- · Excellent frequency stability compared to AT-cut resonators and SAW resonators \rightarrow Frequency tolerance +/- 10 ppm available
- → Stability over temperature is twice as good compared to AT-cut resonator
- KoT- resonators lowers oscillator phase noise \rightarrow -140 dBc/Hz @ offset 10 kHz (Typ.)
- · It can oscillate with a normal Colpitts oscillator circuit

APPLICATIONS

- · 400 Gbps / 800 Gbps network equipment
- · High speed AD / DA converter
- · Optical modules
- → Replacement for SAW resonators

STANDARD SPECIFICATIONS

	Specifi	cations			
Item	(Standard) (High precisi		Unit	Conditions / Remarks	
Nominal frequency	500 t	o 800	MHz	-	
Frequency tolerance	±20	±10	ppm	@25 °C	
Equivalent series resistance (Max.)	3	0	Ω	640MHz	
Shunt capacitance (Max.)	6	.0	pF	-	
Storage temperature	-55 te	o +125	°C	-	
Operating temperature	-40 to +85,	-55 to +125	°C	-	
Frequency / temperature characteristics	±20	±10		-40 to +85 Refer to 25 °C	
	±50	±20	ppm	-55 to +125 Refer to 25 °C	
Drive level (Max.)	50	00	μW	-	

GENERAL NOTES

- · This document is created based on products under development.
- · All the specifications are subject to change without notice.
- · Phase noise and jitter characteristics are based on IC's recommended by RIVER.
- The information in this document is subject to change without notice.

COMPARISON WITH SAW RESONATOR



Temperature [℃]

OUTLINE DIMENSIONS

 $(3.2 \times 2.5 \times 0.7 \text{ mm})$





Internal Connection <Top View>



Pin	Connection
#1	Crystal
#2	Ground
#3	Crystal
#4	Ground

• Pin #2 & 4 are connected to the metal lid (*1)

RECOMMENDED LAND PATTERN

lid(*1)

Aetal

(Unit: mm)



	KCR-04	SAW	AT + PLL		KCR-04 (Typ.)	Typical SAW resonato
Nominal Frequency	Excellent	Fair	Excellent	Nominal Frequency	640 MHz	640 MHz
Frequency vs. Temperature Characteristics	Excellent	Fair	Good	Motional Resistance [R1]	18 Ω	16 Ω
Aging	Excellent	Good	Excellent	Shunt Capacitance [C ₀]	2.1 pF	2.7 pF
Jitter Characteristics	Excellent	Excellent	Fair	Motional Capacitance [C1]	1.7 fF	1.3 fF
Phase-Noise Performance	Excellent	Excellent	Fair	Motional Inductance [L1]	38 µH	47 μH
High Frequency	Excellent	Excellent	Excellent	Capacitance Ratio [r]	1300	2100



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