

Travelling Merchant: _____

DATASHEET

Standard: **T53-B313-20.00MHz**

P/N: _____

| Plot | | | The Label |
|------------------|---------|----------|------------------------|
| Drew | Audited | Approved | Stamp, please! Thanks! |
| | | | |
| Date: 2020.02.13 | | | |

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Table of amendment

| Version | Revision contents | Prepared by | Revised date |
|---------|-------------------|--------------|--------------|
| 1.0 | The first issued | <i>Amway</i> | 2020.02.13 |
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1. Electrical Parameters

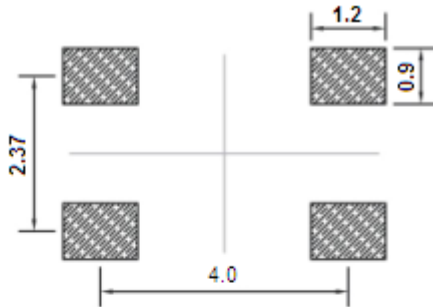
| MODEL: T53-B313-20.00MHz | | | | | | |
|--------------------------|--|------------|------|-------|------------------|--|
| Item | Description | Parameters | | | Unit | Test Condition |
| | | Min. | Typ. | Max. | | |
| Output | Frequency | 20.00 | | | MHz | |
| | Output Waveform | HCMOS | | | | |
| | Output Low Voltage | | | 0.4 | V | $V_{cc}=3.3V, O_{load}=15\text{ pF}$ |
| | Output High Voltage | 2.4 | | | V | $V_{cc}=3.3V, O_{load}=15\text{ pF}$ |
| | Duty Cycle | 45 | 50 | 55 | % | @50% |
| | Rise / Fall Time (10%~90%) | | | 8 | ns | @25°C |
| | Load | 15 | | | pF | |
| Frequency Stabilities | Frequency Tolerance vs. Operating Temperature Range | -0.2 | | +0.2 | $\times 10^{-6}$ | T_A varied from -40°C to 85°C, measurement referenced to frequency observed with $f_{ref}=(f_{max}+f_{min})/2$, $V_{cc}=3.3V, V_c=1.5V, O_{load}=15\text{ pF}$, temperature variable speed less than 2°C per minute. |
| | Nominal Frequency Tolerance | -0.5 | | +0.5 | $\times 10^{-6}$ | Measurement referenced to frequency observed with $T_A=25^\circ\text{C}, V_{cc}=3.3V, V_c=1.5V$ within 30 days after ex-works. |
| | Frequency Tolerance vs. Supply Voltage | -0.1 | | +0.1 | $\times 10^{-6}$ | measurement referenced to frequency observed $T_A=25^\circ\text{C}, V_{cc}$ varied from 3.13V to 3.47V, $V_c=1.5V$ and $O_{Load}=15\text{ pF}$. |
| | Frequency Tolerance vs. Load | -0.2 | | +0.2 | $\times 10^{-6}$ | 5% load change measurement referenced to frequency observed with $T_A=25^\circ\text{C}, V_{cc}=3.3V, V_c=1.5V, O_{Load}=15\text{ pF}$ |
| | Aging Tolerance Per Day | -0.02 | | +0.02 | $\times 10^{-6}$ | $T_A=25^\circ\text{C}, V_{cc}=3.3V, V_c=1.5V$ and after 1h of operation. |
| | Aging Tolerance 1 Year | -1 | | +1 | $\times 10^{-6}$ | |
| Power Supply | Current Consumption | | | 10 | mA | @25°C, $V_{cc}=3.3V, V_c=1.5V, O_{load}=15\text{ pF}$. |
| | Supply Voltage | 3.13 | 3.3 | 3.47 | V | |



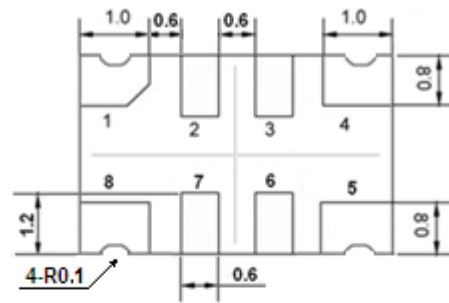
| | | | | | | |
|---------------------------------|--|--|------|------|------------------|--|
| Voltage Control Characteristics | Frequency Tuning Range | -15 | | -10 | $\times 10^{-6}$ | $V_c=0.5V$. measurement referenced to $V_c=1.5V$. |
| | | -0.5 | | +0.5 | $\times 10^{-6}$ | $V_c=1.5V$. measurement referenced to Exactly 20.00MHz. |
| | | +10 | | +15 | $\times 10^{-6}$ | $V_c=2.5V$. measurement referenced to $V_c=1.5V$. |
| | Linearity | | | 10 | % | |
| | Slope | Positive | | | | |
| | Input Impedance | 100 | | | | K Ω |
| Phase Noise | Phase Noise @25 $^{\circ}C$ | | -90 | -85 | dBc/Hz | 10Hz |
| | | | -120 | -115 | | 100Hz |
| | | | -138 | -133 | | 1KHz |
| | | | -150 | -145 | | 10KHz |
| | | | -152 | -147 | | 100KHz |
| | | | -152 | -147 | | 1MHz |
| Environmental Conditions | Operable Temperature | -40 | | +85 | $^{\circ}C$ | |
| | Storage Temperature | -55 | | +105 | $^{\circ}C$ | |
| | 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 | Level 3. | | | | |
| | 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. | | | | | |



2. Mechanical Structure(mm)



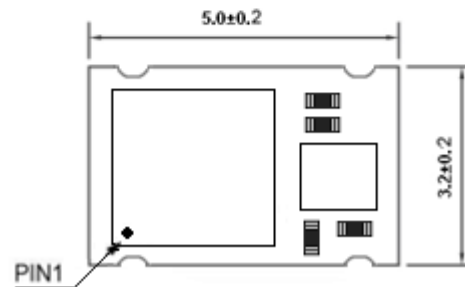
Solder pad layout



Bottom view



Side view



Top view

PIN FUNCTION

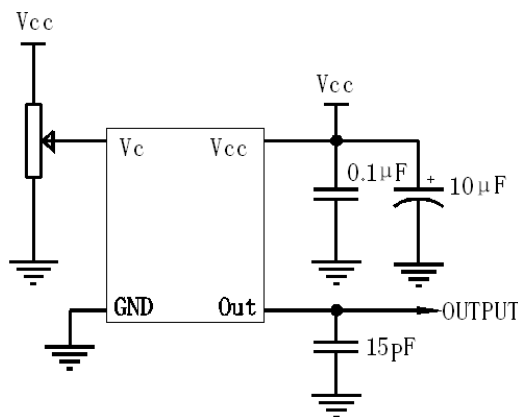
| PIN | NOTATION | FUNCTION |
|------|----------|-----------------|
| 1 | VC | Control Voltage |
| 2, 3 | NC | Not Connect |
| 4 | GND | GND |
| 5 | OUTPUT | RF Output |
| 6, 7 | NC | Not Connect |
| 8 | VCC | Supply Voltage |

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

Note2: Referential Weight 0.05g

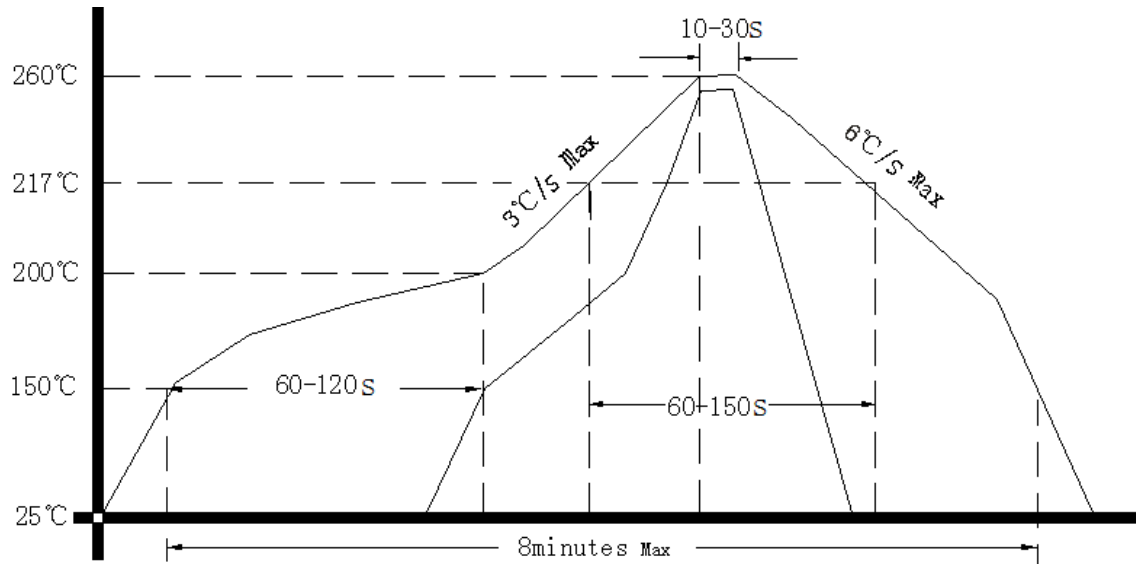
Note3: NC is not connect

3. Test circuit





4. Reflow Soldering Curve (RoHS)



5. Package: Tape & Reel (mm)

