

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

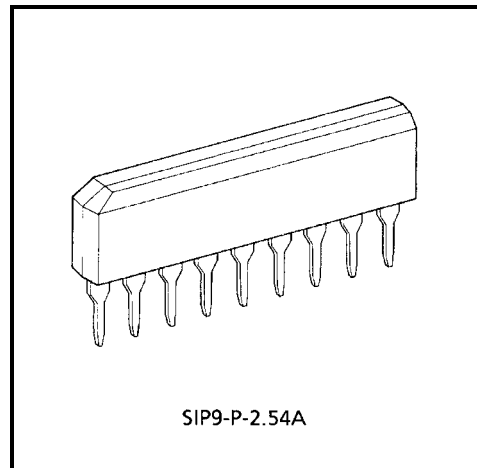
## TD62551S,TD62553S,TD62554S,TD62555S

### 4CH SINGLE DRIVER : COMMON EMITTER

The TD62551S are comprised of four NPN transistor arrays.  
Applications include relay, hammer, lamp and display (LED) drivers.

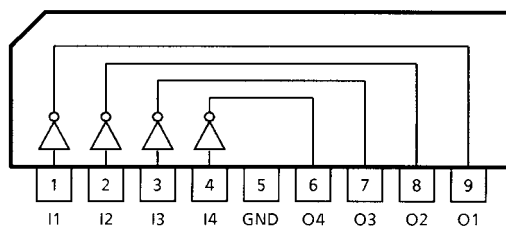
### FEATURES

- Output current (single output) 150 mA (Max)
- High sustaining voltage output 25 V (Min)
- Low saturation voltage  $V_{CE(sat)} = 0.5 \text{ V} @ I_{OUT} = 50 \text{ mA}$
- Inputs compatible with various types of logic.
- TD62551S : External
- TD62553S :  $R_{IN} = 2.7 \text{ k}\Omega$  ..... TTL, 5 V CMOS
- TD62554S :  $R_{IN} = 10.5 \text{ k}\Omega$  .... 6~15 V PMOS, CMOS
- TD62555S :  $R_{IN} = 20 \text{ k}\Omega$  ..... 12~24 V PMOS
- Package type : SIP-9 pin



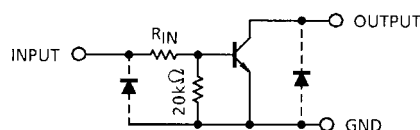
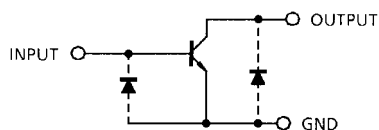
Weight: 0.92 g (Typ.)

### PIN CONNECTION



### SCHEMATICS (EACH DRIVER)

TD62551S



TD62553S  $R_{IN} = 2.7 \text{ k}\Omega$   
TD62554S  $R_{IN} = 10.5 \text{ k}\Omega$   
TD62555S  $R_{IN} = 20 \text{ k}\Omega$

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

## MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC            | SYMBOL                   | RATING  | UNIT    |
|---------------------------|--------------------------|---------|---------|
| Collector-Emitter Voltage | V <sub>CEO</sub>         | 25      | V       |
| Collector-Base Voltage    | V <sub>CBO</sub>         | 35      | V       |
| Collector Current         | I <sub>C</sub>           | 150     | mA / ch |
| Input Voltage             | V <sub>IN</sub> (Note 1) | 20      | V       |
| Input Current             | I <sub>IN</sub> (Note 2) | 10      | mA      |
| Power Dissipation         | P <sub>D</sub> (Note 3)  | 0.75    | W       |
| Operating Temperature     | T <sub>opr</sub>         | -40~85  | °C      |
| Storage Temperature       | T <sub>stg</sub>         | -55~150 | °C      |

Note 1: Except TD62551S

Note 2: Only TD62551S

Note 3: Delated above 25°C in the proportion of 6.0mW / °C.

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

| CHARACTERISTIC            |                                  | SYMBOL           | CONDITION | MIN | TYP. | MAX  | UNIT       |
|---------------------------|----------------------------------|------------------|-----------|-----|------|------|------------|
| Collector–Emitter Voltage |                                  | V <sub>CEO</sub> | —         | 0   | —    | 25   | V          |
| Collector–Base Voltage    |                                  | V <sub>CBO</sub> | —         | 0   | —    | 35   | V          |
| Collector Current         | TD62551S<br>TD62553S             | I <sub>C</sub>   | —         | 0   | —    | 100  | mA /<br>ch |
|                           | TD62554S                         |                  |           | 0   | —    | 80   |            |
|                           | TD62555S                         |                  |           | 0   | —    | 60   |            |
| Input Voltage             | TD62553S<br>TD62554S<br>TD62555S | V <sub>IN</sub>  | —         | 0   | —    | 20   | V          |
| Input Current             | TD62551S                         | I <sub>IN</sub>  | —         | 0   | —    | 5    | mA         |
| Power Dissipation         |                                  | P <sub>D</sub>   | —         | —   | —    | 0.27 | W          |

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

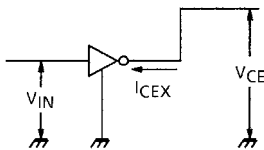
| CHARACTERISTIC                       | SYMBOL                | TEST CIR-CUIT | TEST CONDITION                                                            | MIN | TYP. | MAX  | UNIT |
|--------------------------------------|-----------------------|---------------|---------------------------------------------------------------------------|-----|------|------|------|
| Output Leakage Current               | I <sub>CEX</sub>      | 1             | V <sub>CE</sub> = 25 V, V <sub>IN</sub> = 0 V                             | —   | —    | 10   | μA   |
| Collector-Emitter Saturation Voltage | V <sub>CE (sat)</sub> | 2             | I <sub>IN</sub> = 0.5 mA, I <sub>C</sub> = 10 mA                          | —   | 0.15 | 0.2  | V    |
|                                      |                       |               | I <sub>IN</sub> = 2.5 mA, I <sub>C</sub> = 50 mA                          | —   | 0.35 | 0.5  |      |
| DC Current Transfer Ratio            | (Note 1)              | 2             | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA                             | 60  | —    | 400  | —    |
|                                      | (Note 2)              |               |                                                                           | 50  | —    | 400  |      |
| Input Voltage                        | TD62553S              | 3             | I <sub>IN</sub> = 0.5 mA, I <sub>C</sub> = 10 mA                          | 1.7 | 2.1  | 2.5  | V    |
|                                      | TD62554S              |               |                                                                           | 4.4 | 6.0  | 7.6  |      |
|                                      | Td62555S              |               |                                                                           | 7.7 | 10.7 | 13.8 |      |
| Turn-On Delay                        | t <sub>ON</sub>       | 4             | V <sub>OUT</sub> = 25 V, R <sub>L</sub> = 210 Ω<br>C <sub>L</sub> = 15 pF | —   | 100  | —    | ns   |
| Turn-Off Delay                       | t <sub>OFF</sub>      |               |                                                                           | —   | 500  | —    |      |

Note 1: Except TD62551S.

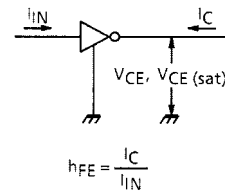
Note 2: Only TD62551S.

## TEST CIRCUIT

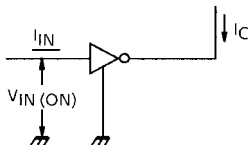
### 1. $I_{CEX}$



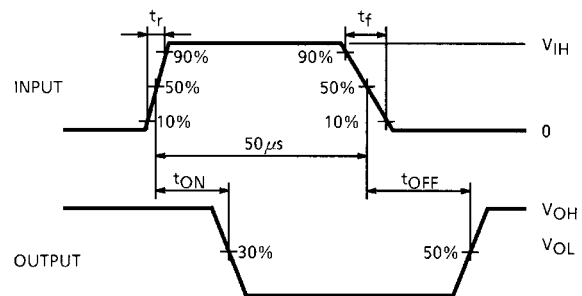
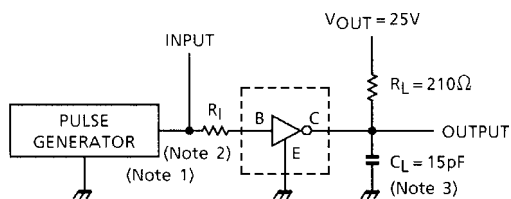
### 2. $h_{FE}$ , $V_{CE(sat)}$



### 3. $V_{IN(ON)}$



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



Note 1: Pulse Width 50  $\mu$ s, Duty Cycle 10%  
Output Impedance 50  $\Omega$ ,  $t_r \leq 5$  ns,  $t_f \leq 10$  ns  
Note 2: See right.  
Note 3:  $C_L$  includes probe and jig capacitance.

#### INPUT CONDITION

| TYPE NUMBER | $R_I$          | $V_{IH}$ |
|-------------|----------------|----------|
| TD62551S    | 2.7 k $\Omega$ | 3 V      |
| TD62553S    | 0 $\Omega$     | 3 V      |
| TD62554S    | 0 $\Omega$     | 10 V     |
| TD62555S    | 0 $\Omega$     | 14 V     |

## PRECAUTIONS for USING

This IC does not integrate protection circuits such as overcurrent and overvoltage protectors.

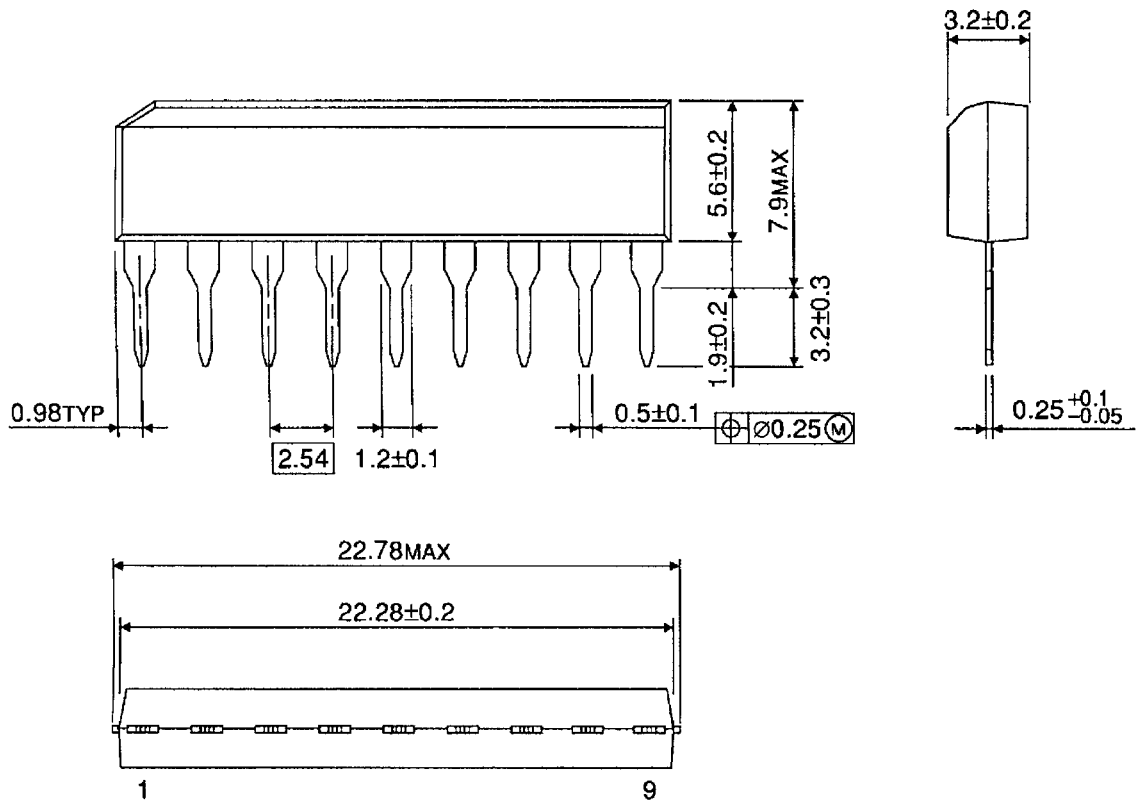
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

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

PACKAGE DIMENSIONS

SIP9-P-300-2.54A

Unit: mm



Weight: 0.92 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

000707EBA

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