# DELAY LINES

T-47-29

## DELAY LINES (DC-8C SERIES)

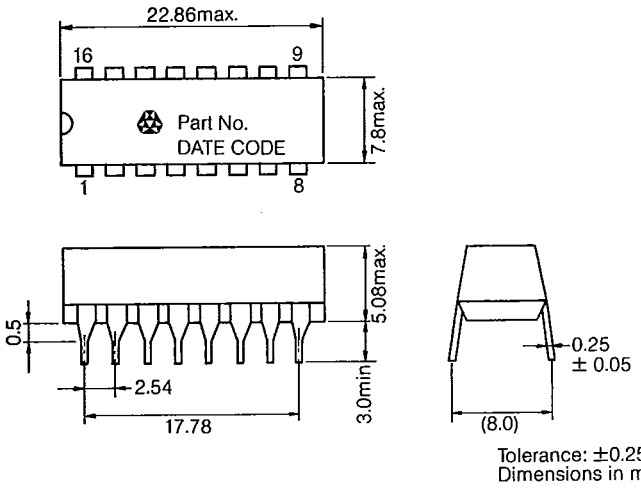
TDK DC-8C series delay lines are used for a cascade connection of DCE series models.

**Features**

- Delay lines can be connected in series without buffers.
- Small, 16-pins DUAL-IN-LINE packaging.
- Inductance with good frequency and temperature characteristics for extremely stable propagation and temperature characteristics.
- Operating temperature range from −10°C to +85°C.

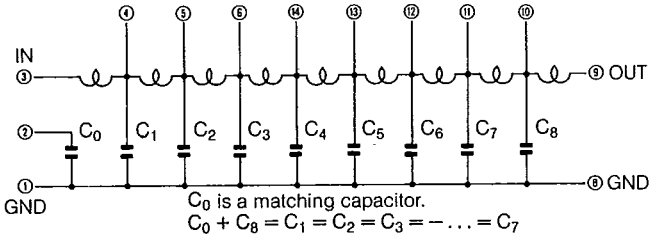
**Common specification**

Operating temperature range: −10 to +85°C
Storage temperature range: −55 to +100°C
Insulation resistance: 100 MΩ min. (50 Vdc)
Withstand voltage: 50 Vdc
Delay time temperature coefficient: ±150 ppm/°C
Distortion rate: 15% max.
Maximum rated current: 50 mA



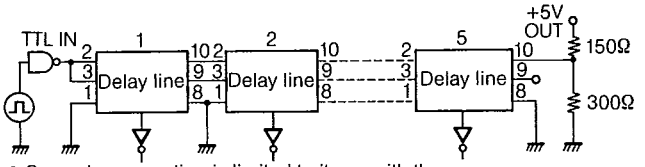

Tolerance: ±0.25
Dimensions in mm

**Connections**




$C_0$ is a matching capacitor.
$C_0 + C_8 = C_1 = C_2 = C_3 = - \ldots = C_7$

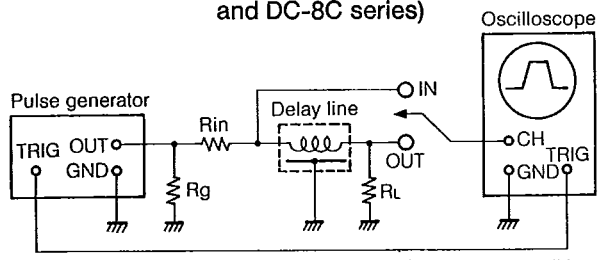
**Cascade connections example**




● Cascade connection is limited to items with the same name.

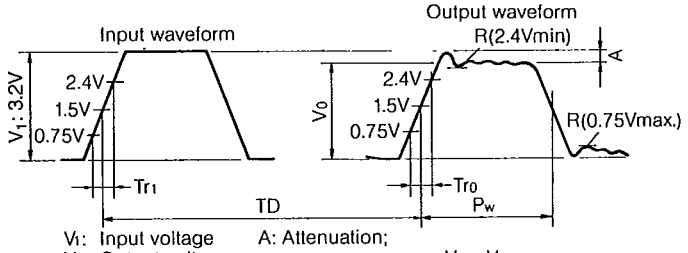
| Part No. | Total delay time (ns) | Characteristic impedance (Ω) ±10% | Delay time between taps (ns) | | Rise time (ns) max. | Attenuation (%) max. |
|---|---|---|---|---|---|---|
| | | | 3–4, 11–10 | Others | | |
| DC01-10-8C | 10±10% | 100 | 1±0.2 | 1.25±0.3 | 5 | 6 |
| DC02-10-8C | 20±10% | 100 | 2±0.5 | 2.5±0.6 | 6 | 6 |
| DC04-10-8C | 40±5% | 100 | 4±1.0 | 5.0±0.7 | 6.5 | 6 |
| DC08-10-8C | 80±5% | 100 | 9±1.0 | 10.0±1.3 | 17 | 6 |
| DC10-10-8C | 100±5% | 100 | 11±1.5 | 12.5±1.6 | 20 | 6 |
| DC20-10-8C | 200±5% | 100 | 22.5±2.5 | 25.0±3.0 | 40 | 6 |

**Measuring circuit (Applicable to each DCE, DCS, DCZ and DC-8C series)**




Rg: Pulse generator terminal resistance
Rin: Input matching resistance
RL: Terminal resistance

Input pulse conditions
Voltage: 3.2V
Width: 3TD (3 times the total delay time)
Repetition cycle: 10PW (10% duty)
Rise time: 5 nsec max.
Fall time: 5 nsec max.




Vi: Input voltage
Vo: Output voltage
TD: Total delay time
Pw: Pulse width

A: Attenuation;

$$\text{Attenuation rate} = \frac{V_i - V_o}{V_i} \times 100(\%)$$

Tri: Input rise time
Tro: Output rise time
Delay line rise time $= \sqrt{(Tro)^2 - (Tri)^2}$
R: Ringing