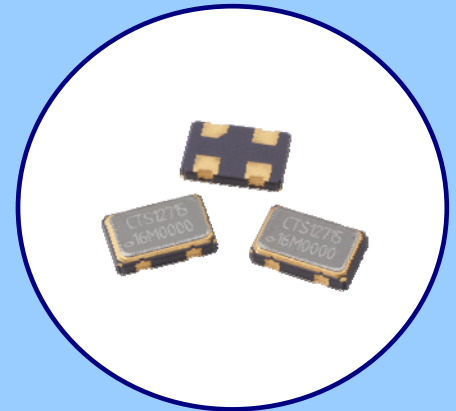




**FEATURES**

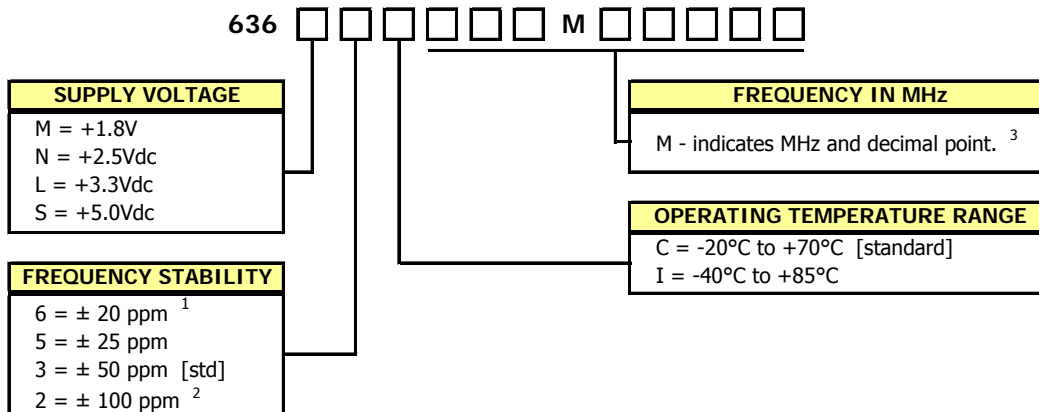
- Standard 5.0mm x 3.2mm 4-Pad Surface Mount Package
- HCMOS/TTL Compatible Output
- Fundamental and 3<sup>rd</sup> Overtone Crystal Designs
- Frequency Range 1 – 160 MHz
- Frequency Stability  $\pm 50$  ppm Standard,  $\pm 25$  ppm and  $\pm 20$  ppm Available
- Operating Voltages +1.8Vdc, +2.5Vdc, +3.3Vdc or +5.0Vdc
- Operating Temperature to -40°C to +85°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**

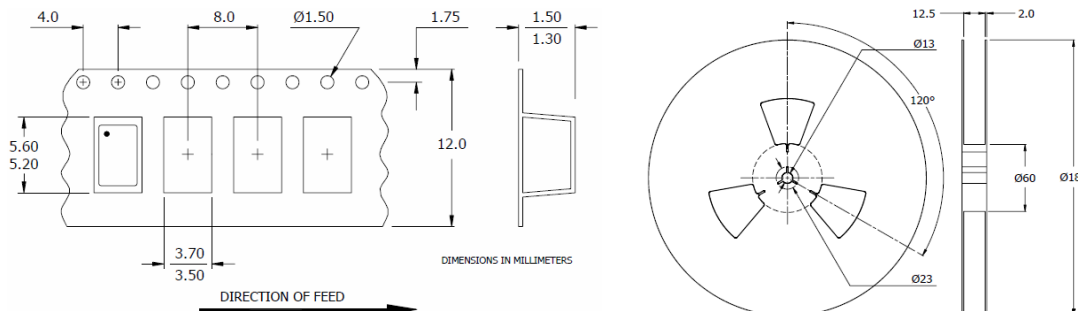


1] Consult factory for 6I Stability/Temperature availability.  
 2] -40°C to +85°C Only.  
 3] Frequency is recorded with three leading significant digits before the 'M' and 5 significant digits after the 'M' (including zeros).  
 [Ex. 3.579545 MHz, code as 003M57954; 14.31818 MHz, code as 014M31818; 125 MHz, code as 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. **12mm tape width.**



**ELECTRICAL CHARACTERISTICS**

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT				
<b>ELECTRICAL PARAMETERS</b>	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	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			$C_L$	1.0 MHz to 160 MHz	-		-	15	pF	
	Model 636N & 636L					1.0 MHz to 50 MHz		-	-		30
	Model 636S					50.001 MHz to 160 MHz		-	-		15
						1.0 MHz to 50 MHz		-	-		50
	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 (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	10	ns	
	Model 636S					1.0 MHz to 20 MHz		-	6		8
						20.001 MHz to 50 MHz		-	3		5
						50.001 MHz to 106.250 MHz		-	1.5		2
						Start Up Time		$T_S$	Application of $V_{CC}$		-
	Period Jitter, Pk-Pk	-	-			-	-	100	ps		
Period Jitter, RMS	-	-	-	-	25						
Phase Jitter, RMS	-	Bandwidth 12 kHz - 20 MHz	-	-	1						

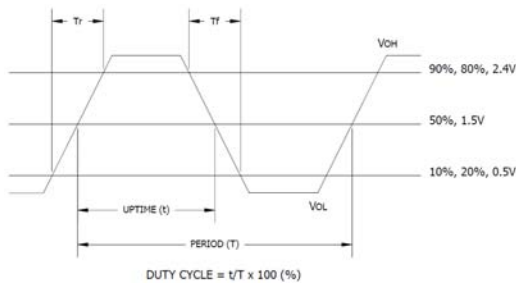
Notes:

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

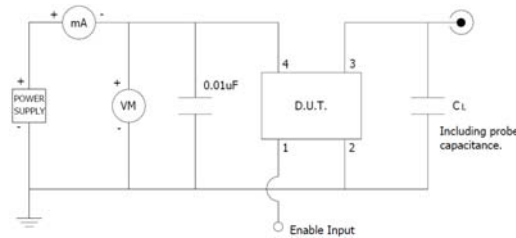
**ELECTRICAL CHARACTERISTICS**

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

**LVC MOS OUTPUT WAVEFORM**



**TEST CIRCUIT, CMOS LOAD**

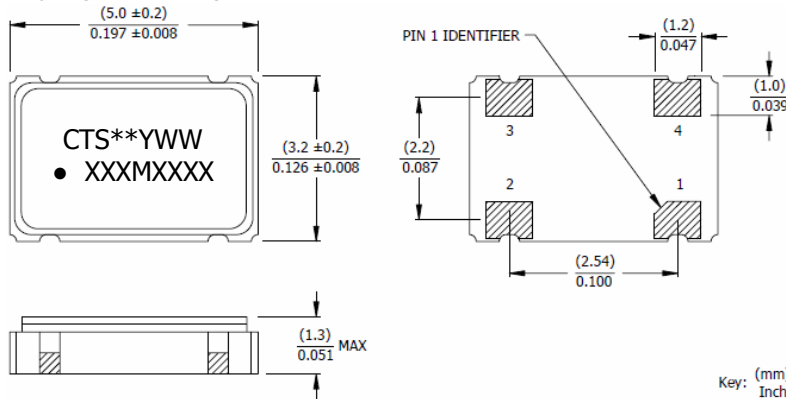


**ENABLE TRUTH TABLE**

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. XXXMXXXX [62M5000]  
XXXMXXXX [155M5200]

**NOTES**

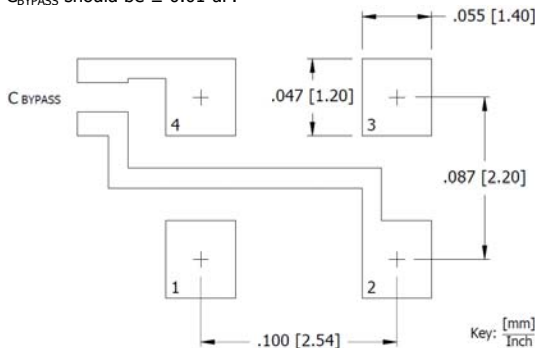
- Termination pads [e4]. Barrier-plating is nickel [Ni] with gold [Au] flash plate.
- Reflow conditions per JEDEC J-STD-020, 260°C maximum, 20 seconds.
- MSL = 1.

**D.U.T. PIN ASSIGNMENTS**

PIN	SYMBOL	DESCRIPTION
1	EOH	Enable
2	GND	Circuit & Package Ground
3	Output	RF Output
4	V <sub>CC</sub>	Supply Voltage

**SUGGESTED SOLDER PAD GEOMETRY**

C<sub>BYPASS</sub> should be ≥ 0.01 µF.



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