

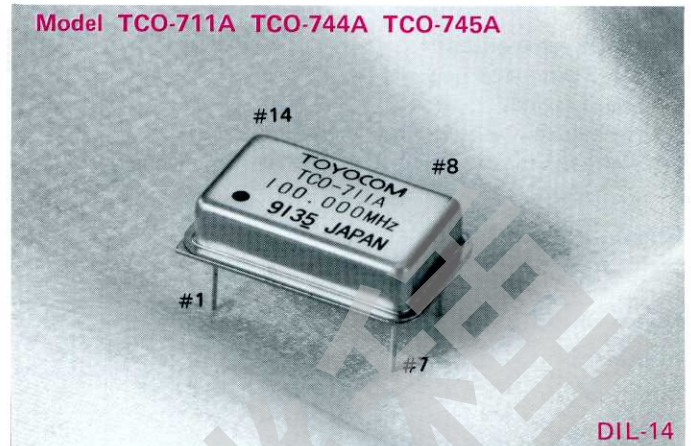
## FULL DIP TTL 711A Series

### Features

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

### 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   |



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

**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

### 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   | $\Delta F/F_O$ | -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               |

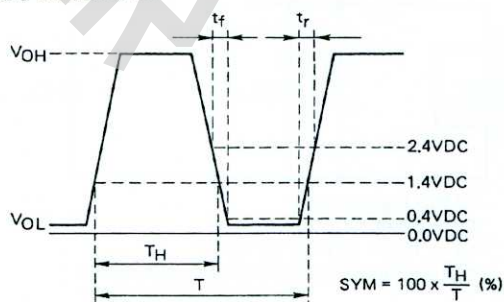
\*1 Inclusive of calibration tolerance at 25°C, operating temperature, operating voltage range, load change, aging, shock and vibration.

\*2 Rise time (0 to 4.5V) of  $V_{CC} > 150 \mu s$

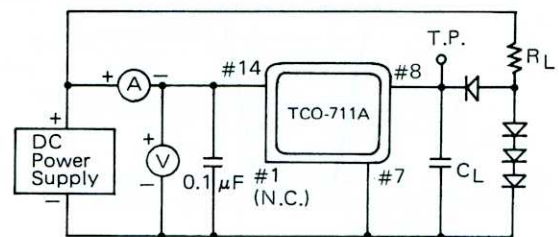
\*3

| 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  
 $R_L = 400\Omega$  (0.25 to 60 MHz)  
 $R_L = 800\Omega$  (60+ to 100 MHz)

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