

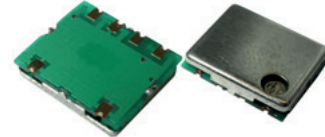
SP4CT

HCMOS SURFACE MOUNT TEMPERATURE COMPENSATED CRYSTAL CLOCK OSCILLATOR

FEATURES

- Metal SMD case
- Wide frequency range
- Mechanical trimmer option
- Applications: Reference clock, Communication equipment,...

11.4 x 9.6 x 2.5 mm



| Item | Specification | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------------------|---------------|---------------|---------------|----------|----------|-----------|-------------|---|---|---|---|------------|--------------|---------------|---------------|---------------|---------------|------------|--------------|---------------|---------------|---------------|---------------|------------|--------------|---------------|---------------|---------------|---------------|---|---|---|---|---|---------------|---|---|---|---|---|---|---------------|---|---|---|---|---|---|
| Frequency Range | 1.0 MHz to 125.0 MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output Logic | CMOS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Voltage Vdd (see options) | +3.3 V ±5% +5.0 V ±5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Supply Current Idd | 40.0 mA max., frequency dependent | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency Tolerance | With trimmer option: ±1.0 ppm at 25°C ±2°C (one hour after reflow) Without trimmer option: ±2.0 ppm at 25°C ±2°C (one hour after reflow) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency Stability vs Temperature (see options) | <table border="1"> <thead> <tr> <th></th> <th>±0.5 ppm</th> <th>±1.0 ppm</th> <th>±1.5 ppm</th> <th>±2.0 ppm</th> <th>±2.5 ppm</th> <th>±3.0 ppm</th> </tr> </thead> <tbody> <tr> <td>0° to +50°C</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> </tr> <tr> <td>-10° to +60°C</td> <td>◇</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> </tr> <tr> <td>-20° to +70°C</td> <td>x</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> </tr> <tr> <td>-30° to +75°C</td> <td>x</td> <td>◇</td> <td>o</td> <td>o</td> <td>o</td> <td>o</td> </tr> <tr> <td>-30° to +85°C</td> <td>x</td> <td>◇</td> <td>◇</td> <td>o</td> <td>o</td> <td>o</td> </tr> <tr> <td>-40° to +85°C</td> <td>x</td> <td>◇</td> <td>◇</td> <td>o</td> <td>o</td> <td>o</td> </tr> </tbody> </table> <p>o = available ◇ = please contact us x = not available</p> | | ±0.5 ppm | ±1.0 ppm | ±1.5 ppm | ±2.0 ppm | ±2.5 ppm | ±3.0 ppm | 0° to +50°C | o | o | o | o | o | o | -10° to +60°C | ◇ | o | o | o | o | o | -20° to +70°C | x | o | o | o | o | o | -30° to +75°C | x | ◇ | o | o | o | o | -30° to +85°C | x | ◇ | ◇ | o | o | o | -40° to +85°C | x | ◇ | ◇ | o | o | o |
| | ±0.5 ppm | ±1.0 ppm | ±1.5 ppm | ±2.0 ppm | ±2.5 ppm | ±3.0 ppm | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0° to +50°C | o | o | o | o | o | o | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -10° to +60°C | ◇ | o | o | o | o | o | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -20° to +70°C | x | o | o | o | o | o | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -30° to +75°C | x | ◇ | o | o | o | o | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -30° to +85°C | x | ◇ | ◇ | o | o | o | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -40° to +85°C | x | ◇ | ◇ | o | o | o | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency Stability vs Aging | ±1.0 ppm max. per year at 25°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency Stability vs Voltage Change | ±0.3 ppm max., for a ±5% input voltage change | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Frequency Stability vs Load Change | ±0.3 ppm max., for a ±10% load condition change | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output Level | VOH ≥ 0.9 Vdd VOL ≤ 0.1 Vdd | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Output Load | 15 pF | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Symmetry | 45 / 55% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rise Time / Fall Time Fr / Ff | 10 ns max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Start-up Time | 5 ms typ., 10 ms max. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase noise | <table border="1"> <thead> <tr> <th>Offset / dBc / Hz</th> <th>10 Hz</th> <th>100 Hz</th> <th>1 kHz</th> <th>10 kHz</th> <th>100 kHz</th> </tr> </thead> <tbody> <tr> <td>(typical)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10.000 MHz</td> <td>-95 dBc / Hz</td> <td>-130 dBc / Hz</td> <td>-140 dBc / Hz</td> <td>-145 dBc / Hz</td> <td>-150 dBc / Hz</td> </tr> <tr> <td>20.000 MHz</td> <td>-80 dBc / Hz</td> <td>-120 dBc / Hz</td> <td>-135 dBc / Hz</td> <td>-140 dBc / Hz</td> <td>-145 dBc / Hz</td> </tr> <tr> <td>77.760 MHz</td> <td>-75 dBc / Hz</td> <td>-105 dBc / Hz</td> <td>-120 dBc / Hz</td> <td>-125 dBc / Hz</td> <td>-120 dBc / Hz</td> </tr> </tbody> </table> | Offset / dBc / Hz | 10 Hz | 100 Hz | 1 kHz | 10 kHz | 100 kHz | (typical) | | | | | | 10.000 MHz | -95 dBc / Hz | -130 dBc / Hz | -140 dBc / Hz | -145 dBc / Hz | -150 dBc / Hz | 20.000 MHz | -80 dBc / Hz | -120 dBc / Hz | -135 dBc / Hz | -140 dBc / Hz | -145 dBc / Hz | 77.760 MHz | -75 dBc / Hz | -105 dBc / Hz | -120 dBc / Hz | -125 dBc / Hz | -120 dBc / Hz | | | | | | | | | | | | | | | | | | | |
| Offset / dBc / Hz | 10 Hz | 100 Hz | 1 kHz | 10 kHz | 100 kHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (typical) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.000 MHz | -95 dBc / Hz | -130 dBc / Hz | -140 dBc / Hz | -145 dBc / Hz | -150 dBc / Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20.000 MHz | -80 dBc / Hz | -120 dBc / Hz | -135 dBc / Hz | -140 dBc / Hz | -145 dBc / Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 77.760 MHz | -75 dBc / Hz | -105 dBc / Hz | -120 dBc / Hz | -125 dBc / Hz | -120 dBc / Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mechanical Frequency Tuning (see options) | ±3.0 ppm min. tuning | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Packing Unit | 1000 pcs / reel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Soldering Conditions | 260°C, 10 sec x2 max | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Customer specifications on request

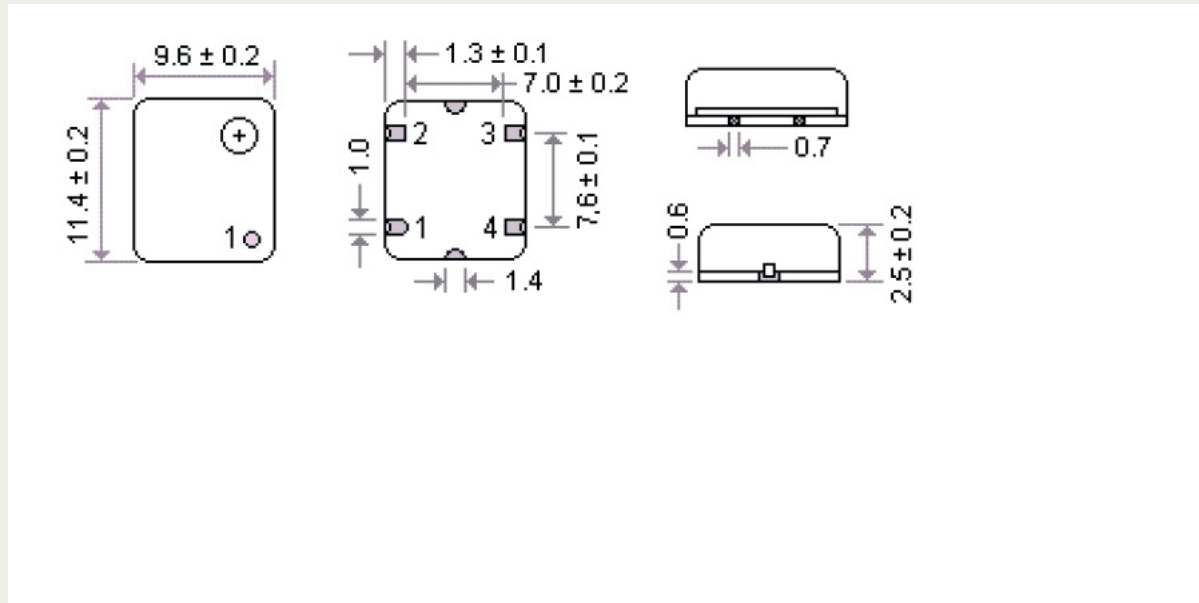
OPTIONS & ORDERING INFORMATION

SP4CT

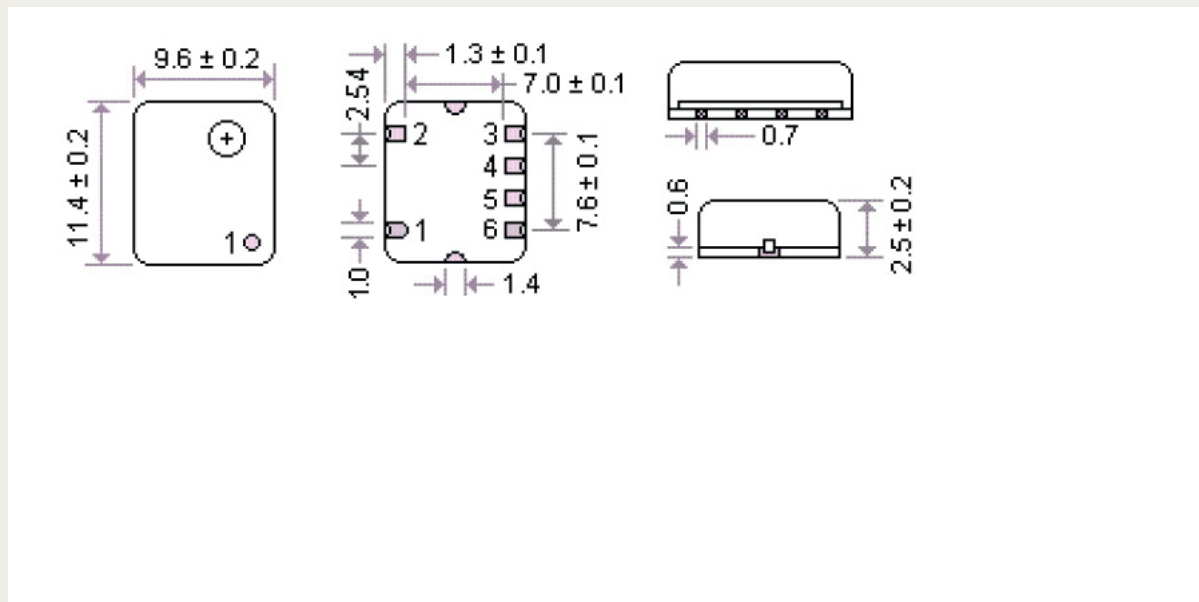
| Supply Voltage | Operating Temp. * | Temperature Stability * | Tri-state Function | Package Type | Frequency in MHz | Mechanical Tuning |
|-------------------|-------------------------|-------------------------|-------------------------|---------------------------|-------------------------------------|----------------------------|
| 33 = +3.3V | C = 0° / +50°C | 0.5 = ±0.5 ppm | F = No Tri-state | 4P = 4-pad version | Please specify the frequency in MHz | Blanc = no trimmer |
| 50 = +5.0V | D = -10° / +60°C | 1.0 = ±1.0 ppm | | 6P = 4-pad version | | -T = Trimmer option |
| | F = -20° / +70°C | 1.5 = ±1.5 ppm | | | | |
| | G = -30° / +75°C | 2.0 = ±2.0 ppm | | | | |
| | H = -30° / +85°C | 2.5 = ±2.5 ppm | | | | |
| | K = -40° / +85°C | 3.0 = ±3.0 ppm | | | | |

(*) Note : Not all combinations are possible, please consult us.

OUTLINE DIMENSIONS



| | | | | |
|-----------------|---------|----------|------------|----------|
| Pin Connections | #1 : NC | #2 : GND | #3: Output | #4 : Vdd |
|-----------------|---------|----------|------------|----------|



| | | | |
|-----------------|----------|----------|------------|
| Pin Connections | #1 : GND | #2 : GND | #3: Output |
| | #4 : GND | #5 : NC | #6: Vdd |