

温补振荡器 Temperature Compensated Crystal Oscillator: K(V)T70 K(V)T70CS

Feature 特征

- CMOS and Clipped Sine wave output available 可选 CMOS 和削峰正弦波输出
- Wide frequency range and tight frequency stability ± 1.0 ppm over -40°C to $+85^{\circ}\text{C}$ 频率范围宽, 频率稳定性高
- VCTCXO option allows frequency tuning via control voltage 支持通过控制电压进行频率微调
- Ideal for GPS, communication, industrial, and measurement systems 适用于 GPS, 通信设备, 工业控制和测量系统等



General Specifications 规格参考

| PARAMETER | 性能参数 | K(V)T70 | | | K(V)T70CS | | |
|-------------------------------------|-------------------|--|-------|------|------------------------------|--------|--|
| Supply Voltage | 工作电压 | +2.5V; +3.3V | | | | | |
| Frequency Range | 频率范围 | 10.0~250.0MHz | | | 6.4~52.0MHz | | |
| Output Waveform | 输出波形 | CMOS | | | Clipped Sine Wave | | |
| Output Load | 输出负载 | 15pF | | | 10k Ω /10pF \pm 10% | | |
| Output Logic | 输出电平 | High: $\geq 0.9V_{DD}$ Low: $\leq 0.1V_{DD}$ | | | 0.8V _{p-p} min. | | |
| Initial Calibration Tolerance | 调整频差 | ± 2.0 ppm max | | | | | |
| Current Consumption | 工作电流 | 36mA max. | | | 40mA max. | | |
| EFC Linearity | 非线性误差 | 正向 $\pm 10\%$ max. | | | | | |
| Frequency Stability 频率稳定性 VS | | | | | | | |
| Operating Temperature Range | 温度范围 | 见下表 | | | | | |
| Frequency Stability | 温度频差 | | | | | | |
| Load Change | 负载变化 | ± 0.3 ppm (Load $\pm 5\%$) | | | | | |
| Voltage Change | 电压变化 | ± 0.3 ppm ($V_{CC}\pm 5\%$) | | | | | |
| Aging | 老化率 | ± 1.0 ppm/year max | | | | | |
| Control Voltage Range | 控制电压范围 | 1.5V \pm 1V | | | | | |
| Frequency Tuning Range | 频率调节范围 | ± 5 ppm min. | | | | | |
| Harmonic | 谐波 | - | | | -30dBc max | | |
| Spurious | 杂散抑制 | - | | | -70dBc max | | |
| Duty Cycle | 占空比 | 45~55% ($f \leq 40\text{MHz}$); 40~60% ($f > 40\text{MHz}$) | | | - | | |
| Rise & Fall Time | 上升下降时间 | 3ns max. | | | - | | |
| Phase Noise @10MHz | 相位噪声 Max (dBc/Hz) | -80 | -115 | -130 | -145 | -150 | |
| | | 10Hz | 100Hz | 1kHz | 10kHz | 100kHz | |
| Input Impedance | 输入电阻 | $> 70\text{k}\Omega$ min. typ. | | | | | |
| Modulation Bandwidth | 调制宽带 | 3KHz min. | | | | | |
| Absolute Voltage | 绝对电压 | 4V max. | | | | | |
| Start-up Time | 起振时间 | 5ms max. | | | | | |
| Storage Temperature Range | 储存温度范围 | $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$ | | | | | |

Frequency Stability 温度频差 VS Operating Temperature Range 温度范围

| Temp. Code | Temp.\ppm | ± 0.5 | ± 1.0 | ± 2.0 | ± 2.5 | ± 3.0 | ± 5.0 |
|------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| A | $-10 \sim 60^{\circ}\text{C}$ | ○ | ○ | ○ | ○ | ○ | ○ |
| B | $-20 \sim 70^{\circ}\text{C}$ | ○ | ○ | ○ | ○ | ○ | ○ |
| C | $-40 \sim 85^{\circ}\text{C}$ | ○ | ○ | ○ | ○ | ○ | ○ |

NOTE: Please consult for other specifications 若有其它规格需求请告知

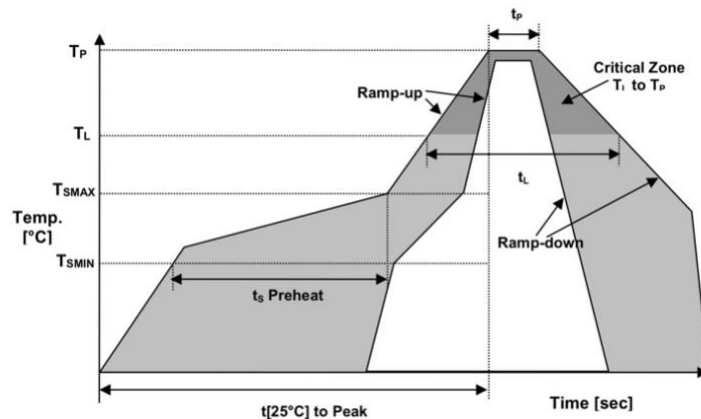
■ Outline Dimensions (Unit: mm) 外形尺寸

| KT70 KT70CS | | | | | <table border="1"> <thead> <tr> <th>Pin</th> <th>Connection</th> </tr> </thead> <tbody> <tr> <td>#1</td> <td>GND or NC for TCXO Voltage Control for VCTCXO</td> </tr> <tr> <td>#2</td> <td>Ground</td> </tr> <tr> <td>#3</td> <td>Output</td> </tr> <tr> <td>#4</td> <td>Supply Voltage</td> </tr> </tbody> </table> | Pin | Connection | #1 | GND or NC for TCXO Voltage Control for VCTCXO | #2 | Ground | #3 | Output | #4 | Supply Voltage |
|----------------|--|------------|--|--|--|-----|------------|----|--|----|--------|----|--------|----|----------------|
| | Pin | Connection | | | | | | | | | | | | | |
| #1 | GND or NC for TCXO Voltage Control for VCTCXO | | | | | | | | | | | | | | |
| #2 | Ground | | | | | | | | | | | | | | |
| #3 | Output | | | | | | | | | | | | | | |
| #4 | Supply Voltage | | | | | | | | | | | | | | |

■ Part Number Guide 产品编号

| | | | | | | | | | | |
|---|---|---------------|---|--------------------|---|--|---|---|---|-----------|
| <u>K(V)T70CS</u> | - | <u>20.000</u> | - | <u>33</u> | - | <u>C</u> | - | <u>03</u> | - | <u>NS</u> |
| ↓ | | ↓ | | ↓ | | ↓ | | ↓ | | ↓ |
| 型号 | - | 标称频率 | - | 工作电压 | - | 工作温度 | - | 温度频差 | - | 特殊要求 |
| ‘KT’:温补系列 KT: TCXO KVT: VCTCXO ‘70’:封装尺寸 7.0x5.0mm ‘CS’: 输出波形 Clipped Sine | | (In MHz) | | 25=2.5V 33=3.3V | | A: -10~+60°C B: -20~+70°C C: -40~+85°C | | A5 = ±0.5ppm 01 = ±1.0ppm 02 = ±2.0ppm 025 = ±2.5ppm 03 = ±3.0ppm 05 = ±5.0ppm | | ‘NS’:特殊要求 |

■ Reflow Profile 回流焊



| | | | |
|--|------------|-------------------|-------------|
| Temperature Min Preheat | 最低预热温度 | T _{smin} | 150°C |
| Temperature Max preheat | 最高预热温度 | T _{smax} | 200°C |
| Time (T _{smin} to T _{smax}) | 时间差 | T _s | 60~120 sec |
| Temperature | 温度 | T _L | 217°C |
| Peak Temperature | 最高温 | T _p | 260 °C |
| Ramp-up Rate | 升温速度 | R _{up} | 3°C/sec max |
| Ramp-down Rate | 降温速度 | R _{down} | 6°C/sec max |
| Time within 5°C of Peak Temperature | 最高温度停留时间 | t _p | 30 sec |
| Time t[25°C] to peak temperature | 25度到最高温度时间 | t[25°C] to peak | 480 sec |
| Time | 时间 | t _L | 60~150 sec |