

# ULTRA MINIATURE PLASTIC PACKAGE

## PURE SILICON™ CLOCK OSCILLATOR

ASEM



RoHS/RoHS II Compliant

ASEM



Life Size

3.2 x 2.5 x 0.85 mm

### FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- MEMS Technology by Discera
- Low Power Consumption <10mA
- Exceptional Stability Over Temp. at -40 to +85°C.
- Available over Extended Operating Temperature
- Low Cost-Compact QFN Plastic Packaging
- Compact Package design

### APPLICATIONS:

- CCD Clock for VTR Camera
- Equipment Connected to PCs
- Low Profile Equipment
- Lower Cost Crystal Oscillator Replacement
- Computers and Peripherals
- Portable Electronics (MP3 Players, Games)
- Consumer Electronics such as TV's, DVR's, etc.
- Vibrant, Shock-Prone & Humid Environments for Industrial Equipment
- Demanding Military & Automotive Electronics



### STANDARD SPECIFICATIONS:

| Parameters                      |                     | Minimum                                                              | Typical | Maximum             | Units | Notes                       |
|---------------------------------|---------------------|----------------------------------------------------------------------|---------|---------------------|-------|-----------------------------|
| Frequency Range:                |                     | 1.0                                                                  | -----   | 150                 | MHz   |                             |
| Operating Temperature:          |                     | 0                                                                    | -----   | +70                 | °C    | See options                 |
| Storage Temperature:            |                     | -55                                                                  | -----   | +150                | °C    |                             |
| Overall Frequency Stability*:   |                     | -100                                                                 | -----   | +100                | ppm   | See options                 |
| Supply Voltage (Vdd):           |                     | +1.8 ~ +3.3                                                          |         |                     | V     | See options                 |
| Supply Current (no load):       | 1.0 to 39.9999MHz   | -----                                                                | 3       | 10                  | mA    | No load<br>RL=∞<br>T=25°C   |
|                                 | 40.0 to 79.9999MHz  | -----                                                                | 4       | 10                  |       |                             |
|                                 | 80.0 to 124.9999MHz | -----                                                                | 5       | 10                  |       |                             |
|                                 | 125.0 to 150MHz     | -----                                                                | 6       | 10                  |       |                             |
| Output Voltage:                 | V <sub>OH</sub>     | 0.8*V <sub>dd</sub>                                                  | -----   | -----               | V     | 15pF                        |
|                                 | V <sub>OL</sub>     | -----                                                                | -----   | 0.2*V <sub>dd</sub> |       |                             |
| Rise Time:                      | Tr                  | -----                                                                | 1.3     | 2.0                 | ns    | 15pF; T=25°C<br>20%/80%*VDD |
| Fall Time:                      | Tf                  | -----                                                                | 1.3     | 2.0                 |       |                             |
| Output Load:                    |                     | 15pF max / 10kΩ min.                                                 |         |                     | pF    | See options                 |
| Symmetry:                       |                     | 45                                                                   | -----   | 55                  | %     | @1/2Vdd                     |
| Startup Time:                   |                     | -----                                                                | 1.5     | 3.0                 | ms    |                             |
| Disable Time:                   |                     | -----                                                                | 20      | 100                 | ns    |                             |
| Disable Stand-by Current:       |                     | -----                                                                | -----   | 1                   | uA    |                             |
| Tri-state Function (Stand-by) : |                     | "1" (VIH≥0.75*Vdd) or Open: Oscillation<br>"0" (VIH<0.25*Vdd) : Hi Z |         |                     | V     |                             |
| Cycle to cycle jitter:          |                     | -----                                                                | 95      | -----               | ps    | F=100MHz                    |
| Aging:                          |                     | -5.0                                                                 | -----   | +5.0                | ppm   | First year                  |

### Absolute Maximum Ratings

| Item            | Minimum | Maximum | Unit | Condition |
|-----------------|---------|---------|------|-----------|
| Supply Voltage  | -0.3    | +4.0    | V    |           |
| Input Voltage   | -0.3    | Vdd+0.3 | V    |           |
| Junction Temp.  | -----   | +150    | °C   |           |
| Soldering Temp. | -----   | +260    | °C   | 40sec max |
| ESD             |         |         | V    |           |
| HBM             |         | 2,000   |      |           |
| MM              |         | 200     |      |           |
| CDM             |         | 500     |      |           |

ABRACON IS  
ISO 9001:2008  
CERTIFIED



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Visit [www.abracon.com](http://www.abracon.com) for Terms and Conditions of Sale

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## ➤ PART NUMBER FOR PROGRAMMED ORDERS (Quantity > 1,000pcs)

ASEM  -  MHz -  -  -

| Supply Voltage     |
|--------------------|
| 1: $3.3 \pm 0.3V$  |
| 2: $3.0 \pm 0.3V$  |
| 3: $2.5 \pm 0.2V$  |
| 4: $1.8 \pm 0.15V$ |
| 5: $2.8 \pm 0.2V$  |

| Frequency in MHz                                        |
|---------------------------------------------------------|
| e.g. 14.3181 MHz<br>(Maximum 4 digits<br>after decimal) |

| Operating Temp.                       |
|---------------------------------------|
| Blank: $0^{\circ}C \sim +70^{\circ}C$ |
| E: $-20^{\circ}C \sim +70^{\circ}C$   |
| L: $-40^{\circ}C \sim +85^{\circ}C$   |

| Overall Freq. Stability |
|-------------------------|
| Blank: $\pm 100ppm$     |
| R: $\pm 25ppm$          |
| C: $\pm 50ppm$          |

| Packaging             |
|-----------------------|
| Blank*: 110pcs / Tube |
| T: 1,000pcs / reel    |
| T3: 3,000pcs / reel   |
| T5: 5,000pcs / reel   |

\* For Quick turn-around programmable orders < 1000pcs: Due to the immediate availability of stock and the qty of the order, the parts may be delivered as BULK: Cut Tape, Loose parts in Antistatic Bag or in Tube(s). The MOQ per the series will still apply for Tube packaging.

## Un-Programmed Orders (Quantity < 1,000pcs)

Blank un-programmed oscillators and our low cost portable programmer are available for quick turn engineering requirements. Please call ABRACON or visit MEMSpeed Pro site <http://www.abracon.com/memspeedpro/memspeedpro.html> for more information.

ASEM - BLANK -  -  -

| Operating Temp.<br>Freq. Stability                       |
|----------------------------------------------------------|
| EC: $\pm 50 ppm / -20^{\circ}C \text{ to } +70^{\circ}C$ |
| ER: $\pm 25 ppm / -20^{\circ}C \text{ to } +70^{\circ}C$ |
| LC: $\pm 50 ppm / -40^{\circ}C \text{ to } +85^{\circ}C$ |
| LR: $\pm 25 ppm / -40^{\circ}C \text{ to } +85^{\circ}C$ |

| Packaging            |
|----------------------|
| Blank: 110pcs / Tube |
| T: 1,000pcs / reel   |
| T3: 3,000pcs / reel  |
| T5: 5,000pcs / reel  |

