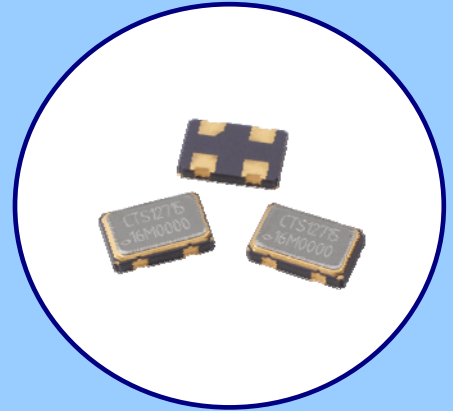




FEATURES

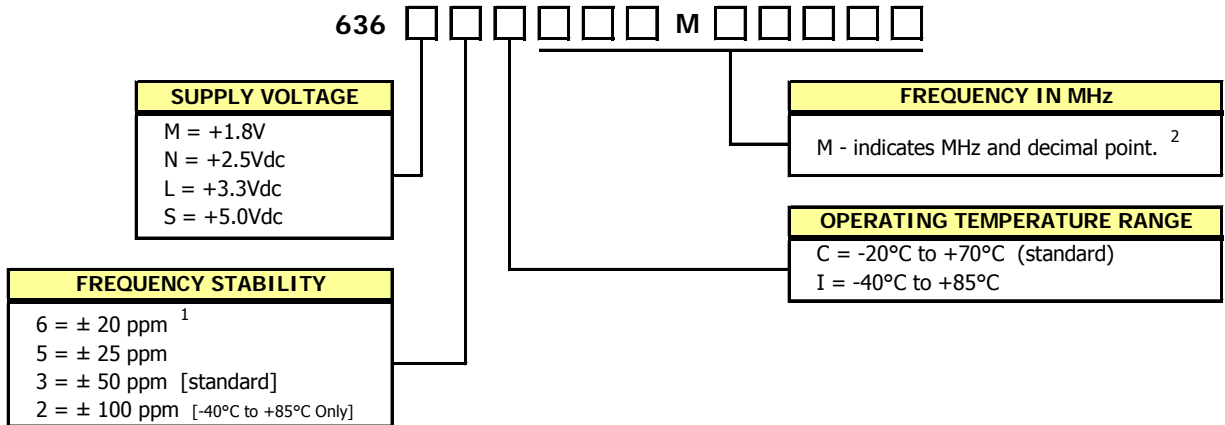
- Standard 5.0mm x 3.2mm 4-Pad Surface Mount Package
- HCMOS/TTL Compatible Output
- Fundamental and 3rd Overtone Crystal Designs
- Frequency Range 1 – 160 MHz
- Frequency Stability ± 50 ppm Standard, ± 25 ppm and ± 20 ppm Available
- Operating Voltages +1.8Vdc, +2.5Vdc, +3.3Vdc or +5.0Vdc
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Output Enable Standard
- Tape & Reel Packaging Standard, EIA-418
- **RoHS/Green Compliant [6/6]**



APPLICATIONS

Model 636 is ideal for applications; such as digital video, networking equipment, broadband access, Ethernet/Gigabit Ethernet, microprocessors/DSP/FPGA, storage area networks, computers and peripherals, cameras and other portable devices to name a few.

ORDERING INFORMATION



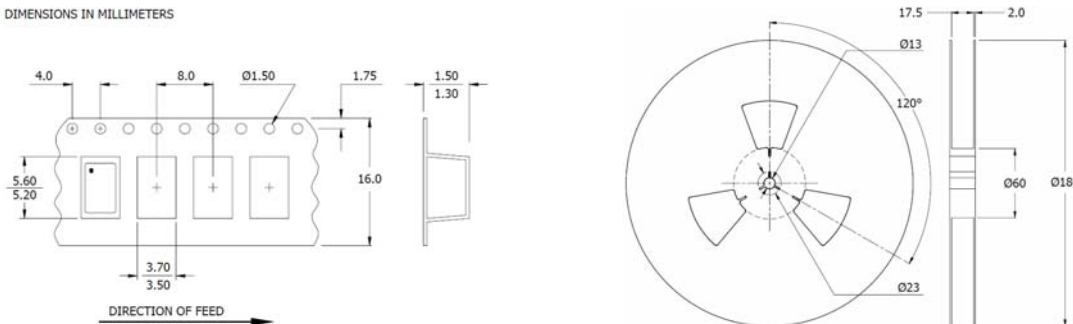
1] 6I Stability/Temperature combination is not available.
2] Frequency is recorded with three leading significant digits before the 'M' and 5 significant digits after the 'M' (including zeros).
[Ex. XXXMXXXXX, (0004M00000 (014M31818) (125M00000)]

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

PACKAGING INFORMATION [Reference]

Factory may package reels in quantities of 1k pcs. or 3k pcs. Reel size is 180mm.

DIMENSIONS IN MILLIMETERS



ELECTRICAL CHARACTERISTICS

| | PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT | | |
|------------------------------|--|----------------|---|--|--------------------------|------------------------------|----------------|------------------------------------|----|
| ELECTRICAL PARAMETERS | Maximum Supply Voltage | V_{CC} | - | -0.5 | - | 7.0 | V | | |
| | Storage Temperature | T_{STG} | - | -55 | - | 125 | °C | | |
| | Frequency Range | f_0 | - | 1.0 | - | 160 | MHz | | |
| | Frequency Stability [See Note 1 and Ordering Information] | $\Delta f/f_0$ | - | - | - | 20,25, 50 or 100 | ± ppm | | |
| | Aging | $\Delta f/f_0$ | - | - | - | 3 | ± ppm/yr | | |
| | Operating Temperature Commercial Industrial | T_A | - | -20 -40 | 25 | 70 85 | °C | | |
| | Supply Voltage Model 636M Model 636N Model 636L Model 636S | V_{CC} | ± 10 % | 1.62 2.25 2.97 4.50 | 1.8 2.5 3.3 5.0 | 1.98 2.75 3.63 5.50 | V | | |
| | Supply Current Model 636M [+1.8V] | I_{CC} | $C_L = 15pF$ 1.0 MHz to 34.999 MHz 35 MHz to 60 MHz 60.001 MHz to 99.999 MHz 100 MHz to 106.250 MHz 106.251 MHz to 160 MHz | - - - - - | - - - - - | 8 15 25 35 35 | mA | | |
| | Model 636N [+2.5V] | | 1.0 MHz to 34.999 MHz 35 MHz to 60 MHz 60.001 MHz to 99.999 MHz 100 MHz to 106.250 MHz 106.251 MHz to 160 MHz | - - - - - | - - - - - | 10 20 30 40 40 | | | |
| | Model 636L [+3.3V] | | 1.0 MHz to 34.999 MHz 35 MHz to 60 MHz 60.001 MHz to 99.999 MHz 100 MHz to 106.250 MHz 106.251 MHz to 160 MHz | - - - - - | - - - - - | 16 25 40 50 50 | | | |
| | Model 636S [+5.0] | | 1.0 MHz to 34.999 MHz 35 MHz to 60 MHz 60.001 MHz to 99.999 MHz 100 MHz to 106.250 MHz | - - - - | - - - - | 25 50 60 80 | | | |
| | Output Load Model 636M Model 636N & 636L | | C_L | 1.0 MHz to 160 MHz 1.0 MHz to 50 MHz 50.001 MHz to 160 MHz | - - - | - - - | | 15 30 15 | pF |
| | Model 636S | | | 1.0 MHz to 50 MHz 50.001 MHz to 80 MHz 80.001 MHz to 106.250 MHz | - - - | - - - | | 50 30 15 | |
| | Output Voltage Levels Logic '1' Level Logic '0' Level | | | V_{OH} V_{OL} | CMOS Load CMOS Load | 90% V_{CC} - | | - - | |
| | Output Current Logic '1' Level (M,N,L,S) Logic '0' Level (M,N,L,S) | | I_{OH} I_{OL} | $V_{OH} = 90\%V_{CC}$ $V_{OL} = 10\%V_{CC}$ | - - | - - | | -2, -4, -8, -16 +2, +4, +8, +16 | mA |
| | Output Duty Cycle | | SYM | @ 50% Level | 45 | - | | 55 | % |
| | Rise and Fall Time Model 636M, 636N & 636L | | T_R, T_F | @ 10% - 90% Levels, $C_L = 15pF$ 1.0 MHz to 50 MHz 50.001 MHz to 125 MHz 125.001 MHz to 160 MHz | - - - | 6 3 1.5 | | 10 5 2.5 | ns |
| | Model 636S | | | 1.0 MHz to 20 MHz 20.001 MHz to 50 MHz 50.001 MHz to 106.250 MHz | - - - | 6 3 1.5 | | 8 5 2 | |
| | Start Up Time | | | T_S | Application of V_{CC} | - | | 5 | |
| | Period Jitter, Pk-Pk Period Jitter, RMS Phase Jitter, RMS | - - - | | - - Bandwidth 12 kHz - 20 MHz | - - - | - - - | 100 25 1 | ps | |

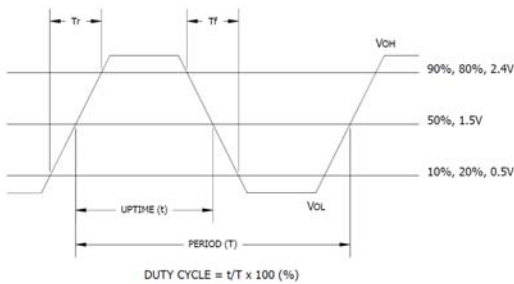
Notes:

1. Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and aging.

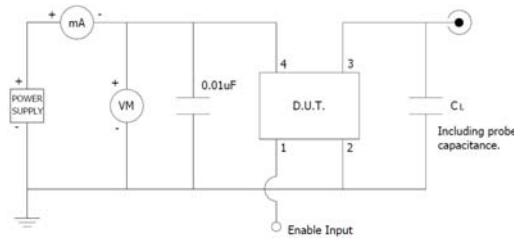
ELECTRICAL CHARACTERISTICS

| | PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------|----------------------------------|----------------------------------|----------------------------------|------|-----|-----|------|
| ELECTRICAL PARAMETERS | Enable Function | | | | | | |
| | Enable Input Voltage | V _{IH} | Pin 1 Logic '1', Output Enabled | 1.26 | - | - | V |
| | Model 636M | | Pin 1 Logic '1', Output Enabled | 1.75 | - | - | |
| | Model 636N | | Pin 1 Logic '1', Output Enabled | 2.0 | - | - | |
| | Model 636S | | Pin 1 Logic '1', Output Enabled | 4.0 | - | - | |
| | Disable Input Voltage | V _{IL} | Pin 1 Logic '0', Output Disabled | - | - | 0.3 | |
| Model 636M,636N,636L | Pin 1 Logic '0', Output Disabled | | - | - | 0.8 | | |
| Enable Time (M,N,L,S) | T _{PLZ} | Pin 1 Logic '1' | - | - | 10 | ms | |
| Standby Current | I _{ST} | Pin 1 Logic '0', Output Disabled | - | - | 10 | μA | |

LVC MOS OUTPUT WAVEFORM



TEST CIRCUIT, CMOS LOAD

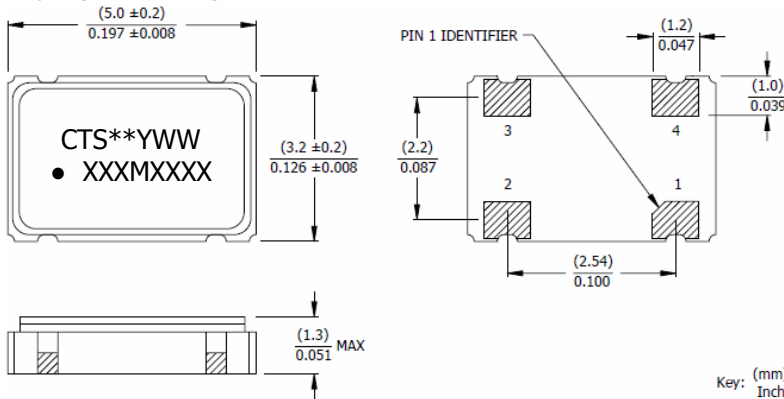


ENABLE TRUTH TABLE

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

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



MARKING INFORMATION

- ** - Manufacturing Site Code.
- YWW - Date code, Y - year, WW - week.
- XXXMXXXX - Frequency is marked with only leading significant digits before the 'M' and 4 digits after the 'M' [including zeros].
Ex. XXMXXXX [62M5000]
XXXMXXXX [155M5200]

NOTES

- Termination pads [e4]. Barrier-plating is nickel [Ni] with gold [Au] flash plate.
- Reflow conditions per JEDEC J-STD-020, 260°C maximum.
- Moisture Sensitivity Level 1 per JEDEC J-STD-020.

D.U.T. PIN ASSIGNMENTS

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

SUGGESTED SOLDER PAD GEOMETRY

C_{BYPASS} should be ≥ 0.01 μF.

