

TV/TX 35 SERIES TCXO: 3.2x5 mm Stratum 3 TCXO with frequency Range 10.0 MHz to 52.0 MHz

■ FEATURES

- ± 0.2 ppm Stability over Temperature
- ± 4.6 ppm Overall Stability over 20 years
- Ultra compact 3.2x5mm SMD Ceramic Package
- Low Current consumption

■ APPLICATIONS

- Mobile Phones
- Base Stations
- Mobile Radios
- GPS Devices
- Broadband Equipment
- Utility Metering



■ ELECTRICAL SPECIFICATION

| PARAMETER | SYMBOL | CONDITIONS | VALUE | UNIT |
|---|-------------------------|--|---------------------------------|----------------------------|
| Frequency Range | f_o | | 10 ~ 52 | MHz |
| Supply Voltage | V_{CC} | | 3.3 or 5.0 | V |
| Supply Current | I_s | Typical (depending on V_{CC} and output) | 2 ~ 10 | mA |
| Clipped Sine Wave – Output Voltage Swing (peak-to-peak) | V_{p-p} | Load = 10K Ω // 10pF | 0.6 ~ 1.0 | V |
| HCMOS – Output Levels | V_{OH} / V_{OL} | Min/Max, 15pF Load | 0.9 V_{CC} / 0.1 V_{CC} | V |
| Duty Cycle | DC | HCMOS - Load = 15pF (2 TTL) | 40/60 or 45/55 | % |
| Rise Time / Fall Time | t_r / t_f | 10% ~ 90% | 5 | ns |
| Start up time | t_s | Typical | 3 | ms |
| Enable / Disable | E/D | Min / Max | 0.8 (V_{CC}) / 0.2 V_{CC} | Vdc |
| Control Voltage ¹ | V_c | Optional | 0.5 ~ 2.5 | Vdc |
| Pull Range ¹ | f_T | $V_c = 1.5 \pm 1.0$ V | $\pm 3 \sim \pm 15$ | ppm |
| Linearity, max | L | Positive tuning slope | 10 | % |
| Initial Frequency Calibration | f_c | Measures at 25°C | ± 1.5 | ppm |
| Stability vs. Supply Voltage change | f_v | $V_{CC} \pm 5\%$ | ± 0.05 | ppm |
| Stability vs. Load change | f_L | Load $\pm 10\%$ | ± 0.05 | ppm |
| Stability over operating temperature ² | $\Delta f/f_o(T)$ | Referenced at 25°C | ± 0.2 | ppm |
| Overall Frequency Stability, max | $\Delta f/f_c$ | Including 20 years of aging | ± 4.6 | ppm |
| Stability vs. Aging, max | f_{age} | 1 year @ 25°C | ± 0.5 | ppm |
| Phase Noise @ freq. offset, typical. 10 MHz | $\mathcal{L}(\Delta f)$ | $\Delta f = 100$ Hz $\Delta f = 1$ kHz $\Delta f = 10$ kHz | -110 -135 -145 | dBc/Hz dBc/Hz dBc/Hz |
| Integrated Phase Jitter RMS, max | J | BW= 12kHz to 20MHz, $V_{CC} \pm 5\%$, 15pF load | 1.0 | ps |
| Operating temperature Range | T_a | | -20 ~ +70 -40 ~ +85 | °C |
| Storage Temperature Range | T(stg) | Absolute max | -55°C ~ +125°C | °C |

NOTES

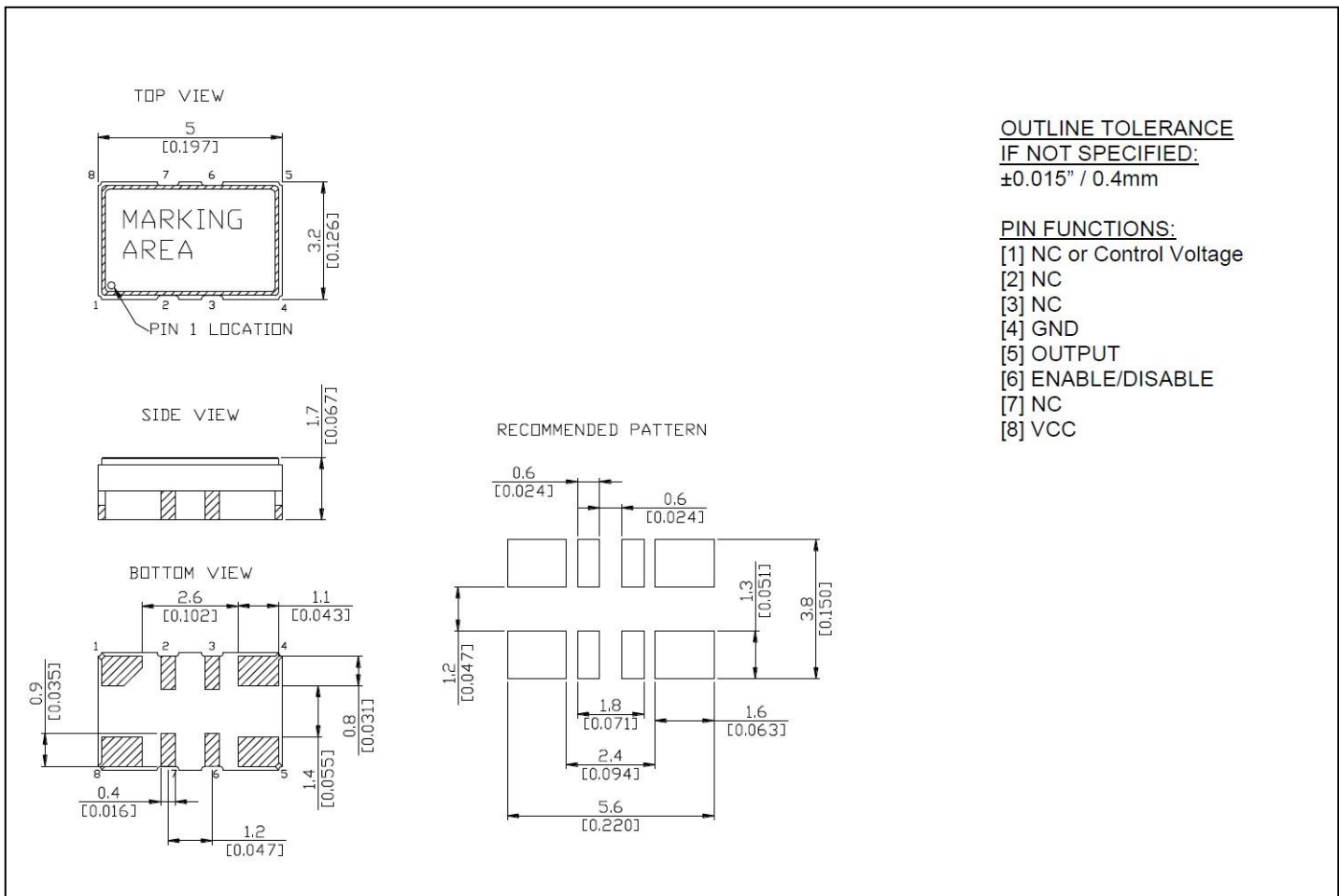
¹ Available with TV series only

² Not available at all frequencies, Contact Factory

³ Check part numbering table below. For others contact factory.

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MECHANICAL SPECIFICATION



PART NUMBERING SYSTEM

| TYPE | OUTPUT TYPE | SERIES | REV | OPERATING TEMP RANGE (°C) | STABILITY (PPM) | FREQUENCY (MHz) | SUPPLY VOLTAGE (V) | TAPE & REEL |
|--------------------------|-----------------------------|-----------|----------|--|-----------------|-----------------|--------------------------|-------------|
| Surface Mount TCXO | 0: Clipped Sine 2: HCMOS | 35 | A | LZ: 0~70 HZ: -20~+70 D3: -40~+85 | 0.28: ±0.28 | 10 ~ 52 | 5: Vcc=5.0 3: Vcc=3.3 | TR |
| TX TV⁴ | 2 | 35 | A | HZ | 0.28 | 12.8 | 3 | TR |

Notes

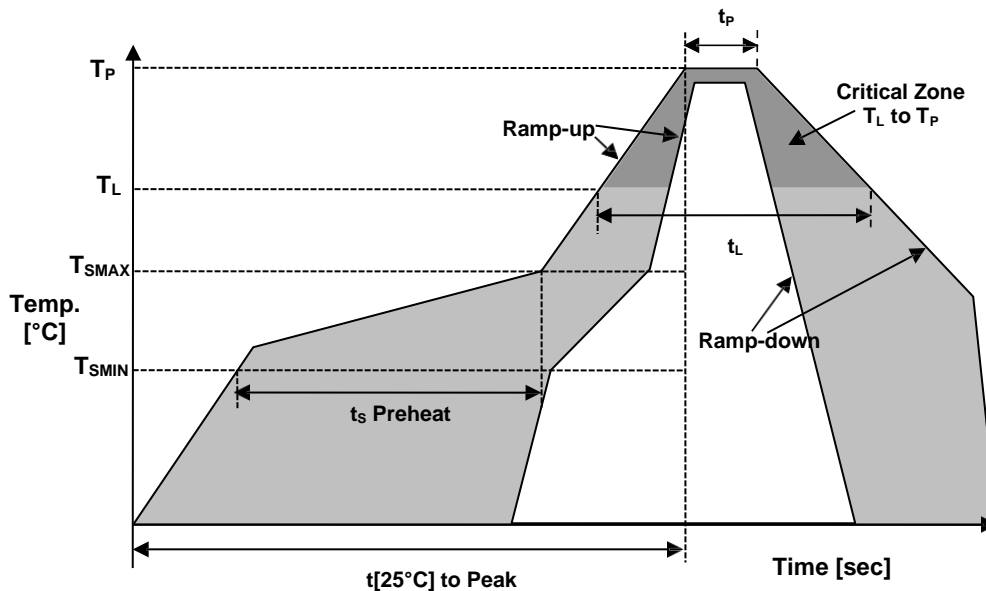
⁴ Available with Control Voltage option.

EXAMPLE: TV035A-D3-0.28-12.800-3-TR

Surface Mount TCXO, Control voltage option, 3.2x5 mm, Stratum 3, from -40°C to +85°C, 3.3 VDC supply voltage, Control Voltage range ±5 ppm to ±12 ppm, Clipped Sine wave output, Tape and reel packaging.

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REFLOW PROFILE



| Reflow profile | | |
|--|-------------------------------|--------------|
| Temperature Min Preheat | T_{SMIN} | 150°C |
| Temperature Max Preheat | T_{SMAX} | 200°C |
| Time (T_{SMIN} to T_{SMAX}) | t_s | 60-180 sec. |
| Temperature | T_L | 217°C |
| Peak Temperature | T_P | 260°C |
| Ramp-up rate | R_{UP} | 3°C/sec max. |
| Ramp-down rate | R_{DOWN} | 6°C/sec max. |
| Time within 5°C of Peak Temperature | t_p | 10 sec. |
| Time $t[25^\circ\text{C}]$ to Peak Temperature | $t[25^\circ\text{C}]$ to Peak | 480 sec. |
| Time | t_L | 60-150 sec. |

ENVIRONMENTAL

| PARAMETER | VALUE |
|----------------------------|-----------|
| MOISTURE SENSITIVITY LEVEL | 1 |
| REACH SVHC | COMPLIANT |
| RoHS | COMPLIANT |
| TERMINATION FINISH | Au |

