

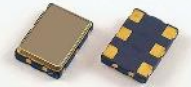
## MINIATURE CERAMIC SMD OSCILLATOR (7.0 x 5.0 x 1.9mm)

### FEATURES

- Available with output frequency from 10M~1.5GHz
- High reliability and low aging
- Available CMOS, LVDS, and LVPECL outputs
- 3.3V and 2.5V supply options

### APPLICATIONS

- SONET
- Ethernet
- Storage Area Network
- Microprocessors / DSP / FPGA
- Broadband Access
- Industrial Controllers
- Fiber Channel



### ■ SPECIFICATION

| PARAMETER                   |                                      | MIN.                      | TYP.                    | MAX.                  | UNIT                    | NOTE   |  |
|-----------------------------|--------------------------------------|---------------------------|-------------------------|-----------------------|-------------------------|--|--|
| FREQUENCY RANGE             | CMOS                                 | 10                        |                         | 250                   | MHz                     |  |  |
|                             | LVDS                                 | 10                        |                         | 1500                  | MHz                     |  |  |
|                             | LVPECL                               | 10                        |                         | 1500                  | MHz                     |  |  |
| FREQUENCY STABILITY         |                                      | ±10*                      | ±50                     | ±100                  | ppm                     |  |  |
| OPERATING TEMPERATURE RANGE |                                      | -40                       |                         | 85                    | °C                      | * See P/N guide for other options                            |  |
| STORAGE TEMPERATURE RANGE   |                                      | -55                       |                         | 125                   | °C                      |  |  |
| SUPPLY VOLTAGE ±10%         | V <sub>DD</sub> = 2.5V <sub>DC</sub> | 2.375                     | 2.500                   | 2.625                 | V                       | * See P/N guide for other options                            |  |
|                             | V <sub>DD</sub> = 3.3V <sub>DC</sub> | 2.970                     | 3.300                   | 3.630                 | V                       |  |  |
| SUPPLY CURRENT              | CMOS                                 |                           | 20                      | 45                    | mA                      | (V <sub>DD</sub> = 2.5V <sub>DC</sub> , 3.3V <sub>DC</sub> ) |  |
|                             | LVDS                                 |                           | 23                      | 45                    | mA                      |  |  |
|                             | LVPECL                               |                           | 54                      | 60                    | mA                      |  |  |
| OUTPUT                      | LOAD                                 | CMOS                      |                         | 15                    | pF                      |  |  |
|                             |                                      | LVDS                      |                         | 100                   | Ω                       | Output - Complimentary Output                                |  |
|                             |                                      | LVPECL                    |                         | 50                    | Ω                       | into V <sub>DD</sub> - 2V <sub>DC</sub>                      |  |
|                             | LEVEL                                | CMOS (V <sub>OH</sub> )   | 0.9 x V <sub>DD</sub>   |                       |                         | V  |  |
|                             |                                      | CMOS (V <sub>OL</sub> )   |                         |                       | 0.1 x V <sub>DD</sub>   | V  |  |
|                             |                                      | LVDS (V <sub>OH</sub> )   |                         | 1.4                   | 1.6                     | V  |  |
|                             |                                      | LVDS (V <sub>OL</sub> )   | 0.9                     | 1.1                   |                         | V  |  |
|                             |                                      | LVPECL (V <sub>OH</sub> ) | V <sub>DD</sub> - 1.03V |                       | V <sub>DD</sub> - 0.60V | V  |  |
|                             |                                      | LVPECL (V <sub>OL</sub> ) | V <sub>DD</sub> - 1.85V |                       | V <sub>DD</sub> - 1.60V | V  |  |
|                             | SYMMETRY (DUTY CYCLE)                | CMOS                      | 45                      |                       | 55                      | %  |  |
|                             |                                      | LVDS                      | 45                      |                       | 55                      | %  |  |
|                             |                                      | LVPECL                    | 45                      |                       | 55                      | %  |  |
|                             | RISE AND FALL TIME (Tr/Tf)           | CMOS                      |                         | 1.0                   | 3.0                     | nS   |  |
|                             |                                      | LVDS                      |                         | 0.25                  | 1.0                     | nS   |  |
|                             |                                      | LVPECL                    |                         | 0.25                  | 1.0                     | nS   |  |
| START-UP TIME               |                                      |                           | 2.0                     | 3.0                   | mS                      |  |  |
| STAND-BY VOLTAGE            | ENABLE (V <sub>IH</sub> )            | 0.7 x V <sub>DD</sub>     |                         |                       | V                       |  |  |
|                             | DISABLE (V <sub>IL</sub> )           |                           |                         | 0.3 x V <sub>DD</sub> | V                       |  |  |
| ENABLE DELAY TIME           |                                      |                           |                         | 100                   | nS                      |  |  |
| DISABLE DELAY TIME          |                                      |                           |                         | 100                   | nS                      |  |  |
| AGING                       | per 1year                            |                           |                         | ±3.0                  | ppm                     | @ 25°C ±3°C  |  |
|                             | per 10years                          |                           |                         | ±5.0                  | ppm                     |  |  |
| PHASE JITTER RMS            |                                      |                           | 0.60                    | 1.50                  | pS                      | @ 12kHz ~ 20MHz  |  |

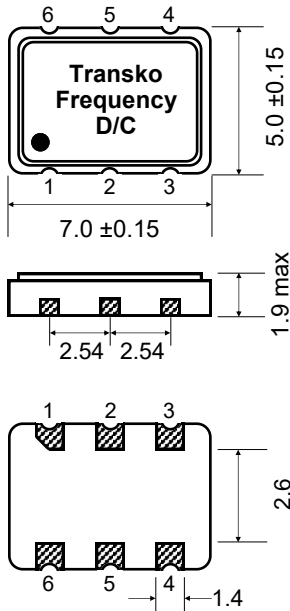
\* Available in selected operating temperature range

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■ Typical Phase Noise

| Frequency | 1kHz           | 10kHz          | 100kHz         | 1MHz           |
|-----------|----------------|----------------|----------------|----------------|
| 156.25MHz | -114.70 dBc/Hz | -124.11 dBc/Hz | -126.23 dBc/Hz | -140.45 dBc/Hz |
| 212.5MHz  | -108.73 dBc/Hz | -115.58 dBc/Hz | -116.22 dBc/Hz | -136.02 dBc/Hz |
| 622.08MHz | -100.38 dBc/Hz | -106.69 dBc/Hz | -106.43 dBc/Hz | -126.36 dBc/Hz |

■ PACKAGE DIMENSIONS

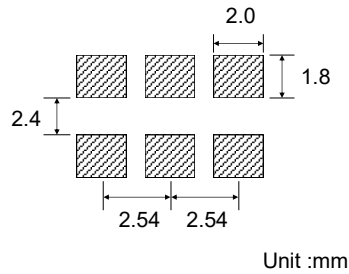


| Pin Configuration |                 |
|-------------------|-----------------|
| 1                 | En/Dis or NC    |
| 2                 | En/Dis or NC    |
| 3                 | GND             |
| 4                 | Output          |
| 5                 | **C.output      |
| 6                 | V <sub>DD</sub> |

\*\* LVDS/LVPECL only  
NC for CMOS

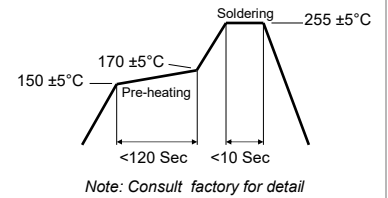
Unit : mm

■ SOLDER PATTERN

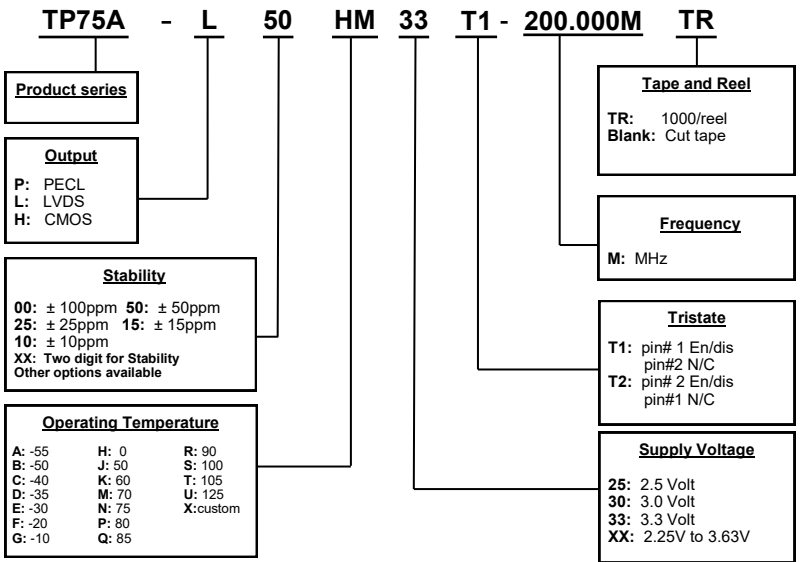


Unit : mm

■ REFLOW PROFILE



■ PART NUMBERING GUIDE



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