

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

# TD62785P, TD62785F

## 8CH SOURCE DRIVER

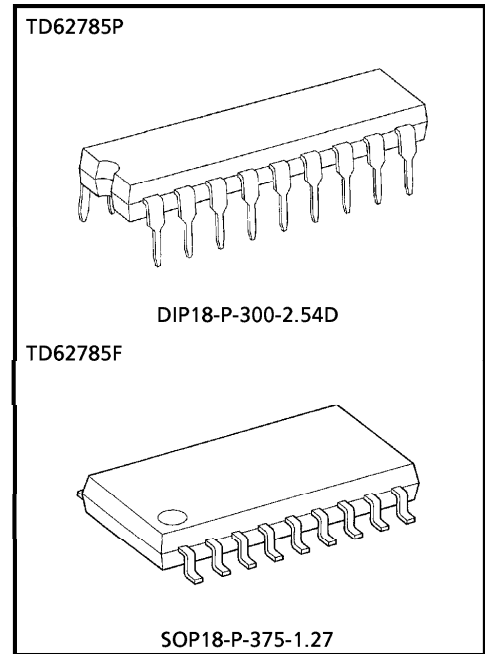
The TD62785P, TD62785F are eight Channel Non-Inverting Source current transistor Array.

All units feature input pull-up resistors and output pull-down resistors. These device are specifically designed for multiplexed digit driving of eight digit common-anode LED and also can be employed as a source drivers for multiplexed LED displays using with the TD62381P, TD62381F at standard supply voltage, 5V.

Applications include relay, hammer and lamp drivers.

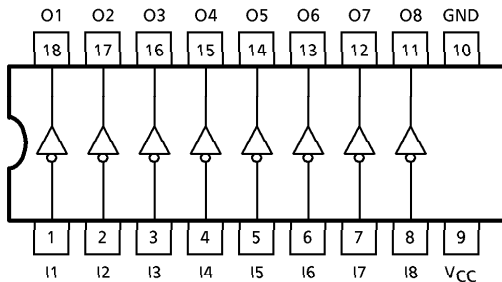
### FEATURES

- Low saturation voltage  $V_{CE(sat)} = 1.35V \text{ MAX.}$   
@ $I_{OUT} = -500mA$
- Output current (single output)  $I_{OUT} = -500mA \text{ MIN.}$
- Input pull-up resistor  $R_{IN} = 5.6k\Omega \text{ Typ.}$
- Output pull-down resistor  $R_{IN} = 15k\Omega \text{ Typ.}$
- Low level active inputs
- Package Type-P : DIP-18pin
- Package Type-F : SOP-18pin

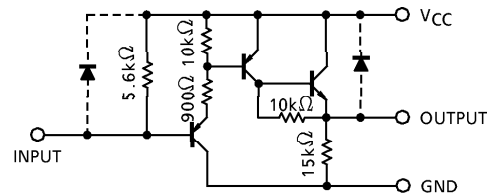


Weight  
 DIP18-P-300-2.54D : 1.47g (Typ.)  
 SOP18-P-375-1.27 : 0.41g (Typ.)

### PIN CONNECTION (TOP VIEW)



### SCHEMATICS (EACH DRIVER)



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

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**MAXIMUM RATING (Ta = 25°C)**

| CHARACTERISTIC        |   | SYMBOL                  | RATING          | UNIT    |
|-----------------------|---|-------------------------|-----------------|---------|
| Supply Voltage        |   | V <sub>CC</sub>         | 7.0             | V       |
| Output Voltage        |   | V <sub>OUT</sub>        | V <sub>CC</sub> | V       |
| Output Current        |   | I <sub>OUT</sub>        | - 500           | mA / ch |
| Input Voltage         |   | V <sub>IN</sub>         | V <sub>CC</sub> | V       |
| Input Current         |   | I <sub>IN</sub>         | - 10            | mA      |
| Power Dissipation     | P | P <sub>D</sub> (Note 1) | 1.47            | W       |
|                       | F |                         | 0.96            |         |
| Operating Temperature |   | T <sub>opr</sub>        | - 40~85         | °C      |
| Storage Temperature   |   | T <sub>stg</sub>        | - 55~150        | °C      |

(Note 1) Delated above 25°C in the proportion of 11.7mW/°C (P-Type), 7.7mW/°C (F-Type).

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

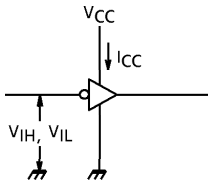
| CHARACTERISTIC    |            | SYMBOL                | TEST CONDITION                                       | MIN.                  | TYP. | MAX.              | UNIT            |       |
|-------------------|------------|-----------------------|--|-----------------------|------|-------------------|-----------------|-------|
| Supply Voltage    |            | V <sub>CC</sub>       | —  | 4.5                   | 5.0  | 5.5               | V               |       |
| Output Voltage    |            | V <sub>OUT</sub>      | —  | 0                     | —    | - V <sub>CC</sub> | V               |       |
| Output Current    | P          | I <sub>OUT</sub>      | DC 1 Circuit, Ta = 25°C                              | 0                     | —    | - 400             | mA / ch         |       |
|                   |            |                       |  | 0                     | —    | - 400             |                 |       |
|                   | P          |                       | T <sub>pw</sub> ≤ 25ms                               | Duty = 10%            | 0    | —                 |                 | - 376 |
|                   |            |                       | 8 Circuits On<br>Ta = 85°C<br>T <sub>j</sub> = 120°C | Duty = 50%            | 0    | —                 |                 | - 67  |
|                   | F          |                       |  | Duty = 10%            | 0    | —                 |                 | - 248 |
|                   |            |                       |  | Duty = 50%            | 0    | —                 |                 | - 38  |
| Input Voltage     |            | V <sub>IN</sub>       |  | —                     | 0    | —                 | V <sub>CC</sub> | V     |
|                   | Output On  | V <sub>IN (ON)</sub>  | —  | 0                     | —    | 0.8               | V               |       |
|                   | Output Off | V <sub>IN (OFF)</sub> | —  | V <sub>CC</sub> - 1.0 | —    | V <sub>CC</sub>   | V               |       |
| Power Dissipation | P          | P <sub>D</sub>        | —  | —                     | —    | 0.52              | W               |       |
|                   | F          |                       | —  | —                     | —    | 0.35              |                 |       |

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

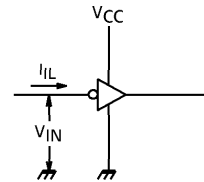
| CHARACTERISTIC            |           | SYMBOL                | TEST CIR-CUIT | TEST CONDITION  | MIN.                       | TYP.  | MAX.                   | UNIT                   |   |
|---------------------------|-----------|-----------------------|---------------|---|----------------------------|-------|------------------------|------------------------|---|
| Input Voltage             | "H" Level | V <sub>IH</sub>       | 1             | —   | V <sub>CC</sub> - 1.0      | —     | —                      | V                      |   |
|                           | "L" Level | V <sub>IL</sub>       |               | —   | —                          | —     | 0.8                    |                        |   |
| Input Current             | "L" Level | I <sub>IL</sub>       | 2             | V <sub>CC</sub> = 5.5V, V <sub>IN</sub> = 0.8V                      | —                          | - 1.5 | - 2.3                  | mA                     |   |
| Input Pull-Up Resistor    |           | R <sub>ip</sub>       | —             | —   | —                          | 5.6   | —                      | kΩ                     |   |
| Output Pull-Down Resistor |           | R <sub>OP</sub>       | —             | —   | —                          | 15    | —                      | kΩ                     |   |
| Output Voltage            | "H" Level | V <sub>OH</sub>       | 3             | V <sub>CC</sub> = 0V<br>GND = - 4.5V<br>V <sub>IN</sub> = GND       | I <sub>OUT</sub> = - 500mA | —     | —                      | V <sub>CC</sub> - 1.35 | V |
|                           |           |                       |               | I <sub>OUT</sub> = - 350mA  | —                          | —     | V <sub>CC</sub> - 1.30 |                        |   |
| Supply Current            |           | I <sub>CC (ON)</sub>  | 1             | V <sub>CC</sub> = 55V, V <sub>IN</sub> = GND                        | —                          | —     | 12.5                   | mA / ch                |   |
|                           |           | I <sub>CC (OFF)</sub> |               | V <sub>CC</sub> = 55V, V <sub>IN</sub> = OPEN                       | —                          | —     | 10                     | μA                     |   |
| Turn-On Delay             |           | t <sub>ON</sub>       | 4             | V <sub>CC</sub> = 5V, R <sub>L</sub> = 16Ω<br>C <sub>L</sub> = 15pF | —                          | 0.1   | —                      | μs                     |   |
| Turn-Off Delay            |           | t <sub>OFF</sub>      |               |   | —                          | 3.5   | —                      | μs                     |   |

**TEST CIRCUIT**

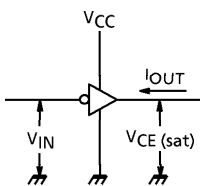
1.  $V_{IH}$ ,  $V_{IL}$ ,  $I_{CC}$



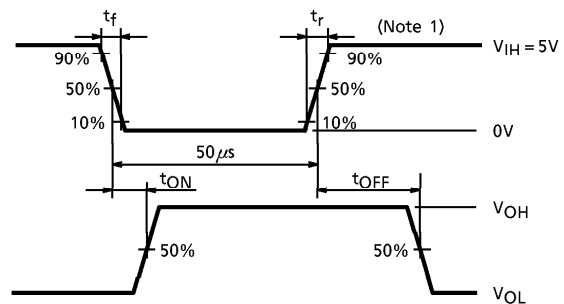
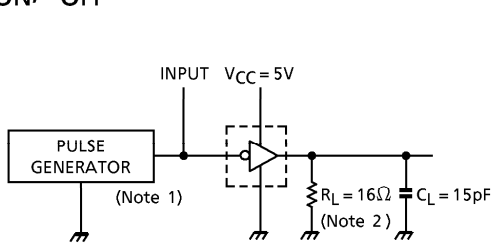
2.  $I_{IL}$



3.  $V_{CE(sat)}$



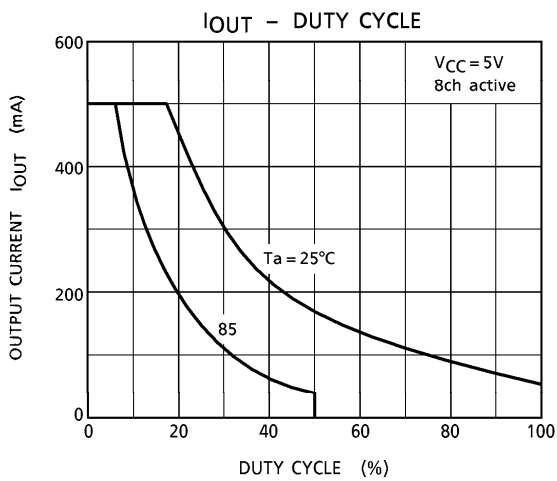
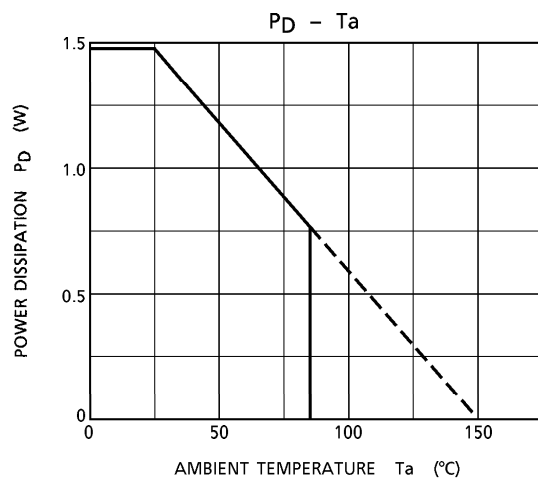
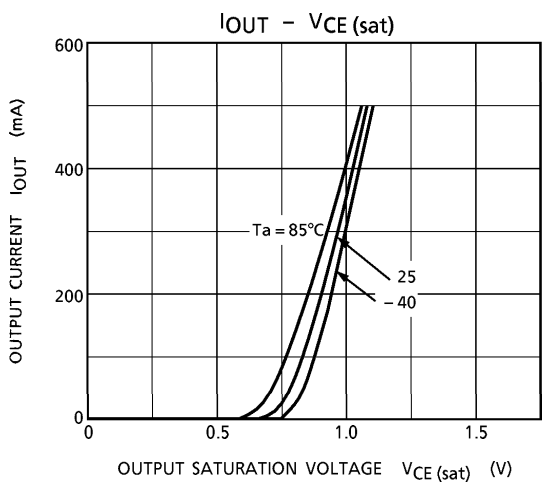
4.  $t_{ON}$ ,  $t_{OFF}$



- (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

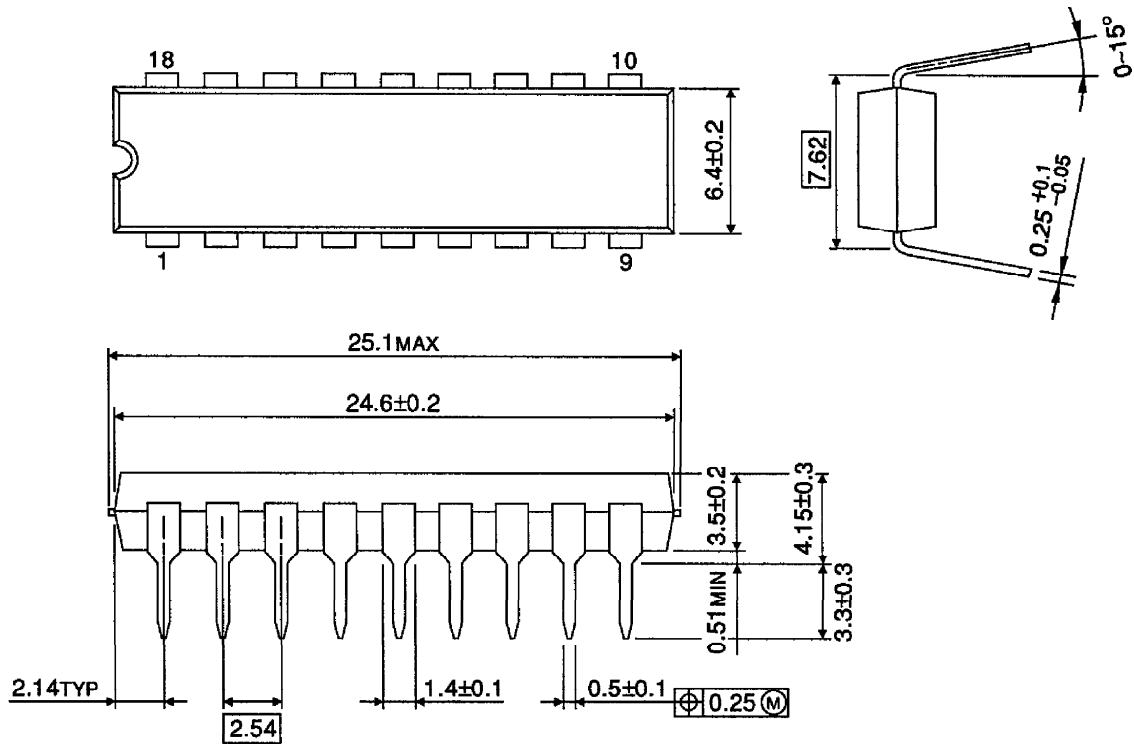
**PRECAUTIONS for USING**

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

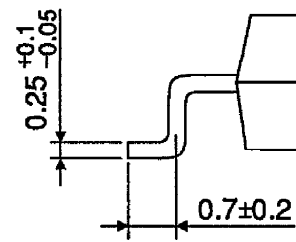
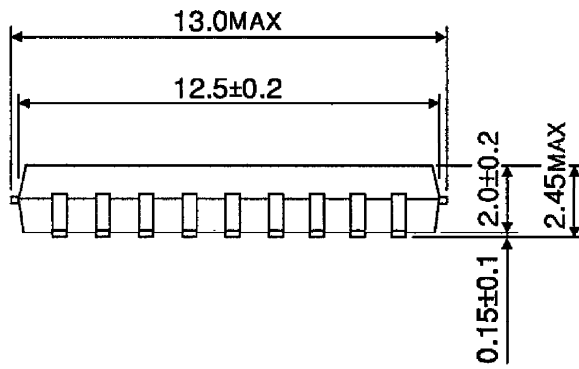
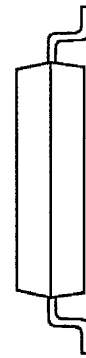
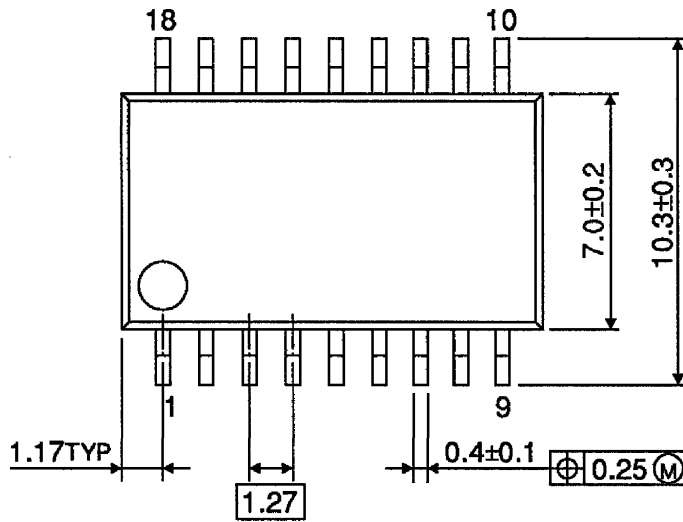
Unit : mm



Weight : 1.47g (Typ.)

OUTLINE DRAWING  
SOP18-P-375-1.27

Unit : mm



Weight : 0.41g (Typ.)