

SERIES TX 146 AND TV146

● FEATURES

- WIDE FREQUENCY RANGE TO 155.520 MHz
- ENABLE/DISABLE AND VOLTAGE CONTROL OPTIONS
- TTL, HCMOS, ACMOS, SINEWAVE, CLIPPED SINEWAVE, ECL, AND PECL

● SPECIFICATIONS

| | |
|---|--|
| FREQUENCY RANGE | 1.00 TO 155.520 MHz |
| FREQUENCY STABILITY OVER OPERATING TEMPERATURE (SEE NOTE 1) | LZ-1: ±1.0 PPM OVER 0° C TO 70° C HZ-1: ±1.0 PPM OVER -20° C TO 70° C F1-1.5: ±1.5 PPM OVER -30° C TO 75° C D3-2: ±2.0 PPM OVER -40° C TO 85° C |
| FREQUENCY STABILITY VS. CALIBRATION | ±1.0 PPM MAXIMUM |
| FREQUENCY STABILITY VS. AGING | ±1.0 PPM MAXIMUM PER YEAR |
| STORAGE TEMPERATURE RANGE | -50° C TO 90° C |
| OUTPUT WAVEFORM | SEE TABLE 1 FOR OUTPUT TYPES |
| LOAD | SEE TABLE 1 FOR LOAD CHARACTERISTICS |
| FREQUENCY STABILITY VS. LOAD VARIATION | ±0.3 PPM MAXIMUM FOR ±10% VARIATION FROM STANDARD LOAD |
| SUPPLY VOLTAGE | +5.0 VDC ±5%, +3.3 VDC ± 5% (OPTIONAL) |
| FREQUENCY STABILITY VS. SUPPLY VARIATION | ±0.3 PPM MAXIMUM FOR ±5% VARIATION FROM NOMINAL SUPPLY |
| SUPPLY CURRENT | SEE TABLE 1 FOR CURRENT CHARACTERISTICS |
| ENABLE/DISABLE FUNCTION (TE OPTION) | SEE TABLES 2 AND 3 FOR PIN FUNCTION AND VOLTAGE |
| VOLTAGE CONTROL FUNCTION (TV OPTION) | SEE TABLE 4 FOR CHARACTERISTICS |
| ENVIRONMENTAL CONDITIONS | SEE TABLE 5 |

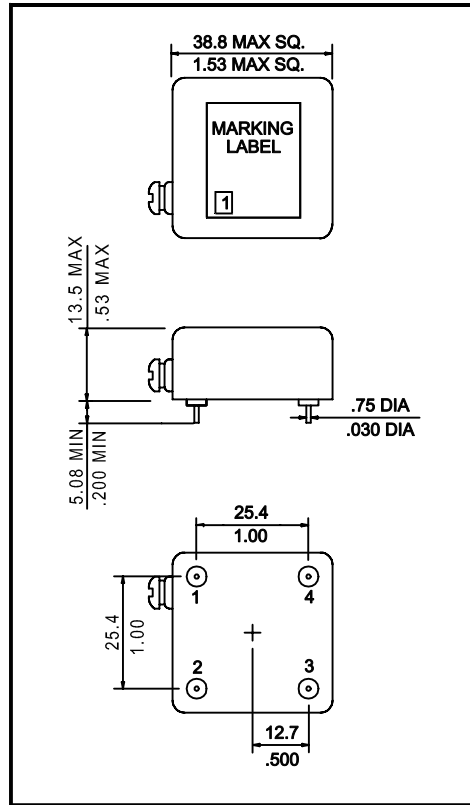


NOTE 1: OTHER STABILITY OPTIONS AVAILABLE PLEASE CONSULT FACTORY

● OUTPUT WAVEFORM AND LOAD CHARACTERISTICS

| TABLE 1 - OUTPUT WAVEFORM AND CHARACTERISTICS, FREQUENCY RANGE, AND MODE OF OSCILLATION | | | | |
|---|-------------|--|-------------------------------|--|
| OUTPUT WAVEFORM | OUTPUT CODE | FREQUENCY RANGE | MODE OF OSCILLATION CODE | OUTPUT CHARACTERISTICS |
| CLIPPED SINEWAVE | 0 | 8.00 MHz TO 40.00 MHz | F: FUNDAMENTAL | LOAD: 10 K OHM // 10pF OUTPUT LEVEL: 0.7 V P-P MINIMUM SYMMETRY: 60/40 % TO 40/60 % TYPICAL |
| TTL | 1 | 1.00 MHz TO 40.00 MHz 40.00 MHz TO 100.00 MHz | F: FUNDAMENTAL O: OVERTONE | LOAD: HCMOS TO DRIVE 2 LS TTL NOMINAL OR 10 LS TTL MAXIMUM GATES *1* LEVEL: +2.4 VDC MINIMUM *0* LEVEL: +0.1 VCC MAXIMUM SYMMETRY: 40/60 TO 60/40% AT 1.2 V RISE AND FALL TIME: 10 ns MAXIMUM CURRENT: 20 mA MAXIMUM (F), 30 mA MAXIMUM (O), 45 mA MAXIMUM (PLL) |
| HCMOS | 2 | 1.00 MHz TO 40.00 MHz 40.00 MHz TO 100.00 MHz | F: FUNDAMENTAL O: OVERTONE | LOAD: 2 LS TTL/HCMOS NOMINAL OR 10 LS TTL/HCMOS MAXIMUM GATES *1* LEVEL: +4.5 VDC MINIMUM *0* LEVEL: +0.5 VDC MAXIMUM SYMMETRY: 40/60 TO 60/40% AT 50% VCC LEVEL RISE AND FALL TIME: 10 ns MAXIMUM JITTER: 10 ps PEAK TO PEAK MAXIMUM CURRENT: 20 mA MAXIMUM (F), 30 mA MAXIMUM (O), 45 mA MAXIMUM (PLL) |
| ACMOS | 3 | 1.00 MHz TO 40.00 MHz 40.00 MHz TO 100.00 MHz | F: FUNDAMENTAL O: OVERTONE | LOAD: 2 LS TTL/ACMOS NOMINAL OR 10 LS TTL/ACMOS MAXIMUM GATES *1* LEVEL: +4.5 VDC MINIMUM *0* LEVEL: +0.5 VDC MAXIMUM SYMMETRY: 40/60 TO 60/40% AT 50% VCC LEVEL RISE AND FALL TIME: 10 ns MAXIMUM JITTER: 10 ps PEAK TO PEAK MAXIMUM CURRENT: 20 mA MAXIMUM (F), 30 mA MAXIMUM (O), 45 mA MAXIMUM (PLL) |
| SINEWAVE | 6 | 8.00 MHz TO 40.00 MHz | F: FUNDAMENTAL | LOAD: 50 OHMS NOMINAL OUTPUT LEVEL: 0 dBm MINIMUM HARMONICS: -25 dBc MAXIMUM SPURIOUS: -60 dBc MAXIMUM CURRENT: 20 mA MAXIMUM |
| PECL | 8 | 100.00 MHz TO 155.520 MHz | O: OVERTONE | LOAD: 50 OHMS CONNECTED TO +3.0 VDC *1* LEVEL: +3.975 VDC MINIMUM *0* LEVEL: +3.38 VDC MAXIMUM SYMMETRY: 40/60 TO 60/40% AT +3.65 VDC LEVEL RISE AND FALL TIME: 5 ns MAXIMUM JITTER: 10 ps PEAK TO PEAK MAXIMUM CURRENT: 130 mA MAXIMUM |
| LVECL | 9 | 100.00 MHz TO 155.520 MHz | O: OVERTONE | LOAD: 50 OHMS CONNECTED TO +3.0 VDC *1* LEVEL: +3.975 VDC MINIMUM *0* LEVEL: +3.38 VDC MAXIMUM SYMMETRY: 40/60 TO 60/40% AT +3.65 VDC LEVEL RISE AND FALL TIME: 5 ns MAXIMUM JITTER: 10 ps PEAK TO PEAK MAXIMUM CURRENT: 130 mA MAXIMUM |

● **OUTLINE DRAWING**



● **PIN FUNCTION**

| TABLE 2 - PIN FUNCTION | | | |
|------------------------|-------------|----------------|-------------|
| | TX | TE | TV |
| PIN 1 | CASE/GROUND | CASE/GROUND | CASE/GROUND |
| PIN 2 | VCC | VCC | VCC |
| PIN 3 | OUTPUT | OUTPUT | OUTPUT |
| PIN 4 | NO CONNECT | ENABLE/DISABLE | V CONT. |

● **ENABLE/DISABLE FUNCTION**

| TABLE 3 - ENABLE/DISABLE FUNCTION | |
|-----------------------------------|--------------------------------|
| ENABLE | +2.0 VDC MINIMUM OR NO CONNECT |
| DISABLE | +0.4 VDC MAXIMUM |

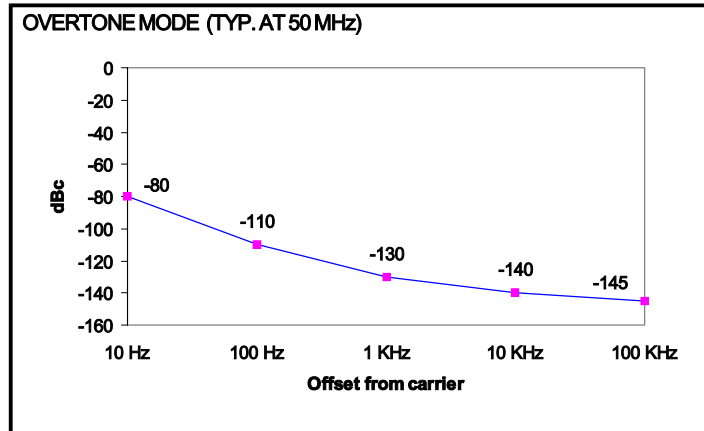
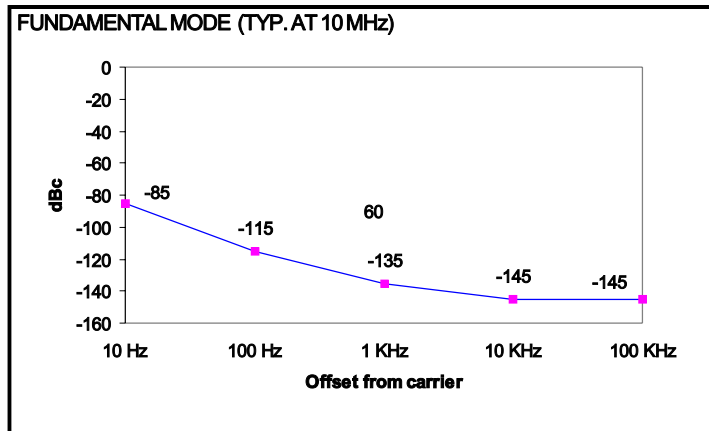
● **VOLTAGE CONTROL FUNCTION**

| TABLE 4 - VOLTAGE CONTROL OPTION | |
|----------------------------------|---------------------------------------|
| CONTROL VOLTAGE RANGE | +0.5 TO +4.5 VDC (0 TO +3.3 VDC) |
| NOMINAL CONTROL VOLTAGE | +2.5 VDC (1.65 V AT $V_{CC} = 3.3$ V) |
| FREQUENCY DEVIATION | ±5 PPM MINIMUM |
| LINEARITY | 10% MAXIMUM MONOTONIC |
| MODULATION BANDWIDTH | 10 KHz MINIMUM FOR -3 dBc POINT |
| INPUT IMPEDANCE | 10 K OHMS MINIMUM |
| SLOPE | POSITIVE |

● **ENVIRONMENTAL CONDITIONS**

| TABLE 5 - ENVIRONMENTAL CONDITIONS | |
|------------------------------------|---|
| MECHANICAL SHOCK | MIL-STD-202F, TEST CONDITION 213, CONDITION A |
| RANDOM VIBRATION | MIL-STD-202F, TEST CONDITION 214, CONDITION A |
| SINUSOIDAL VIBRATION | MIL-STD-202F, TEST CONDITION 204, CONDITION A |
| HERMETICITY | <5 x 10 ⁻⁸ cc ATM/s |
| SOLDERABILITY | 260° C FOR 10 s MAXIMUM |

● PHASE NOISE CHARACTERISTICS



● PART NUMBERING SYSTEM

| OPTION 1: TCXO TYPE | | | |
|--------------------------------------|--------------------------------|----|----------|
| TX: | TCXO | | |
| TE: | TCXO WITH ENABLE DISABLE | | |
| TV: | TCXO WITH VOLTAGE CONTROL | | |
| OPTION 2: OUTPUT TYPE | | | |
| 0: | CLIPPED SINEWAVE | 6: | SINEWAVE |
| 1: | TTL | 8: | PECL |
| 2: | HCMOS | 9: | LVECL |
| 3: | ACMOS | | |
| OPTION 3: REVISION | | | |
| | | | |
| OPTION 4: STABILITY OVER TEMPERATURE | | | |
| LZ-1 | ±1.0 PPM OVER 0 °C TO +70 °C | | |
| HZ-1 | ±1.0 PPM OVER -20 °C TO +70 °C | | |
| F1-1.5 | ±1.5 PPM OVER -30 °C TO +75 °C | | |
| D3-2 | ±2.0 PPM OVER -40 °C TO +85 °C | | |

EXAMPLE:

TV 2 146 A - HZ-1 - 10.000

