

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

# TD62703P, TD62703F

## 6CH HIGH VOLTAGE SOURCE DRIVER

The TD62703P, TD62703F is comprised of six source current Transistor Array.

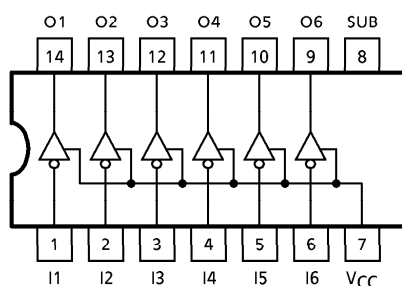
These drivers are specifically designed for fluorescent display applications.

For proper operation, the substrate (SUB) must be connected to the most negative voltage.

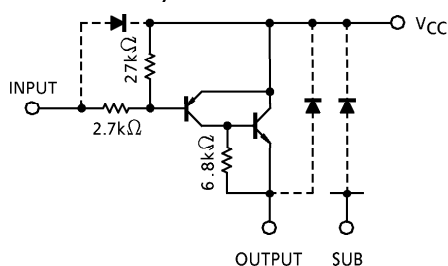
### FEATURES

- High output voltage :  $V_{CC}$ ,  $V_{OUT} = 60V$  (Min.)
- Output current (single output) :  $I_{OUT} = -50mA$  (Max.)
- Input resistor :  $R_{IN} = 2.7k\Omega$
- Package type-P : DIP-14 pin
- Package type-F : SOP-14 pin

### PIN CONNECTION (TOP VIEW)

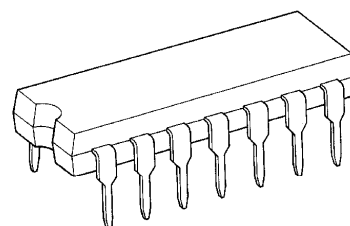


### SCHEMATICS (EACH DRIVER)



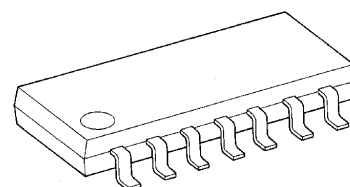
(Note) The input and output parasitic diodes cannot be used as clamp diodes.

TD62703P



DIP14-P-300-2.54

TD62703F



SOP14-P-225-1.27

### Weight

DIP14-P-300-2.54 : 1.11g (Typ.)  
SOP14-P-225-1.27 : 0.16g (Typ.)

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**MAXIMUM RATINGS** (Ta = 25°C)

| CHARACTERISTIC            | SYMBOL           | RATING                  | UNIT           |
|---------------------------|------------------|-------------------------|----------------|
| Supply Voltage            | V <sub>SUB</sub> | V <sub>CC</sub> - 60    | V              |
| Output Sustaining Voltage | V <sub>OUT</sub> | V <sub>CC</sub> - 60    | V              |
| Input Voltage             | V <sub>IN</sub>  | - 30~0.5                | V              |
| Output Current            | I <sub>OUT</sub> | - 50                    | mA / ch        |
| Input Current             | I <sub>IN</sub>  | 10                      | mA             |
| Power Dissipation         | P                | P <sub>D</sub> (Note 2) | 1.0            |
|                           | F                |                         | 0.625 (Note 1) |
| Operating Temperature     | T <sub>opr</sub> | - 40~85                 | °C             |
| Storage Temperature       | T <sub>stg</sub> | - 55~150                | °C             |

(Note 1) On Glass Epoxy PCB (50×50×1.6mm Cu 50%)

(Note 2) Delated above 25°C in the proportion 8.0mW/°C (P Type), 5.0mW/°C (F Type).

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

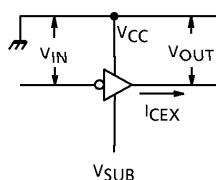
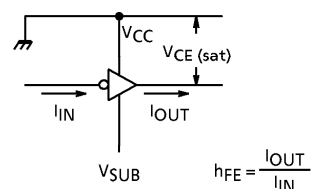
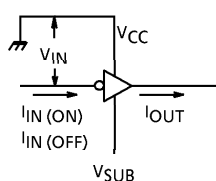
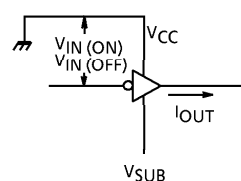
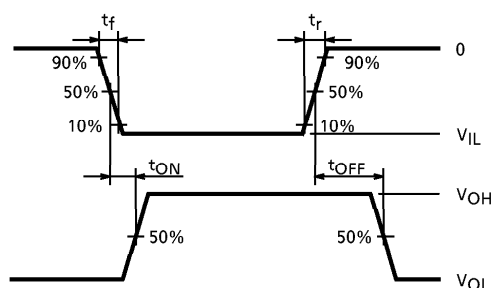
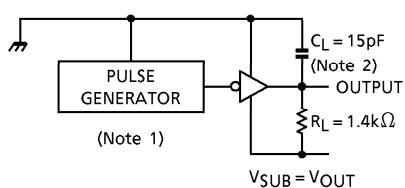
| CHARACTERISTIC            | SYMBOL           | CONDITION            | MIN.             | TYP. | MAX.             | UNIT    |
|---------------------------|------------------|----------------------|------------------|------|------------------|---------|
| Supply Voltage            | V <sub>SUB</sub> | V <sub>CC</sub> = 0V | V <sub>OUT</sub> | —    | - 55             | V       |
| Output Sustaining Voltage | V <sub>OUT</sub> |                      | 0                | —    | V <sub>SUB</sub> | V       |
| Output Current            | I <sub>OUT</sub> |                      | 0                | —    | - 40             | mA / ch |
| Input Voltage             | V <sub>IN</sub>  |                      | 0                | —    | - 7.0            | V       |
| Power Dissipation         | P                | P <sub>D</sub>       | —                | —    | 0.36             | W       |
|                           | F                |                      | On PCB (Note)    | —    | 0.325            |         |

(Note) On Glass Epoxy PCB (50×50×1.6mm Cu 30%)

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

| CHARACTERISTIC                       | SYMBOL                | TEST CIRCUIT | TEST CONDITION                                                                                                     | MIN.  | TYP.  | MAX.   | UNIT |
|--------------------------------------|-----------------------|--------------|--------------------------------------------------------------------------------------------------------------------|-------|-------|--------|------|
| Output Leakage Current               | I <sub>CEX</sub>      | 1            | V <sub>CC</sub> = 0V, V <sub>IN</sub> = 0V<br>V <sub>OUT</sub> = - 55V                                             | —     | —     | - 100  | μA   |
| Collector-Emitter Saturation Voltage | V <sub>CE</sub> (sat) | 2            | I <sub>IN</sub> = - 1mA, I <sub>OUT</sub> = - 40mA                                                                 | —     | —     | - 2.5  | V    |
| DC Current Transfer Ratio            | h <sub>FE</sub>       | 2            | V <sub>CE</sub> = - 5.0V, I <sub>OUT</sub> = - 40mA                                                                | 100   | —     | —      | —    |
| Input Current                        | Output On             | 3            | V <sub>CC</sub> = 0V, V <sub>IN</sub> = - 5.1V                                                                     | —     | - 1.7 | - 2.4  | mA   |
|                                      | Output Off            |              | —                                                                                                                  | —     | —     | 10     | μA   |
| Input Voltage                        | Output On             | 4            | V <sub>CC</sub> = 0V                                                                                               | - 3.0 | —     | —      | V    |
|                                      | Output Off            |              |                                                                                                                    | —     | —     | - 0.44 |      |
| Turn-On Delay                        | P                     | 5            | V <sub>CC</sub> = 0V, V <sub>SUB</sub> = V <sub>OUT</sub> = - 55V<br>R <sub>L</sub> = 1.4kΩ, C <sub>L</sub> = 15pF | —     | 1     | —      | μs   |
|                                      | F                     |              |                                                                                                                    | —     | 0.5   | —      |      |
| Turn-Off Delay                       | P                     |              |                                                                                                                    | —     | 2     | —      | μs   |
|                                      | F                     |              |                                                                                                                    | —     | 1     | —      |      |

## TEST CIRCUIT

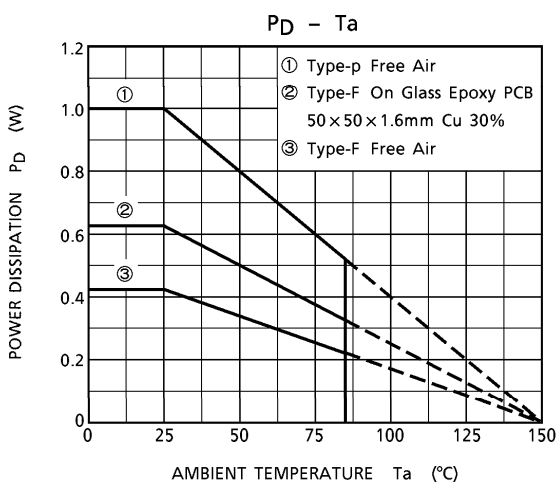
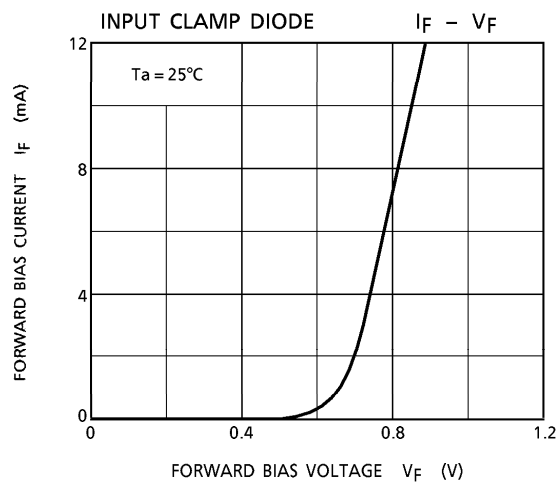
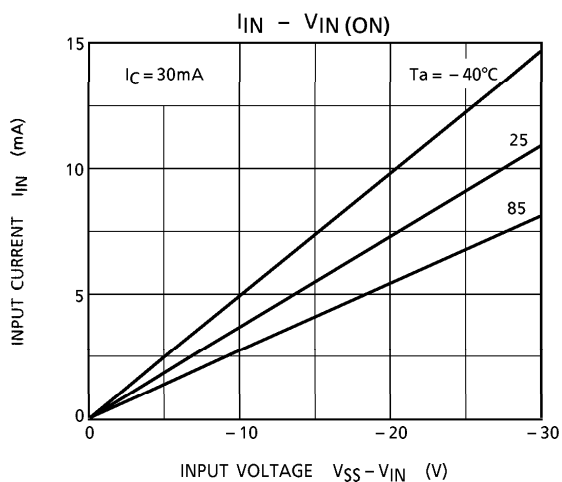
1.  $I_{CEX}$ 2.  $V_{CE(sat)}$ ,  $h_{FE}$ 3.  $I_{IN(ON)}$ ,  $I_{IN(OFF)}$ 4.  $V_{IN(ON)}$ ,  $V_{IN(OFF)}$ 5.  $t_{ON}$ ,  $t_{OFF}$ 

(Note 1) Pulse Width  $50\mu s$ , Duty Cycle 10%  
Output Impedance  $50\Omega$ ,  $t_r \leq 10ns$ ,  $t_f \leq 5ns$

(Note 2)  $C_L$  includes probe and jig capacitance.

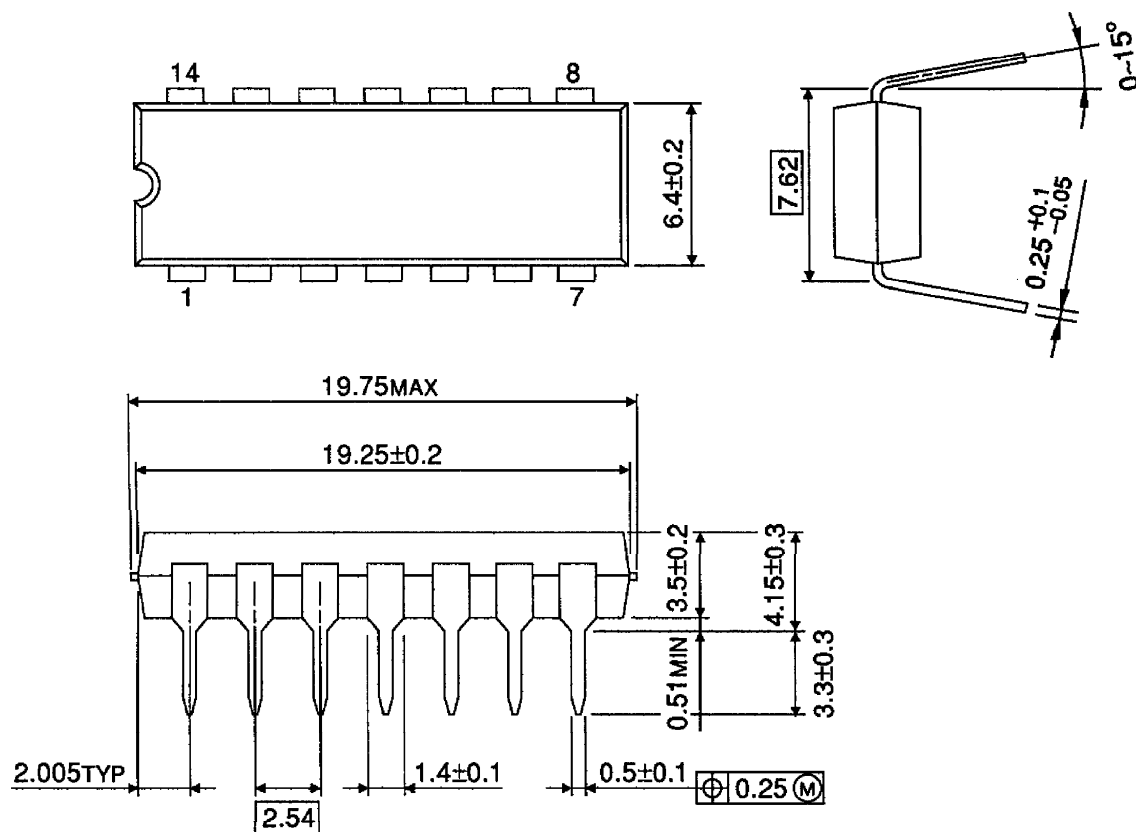
## PRECAUTIONS for USING

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



**OUTLINE DRAWING**  
DIP14-P-300-2.54

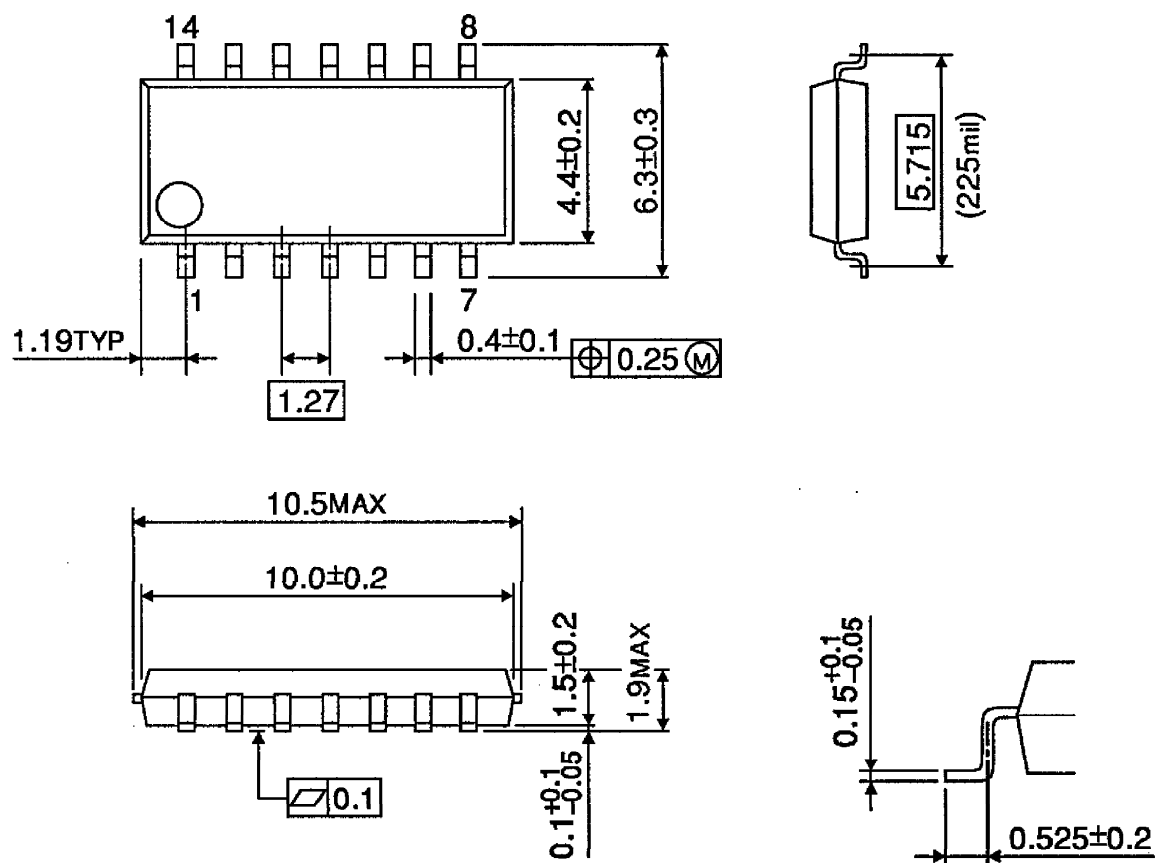
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING  
SOP14-P-225-1.27

Unit : mm



Weight : 0.16g (Typ.)