

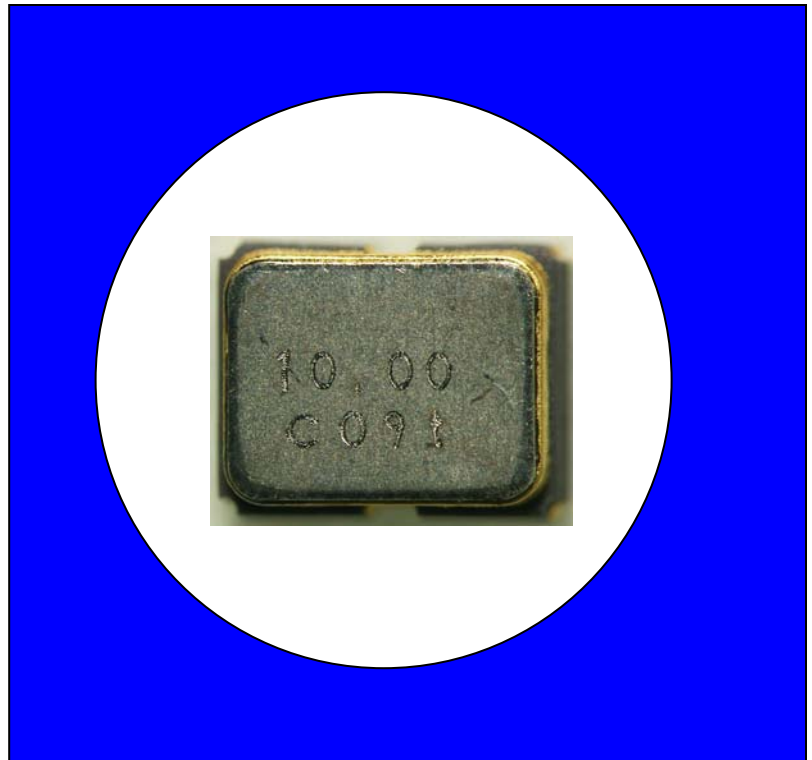


FEATURES

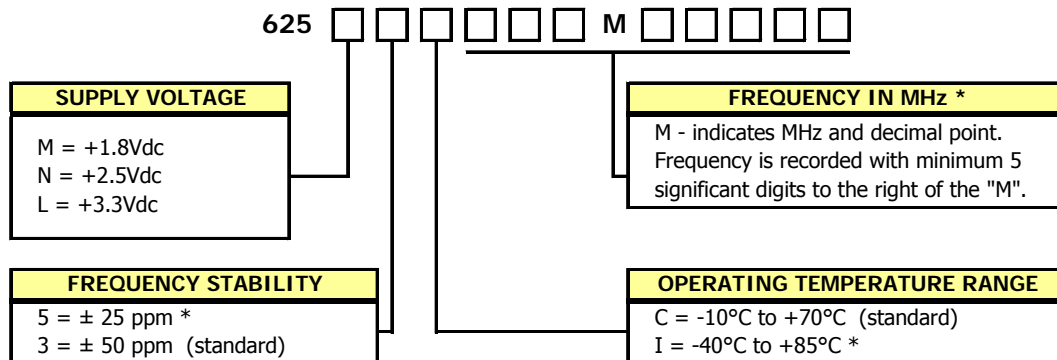
- Standard 2.5x2.0mm Surface Mount Footprint
- CMOS Compatible
- **Fundamental and 3RD Overtone Crystals**
- Frequency Range 1.0 – 50 MHz
- Frequency Stability, ± 50 ppm
- +1.8Vdc, +2.5Vdc, +3.3Vdc Operation
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Output Enable Standard
- Tape & Reel Packaging
- **RoHS/Green Compliant (6/6)**

DESCRIPTION

The Model 625 is a ceramic packaged Clock oscillator offering reduced size and enhanced stability. The small size means it is perfect for any application. The enhanced stability means it is the perfect choice for today's communications applications that require tight frequency control.



ORDERING INFORMATION



* Contact factory for availability.

**Not all performance combinations and frequencies may be available.
Contact your local CTS Representative or CTS Customer Service for availability.**

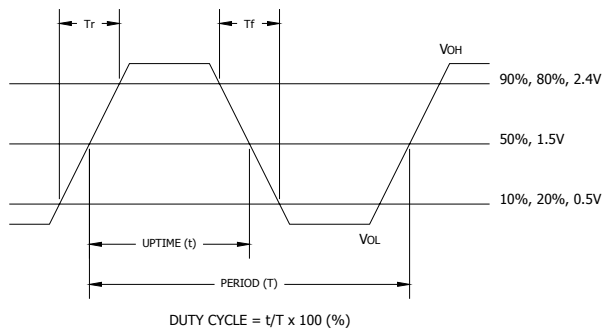
ELECTRICAL CHARACTERISTICS

| | PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|---|--|----------------------|--|----------------------|-------------------|--------------------------|----------|
| Absolute Maximums | Maximum Supply Voltage | V_{CC} | - | -0.5 | - | 4.0 | V |
| | Storage Temperature | T_{STG} | - | -55 | - | 125 | °C |
| | Frequency Range (See Note 1) | f_O | - | 1.0 | - | 50 | MHz |
| | Frequency Stability (See Note 2 and Ordering Information) | $\Delta f/f_O$ | - | - | - | 50 | ± ppm |
| | Aging | $\Delta f/f_O$ | - | - | 3 | 5 | ± ppm/yr |
| Electrical and Waveform Parameters | Operating Temperature Commercial Industrial | T_A | - | -10 -40 | 25 | 70 85 | °C |
| | Supply Voltage Model 625M Model 625N Model 625L | V_{CC} | ± 10 % | 1.62 2.25 2.97 | 1.8 2.5 3.3 | 1.98 2.75 3.63 | V |
| | Supply Current Model 625M | I_{CC} | 1.0 MHz to 30 MHz $C_L=15pF$ 30.1 MHz to 54 MHz $C_L=15pF$ | - | - | 6 10 | mA |
| | Model 625N | | 1.0 MHz to 30 MHz $C_L=15pF$ 30.1 MHz to 54 MHz $C_L=15pF$ | - | - | 8 10 | |
| | Model 625L | | 1.0 MHz to 30 MHz $C_L=15pF$ | - | - | 10 | |
| | | | 30.1 MHz to 54 MHz $C_L=15pF$ | - | - | 15 | |
| | Output Load | C_L | | | | 15 | pF |
| | Output Voltage Levels Logic '1' Level Logic '0' Level | V_{OH} V_{OL} | CMOS Load CMOS Load | $90\%V_{CC}$ - | - - | - $10\%V_{CC}$ | V |
| | Output Current Logic '1' Level Logic '0' Level | I_{OH} I_{OL} | $V_{OH} = 90\%V_{CC}$ (1.8V, 2.5, 3.3V) $V_{OL} = 10\%V_{CC}$ (1.8V, 2.5, 3.3V) | - - | - - | -2, -4, -8 +2, +4, +8 | mA |
| | Output Duty Cycle | SYM | @ 50% Level | 45 | - | 55 | % |
| | Rise and Fall Time | T_{R}, T_F | @ 10% - 90% Levels, $C_L = 15$ pF | | | 10 | ns |
| | Start Up Time | T_S | Application of V_{CC} | - | - | 10 | ms |
| | Enable Function Enable Input Voltage Disable Input Voltage | V_{IH} V_{IL} | Pin 1 Logic '1', Output Enabled Pin 1 Logic '0', Output Disabled | $0.7*V_{CC}$ - | - - | - $0.3*V_{CC}$ | V |
| | Enable Time | T_{PLZ} | Pin 1 Logic '1' | - | - | 10 | ms |
| | Standby Current | I_{ST} | Pin 1 Logic '0', Output Disabled | - | - | 10 | uA |
| | Period Jitter, Pk-Pk | - | - | - | - | 100 | ps |
| | Period Jitter, RMS | - | - | - | - | 25 | |
| | Phase Jitter, RMS | - | Bandwidth 12 kHz - 20 MHz | - | < 2 | - | |

Notes:

- Contact factory for available frequencies.
- Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and aging.

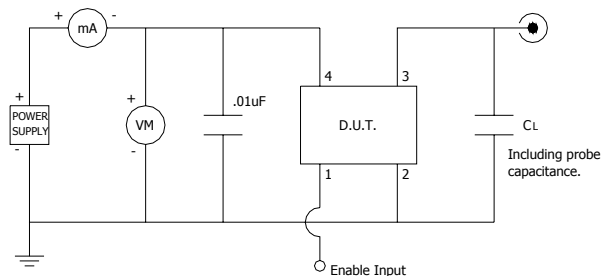
CMOS/TTL OUTPUT WAVEFORM



ENABLE TRUTH TABLE

| PIN 1 | PIN 3 |
|-----------|-----------|
| Logic '1' | Output |
| Open | Output |
| Logic '0' | High Imp. |

TEST CIRCUIT, CMOS LOAD

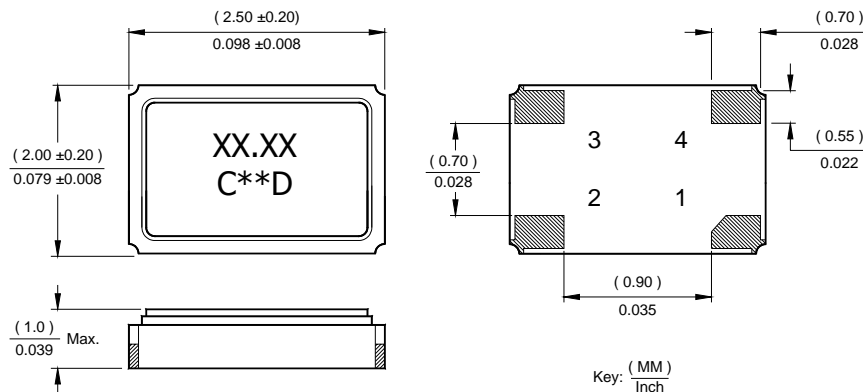


D.U.T. PIN ASSIGNMENTS

| PIN | SYMBOL | DESCRIPTION |
|-----|-----------------|--------------------------|
| 1 | EOH | Enable Input |
| 2 | GND | Circuit & Package Ground |
| 3 | Output | RF Output |
| 4 | V _{CC} | Supply Voltage |

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



MARKING INFORMATION

1. XX.XX – Frequency in MHz.
2. C – CTS and Pin 1 identifier.
3. ** – Manufacturing Site Code.
4. D – Manufactured Date Code. See Table I for codes.

NOTES

1. Termination pads (e4), barrier-plating is nickel (Ni) with gold (Au) flash plate.
2. Reflow conditions per JEDEC J-STD-020.

SUGGESTED SOLDER PAD GEOMETRY

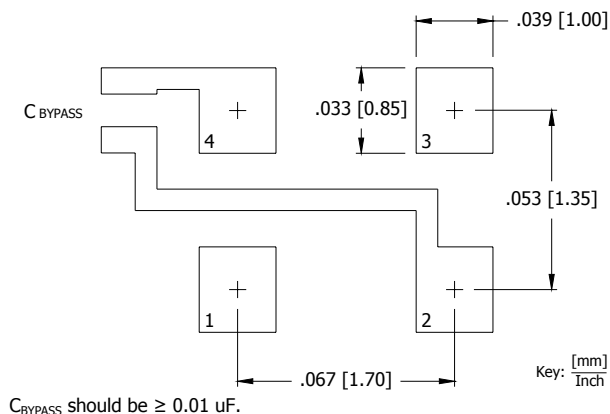
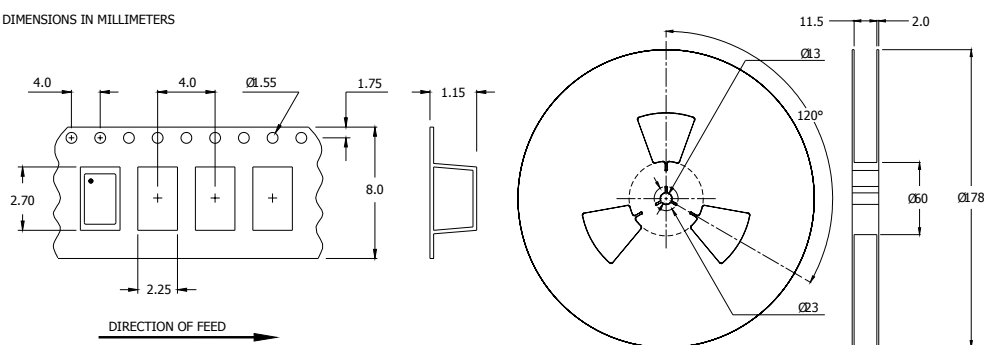


TABLE I

| YEAR | | | | | MONTH | | | | | | | | | | | |
|------|------|------|------|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | | | | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
| 2001 | 2005 | 2009 | 2013 | 2017 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2002 | 2006 | 2010 | 2014 | 2018 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2003 | 2007 | 2011 | 2015 | 2019 | a | b | c | d | e | f | g | h | j | k | l | m |
| 2004 | 2008 | 2012 | 2016 | 2020 | n | p | q | r | s | t | u | v | w | x | y | z |

TAPE AND REEL INFORMATION

DIMENSIONS IN MILLIMETERS



Device quantity is 3,000 pieces per 178mm reel minimum.

ENVIRONMENTAL SPECIFICATIONS

| | |
|----------------------------------|---|
| Temperature Cycle: | 400 cycles from -55°C to $+125^{\circ}\text{C}$, 10 minute dwell at each temperature, 1 minute transfer time between temperatures. |
| Mechanical Shock: | 1,500g's, 0.5mS duration, $\frac{1}{2}$ sinewave, 3 shocks each direction along 3 mutually perpendicular planes (18 total shocks). |
| Sinusoidal Vibration: | 0.06 inches double amplitude, 10 to 55 Hz and 20g's, 55 to 2,000 Hz, 3 cycles each in 3 mutually perpendicular planes (9 times total). |
| Gross Leak: | No leak shall appear while immersed in an FC40 or equivalent liquid at $+125^{\circ}\text{C}$ for 20 seconds. |
| Fine Leak: | Mass spectrometer leak rates less than 2×10^{-8} ATM cc/sec air equivalent. |
| Resistance to Solder Heat: | Product must survive 3 reflows of $+260^{\circ}\text{C}$ peak, 10 seconds maximum. |
| High Temperature Operating Bias: | 2,000 hours at $+125^{\circ}\text{C}$, maximum bias, disregarding frequency shift. |
| Frequency Aging: | 1,000 hours at $+85^{\circ}\text{C}$, full bias, less than ± 5 ppm shift. |
| Moisture Sensitivity Level: | Level 1 per JEDEC J-STD-020. |

QUALITY AND RELIABILITY

Quality systems meet or exceed the requirements of ISO 9000:2000 standards.