

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

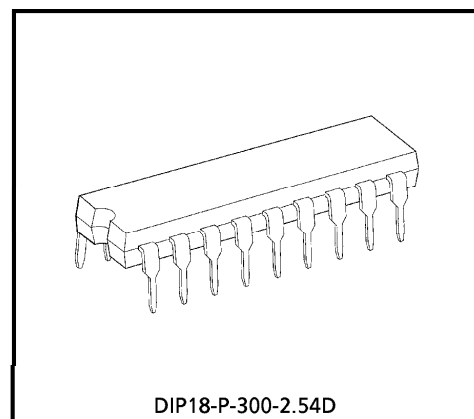
# TD62380P

## 8CH LOW SATURATION DARLINGTON SINK DRIVER

The TD62380P is comprised of eight NPN low saturation drivers.

This device is specifically designed for multiplexed digit driving of eight digit common-cathode LED and also can be employed as a sink driver for multiplexed LED displays using with the TD62785P, TD62785F at standard supply voltage, 5V.

Applications include relay, hammer, lamp and LED display drivers.

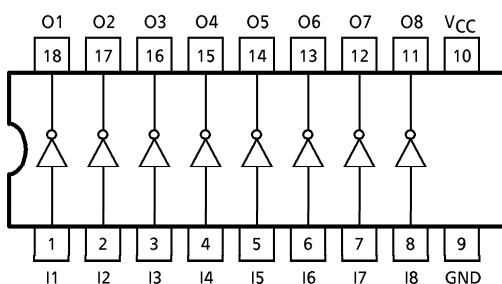


Weight : 1.47g (Typ.)

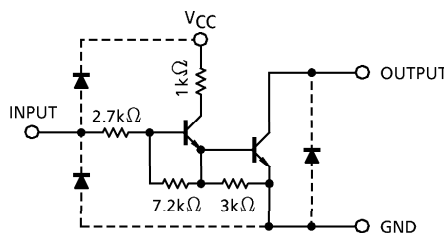
### FEATURES

- Low saturation output  $V_{CE(sat)} = 0.5V$  (Max.) @  $I_{OUT} = 120mA$
- Output rating 15V (Min.) / 120mA (Max.)
- Input compatible with TTL and 5V CMOS
- Low level active inputs
- Standard supply voltage
- Package type-P : DIP-18 pin

### PIN CONNECTION (TOP VIEW)



### SCHEMATICS (EACH DRIVER)



(Note) The input and output parasitic diodes cannot be used as clamp diodes.

961001EBA2

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The products described in this document are subject to foreign exchange and foreign trade control laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

## MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC            | SYMBOL                | RATING  | UNIT    |
|---------------------------|-----------------------|---------|---------|
| Supply Voltage            | V <sub>CC</sub>       | 7       | V       |
| Output Sustaining Voltage | V <sub>CE(SUS)</sub>  | 15      | V       |
| Output Current            | I <sub>OUT</sub>      | 120     | mA / ch |
| Input Voltage             | V <sub>IN</sub>       | 7       | V       |
| Input Current             | I <sub>IN</sub>       | 5       | mA      |
| Power Dissipation         | P <sub>D</sub> (Note) | 1.47    | W       |
| Operating Temperature     | T <sub>opr</sub>      | -40~85  | °C      |
| Storage Temperature       | T <sub>stg</sub>      | -55~150 | °C      |

(Note) Delated above 25°C in the proportion of 11.7mW/°C.

## RECOMMENDED OPERATING CONDITIONS (Ta = -40~85°C)

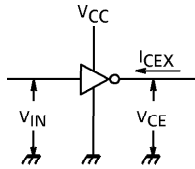
| CHARACTERISTIC    | SYMBOL           | CONDITION | MIN. | TYP. | MAX.            | UNIT    |
|-------------------|------------------|-----------|------|------|-----------------|---------|
| Supply Voltage    | V <sub>CC</sub>  | —         | 4.5  | 5.0  | 5.5             | V       |
| Output Voltage    | V <sub>OUT</sub> | —         | —    | —    | 12              | V       |
| Output Current    | I <sub>OUT</sub> | —         | —    | —    | 120             | mA / ch |
| Input Voltage     | V <sub>IN</sub>  | —         | 0    | —    | V <sub>CC</sub> | V       |
| Power Dissipation | P <sub>D</sub>   | —         | —    | —    | 0.52            | W       |

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

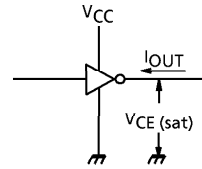
| CHARACTERISTIC            | SYMBOL               | TEST CIR-CUIT | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT      |
|---------------------------|----------------------|---------------|---|------|------|------|-----------|
| Output Leakage Current    | I <sub>CEX</sub>     | 1             | V <sub>CC</sub> = 5V, V <sub>IN</sub> = OPEN<br>V <sub>OUT</sub> = 12V, Ta = 85°C | —    | —    | 100  | μA        |
| Output Saturation Voltage | V <sub>CE(sat)</sub> | 2             | V <sub>CC</sub> = 5V, V <sub>OUT</sub> = 120mA                                    | —    | 0.18 | 0.5  | V         |
| Input Current             | I <sub>IN(ON)</sub>  | 3             | V <sub>CC</sub> = 5V, V <sub>IN</sub> = 2.4V                                      | —    | 0.4  | 0.7  | mA        |
| Supply Current            | I <sub>CC</sub>      | 4             | V <sub>CC</sub> = V <sub>IN</sub> = 5V  | —    | —    | 8    | mA / Gate |
| Turn-On Delay             | t <sub>ON</sub>      | 5             | V <sub>OUT</sub> = 10V, R <sub>L</sub> = 100Ω<br>C <sub>L</sub> = 15pF            | —    | 0.1  | —    | μs        |
| Turn-Off Delay            | t <sub>OFF</sub>     |               |   | —    | 1.2  | —    | μs        |

**TEST CIRCUIT**

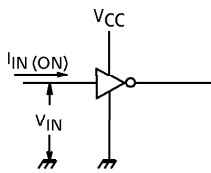
1.  $I_{CEX}$



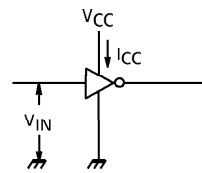
2.  $V_{CE(sat)}$



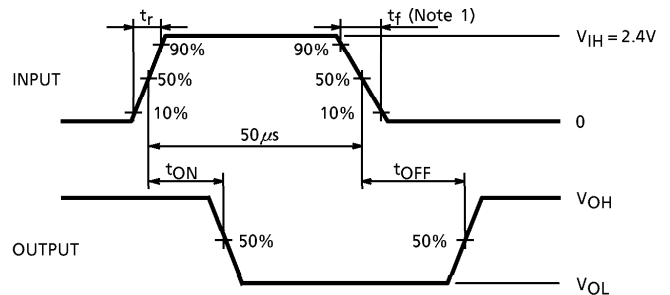
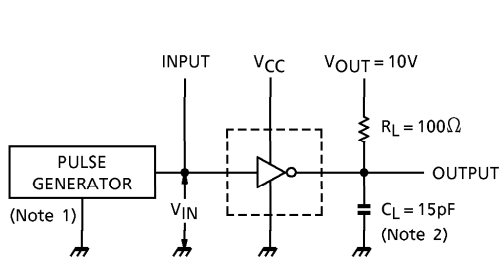
3.  $I_{IN(ON)}$



4.  $I_{CC}$



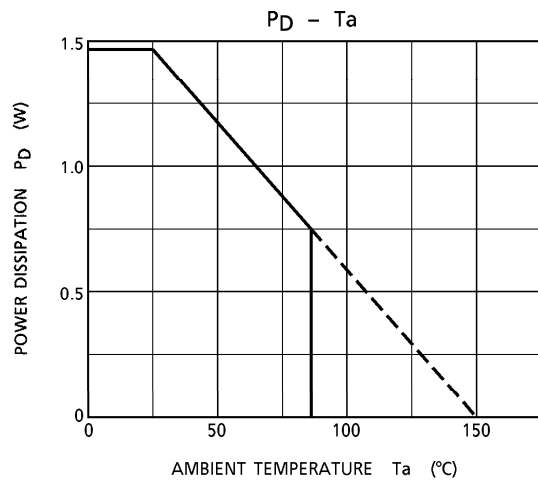
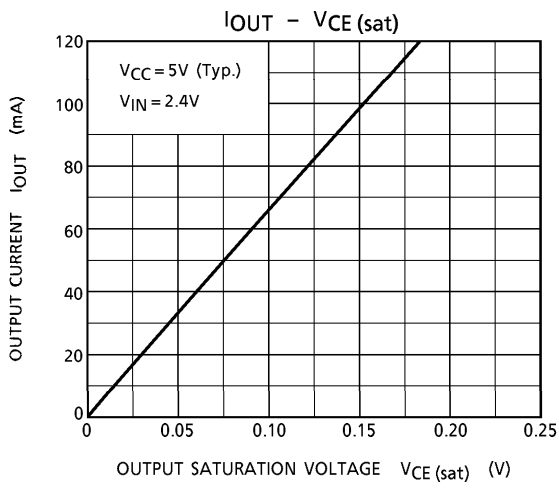
5.  $t_{ON}, t_{OFF}$



- (Note 1) Pulse Width  $50\mu s$ , Duty Cycle 10%  
Output Impedance  $50\Omega$ ,  $t_r \leq 5ns$ ,  $t_f \leq 10ns$
- (Note 2)  $C_L$  includes probe and jig capacitance.

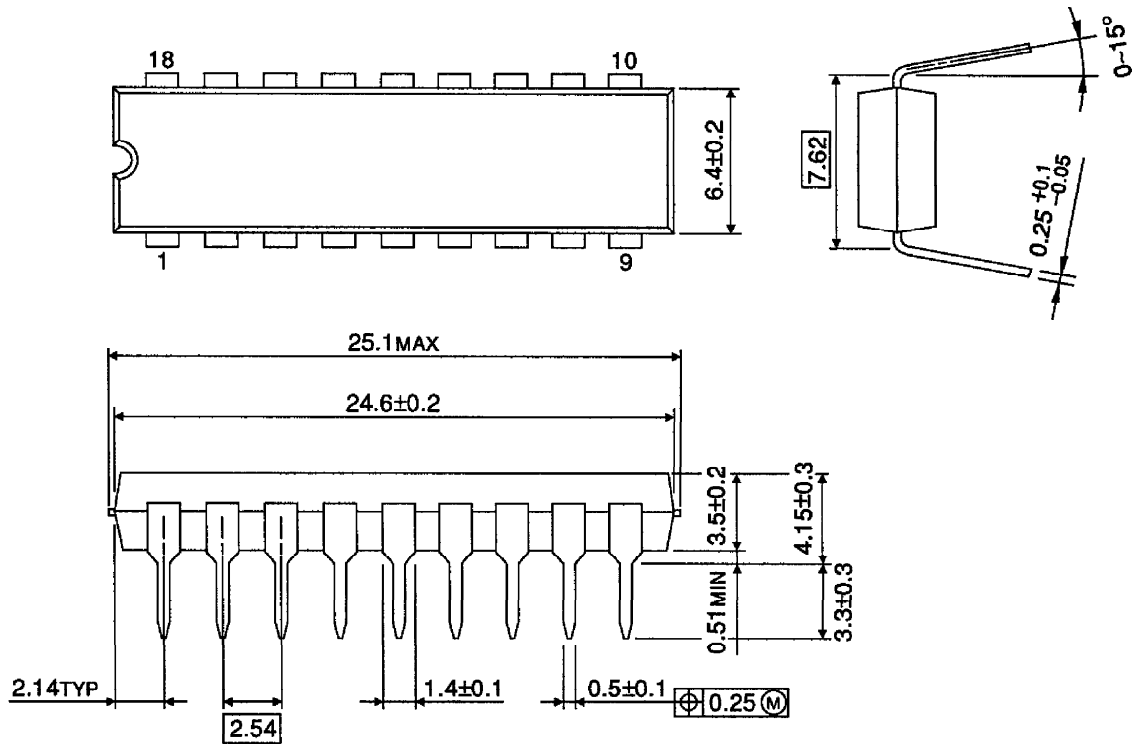
**PRECAUTIONS for USING**

Utmost care is necessary in the design of the output line,  $V_{CC}$  and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



**OUTLINE DRAWING**  
DIP18-P-300-2.54D

Unit : mm



Weight : 1.47g (Typ.)