

Crystal Oscillators

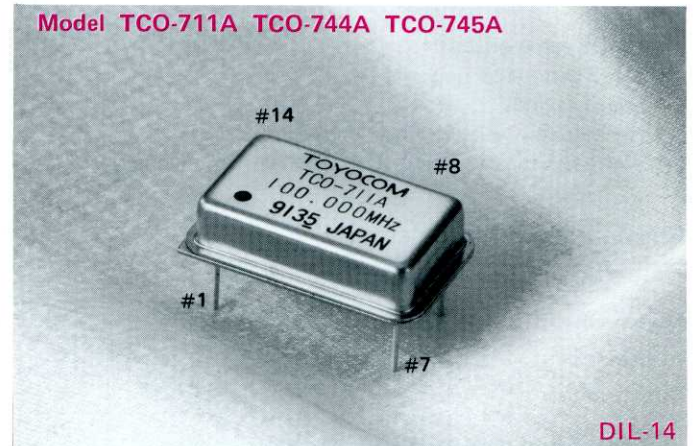
TOYOCOM

FULL DIP TTL 711A Series

Features

- TTL logic output
- DIL-14 pin package compatible
- Hermetically sealed metal package
- Case ground 7-pin for minimizing RF radiation

Model TCO-711A TCO-744A TCO-745A



DIL-14

Dimensions
 20.8x13.2x5.0 max. (mm) .820x.520x.200 max. (inch)
Pin Connections
 #14 V_{CC} #8 OUTPUT
 #1 N.C. #7 GND/CASE

Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit |
|---------------------|------------------|------------------------------|------|
| Supply voltage | V _{CC} | -0.5 to +7.0 | V |
| Input voltage | V _{IN} | -0.5 to V _{CC} +0.5 | V |
| Output voltage | V _O | -0.5 to V _{CC} +0.5 | V |
| Input current | I _{IN} | ±10 | mA |
| Output current | I _O | ±25 | mA |
| Storage temperature | T _{stg} | -55 to +125 | °C |

Specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|-----------------------|---------------------------------|------|------|------|------|---------------------------------|
| Frequency range | F _O | 0.25 | — | 100 | MHz | TCO-711A |
| | | 0.25 | — | 70 | MHz | TCO-744A, TCO-745A |
| Frequency stability | ΔF/F _O | -100 | — | 100 | ppm | TCO-711A *1 |
| | | -25 | — | 25 | ppm | TCO-744A |
| | | -50 | — | 50 | ppm | TCO-745A |
| Operating temperature | T _{opr} | 0 | 25 | 70 | °C | |
| Operating voltage | V _{CC} | 4.5 | 5.0 | 5.5 | V | DC |
| Operating current | I _{CC} | — | — | *3 | mA | V _{CC} = 5.5V |
| Output voltage | V _{OH} | 2.4 | — | — | V | I _{OH} = -0.4 mA |
| | V _{OL} | — | — | 0.4 | V | I _{OL} = 16 mA |
| Symmetry | SYM | 40 | 50 | 60 | % | at 1.4V |
| Rise/Fall time | t _r , t _f | — | — | *3 | ns | at 0.4V to 2.4V/at 2.4V to 0.4V |
| Fanout | n | — | — | 10 | — | 0.25 to 60 MHz |
| | | — | — | 5 | — | 60+ to 100 MHz |
| Start-up time | t _{st} | — | — | 4 | ms | 0.25 to 26 MHz *2 |
| | | — | — | 10 | ms | 26+ to 100 MHz *2 |

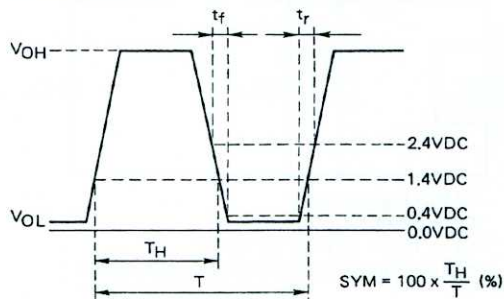
*1 Inclusive of calibration tolerance at 25°C, operating temperature, operating voltage range, load change, aging, shock and vibration.

*2 Rise time (0 to 4.5V) of V_{CC} > 150 μs

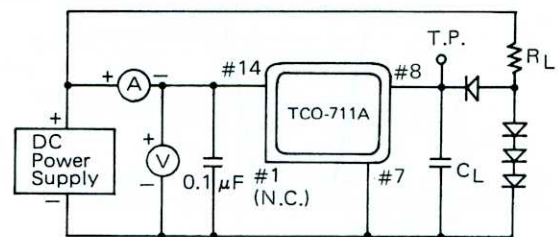
*3

| Freq. | 1.5 to 9 | 9+ to 23 | 23+ to 32 | 32+ to 60 | 60+ to 80 | 80+ to 100 | MHz |
|---------------------------------|----------|----------|-----------|-----------|-----------|------------|-----|
| I _{CC} | 30 | 30 | 40 | 50 | 70 | 90 | mA |
| t _r , t _f | 15 | 10 | 10 | 5 | 5 | 4 | ns |

Output waveform



Test circuit



TTL logic output
 R_L = 400Ω (0.25 to 60 MHz)
 R_L = 800Ω (60+ to 100 MHz)

C_L = 15 pF max.
 Note: total fixture and probe capacitance