

Customer Code : \_\_\_\_\_

# DATASHEET

DAPU P/N :     **T32-B513-32.00MHz**    

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DAPU			Customer Approval
Drew	Audited	Approved	Stamp, please! Thanks!
Date: 2024.09.05			

## Guangdong Dapu Telecom Technology Co.,Ltd

Building 5, No.24, Industrial East Road, Songshanhu Park, Dongguan, Guangdong, P.R. China

TEL: 0086-0769-88010888 FAX: 0086-0769-81800098





## 1. Electrical Parameters

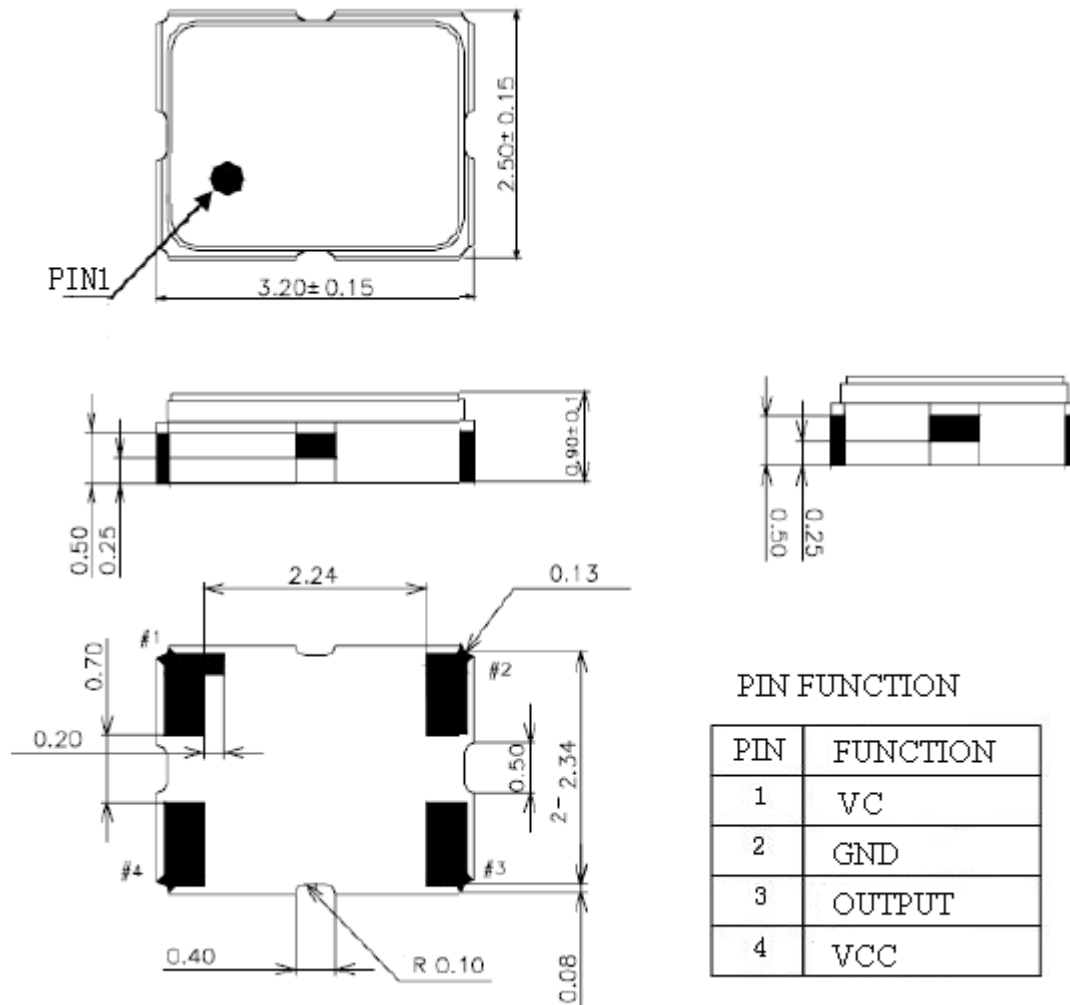
MODEL: T32-B513-32.00MHz							
Item	Description	Parameters			Unit	Test Condition	
		Min.	Typ.	Max.			
Output	Frequency	32.00			MHz		
	Output Waveform	Clipped Sine Wave					
	Vp-p	0.8			V		
	Start up Time			3	ms	Stabilization time to +/-0.5ppm of final frequency.	
	Load	10KΩ//10pF					
Frequency Stabilities	Overall Stability	-4.6		+4.6	$\times 10^{-6}$	Including frequency stability vs.temperature tolerance ex factory, aging over 20 years, supply&load variation.	
	Frequency Tolerance vs. Operating Temperature Range	-0.28		+0.28	$\times 10^{-6}$	T <sub>A</sub> varied from -40 to 85°C, measurement referenced to frequency observed with $f_{ref}=(f_{max}+f_{min})/2$ , V <sub>cc</sub> =3.3V, V <sub>c</sub> =1.5V O <sub>load</sub> =10KΩ//10pF, temperature variable speed less than 2°C per minute.	
	Initial Frequency Tolerance		-1		+1	$\times 10^{-6}$	Measurement referenced to frequency observed with T <sub>A</sub> =25°C, V <sub>cc</sub> =3.3V, V <sub>c</sub> =1.5V within 30 days after ex-works.
			-0.5		+0.5	$\times 10^{-6}$	Measurement referenced to frequency before reflow, tested with T <sub>A</sub> =25°C, V <sub>cc</sub> =3.3V, V <sub>c</sub> =1.5V, O <sub>load</sub> =10KΩ//10pF. At least 4 hours of static placement at room temperature is necessary after completion of 2 times reflow.
	Frequency Tolerance vs. Supply Voltage	-0.1		+0.1	$\times 10^{-6}$	measurement referenced to frequency observed T <sub>A</sub> =25°C, V <sub>cc</sub> varied from 3.13V to 3.47V, V <sub>c</sub> =1.5V and O <sub>Load</sub> =10KΩ//10pF.	
	Frequency Tolerance vs. Load	-0.1		+0.1	$\times 10^{-6}$	5% load change measurement referenced to frequency observed with T <sub>A</sub> =25°C, V <sub>cc</sub> =3.3V, V <sub>c</sub> =1.5V, O <sub>Load</sub> =10KΩ//10pF.	
	Holdover	-0.37		+0.37	$\times 10^{-6}$	Including frequency stability over temp. and short term aging in 24h.	
	Short Term		0.1	0.2	$\times 10^{-9}$	Allan Deviation (ADEV), tau=1 second, at constant temperature.	



	Aging Tolerance Per Day	-0.02		+0.02	$\times 10^{-6}$	$T_A=25^\circ\text{C}$ , $V_{cc}=3.3\text{V}$ , $V_c=1.5\text{V}$ and after 1h of operation.
	Aging Tolerance First Year	-1		+1	$\times 10^{-6}$	
	Aging Tolerance 20 Years	-3		+3	$\times 10^{-6}$	
Power Supply	Current Consumption			3	mA	@ $25^\circ\text{C}$ , $V_{cc}=3.3\text{V}$ , $V_c=1.5\text{V}$ $O_{load}=10\text{K}\Omega//10\text{pF}$ .
	Supply Voltage	3.13	3.3	3.47	V	
Phase Noise	Phase Noise		-85	-80	dBc/Hz	10Hz
			-110	-105		100Hz
			-135	-130		1KHz
			-150	-145		10KHz
			-155	-150		100KHz
Voltage Control Characteristics	Frequency Tuning Range	-15		-10	$\times 10^{-6}$	$V_c=0.5\text{V}$ . measurement referenced to $V_c=1.5\text{V}$
		-1		+1	$\times 10^{-6}$	$V_c=1.5\text{V}$ . measurement referenced to exactly 32.00MHz
		+10		+15	$\times 10^{-6}$	$V_c=2.5$ . measurement referenced to $V_c=1.5\text{V}$
	Linearity			10	%	
	Slope	Positive				
	Input Impedance	100			K $\Omega$	
Environmental Conditions	Operable Temperature	-40		+85	$^\circ\text{C}$	
	Storage Temperature	-55		+105	$^\circ\text{C}$	
	ESD Level	Human Body Model, class2: 2000V to 4000V; ANSI/ESDA/JEDEC JS-001-2010.				
		Machine Model, class B: 200V to 400V; JEDEC JESD22-A115C.				
	Moisture Sensitivity Level	Level 1.				
	Vibration	Test Condition: 0.75mm ;acceleration:10g;10Hz~2000Hz, one cycle per 30 min, test 2 hour. (3 times for each 3 directions X ,Y , Z ).IEC 68-2-06 Test Fc.				
Shock	100g; 6ms; half sine wave (3 times for each 3 directions X ,Y , Z ),IEC 68-2-27 Test Ea/Severity 50A.					
Full Package Storage	Relative humidity (%)	20% ~ 70%				
	Temperature ( $^\circ\text{C}$ )	-10~35 $^\circ\text{C}$				



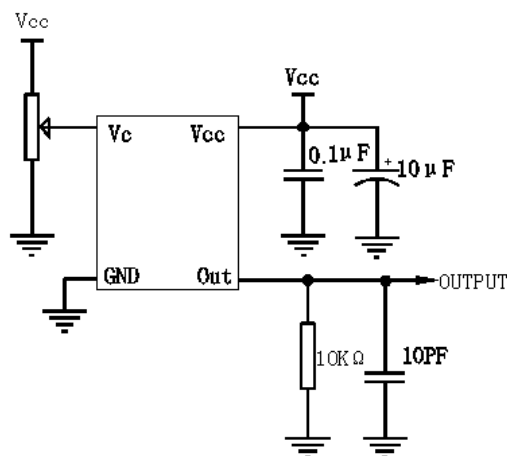
## 2. Mechanical Structure(mm)



**Note1:** Tolerance  $\pm 0.1\text{mm}$  without mark

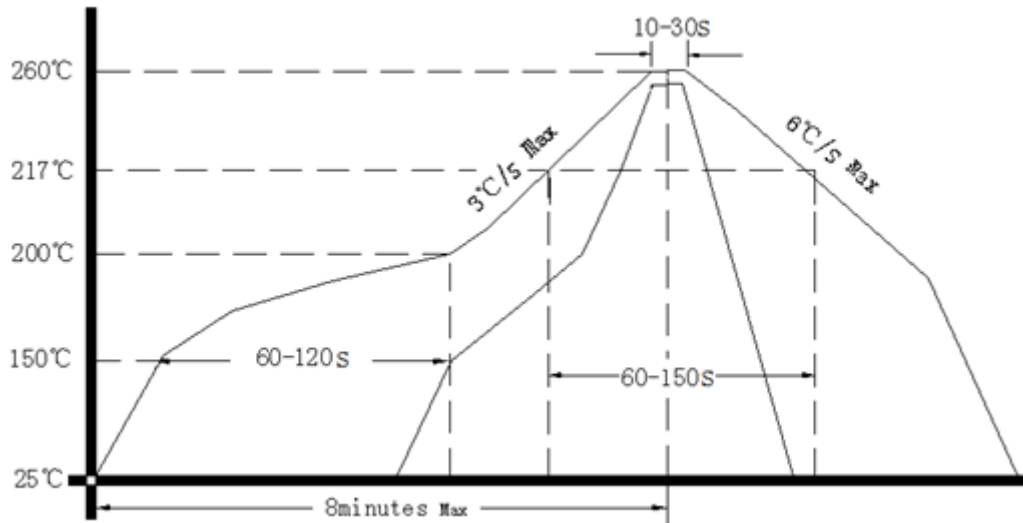
**Note2:** Referential weight 0.02g

## 3. Test circuit





#### 4. Reflow Soldering Curve (RoHS)



**Note:** If soldering with a hot air gun, ensure the temperature < 320°C , soldering time < 15 seconds.

#### 5. Package: Tape & Reel (mm)

