Ordering number:ENN1977B

Monolithic Digital IC

# LB1710

## Low-Active, 7-Unit, Darlington Transistor Array

## Applications

• Relay drivers, printer drivers, lamp drivers.

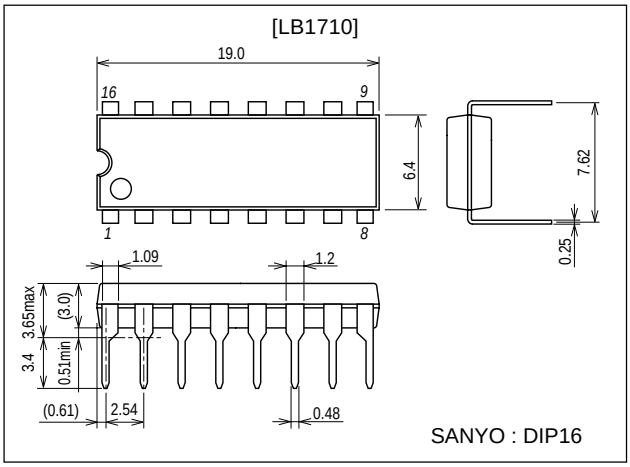
## Features

• Input : Low-active type, Output : Sink type
• High breakdown voltage $V_{CEO}$=50V.
• High-current drive $I_C$ max=400mA.
• On-chip input diodes.

## Package Dimensions

unit:mm

3006C-DIP16




## Specifications

### Absolute Maximum Ratings at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Maximum supply voltage | $V_{CC}$ max | | 10 | V |
| Collector-to-emitter voltage | $V_{CEO}$ | | 50 | V |
| Collector current | $I_C$ | Per unit | 400 | mA |
| Input voltage | $V_{IN}$ | | 10 | V |
| Allowable power dissipation | Pd max | | 1.5 | W |
| Operating temperature | Topr | | –20 to +75 | ˚C |
| Storage temperature | Tstg | | –55 to +150 | ˚C |

### Allowable Operating Ranges at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Supply voltage | $V_{CC}$ | | 4 | 5 | 8 | V |
| Collector current | $I_C$ | $V_{CC}$=5V, Duty≤25% | | | 400 | mA |
| (per unit) | | $V_{CC}$=5V, Duty≤100% | | | 140 | mA |
| Input high-level voltage | $V_{INH}$ | $I_{C(LEAK)}$=50μA | $V_{CC}$–0.5 | | $V_{CC}$ | V |
| Input low-level voltage | $V_{INL}$ | $I_C$=0.35A | 0 | | $V_{CC}$–3.5 | V |

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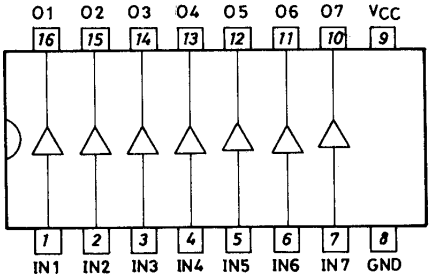
## Electrical Characteristics at Ta = 25˚C

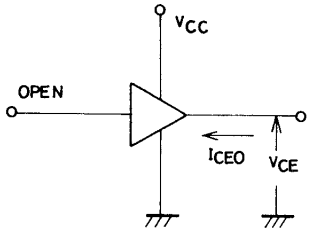
| Parameter | Symbol | Conditions | Test Circuit | Ratings | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | min | typ | max | |
| Collector-to-emitter cutoff current | $I_{CEO}$ | $I_{IN}$=0A, $V_{CC}$=5V, $V_{CE}$=50V | 1 | | | 100 | µA |
| Collector-to-emitter saturation voltage | $V_{CE(sat)}1$ | $V_{IN}$=2V, $V_{CC}$=5V, $I_C$=0.35A | 2 | | 1.2 | 2.0 | V |
| Collector-to-emitter saturation voltage | $V_{CE(sat)}2$ | $V_{IN}$=2V, $V_{CC}$=5V, $I_C$=0.2A | 2 | | 1.0 | 1.6 | V |
| Input current (ON-state) | $I_{IN(ON)}$ | $V_{IN}$=1.5V, $V_{CC}$=5V | 3 | | | –0.58 | mA |
| Input current (OFF-state) | $I_{IN(OFF)}$ | $V_{IN}$=10V (7ch), $V_{CC}$=0V | 4 | | | 100 | µA |
| Input voltage | $V_{IN(ON)}$ | $V_{CC}$=5V, $I_C$=0.35A | 5 | 0 | | 1.5 | V |
| Current drain (ON-state) | $I_{CC(ON)}$ | $V_N$=1.5A, $V_{CC}$=5V | 6 | | | 3 | mA |
| Current drain (OFF-state) | $I_{CC(OFF)}$ | $I_{IN}$=0A (7ch), $V_{CC}$=5V | 6 | | | 100 | µA |

## Pin Assignment and Equivalent Circuit Block Diagram

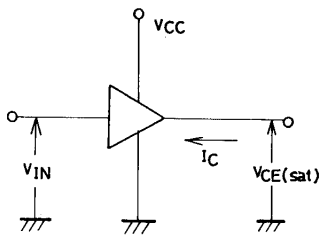



## Test Circuits

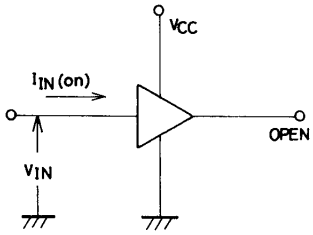
Test Circuit 1



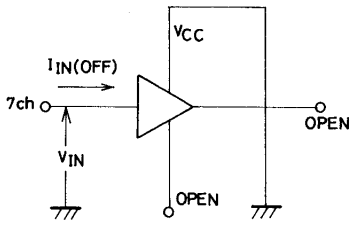

Test Circuit 2



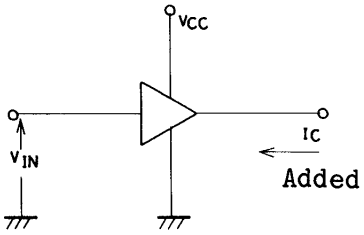

Test Circuit 3



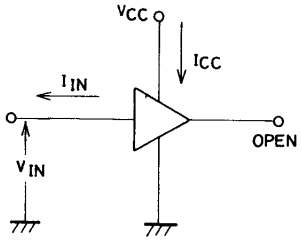

Test Circuit 4




Test Circuit 5




Test Circuit 6



## Equivalent Circuit