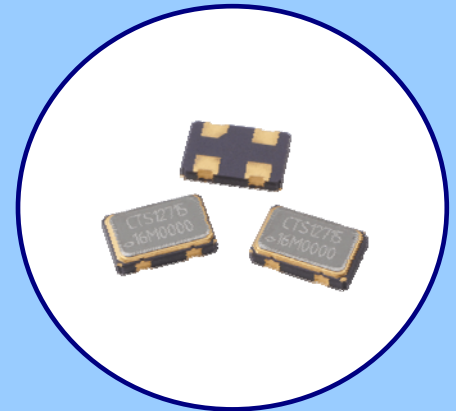




**FEATURES**

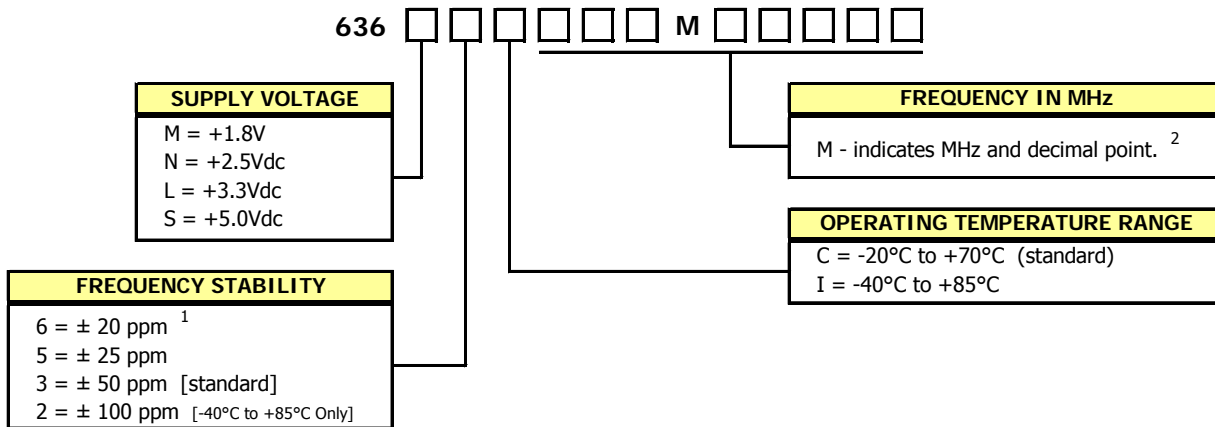
- Standard 5.0mm x 3.2mm 4-Pad Surface Mount Package
- HCMOS/TTL Compatible Output
- Fundamental and 3<sup>rd</sup> Overtone Crystal Designs
- Frequency Range 1 – 160 MHz
- Frequency Stability  $\pm 50$  ppm Standard,  $\pm 25$  ppm and  $\pm 20$  ppm Available
- Operating Voltages +1.8Vdc, +2.5Vdc, +3.3Vdc or +5.0Vdc
- Operating Temperature to -40°C to +85°C
- Output Enable Standard
- Tape & Reel Packaging Available
- **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 digits before the 'M' and 5 significant digits after the 'M' (including zeros).

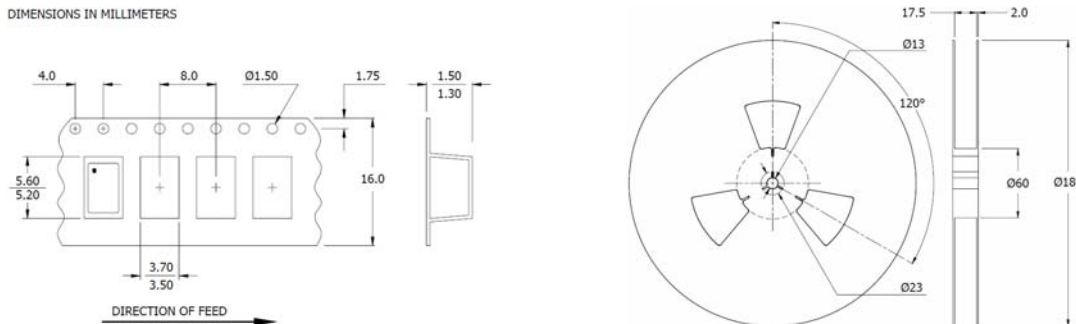
[Ex. XXXMXXXXX, (0004M00000 (014M31818) (125M00000)]

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

**PACKAGING INFORMATION**

Device quantity is 3,000 pieces maximum per reel.

DIMENSIONS IN MILLIMETERS



**ELECTRICAL CHARACTERISTICS**

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT		
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	-	-		15	pF
Model 636S			1.0 MHz to 50 MHz 50.001 MHz to 160 MHz	-	-		30 15	
			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% $V_{CC}$ -	- -		- 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 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		10	ms
Period Jitter, Pk-Pk Period Jitter, RMS Phase Jitter, RMS		- - -	- - Bandwidth 12 kHz - 20 MHz	- - -	- - -		100 25 1	ps

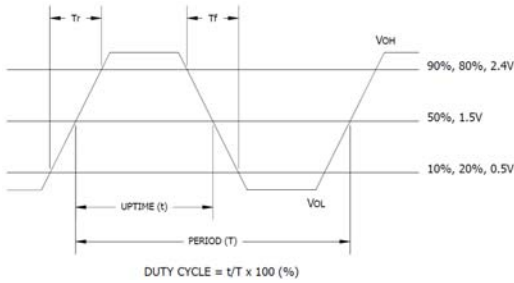
Notes:

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

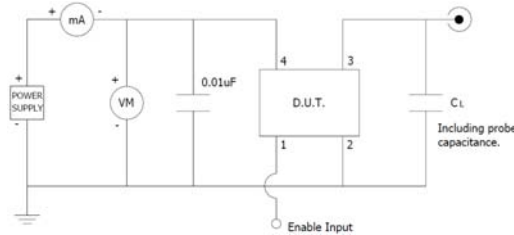
**ELECTRICAL CHARACTERISTICS**

	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 636S		Pin 1 Logic '1', Output Enabled	4.0	-	-	
	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		
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**

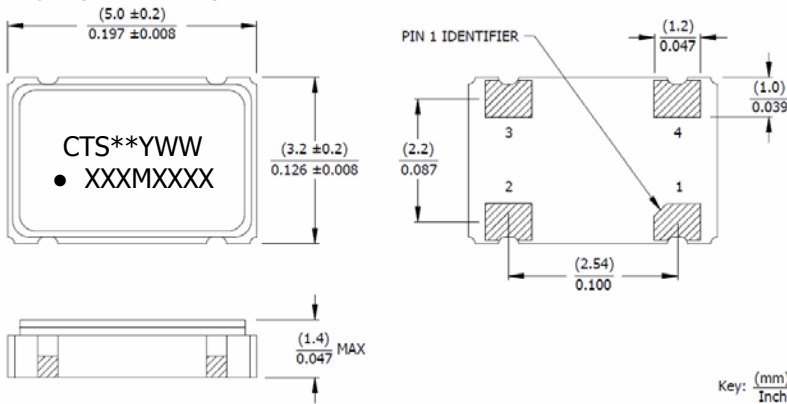


**ENABLE TRUTH TABLE**

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. XXMXXXX (62M5000)  
XXXMXXXX (155M5200)

**NOTES**

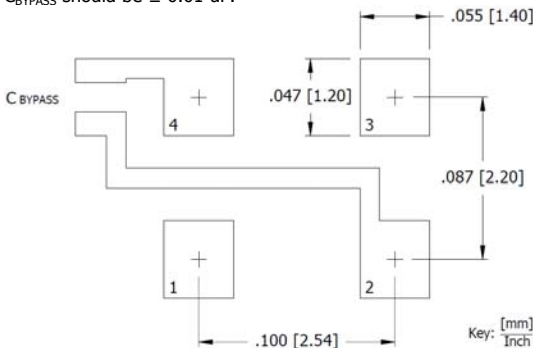
- Termination pads (e4). Barrier-plating is nickel (Ni) with gold (Au) flash plate.
- Reflow conditions per JEDEC J-STD-020, 260°C maximum.
- Moisture Sensitivity Level 1 per JEDEC J-STD-020.

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

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

**SUGGESTED SOLDER PAD GEOMETRY**

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



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