





**Table of amendment**

Version	Revision contents	Prepared by	Revised date
1.0	The first issued	<i>Amway</i>	2018.08.03



## 1. Electrical Parameters

MODEL: O23B-0801-77.76MHz						
Item	Description	Parameters			Unit	Test Condition
		Min.	Typ.	Max.		
Output	Frequency	77.76			MHz	
	Output Waveform	HCMOS				
	Output Low Voltage			0.5	V	$V_{cc}=5.0V, O_{load}=20pF$
	Output High Voltage	3.6			V	$V_{cc}=5.0V, O_{load}=20pF$
	Duty Cycle	45	50	55	%	@50%
	Rise / Fall Time (10%~90%)			5	ns	
	Dip			10	$\times 10^{-9}$	
	Output Overshoot Amplitude			10	%	
	Spurious			-60	dBc	
	Load	20			pF	
Frequency Stabilities	Frequency Tolerance vs. Operating Temperature Range	-0.1		+0.1	$\times 10^{-6}$	$T_A$ varied from $-20^{\circ}C$ to $70^{\circ}C$ , measurement referenced to frequency observed with $f_{ref}=(f_{max}+f_{min})/2, V_{cc}=5.0V, V_c=2.5V, O_{load}=20pF$ , temperature variable speed less than $2^{\circ}C$ per minute.
	Initial Frequency Accuracy	-0.5		+0.5	$\times 10^{-6}$	Measurement referenced to frequency observed with $T_A=25^{\circ}C, V_{cc}=5.0V, V_c=2.5V$ , and after 30 minutes of operation, within 90 days after ex-works.
	Frequency Tolerance vs. Supply Voltage	-0.02		+0.02	$\times 10^{-6}$	measurement referenced to frequency observed $T_A=25^{\circ}C, V_{cc}$ varied from 4.5V to 5.5V, $V_c=2.5V$ , and $O_{Load}=20pF$ .
	Frequency Tolerance vs. Load	-0.02		+0.02	$\times 10^{-6}$	5% load change measurement referenced to frequency observed with $T_A=25^{\circ}C, V_{cc}=5.0V$ , and $O_{Load}=20pF$ .
	Short-Term Stability Allan Variance				0.2	$\times 10^{-9}$
				0.5	$\times 10^{-9}$	Temperature stability, no EMI\EMC or other interference, test after power for 1hour ref. to $25^{\circ}C$ ; 10s, using PN9000 equipment.



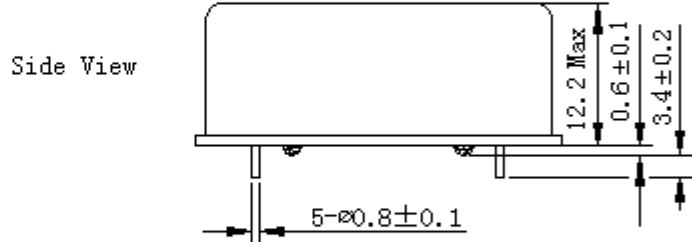
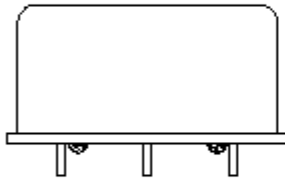
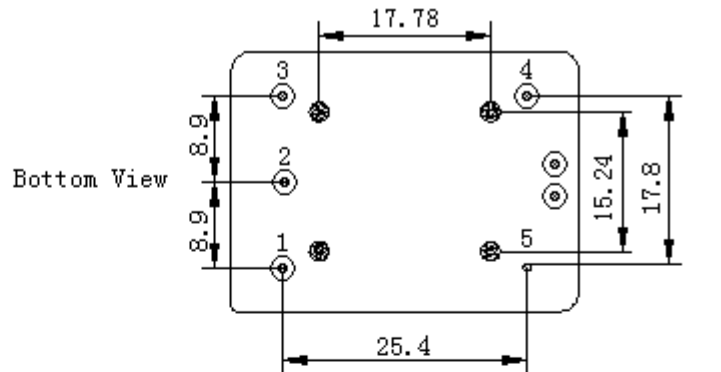
	Daily Fluctuation	-0.04		+0.04	$\times 10^{-6}$	@25°C $\pm 5^\circ\text{C}$
	Retrace	-0.1		+0.1	$\times 10^{-6}$	Continuously boot for 1 hour, power off 24 hours, power on 15min..
	Aging Tolerance Per Day	-0.01		+0.01	$\times 10^{-6}$	V <sub>cc</sub> , V <sub>c</sub> , T <sub>A</sub> constant measurement referenced to frequency observed with T <sub>A</sub> =25°C, V <sub>cc</sub> =5.0V, V <sub>c</sub> =2.5V, and after 30 days of operation.
	Aging Tolerance The first Year	-1.0		+1.0	$\times 10^{-6}$	
	Aging Tolerance 10 Year	-4.0		+4.0	$\times 10^{-6}$	
Power Supply	Supply Voltage	4.75	5.0	5.25	V	Tolerate input voltage (no damage) -0.5VDC~5.5VDC
	Steady Consumption			300	mA	
	Warm up current			700	mA	-20°C~70°C
	Warm up time			5	min	@25°C within $\pm 0.2 \times 10^{-6}$ of final frequency with reference after 1hour on.
Voltage Control Characteristics	Frequency Tuning Range	+6		+9	$\times 10^{-6}$	V <sub>c</sub> =0.5V. measurement referenced to V <sub>c</sub> =2.5V.
		-0.5		+0.5	$\times 10^{-6}$	V <sub>c</sub> =2.5V. measurement referenced to exactly 77.76MHz.
		-9		-6	$\times 10^{-6}$	V <sub>c</sub> =4.5V. measurement referenced to V <sub>c</sub> =2.5V.
	Linearity			10	%	
	Slope	Negative				
	Input Impedance	50			K $\Omega$	
Jitter			100	ps	RMS(12K~20M)	
Phase Noise	Phase Noise		-80	-70	dBc/Hz	10Hz
			-110	-100		100Hz
			-120	-115		1KHz
			-130	-125		10KHz
			-140	-135		100KHz



Environmental Conditions	Operable Temperature	-20		+70	°C	
	Storage Temperature	-50		+125	°C	
	ESD Level	Human Body Model, class2: 2000V to 4000V; ANSI/ESDA/JEDEC JS-001-2010.				
		Machine Model, class B: 200V to 400V; ANSI/ESDA/JEDEC JS-001-2010.				
	Moisture Sensitivity Level	Not humidity sensitive.				
	Vibration	Test Condition: 0.75mm ;acceleration:10g;10Hz~500Hz, one cycle per 30 min, test 2 hour. (3 times for each 3 directions X ,Y , Z), IEC 68-2-06 Test Fc.				
Shock	50g; 11ms; 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 (°C)	-10~35°C				

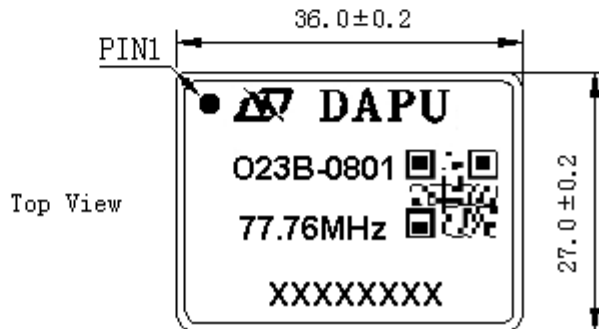


## 2. Mechanical Structure (mm)



### PIN FUNCTION

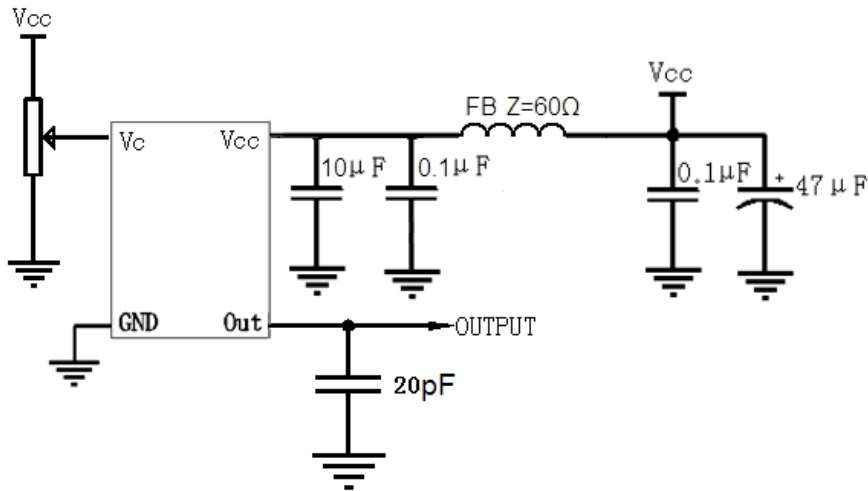
PIN	NOTATION	FUNCTION
1	VC	Control Voltage
2	NC	Not Connect
3	WCC	Supply Voltage
4	OUTPUT	RF Output
5	GND	GND



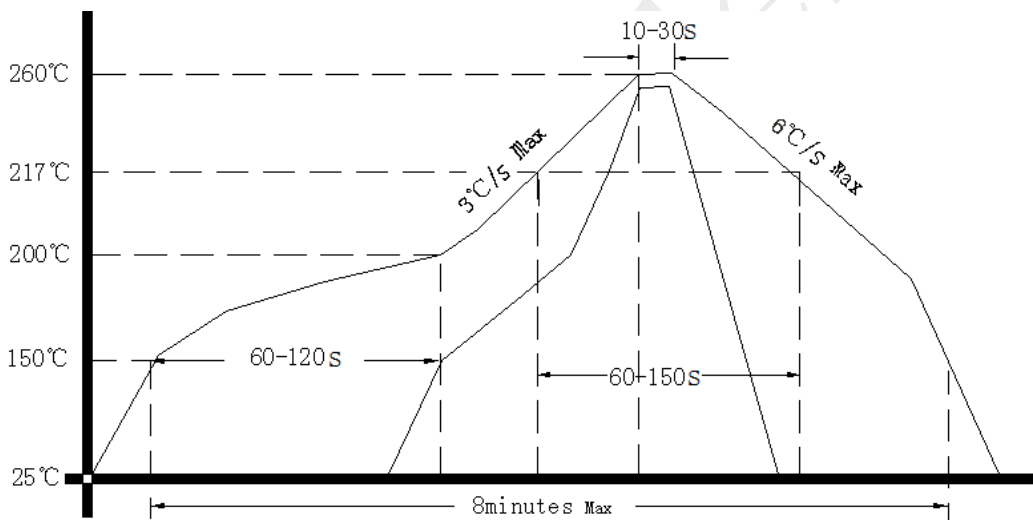
- Note1:** Tolerance  $\pm 0.2\text{mm}$  without mark  
**Note2:** The first two xx representative: week  
 After two xx representative: year  
 At last four xxxx representative: serial number  
**Note3:** Referential weight 20.7g  
**Note4:** NC is not connect



### 3. Test Circuit



### 4. Reflow Soldering Curve (RoHS)



### 5. Package (mm)

