

Features

- 32.768 kHz RTC oscillator in seam sealed ceramic package
- Supply voltage : 1.8V ~ 3.3V
- CMOS output
- Ultra low current consumption
- Tri-state function available for power saving
- Dimensions (mm) : L : 1.65 x W : 1.25 x H : 0.58
- RoHS and REACH compliant, Pb-free, Halogen-free

Applications

- Real-time clock (RTC)
- System in sleep mode or low energy mode timekeeping

Electrical Characteristics

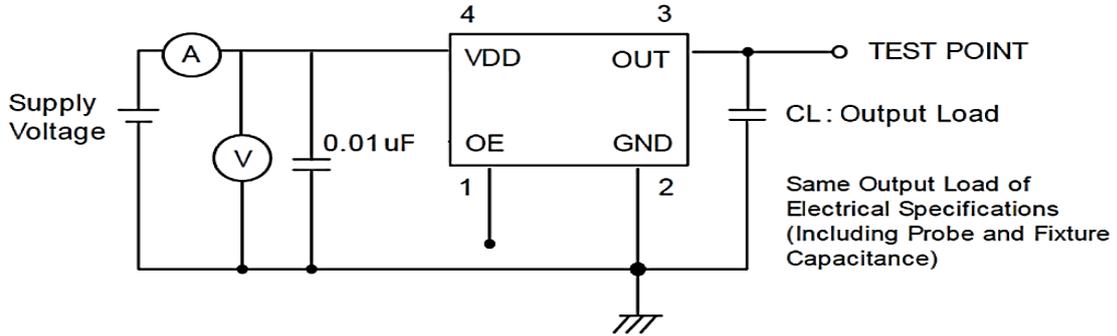
Item	QTK161	Conditions
Frequency Range (F_0)	32.768 kHz	
Frequency Stability (F_{stab})	± 25 ppm	-10°C ~ +70°C; Note[1]
	± 50 ppm, ± 25 ppm	-40°C ~ +85°C; Note[1]
Operating Temperature Range (T_{OTR})	-10°C ~ +70°C	
	-40°C ~ +85°C	
Supply Voltage (V_{DD})	1.8V, 2.5V, 3.3V	$V_{DD} \pm 10\%$
Current Consumption (I_{DD})	15 μ A Max.	$C_L = 15$ pF
Standby Current (I_{CCST})	5 μ A Max.	OE = Low
Output Type	CMOS	
Output Load (C_L)	15 pF	
Output Voltage High (V_{OH})	90% V_{DD} Min.	
Output Voltage Low (V_{OL})	10% V_{DD} Max.	
Rise & Fall Time (T_r / T_f)	20 ns Max.	10% ~ 90% of V_{DD}
Duty Cycle	45% ~ 55%	
Start-up Time	10 ms Max.	To 90% of final amplitude
Enable Voltage High (V_{IH}), Logic "1"	70% V_{DD} Min.	Enable control @ Pin 1 Note [2]
Enable Voltage Low (V_{IL}), Logic "0"	30% V_{DD} Max.	
Aging (F_{aging})	± 3 ppm Max.	at 25°C \pm 3°C, first year
Storage Temperature Range (T_{STR})	-55°C ~ +125°C	

Notes:

[1] Inclusive of frequency tolerance at 25°C, variation over temperature, supply voltage variation, aging and vibration.

[2] Output will be enable if Pin1 is Logic "1" or Open; Output will be disable if Pin1 is Logic "0".

Testing diagram:

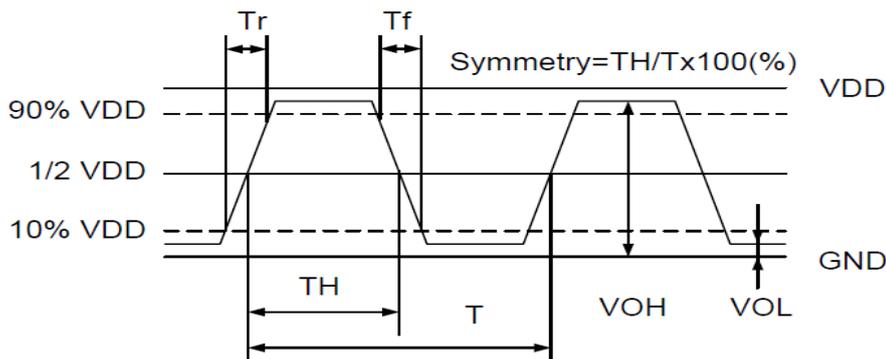


Notes: Sets CL to 15pF for simulation IC load. Customer does not need to layout it in reality circuit.

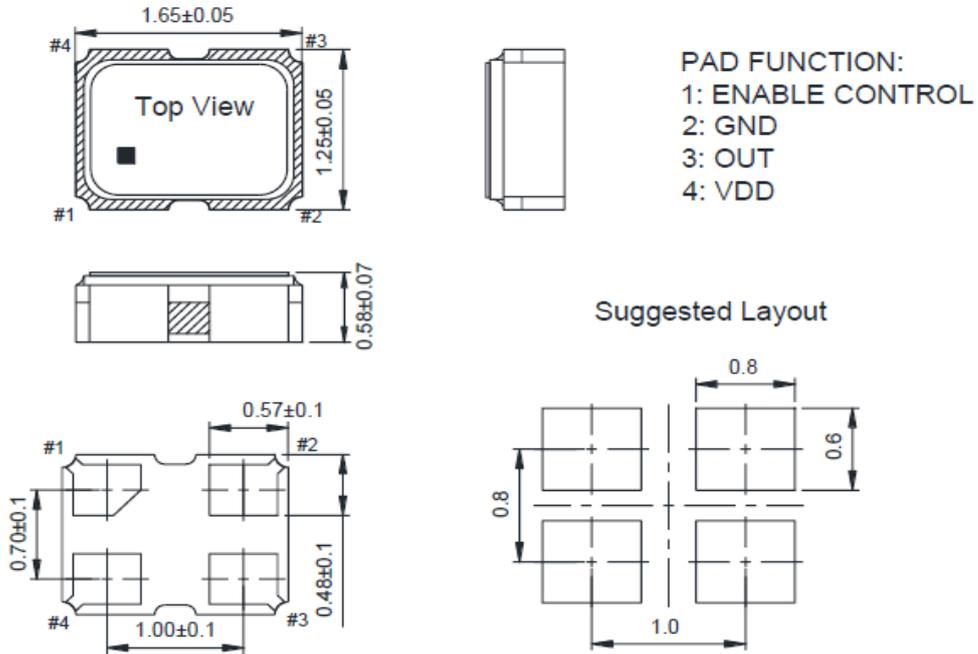
Pad 1 (OE)	Pad 3 (Output)	Oscillator
High (or open)	OSC out	Normal operation
Low	High impedance	Stop oscillation

Waveform conditions :

Waveform measurement system should have min. bandwidth 5 times of the frequency being tested.



Dimensions



Ordering Information

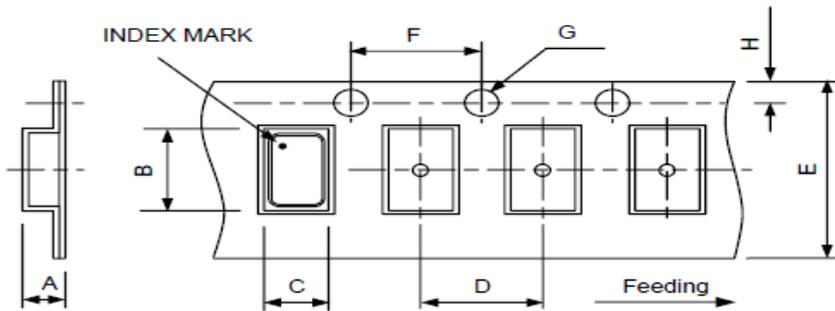
QTK161 - 32.768K - **B** **E** - **T**

Supply Voltage	
B	3.3 V
C	2.5 V
D	1.8 V

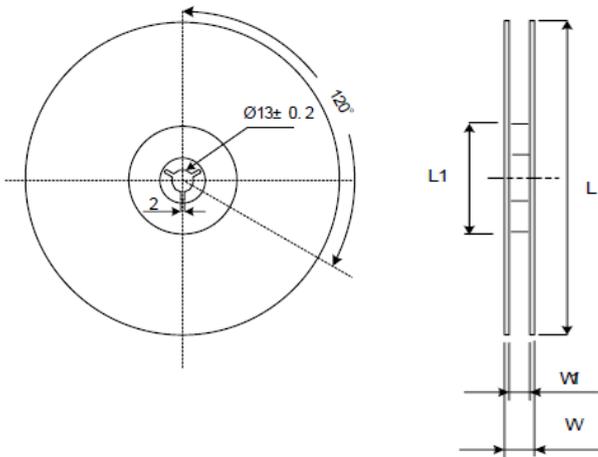
Packaging Method	
T	Tape & Reel

Frequency Stability	
A	± 25 ppm (-10°C ~ +70°C)
E	± 50 ppm (-40°C ~ +85°C)
D	± 25 ppm (-40°C ~ +85°C)

Packing



DIMENSIONS	A	B	C	D	E	F	G	H	(UNIT : mm)
	0.80	1.80	1.40	4.00	8.00	4.00	1.55	1.75	



DIMENSIONS	L	L1	W	W1	pcs / Reel (UNIT : mm)
	178	13	11.5	8	8

Reflow Profile

Total time : 600 sec. Max.
Solder melting point : 220°C

