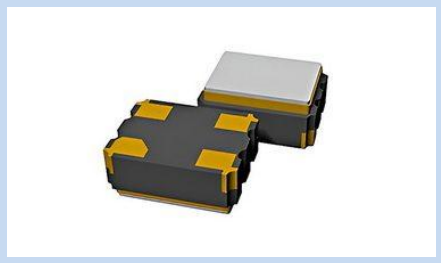
Ceramic Crystal Oscillator
SMD 2.5 x 2.0mm CMOS

MO2 Series

MERITEK

FEATURE

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



RoHS

ELECTRICAL CHARACTERISTICS

Item		Min	Typ	Max	Units
Nominal Frequency Range		0.032768	-	125.000	**MHz**
Supply Voltage (V_{DD})		1.8	-	5.5	**V**
Overall Frequency Stability Range		-20	-	+20	**ppm**
		-100	-	+100	
Operating Temperature Range		0	-	+60	**°C**
		-40	-	+85	
Storage Temperature Range		-55	-	+125	
Supply Current		-	-	15	**mA**
Symmetry (Duty Cycle)		45	50	55	**%**
Rise/ Fall Time, Tr (10% ~90% V_{DD}) / Tf (90% ~10% V_{DD})		-	-	10	**ns**
Output Voltage	**High (V_{OH})**	90%	-	-	**V_{DD}**
	Low (V_{OL})	-	-	10%	
Output Load (CMOS)		-	-	15	**pF**
Start Up Time		-	-	5	**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 3 Pin 1 = "L": Output is high impedance at Pin 3			**--**

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_{DD} and GND to minimize power supply line noise.

DIMENSIONS

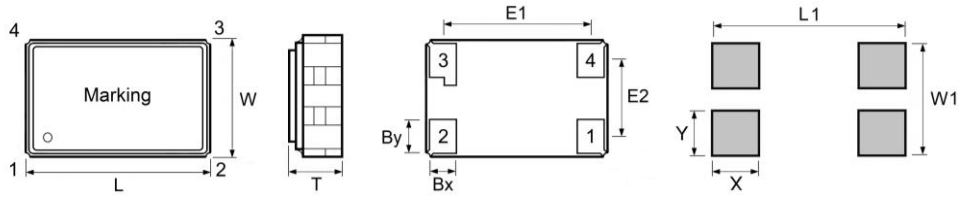


Fig.3

Unit: mm

Size	L	W	T	Bx	By	E1	E2	X	Y	L1	W1	Fig
2520	2.5 ±0.15	2.0 ±0.15	0.8 ±0.1	0.50	0.62	1.90	1.27	0.90	1.00	2.90	2.27	3

Note: Pin 1: Tri-State; Pin 2: GND; Pin 3: Output; Pin 4: V_{DD}.

Ceramic Crystal Oscillator
SMD 2.5 x 2.0mm CMOS

MO2 Series

MERITEK

PART NUMBERING SYSTEM

MO2 (1) **33** (2) **F** (3) **3** (4) **32M0** (5)

No.	Item	Code	Description	
(1)	**Meritek Series**	MO2	Ceramic SMD Crystal Oscillator, 2.5 x 2.0mm, 4 Pads, CMOS	
(2)	**Supply Voltage**	33	33: 3.3V ±5%	1.8~5.5V, See option table
(3)	**Frequency Stability**	F	F: ±20ppm	±20~±100ppm, See option table
(4)	**Operating Temperature**	3	3: -40~+85ºC	See option table
(5)	**Frequency**	32M0	32M0: 32.00MHz	32K768~125M0, 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%

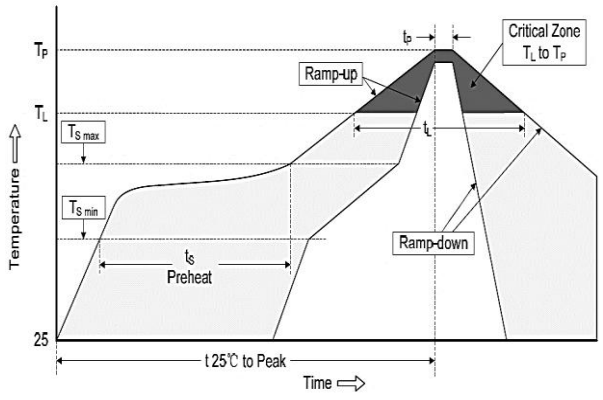
PRODUCTS OPTION CODE

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.



DIMENSIONS – MOx Series

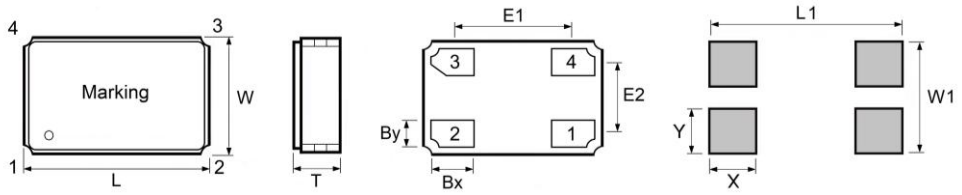


Fig.1

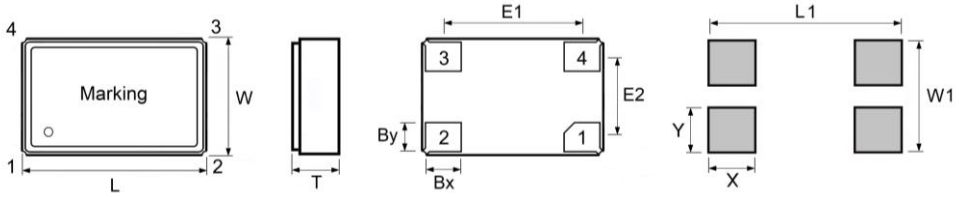


Fig.2

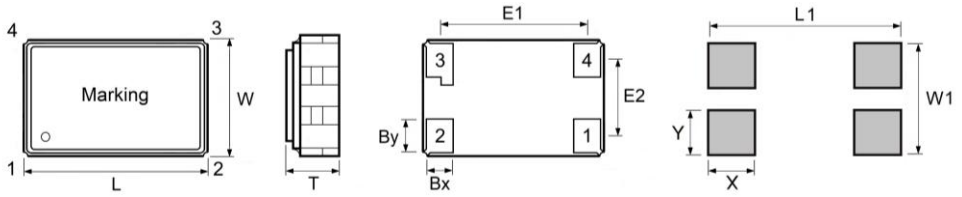


Fig.3

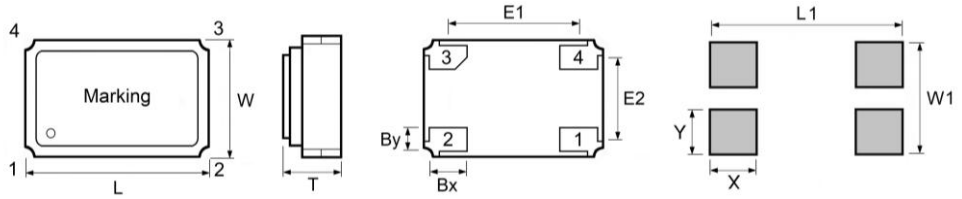


Fig.4

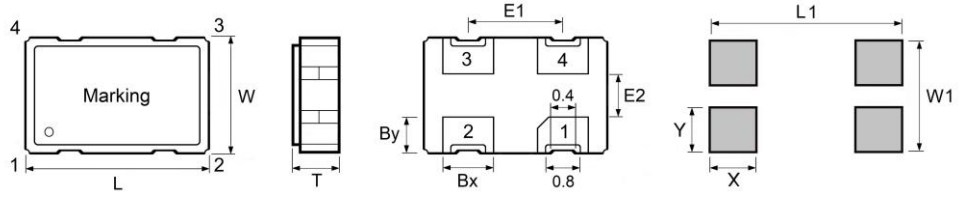


Fig.5

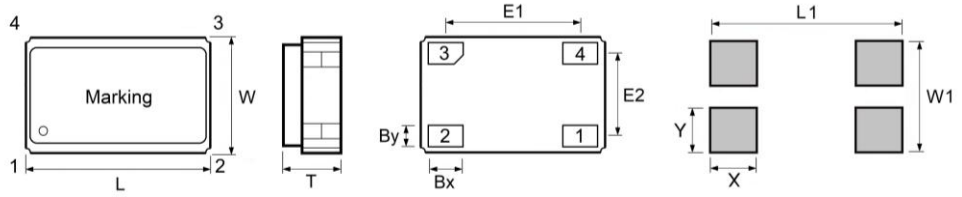
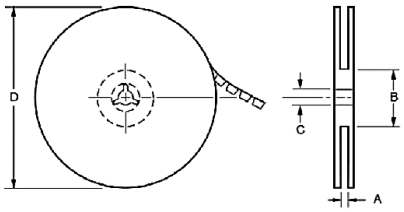


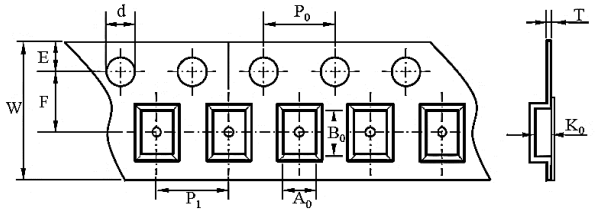
Fig.6

Unit: mm

Series	Size	Pad	L	W	T max	Bx	By	E1	E2	X	Y	L1	W1	Fig
MO1	**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
MOA	**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
MO2	**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
MO3	**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
MO5	**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
MO7	**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

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
MO1	**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
MOA	**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
MO2	**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
MO3	**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
MO5	**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
MO7	**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