

# Ceramic SMD Crystal Oscillator

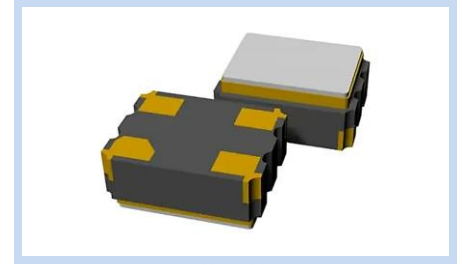
## SMD 5.0 x 3.2mm HCMOS

MO5M Series

**MERITEK**

### FEATURE

- Output Logic: HCMOS
- Tri-State Function
- High Precision and High Frequency Stability
- Applications: Wired Network, Mobile Communication, Bluetooth, WiMAX, WLAN, Set-Top Box, HDTV



### ELECTRICAL CHARACTERISTICS

Item	Min	Typ	Max	Units
Nominal Frequency Range	0.0137	-	167.000	MHz
Supply Voltage (V <sub>DD</sub> )	1.8	-	5.5	V
Overall Frequency Stability Range	-20	-	+20	ppm
	-50	-	+50	
Operating Temperature Range	0	-	+60	°C
	-40	-	+85	
Storage Temperature Range	-55	-	+125	
Supply Current	-	-	7.5	mA
Symmetry (Duty Cycle)	40	50	60	%
Rise/ Fall Time, Tr (10% ~90% V <sub>DD</sub> ) / Tf (90% ~10% V <sub>DD</sub> )	-	-	5	ns
Output Voltage	High (V <sub>OH</sub> )	90%	-	V <sub>DD</sub>
	Low (V <sub>OL</sub> )	-	10%	
Output Load (CMOS)	-	-	15	pF
Start Up Time	-	-	2	ms
Frequency Aging First Year at 25°C ± 3°C	-3		3	ppm
Pin 1, Tri-State Function	Pin 1 = "H" or "open": Output active at Pin 4 Pin 1 = "L": Output is high impedance at Pin 4			--

Note:

1. Overall frequency stability range include 25°C tolerance, operating temperature change, input voltage change, load change, aging, shock and vibration.
2. For stable operation, it is recommended that the bypass capacitor (0.01µF) placed between V<sub>DD</sub> and GND to minimize power supply line noise.

### DIMENSIONS

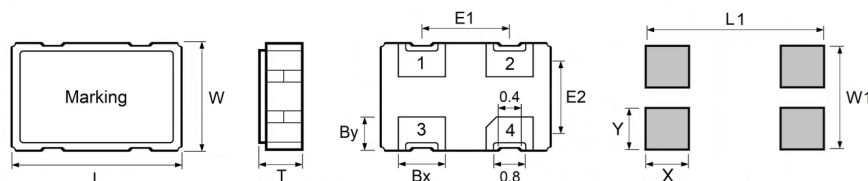


Fig.5

Unit: mm

Size	L	W	T	Bx	By	E1	E2	X	Y	L1	W1	Fig
5032	5.0 ±0.2	3.2 ±0.2	1.25 ±0.15	1.2 ±0.1	1.0	2.54	2.20	1.70	1.50	4.24	3.70	5

Note: Pin 1: Tri-State; Pin 2: GND; Pin 3: V<sub>DD</sub>; Pin 4: Output.

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### PART NUMBERING SYSTEM

**MO5M** **33** **F** **3** **32M0**  
 (1) (2) (3) (4) (5)

No.	Item	Code	Description
(1)	Meritek Series	MO5M	Ceramic SMD Crystal Oscillator, 5.0 x 3.2mm, 4 Pads, HCMOS
(2)	Supply Voltage	33	33: 3.3V ±5% 1.8~5.5V, See option table
(3)	Frequency Stability	F	F: ±20ppm ±20~±50ppm, See option table
(4)	Operating Temperature	3	3: -40~+85°C See option table
(5)	Frequency	32M0	32M0: 32.00MHz 13K7~167M0, K and M: denotes decimal point
(6)	Pin 1	Blank	Blank: Tri-State N: No Connection
(7)	Output Load	Blank	Blank: 15pF Blank: 15pF (Standard), X: 30pF, Y: 50pF
(8)	Duty Cycle	Blank	Blank: 45/55% T: 40/60%

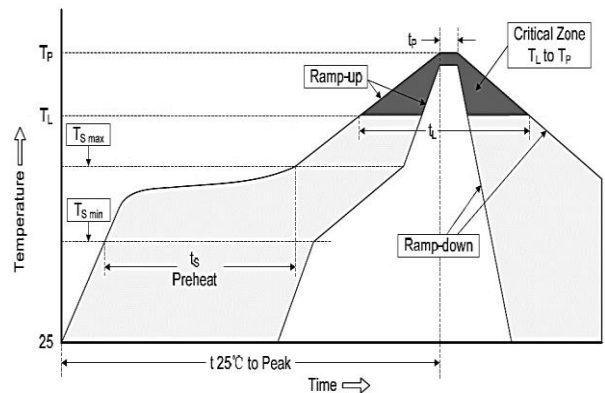
### PRODUCTS OPTION CODE

Supply Voltage	(V)	1.8	2.5	2.8	3.0	3.3	5.0	*	
	Code	18	25	28	30	33	50	Z	
Frequency Stability	(ppm)	±10	±15	±20	±25	±30	±50	±100	*
	Code	A	C	F	G	H	J	K	Z
Operating Temperature	(°C)	-40~70	-40~85	-40~105	-40~125	-40~150	-10~60	0~70	*
	Code	4	3/I	2/R	1/Y	0	A	B	Z
Operating Temperature	(°C)	-55~70	-55~85	-55~105	-55~125	-55~150	-20~70	-30~85	*
	Code	9	8	7	6	5	C	K	Z

Note: \* Z: None Standard, Custom options available. Contact Meritek for more information.

### RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	125°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) ( $t_s$ )	60~180 seconds
Ramp up rate ( $T_L$ to $T_P$ )		3°C/second max.
$T_{s(max)}$ to $T_L$ (Ramp-up rate)		3°C/second max.
Reflow	Temp. ( $T_L$ )	217°C
	Time (min. to max.) ( $t_L$ )	60~150 seconds
Peak Temperature ( $T_P$ )		260°C
$t_p$ within 5°C of Peak Temperature ( $t_p$ )		20~40 seconds
Ramp-down Rate		6°C/second max.



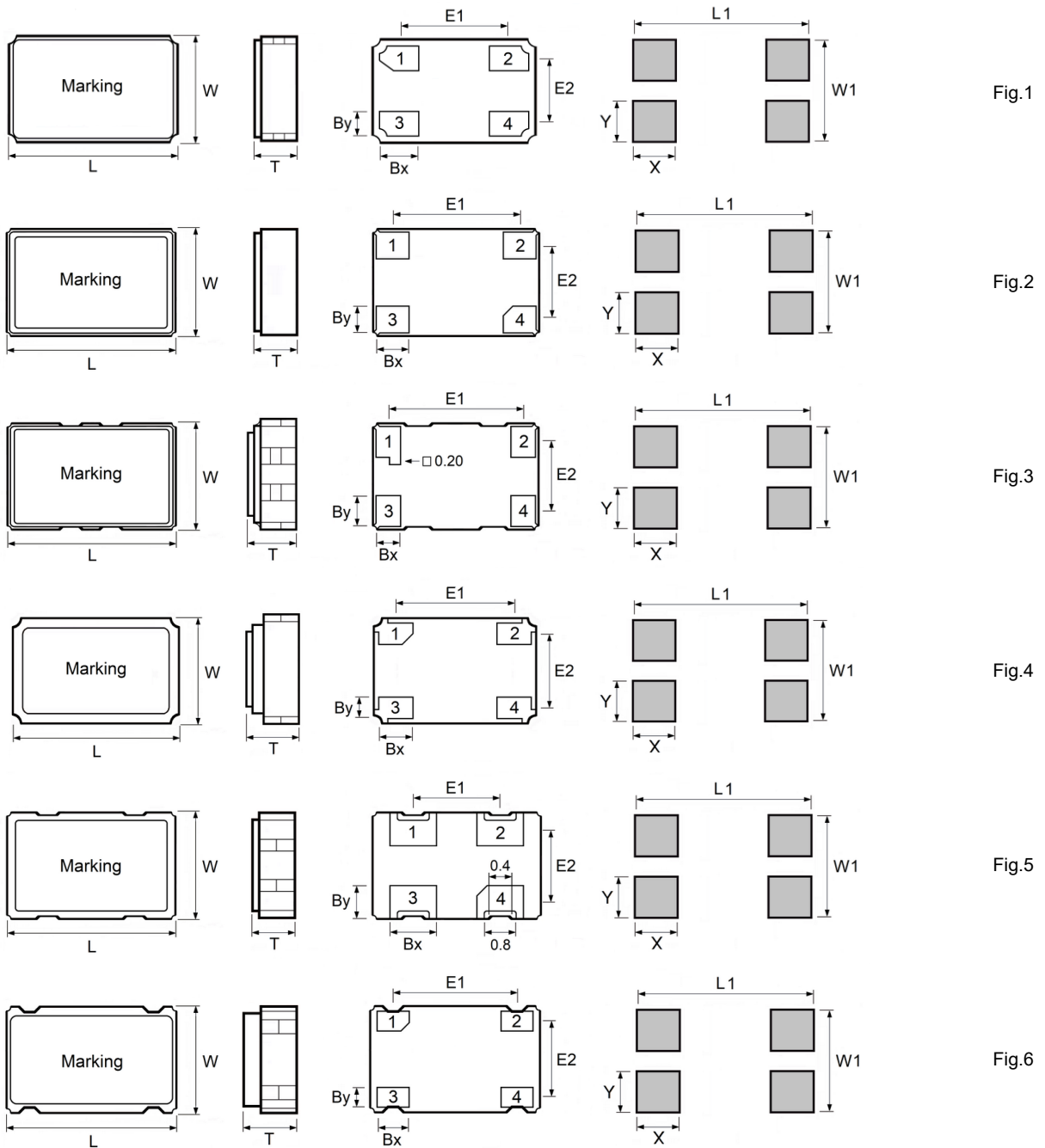
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## SMD 5.0 x 3.2mm HCMOS

MO5M Series

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### DIMENSIONS – MOxM Series



Unit: mm

Series	Size	Pad	L	W	T max	Bx	By	E1	E2	X	Y	L1	W1	Fig
MO1M	1612	4	1.6 ±0.1	1.2 ±0.1	0.58	0.55	0.35	0.95	0.75	0.80	0.60	1.80	1.40	1
MOAM	2016	4	2.0 ±0.1	1.6 ±0.1	0.90	0.55	0.45	1.25	0.95	0.85	0.75	2.20	1.80	2
MO2M	2520	4	2.5 ±0.15	2.0 ±0.15	0.90	0.50	0.62	1.90	1.27	0.90	1.00	2.90	2.27	3
MO3M	3225	4	3.2 ±0.15	2.5 ±0.15	1.20	0.90	0.65	2.10	1.65	1.30	1.30	3.40	3.20	4
MO5M	5032	4	5.0 ±0.2	3.2 ±0.2	1.40	1.20	1.00	2.54	2.20	1.70	1.50	4.24	3.70	5
MO7M	7050	4	7.0 ±0.2	5.0 ±0.2	1.50	1.40	1.10	5.08	3.70	1.80	2.00	6.88	6.20	6

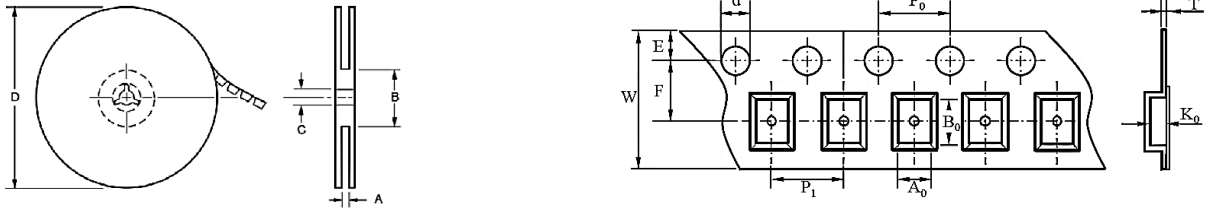
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### PACKAGING SPECIFICATION



Series	Size	Reel Dimension (mm)						Tape Dimensions (mm)									
		A	B	C	D	Dia	Pcs/Reel	A0	B0	d	E	F	K0	P0	P1	T	W
MO1M	1612	9.0	60	13.0	180	178	3000	1.4	1.8	1.50	1.75	3.5	0.7	4.0	4.0	0.25	8.0
MOAM	2016	9.0	60	13.0	180	178	3000	1.8	2.2	1.50	1.75	3.5	1.3	4.0	4.0	0.25	8.0
MO2M	2520	9.0	60	13.0	180	178	3000	2.25	2.7	1.50	1.75	3.5	1.15	4.0	4.0	0.25	8.0
MO3M	3225	9.0	60	13.0	180	178	3000	2.7	3.4	1.50	1.75	3.5	1.15	4.0	4.0	0.25	8.0
MO5M	5032	13.5	60	13.0	180	178	1000	3.6	5.4	1.50	1.75	5.5	1.4	4.0	8.0	0.25	12.0
MO7M	7050	17.5	60	13.0	180	178	1000	5.4	7.4	1.50	1.75	7.5	1.8	4.0	8.0	0.25	16.0

Note: Specifications subject to change without notice.