

# M6001, M6002, M6003 & M6004 Series

## 9x14 mm FR-4, 5.0 or 3.3 Volt, HCMOS/TTL, TCXO and TCVCXO



### Features:

- Operating stabilities to  $\pm 0.5$  ppm
- Stratum III stability of  $\pm 4.6$  ppm (non-holdover)

### Applications:

- Ideal for Signal Processing, Military/Avionic Communications, Flight Controls, WLAN, Basestations, DWDNM, SERDES, SONET/SDH, 10G and 40G Ethernet applications

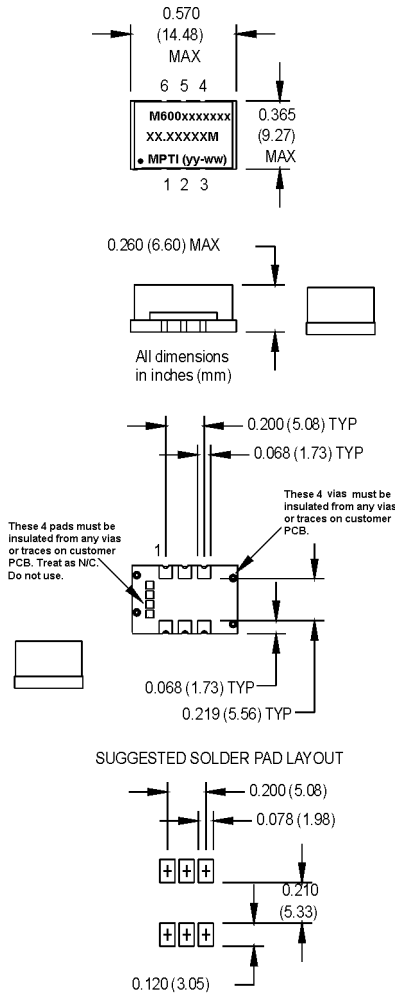
### Ordering Information

|                                |   |   |   |   |   |   |    |         |     |
|--------------------------------|---|---|---|---|---|---|----|---------|-----|
| Product Series                 | M6001 - M6004                             | 1 | L | F | C | K | -R | 00.0000 | MHz |
| M6001 =                        | 3.3 V TCXO                                |   |   |   |   |   |    |         |     |
| M6002 =                        | 5.0 V TCXO                                |   |   |   |   |   |    |         |     |
| M6003 =                        | 3.3 V VCTCXO                              |   |   |   |   |   |    |         |     |
| M6004 =                        | 5.0 V VCTCXO                              |   |   |   |   |   |    |         |     |
| Temperature Range              |   |   |   |   |   |   |    |         |     |
| 1:                             | 0°C to +70°C                              |   |   |   |   |   |    |         |     |
| 2:                             | -40°C to +85°C                            |   |   |   |   |   |    |         |     |
| 8:                             | 0°C to +50°C                              |   |   |   |   |   |    |         |     |
| Stability                      |   |   |   |   |   |   |    |         |     |
| L:                             | $\pm 4.6$ ppm                             |   |   |   |   |   |    |         |     |
| K:                             | $\pm 2$ ppm                               |   |   |   |   |   |    |         |     |
| J:                             | $\pm 1$ ppm                               |   |   |   |   |   |    |         |     |
| G:                             | $\pm 0.5$ ppm (0° to 50°C only)           |   |   |   |   |   |    |         |     |
| Frequency Control (Pin #1)     |   |   |   |   |   |   |    |         |     |
| F:                             | Fixed (M6001 and M6002 only)              |   |   |   |   |   |    |         |     |
| V:                             | Voltage Controlled (M6003 and M6004 only) |   |   |   |   |   |    |         |     |
| Symmetry/Logic Compatibility   |   |   |   |   |   |   |    |         |     |
| C:                             | 45/55% CMOS                               |   |   |   |   |   |    |         |     |
| Package/Lead Configurations    |   |   |   |   |   |   |    |         |     |
| K:                             | FR-4 6 pad                                |   |   |   |   |   |    |         |     |
| D:                             | DIP (contact factory)                     |   |   |   |   |   |    |         |     |
| RoHS Compliant                 |   |   |   |   |   |   |    |         |     |
| Blank:                         | non-RoHS compliant part                   |   |   |   |   |   |    |         |     |
| -R:                            | RoHS compliant part                       |   |   |   |   |   |    |         |     |
| Frequency (customer specified) |   |   |   |   |   |   |    |         |     |

### Pin Connections

| FUNCTION               | PAD |
|------------------------|-----|
| N/C or Control Voltage | 1   |
| Tristate               | 2   |
| Ground/Case            | 3   |
| Output                 | 4   |
| N/C                    | 5   |
| +Vdd                   | 6   |

M6001Sxxx, M6002Sxxx, M6003Sxxx & M6004Sxx - Contact factory for datasheets.



| PARAMETER                        | Symbol          | Min.   | Typ.   | Max.  | Units           | Condition/Notes                   |                     |
|----------------------------------|-----------------|--|--------|-------|-----------------|-----------------------------------|---------------------|
| Frequency Range                  | F               | 5  |        | 30    | MHz             |                                   |                     |
| Operating Temperature            | T <sub>A</sub>  | (See Ordering Information)   |        |       |                 |                                   |                     |
| Storage Temperature              | T <sub>S</sub>  | -55  |        | +105  | °C              |                                   |                     |
| Frequency Stability              |                 | (See Ordering Information)   |        |       |                 |                                   | See Note 1          |
| Aging                            |                 |  |        |       |                 | See Note 2                        |                     |
| 1st Year                         |                 |  |        | 1.0   | ppm             |                                   |                     |
| 10 year aging                    |                 |  |        | 3.0   | ppm             |                                   |                     |
| Input Voltage                    | V <sub>dd</sub> | 3.15   | 3.3    | 3.45  | V               | M6001, M6003                      |                     |
|                                  |                 | 4.75   | 5.0    | 5.25  | V               | M6002, M6004                      |                     |
| Input Current                    | I <sub>dd</sub> |  |        | 10    | mA              | M6001, M6003                      |                     |
|                                  |                 |  |        | 20    | mA              | M6002, M6004                      |                     |
| Pullability                      |                 | $\pm 10$   |        |       | ppm             | M6003/M6004 only (positive slope) |                     |
| Control Voltage                  | V <sub>c</sub>  | 0.5  | 1.5    | 2.5   | V               | M6003/M6004 only                  |                     |
| Modulation Bandwidth             | f <sub>m</sub>  | 10   |        |       | kHz             | M6003/M6004 only                  |                     |
| Input Impedance                  | Z <sub>in</sub> | 50k  |        |       | Ohms            | M6003/M6004 only                  |                     |
| Output Type                      |                 |  |        |       |                 | CMOS                              |                     |
| Load                             |                 |  |        | 15    | pF              |                                   |                     |
| Symmetry (Duty Cycle)            |                 | (See Ordering Information)   |        |       |                 |                                   |                     |
| Logic "1" Level                  | V <sub>oh</sub> | 90 %   |        |       | V <sub>dd</sub> |                                   |                     |
| Logic "0" Level                  | V <sub>ol</sub> |  |        | 10%   | V <sub>dd</sub> |                                   |                     |
| Rise/Fall Time                   | Tr/Tf           |  |        | 3     | ns              |                                   |                     |
| Tristate Function                |                 | Input Logic "1": output active<br>Input Logic "0": output disables |        |       |                 |                                   |                     |
| Start up Time                    |                 | 10   |        |       | ms              |                                   |                     |
| Phase Noise (Typical) @19.44 MHz |                 | 10 Hz  | 100 Hz | 1 kHz | 10 kHz          | 100 kHz                           | Offset from carrier |
|                                  |                 | -77  | -107   | -128  | -143            | -148                              |                     |

1. Stability is inclusive of initial calibration, temperature, reflow, supply, load, shock, vibration, and ten year aging at 55°C.
2. "L" stability version only. All other stability options - initial calibration and deviation vs. temperature. TTL Load – see load circuit diagram #1. HCMOS Load – see load circuit diagram #2.

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# MtronPTI Lead Free Solder Profile

