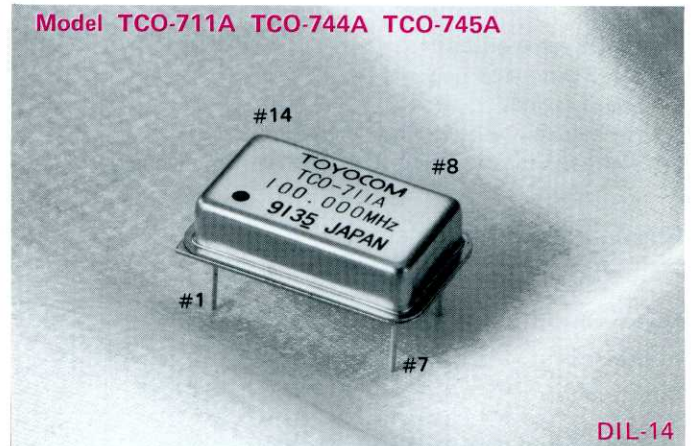


## FULL DIP TTL 711A Series

### 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<sub>CC</sub> #8 OUTPUT  
#1 N.C. #7 GND/CASE

### Absolute Maximum Ratings

| Parameter           | Symbol           | Rating                       | Unit |
|---------------------|------------------|------------------------------|------|
| Supply voltage      | V <sub>CC</sub>  | -0.5 to +7.0                 | V    |
| Input voltage       | V <sub>IN</sub>  | -0.5 to V <sub>CC</sub> +0.5 | V    |
| Output voltage      | V <sub>O</sub>   | -0.5 to V <sub>CC</sub> +0.5 | V    |
| Input current       | I <sub>IN</sub>  | ±10                          | mA   |
| Output current      | I <sub>O</sub>   | ±25                          | mA   |
| Storage temperature | T <sub>stg</sub> | -55 to +125                  | °C   |

### Specifications

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

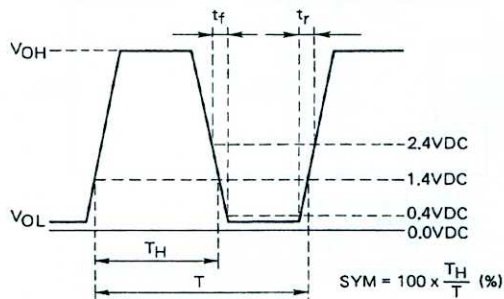
\*1 Inclusive of calibration tolerance at 25°C, operating temperature, operating voltage range, load change, aging, shock and vibration.

\*2 Rise time (0 to 4.5V) of V<sub>CC</sub> > 150 μs

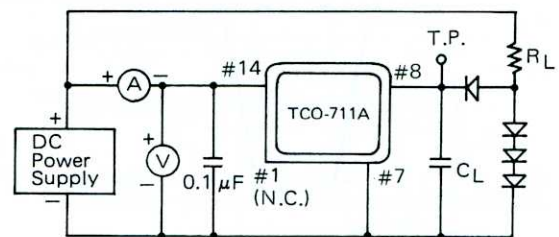
\*3

| Freq.                           | 1.5 to 9 | 9+ to 23 | 23+ to 32 | 32+ to 60 | 60+ to 80 | 80+ to 100 | MHz |
|---------------------------------|----------|----------|-----------|-----------|-----------|------------|-----|
| I <sub>CC</sub>                 | 30       | 30       | 40        | 50        | 70        | 90         | mA  |
| t <sub>r</sub> , t <sub>f</sub> | 15       | 10       | 10        | 5         | 5         | 4          | ns  |

### Output waveform



### Test circuit



TTL logic output

R<sub>L</sub> = 400Ω (0.25 to 60 MHz)

R<sub>L</sub> = 800Ω (60+ to 100 MHz)

C<sub>L</sub> = 15 pF max.

Note: total fixture and probe capacitance