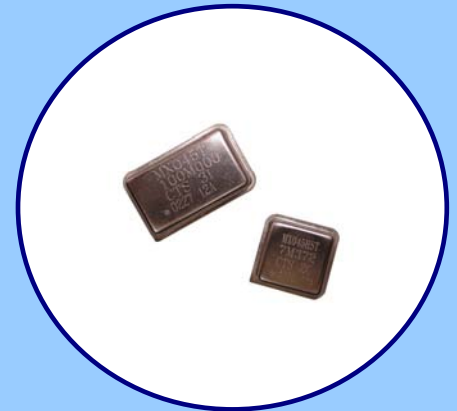




**FEATURES**

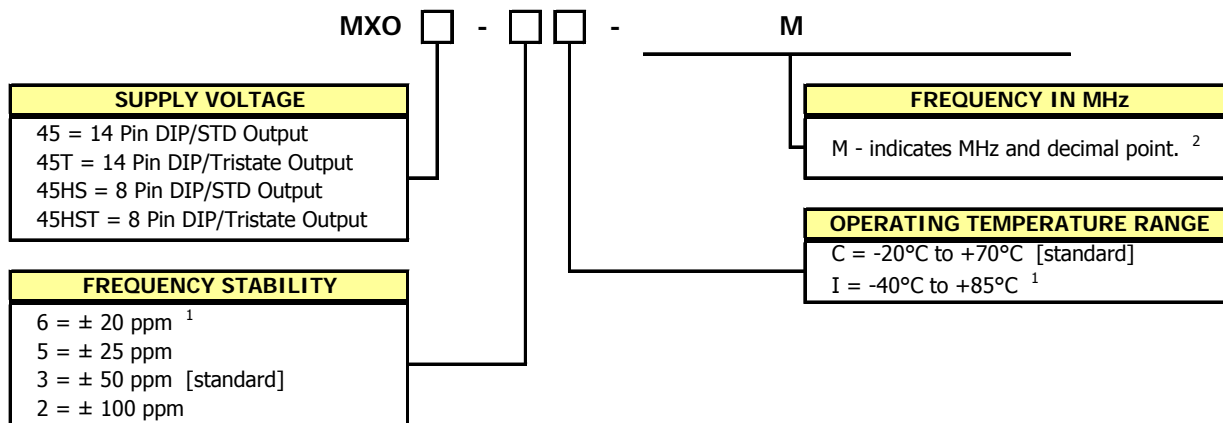
- Standard 14 Pin or 8 Pin DIP Packages
- HCMOS/TTL Compatible Output
- Fundamental and 3<sup>rd</sup> Overtone Crystal Designs
- Frequency Range 1 – 200 MHz
- Frequency Stability  $\pm 50$  ppm Standard
- Operating Voltage +5.0Vdc
- Operating Temperature to -40°C to +85°C
- Output Enable Standard
- Plastic Tray Packaging
- **RoHS/Green Compliant (6/6)**



**APPLICATIONS**

Applications for MXO45 and MXO45HS include microprocessors/DSP/FPGA, networking equipment, broadband access, storage area networks, computers and peripherals, test and measurement, Ethernet/Gigabit Ethernet.

**ORDERING INFORMATION**



1] 6I Stability/Temperature combination is not available. Check availability for 6C combination.

2] Frequency is recorded with only leading significant digits before the 'M' and 4 - 6 significant digits after the 'M' (including zeros).

[Ex. XMXXXXXX (3M579545), XXMXXXXX (14M31818), XXXMXXXX (125M0000)]

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

**PACKAGING INFORMATION [reference]**

Product is packaged in plastic trays. Typical packaging format is as follows:

- 50 pcs./Plastic Tray.  
Tray size is approximately 180 x 136 x 18mm [LxWxH].
- 2 Trays per Anti-Static Bag [100 pcs.] or 10 Trays per Anti-Static Bag [500 pcs.].  
Bag height for 10 Trays is approximately 175mm.
- 1 anti-static bag per cardboard carton.
- Master-pack multiple cardboard cartons in a larger carton.  
8 cardboard cartons [10 trays per carton] is approximately 460 x 380 x 400mm [LxWxH].

**ELECTRICAL CHARACTERISTICS**

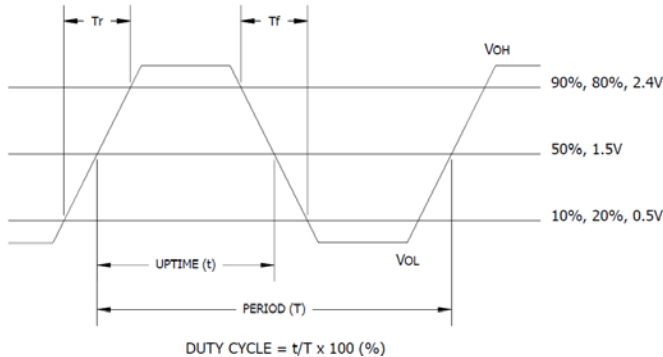
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Maximum Supply Voltage	$V_{CC}$	-	-0.5	-	+7.0	V
Storage Temperature	$T_{STG}$	-	-40	-	+100	°C
Frequency Range	$f_0$	-	1.0	-	200	MHz
Frequency Stability	$\Delta f/f_0$	See Note 1 and Ordering Information	-	-	20,25,50 or 100	± ppm
Aging	$\Delta f$	First year	-	3	5	± ppm
Operating Temperature Commercial Industrial	$T_A$	-	-20 -40	+25	+70 +85	°C
Supply Voltage	$V_{CC}$	±10%	4.5	5.0	5.5	V
Supply Current	$I_{CC}$	Frequency Range Tested load condition noted for typical values.				
		1.0MHz to 20MHz $C_L=50pF$	-	10	26	mA
		20.001MHz to 40MHz $C_L=30pF$	-	20	40	
		40.001MHz to 80MHz $C_L=30pF$	-	30	60	
		80.001MHz to 125MHz $C_L=15pF$	-	40	70	
		125.001MHz to 200MHz $C_L=15pF$	-	55	80	
Output Load						
CMOS	$C_L$	1.0MHz to 50MHz	-	-	50	pF
		50.001MHz to 80MHz	-	-	30	
		80.001MHz to 200MHz	-	-	15	
TTL		1.0MHz to 200MHz	-	-	10	TTL
Output Voltage Levels Logic '1' Level Logic '0' Level	$V_{OH}$ $V_{OL}$	CMOS Load 10 TTL LOAD CMOS TTL Load	90% $V_{CC}$ 2.4	- -	- 10% $V_{CC}$ 0.4	V
Output Current Logic '1' Level Logic '0' Level	$I_{OH}$ $I_{OL}$	$V_{OH} = 3.9V$ $V_{CC} = 4.5V$ $V_{OL} = 0.4V$ $V_{CC} = 4.5V$	- -	- -	-16 16	mA
Output Duty Cycle	SYM	@ 50% Level	45	-	55	%
Rise and Fall Time	$T_{Rv}$ $T_F$	@ 10% - 90% Levels Tested load condition noted for typical values.				
		1.0MHz to 20MHz $C_L=50pF$	-	8	10	ns
		20.001MHz to 80MHz $C_L=30pF$	-	5	8	
		80.001MHz to 125MHz $C_L=15pF$	-	2.5	5	
		125.001MHz to 200MHz $C_L=15pF$	-	-	2	
Start Up Time	$T_S$	Application of $V_{CC}$	-	-	10	ms
Enable Function						
Enable Input Voltage	$V_{IH}$	Pin 1 Logic '1', Output Enabled	2.0	-	-	V
Disable Input Voltage	$V_{IL}$	Pin 1 Logic '0', Output Disabled	-	-	0.8	
Enable Time	$T_{PLZ}$	Pin 1 Logic '1'	-	-	200	ns
Standby Current	$I_{ST}$	Pin 1 Logic '0', Output Disabled	-	-	10	µA
Period Jitter, Pk-Pk	-	-	-	-	50	ps
Period Jitter, RMS	-	-	-	-	5	
Phase Jitter, RMS	-	Bandwidth 12kHz - 20MHz	-	-	1	

Notes:

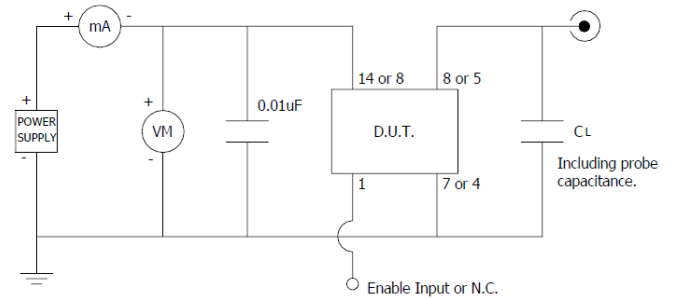
1. Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and 1st year aging.

**ELECTRICAL CHARACTERISTICS**

**LVC MOS OUTPUT WAVEFORM**



**TEST CIRCUIT, CMOS LOAD**



**ENABLE TRUTH TABLE**

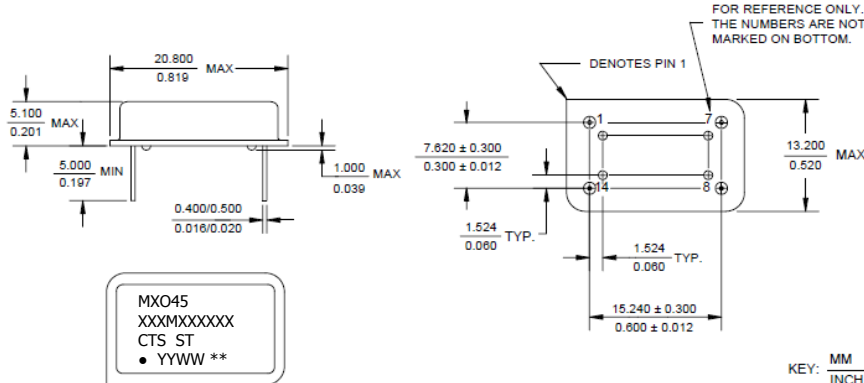
PIN 1	PIN 5 or PIN 8
Logic '1'	Output
Open	Output
Logic '0'	High Imp.

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

PIN	SYMBOL	DESCRIPTION
1	EOH	Enable Input or No Connect
7 or 4	GND	Circuit & Package Ground
8 or 5	Output	RF Output
14 or 8	V <sub>CC</sub>	Supply Voltage

**MECHANICAL SPECIFICATIONS**

**PACKAGE DRAWING  
DIP-14**



**MARKING INFORMATION**

1. Model Name:  
DIP-14 – MX045 or MX045T.  
DIP-8 – MX045HS or MX045HST.
2. XXXMXXXXXX – Frequency is marked with only leading significant digits before the 'M' and 4 – 6 digits after the 'M' (including zeros).  
Ex. XMXXXXXX [3M579545]  
XXMXXXXXX [14M31818]  
XXXMXXXXXX [125M0000]
3. ST – Frequency stability/temperature code. [Refer to Ordering Information.]
4. YYWW – Date code, YY – year, WW – week.
5. \*\* – Manufacturing Site Code.

**NOTES**

1. Lead finish [e1], SnAgCu.
2. Reflow conditions per JEDEC J-STD-020, 260°C maximum.
3. Moisture Sensitivity Level 1, per JEDEC J-STD-020.

**DIP-8**

