

MEMS CLOCK OSCILLATOR

ASEMB



Life Size 3.2 x 2.5 x 0.85mm

ASEMB

Moisture Sensitivity Level – MSL 1



RoHS/RoHS II Compliant

FEATURES:

- Low Power Consumption <10mA
- Exceptional Stability +/- 10ppm Over Temp. at -40 to +105°C
- Compact QFN Plastic Packaging

APPLICATIONS:

- CCD Clock for VTR Camera
- Equipment Connected to PCs
- Low Profile Equipment
- Computers and Peripherals
- Lower Cost Crystal Oscillator Replacement
- 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:

Common Key Electrical 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*: | -50 | | +50 | ppm | See options |
| Supply Voltage (Vdd): | +1.8 ~ +3.3 | | | V | |
| Output Load: | | | 15, 25, or 40 | pF | See options |
| | 10 | | | kΩ | |
| Symmetry: | 45 | | 55 | % | @1/2Vdd |
| Startup Time: | | 1.5 | 3.0 | ms | |
| Disable Time: | | 20 | 100 | ns | |
| Disable Stand-by Current: | | | 15 | uA | |
| Tri-state Function (Stand-by) : | "1" (VIH ≥ 0.7 * Vdd) or Open: Oscillation "0" (VIL < 0.25 * Vdd) : Hi Z | | | V | |
| Aging: | -5.0 | | +5.0 | ppm | First year |

Key Electrical Specifications – V_{dd} = 1.8V

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|---------------------------|---------------------|---------------------|---------------------|-------|---|
| Supply Current (no load): | 1.0 to 39.9999MHz | 5 | 15 | mA | CL=0pF RL=∞ T=25°C (Standard CL: 15pF) |
| | 40.0 to 79.9999MHz | 6 | 15 | mA | |
| | 80.0 to 124.9999MHz | 7 | 15 | mA | |
| | 125.0 to 150MHz | 8 | 15 | mA | |
| | 1.0 to 39.9999MHz | 6 | 15 | mA | CL=0pF RL=∞ T=25°C (CL option: 25pF) |
| | 40.0 to 79.9999MHz | 7 | 15 | mA | |
| | 80.0 to 124.9999MHz | 8 | 15 | mA | |
| | 125.0 to 150MHz | 9 | 15 | mA | |
| | 1.0 to 39.9999MHz | 7 | 15 | mA | CL=0pF RL=∞ T=25°C (CL option: 40pF) |
| | 40.0 to 79.9999MHz | 8 | 15 | mA | |
| | 80.0 to 124.9999MHz | 9 | 15 | mA | |
| | 125.0 to 150MHz | 10 | 15 | mA | |
| Output Voltage: | V _{OH} | 0.8*V _{dd} | | V | CL=15, 25, 40pF |
| | V _{OL} | | 0.2*V _{dd} | V | |
| Rise Time: Fall Time: | Tr | 1.8 | 3.0 | ns | CL=15pF; T=25°C 20%/80%*VDD |
| | Tf | 1.0 | 3.0 | ns | |
| | Tr | 1.5 | 3.0 | ns | CL=25pF; T=25°C 20%/80%*VDD |
| | Tf | 1.2 | 3.0 | ns | |
| | Tr | 1.4 | 3.0 | ns | CL=40pF; T=25°C 20%/80%*VDD |
| | Tf | 1.1 | 3.0 | ns | |
| Cycle to Cycle Jitter: | | 60 | | ps | F=100MHz |
| Period Jitter RMS: | | 10 | | ps | F=100MHz |



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 For terms and conditions of sales, please visit:
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ABRACON IS
 ISO9001-2015
 CERTIFIED

Key Electrical Specifications – $V_{dd}=2.5V$

| Parameters | | Minimum | Typical | Maximum | Units | Notes |
|------------------------------|---------------------|--------------|---------|--------------|-------|---------------------|
| Supply Current (no load): | 1.0 to 39.9999MHz | | 6 | 15 | mA | CL=0pF |
| | 40.0 to 79.9999MHz | | 7 | 15 | mA | RL= ∞ |
| | 80.0 to 124.9999MHz | | 8 | 15 | mA | T=25°C |
| | 125.0 to 150MHz | | 9 | 15 | mA | (Standard CL: 15pF) |
| | 1.0 to 39.9999MHz | | 7 | 15 | mA | CL=0pF |
| | 40.0 to 79.9999MHz | | 8 | 15 | mA | RL= ∞ |
| | 80.0 to 124.9999MHz | | 9 | 15 | mA | T=25°C |
| | 125.0 to 150MHz | | 10 | 15 | mA | (CL option: 25pF) |
| | 1.0 to 39.9999MHz | | 8 | 16 | mA | CL=0pF |
| | 40.0 to 79.9999MHz | | 9 | 16 | mA | RL= ∞ |
| | 80.0 to 124.9999MHz | | 10 | 16 | mA | T=25°C |
| | 125.0 to 150MHz | | 11 | 16 | mA | (CL option: 40pF) |
| Output Voltage: | V_{OH} | $0.8*V_{dd}$ | | | V | |
| | V_{OL} | | | $0.2*V_{dd}$ | V | CL=15, 25pF |
| | V_{OH} | $0.9*V_{dd}$ | | | V | |
| | V_{OL} | | | $0.1*V_{dd}$ | V | CL=40pF |
| Rise Time: Fall Time: | T_r | | 1.0 | 2.0 | ns | CL=15pF; T=25°C |
| | T_f | | 0.9 | 2.0 | ns | 20%/80%*VDD |
| | T_r | | 1.1 | 2.0 | ns | CL=25pF; T=25°C |
| | T_f | | 0.9 | 2.0 | ns | 20%/80%*VDD |
| | T_r | | 1.0 | 2.0 | ns | CL=40pF; T=25°C |
| | T_f | | 0.9 | 2.0 | ns | 20%/80%*VDD |
| Cycle to Cycle Jitter: | | | 50 | | ps | F=100MHz |
| Period Jitter RMS: | | | 5 | | ps | F=100MHz |

Key Electrical Specifications – $V_{dd}=3.3V$

| Parameter | Minimum | Typical | Maximum | Units | Notes |
|------------------------------|---------------------|--------------------|--------------------|-------|---------------------|
| Supply Current (no load): | 1.0 to 39.9999MHz | 7 | 15 | mA | CL=0pF |
| | 40.0 to 79.9999MHz | 8 | 15 | mA | RL=∞ |
| | 80.0 to 124.9999MHz | 9 | 15 | mA | T=25°C |
| | 125.0 to 150MHz | 10 | 15 | mA | (Standard CL: 15pF) |
| | 1.0 to 39.9999MHz | 8 | 16 | mA | CL=0pF |
| | 40.0 to 79.9999MHz | 9 | 16 | mA | RL=∞ |
| | 80.0 to 124.9999MHz | 10 | 16 | mA | T=25°C |
| | 125.0 to 150MHz | 11 | 16 | mA | (CL option: 25pF) |
| | 1.0 to 39.9999MHz | 8 | 16 | mA | CL=0pF |
| | 40.0 to 79.9999MHz | 9 | 16 | mA | RL=∞ |
| | 80.0 to 124.9999MHz | 10 | 16 | mA | T=25°C |
| | 125.0 to 150MHz | 11 | 16 | mA | (CL option: 40pF) |
| Output Voltage: | V_{OH} | $0.8 \cdot V_{dd}$ | | V | |
| | V_{OL} | | $0.2 \cdot V_{dd}$ | V | CL=15pF |
| | V_{OH} | $0.9 \cdot V_{dd}$ | | V | |
| | V_{OL} | | $0.1 \cdot V_{dd}$ | V | CL=25, 40pF |
| Rise Time: Fall Time: | Tr | 1.0 | 2.0 | ns | CL=15pF; T=25°C |
| | Tf | 0.9 | 2.0 | ns | 20%/80%*VDD |
| | Tr | 1.0 | 2.0 | ns | CL=25pF; T=25°C |
| | Tf | 0.9 | 2.0 | ns | 20%/80%*VDD |
| | Tr | 0.8 | 2.0 | ns | CL=40pF; T=25°C |
| | Tf | 0.8 | 2.0 | ns | 20%/80%*VDD |
| Cycle to Cycle Jitter: | | 50 | | ps | F=100MHz |
| Period Jitter RMS: | | 5 | | ps | F=100MHz |



Absolute Maximum Ratings

| Item | Minimum | Maximum | Unit | Condition |
|-----------------|---------|----------------------|------|-----------|
| Supply Voltage | -0.3 | +4.0 | V | |
| Input Voltage | -0.3 | V _{dd} +0.3 | V | |
| Junction Temp. | | +150 | °C | |
| Storage Temp. | -55 | +150 | °C | |
| Soldering Temp. | | +260 | °C | 40sec max |
| ESD | | | V | |
| HBM | | 4,000 | | |
| MM | | 200 | | |
| CDM | | 1,500 | | |

OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

Programmed Orders (Quantity > 1,000pcs)

ASEMB - MHz - - -

| Frequency in MHz | Operating Temp. | Overall Freq. Stability | Output Load | Packaging |
|--|---|--|-------------------------------------|---|
| e.g. 14.3181 MHz (Maximum 4 digits after decimal) | Blank: 0°C ~ +70°C E: -20°C ~ +70°C L: -40°C ~ +85°C X: -40°C ~ +105°C | C: ±50ppm (STD) Y: ±10ppm R: ±25 ppm | Blank: 15pF 25: 25pF 40: 40pF | 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

Blank unprogrammed oscillators are available for quick turn engineering requirements. Please call ABRACON for more information.

ASEMB - BLANK - - - -

| Operating Temp. | Overall Freq. Stability | Output Load | Packaging |
|---|--|-------------------------------------|--|
| Blank: 0°C ~ +70°C E: -20°C ~ +70°C L: -40°C ~ +85°C X: -40°C ~ +105°C | C: ±50ppm (STD) Y: ±10ppm R: ±25 ppm | Blank: 15pF 25: 25pF 40: 40pF | Blank: 110pcs / Tube T: 1,000pcs / reel T3: 3,000pcs / reel T5: 5,000pcs / reel |

