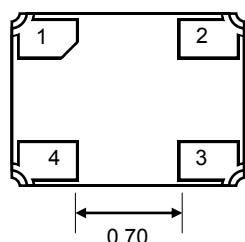
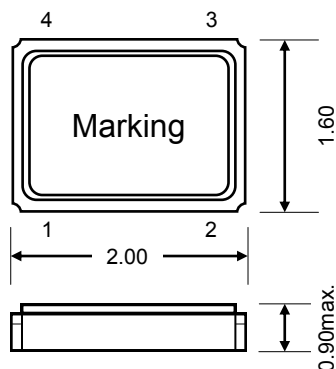


ULTRA MINIATURE SMD HCMOS OSCILLATOR (2.0 x 1.6 x 0.9mm)
FEATURES:

- WIDE FREQUENCY RANGE
- LOW VOLTAGE / LOW CURRENT
- ENABLE / DISABLE

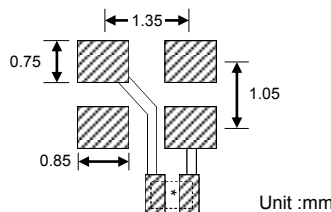

■ SPECIFICATION

FREQUENCY RANGE		1.000MHz ~ 60.000MHz		1.000MHz ~ 80.000MHz
FREQUENCY STABILITY		±25ppm ~ ±100ppm		
OPERATING TEMPERATURE RANGE		STD: 0°C ~ 70°C, Option: -40°C ~ 85°C (See P/N guide for other options)		
STORAGE TEMPERATURE RANGE		-55°C ~ 125°C		
SUPPLY VOLTAGE ±10%		1.8V _{DC}	2.5V _{DC}	3.3V _{DC}
SUPPLY CURRENT	1MHz ≤ f ≤ 10MHz:	0.4mA typ.	2.0mA typ.	2.0mA typ.
	10MHz < f ≤ 20MHz:	1.0mA typ.	2.0mA typ.	2.0mA typ.
	20MHz < f ≤ 25MHz:	1.0mA typ.	2.0mA typ.	3.0mA typ.
	25MHz < f ≤ 50MHz:	2.0mA typ.	4.0mA typ.	3.0mA typ.
	50MHz < f ≤ 60MHz:	-	4.0mA typ.	5.0mA typ.
OUTPUT	LOGIC FAMILY	HCMOS		
	LOAD	15pF		
	LEVEL LOGIC '1' (V_{OH})	0.9 x V _{DD} min.		
	LEVEL LOGIC '0' (V_{OL})	0.1 x V _{DD} max.		
	SYMMETRY(DUTY CYCLE)	STD: 40% / 60% @ 1/2V _{DD} level, Option: 45% / 55%		
	RISE AND FALL TIME (Tr/Tf)	3.0nS typ. 10nS max.		
	START-UP TIME	10mS max.		
STAND-BY VOLTAGE	ENABLE (V_{IH})	0.7 x V _{DD} ≤ V _{IH} ≤ V _{DD} or N/C		
	DISABLE (V_{IL})	V _{IL} ≤ 0.3 x V _{DD}		
ENABLE DELAY TIME		10mS max.		
DISABLE DELAY TIME		10mS max.		
AGING @ 25°C ± 3°C		±3.0ppm / 1 st year max.		
PHASE JITTER RMS (12kHz ~ 20MHz)		1.0pS max.		

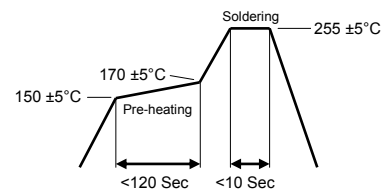
■ PACKAGE DIMENSIONS


Unit : mm

Pin Configuration	
1	En/Dis
2	GND
3	Output
4	V _{DD}

■ SOLDER PATTERN


*0.01μF to 0.1μF bypass capacitor recommended

■ REFLOW PROFILE


Note: Consult factory for detail

■ PART NUMBERING GUIDE

TSM21 - H 50 HM 33 S T - 12.000M - TR									
Product series		Output		Stability		Symmetry		Tape and Reel	
H: HCMOS		00: ± 100ppm 50: ± 50ppm 25: ± 25ppm XX: Two digit for Stability		R: 40/60% S: 45/55%		TR: 3000/reel Blank: Cut tape		Frequency	
								M: MHZ	
								Tristate	
								T: En/Disable N: N/C	
								Supply Voltage	
								18: 1.8 Volt 25: 2.5 Volt 33: 3.3 Volt	

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