



● FEATURES

- WIDE FREQUENCY RANGE TO 100.000 MHz IN 14 PIN DIP
- ENABLE/DISABLE AND VOLTAGE CONTROL OPTIONS
- TTL, HCMOS, ACMOS, SINEWAVE, CLIPPED SINEWAVE, ECL, AND PECL

● SPECIFICATIONS

|   |  |
|---|--|
| FREQUENCY RANGE   | 1.50 MHz TO 100.00 MHz   |
| FREQUENCY STABILITY OVER OPERATING TEMPERATURE (SEE NOTE 1) | LZ-1: ±1.0 PPM OVER 0° C TO 70° C<br>HZ-1: ±1.0 PPM OVER -20° C TO 70° C<br>F1-1.5: ±1.5 PPM OVER -30° C TO 75° C<br>D3-2: ±2.0 PPM OVER -40° C TO 85° C |
| FREQUENCY STABILITY VS. CALIBRATION                         | ±2.0 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 (VCC)  | +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

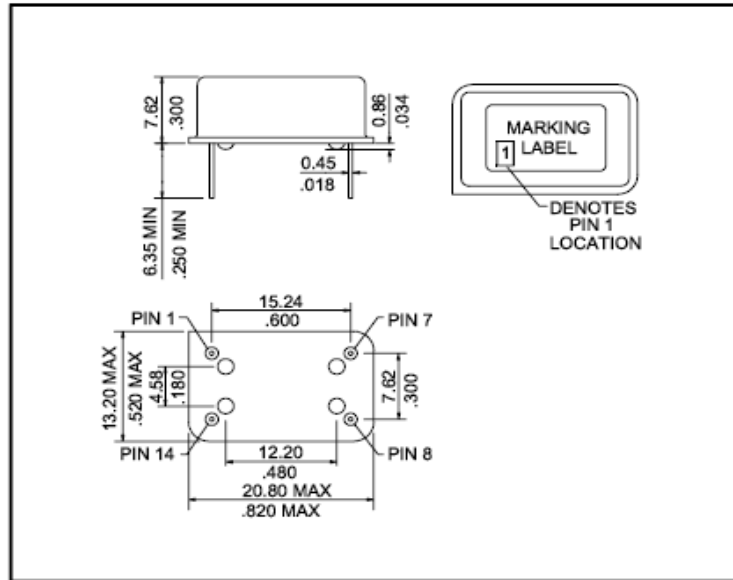
| TABLE 1 - OUTPUT WAVEFORM AND CHARACTERISTICS, FREQUENCY RANGE, AND MODE OF OSCILLATION |             |  |                               |  |
|---|-------------|--|-------------------------------|--|
| OUTPUT WAVEFORM   | OUTPUT CODE | FREQUENCY RANGE                                  | MODE OF OSCILLATION CODE      | OUTPUT CHARACTERISTICS   |
| CLIPPED SINEWAVE  | 0           | 8.00 MHz TO 40.00 MHz                            | F: FUNDAMENTAL                | LOAD: 10 K OHM // 10pF<br>OUTPUT LEVEL: 0.7 V P-P MINIMUM<br>SYMMETRY: 60/40 % TO 40/60 % TYPICAL  |
| TTL   | 1           | 1.50 MHz TO 40.00 MHz<br>40.00 MHz TO 100.00 MHz | F: FUNDAMENTAL<br>O: OVERTONE | LOAD: HCMOS TO DRIVE 2 LS TTL NOMINAL OR 10 LS TTL MAXIMUM GATES<br>"1" LEVEL: +2.4 VDC MINIMUM<br>"0" LEVEL: +0.1 VCC MAXIMUM<br>SYMMETRY: 40/60 TO 60/40% AT 1.2 V<br>RISE AND FALL TIME: 10 ns MAXIMUM<br>CURRENT: 20 mA MAXIMUM (F), 30 mA MAXIMUM (O), 45 mA MAXIMUM (PLL)  |
| HCMOS   | 2           | 1.50 MHz TO 40.00 MHz<br>40.00 MHz TO 100.00 MHz | F: FUNDAMENTAL<br>O: OVERTONE | LOAD: 2 LS TTL/HCMOS NOMINAL OR 10 LS TTL/HCMOS MAXIMUM GATES<br>"1" LEVEL: +4.5 VDC MINIMUM<br>"0" LEVEL: +0.5 VDC MAXIMUM<br>SYMMETRY: 40/60 TO 60/40% AT 50% VCC LEVEL<br>RISE AND FALL TIME: 10 ns MAXIMUM<br>JITTER: 10 ps PEAK TO PEAK MAXIMUM<br>CURRENT: 20 mA MAXIMUM (F), 30 mA MAXIMUM (O), 45 mA MAXIMUM (PLL) |
| ACMOS   | 3           | 1.50 MHz TO 40.00 MHz<br>40.00 MHz TO 100.00 MHz | F: FUNDAMENTAL<br>O: OVERTONE | LOAD: 2 LS TTL/ACMOS NOMINAL OR 10 LS TTL/ACMOS MAXIMUM GATES<br>"1" LEVEL: +4.5 VDC MINIMUM<br>"0" LEVEL: +0.5 VDC MAXIMUM<br>SYMMETRY: 40/60 TO 60/40% AT 50% VCC LEVEL<br>RISE AND FALL TIME: 10 ns MAXIMUM<br>JITTER: 10 ps PEAK TO PEAK MAXIMUM<br>CURRENT: 20 mA MAXIMUM (F), 30 mA MAXIMUM (O), 45 mA MAXIMUM (PLL) |
| SINEWAVE  | 6           | 8.00 MHz TO 60.00 MHz                            | F: FUNDAMENTAL                | LOAD: 50 OHMS NOMINAL<br>OUTPUT LEVEL: 0 dBm MINIMUM<br>HARMONICS: -25 dBc MAXIMUM<br>SPURIOUS: -60 dBc MAXIMUM<br>CURRENT: 20 mA MAXIMUM  |

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## SERIES TX 045 AND TV045

### ● OUTLINE DRAWING



### ● PIN FUNCTION

|        | TX          | TE             | TV          |
|--------|-------------|----------------|-------------|
| PIN 1  | NO CONNECT  | ENABLE/DISABLE | V CONTROL   |
| PIN 7  | CASE/GROUND | CASE/GROUND    | CASE/GROUND |
| PIN 8  | OUTPUT      | OUTPUT         | OUTPUT      |
| PIN 14 | VCC         | VCC            | VCC         |

### ● ENABLE/DISABLE FUNCTION

|         |                                |
|---------|--------------------------------|
| ENABLE  | +2.0 VDC MINIMUM OR NO CONNECT |
| DISABLE | +0.4 VDC MAXIMUM               |

### ●

|                         |                                       |
|-------------------------|---------------------------------------|
| 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     | $\pm 5$ PPM MINIMUM                   |
| LINEARITY               | 10% MAXIMUM MONOTONIC                 |
| MODULATION BANDWIDTH    | 10 KHz MINIMUM FOR -3 dBc POINT       |
| INPUT IMPERDANCE        | 10 K OHMS MINIMUM                     |
| SLOPE                   | POSITIVE                              |

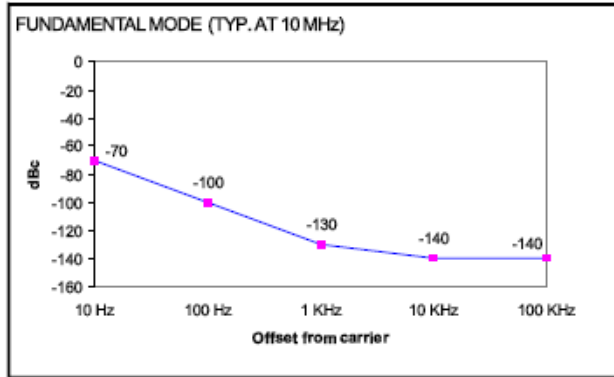
### ● ENVIRONMENTAL CONDITIONS

|                      |   |
|----------------------|---|
| 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 <sup>-8</sup> cc ATM/s                |
| SOLDERABILITY        | 260° C FOR 10 s MAXIMUM                       |

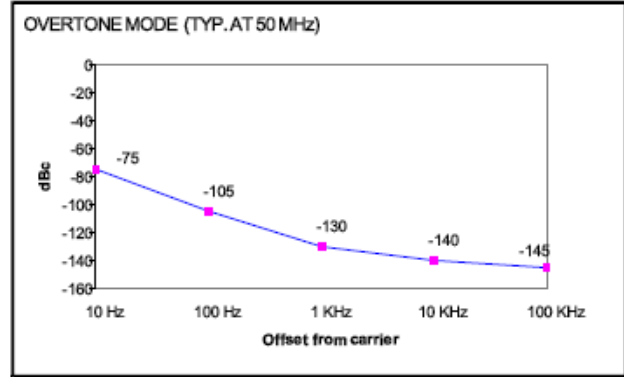
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## ● PHASE NOISE CHARACTERISTICS



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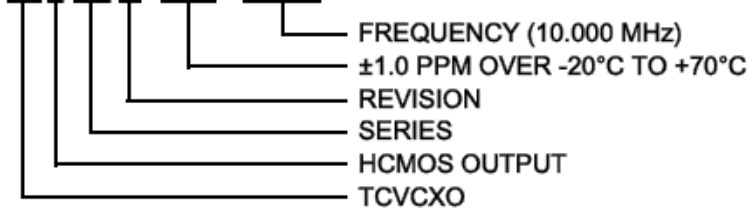


## ● PART NUMBERING SYSTEM

| OPTION 1: TCXO TYPE                  |                                |
|--------------------------------------|--------------------------------|
| TX:                                  | TCXO                           |
| TE:                                  | TCXO WITH ENABLE DISABLE       |
| TV:                                  | TCXO WITH VOLTAGE CONTROL      |
| OPTION 2: OUTPUT TYPE                |                                |
| 0:                                   | CLIPPED SINEWAVE               |
| 1:                                   | TTL                            |
| 2:                                   | HCMOS                          |
| 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 2 045 A - HZ-1 - 10.000



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