

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

## TD62476P, TD62477P, TD62478P, TD62479P

### 2CH PERIPHERAL AND / NAND / OR / NOR DRIVERS

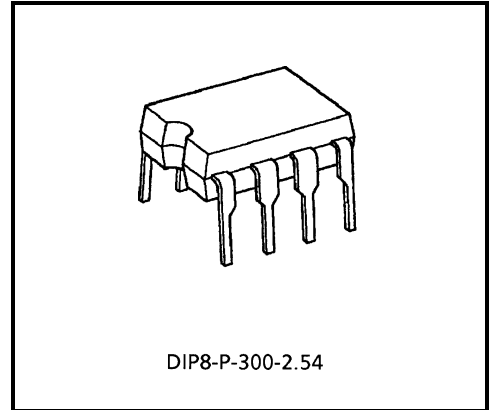
The TD62476P, TD62477P, TD62478P, TD62479P are comprised of two NPN single output stages and control inputs which can gate the outputs.

All units feature integral clamp diodes for switching inductive loads.

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

### FEATURES

- Output current (single output) 350 mA (Max)
- High sustaining voltage output 35 V (Min)
- Output clamp diodes
- Inputs compatible with TTL and 5 V CMOS
- Standard supply voltage
- Package type-P: DIP-8 pin

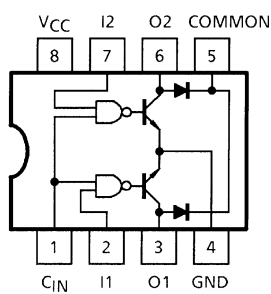


Weight: 0.45 g (Typ.)

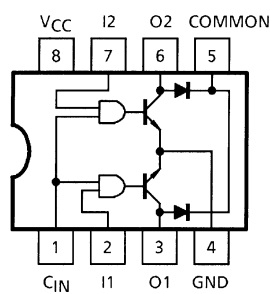
TD62476P			TD62477P			TD62478P			TD62479P		
INPUT		OUTPUT	INPUT		OUTPUT	INPUT		OUTPUT	INPUT		OUTPUT
C <sub>IN</sub>	I		C <sub>IN</sub>	I		C <sub>IN</sub>	I		C <sub>IN</sub>	I	
0	0	ON	0	0	OFF	0	0	ON	0	0	OFF
0	1	OFF	0	1	OFF	0	1	OFF	0	1	ON
1	0	OFF	1	0	OFF	1	0	OFF	1	0	ON
1	1	OFF	1	1	ON	1	1	OFF	1	1	ON

### PIN CONNECTION (TOP VIEW)

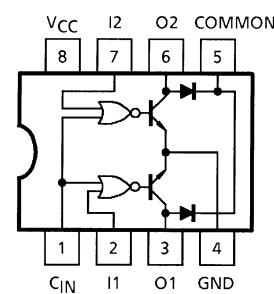
TD62476P



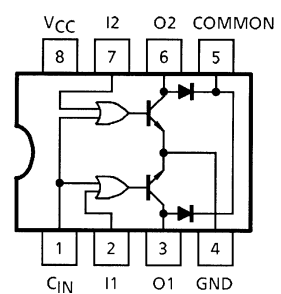
TD62477P



TD62478P

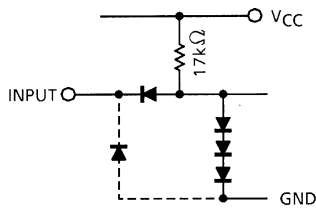


TD62479P

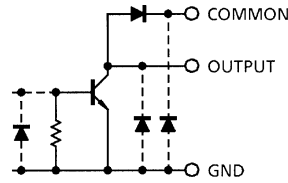


## EQUIVALENT OF INPUTS AND OUTPUTS

Equivalent of inputs



Equivalent of outputs



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

## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5~7.0	V
Input Voltage	V <sub>IN</sub>	-0.5~5.5	V
Output Sustaining Voltage	V <sub>CE (SUS)</sub>	-0.5~35	V
Output Current	I <sub>OUT</sub>	350	mA / ch
Clamp Diode Reverse Voltage	V <sub>R</sub>	35	V
Clamp Diode Forward Current	I <sub>F</sub>	300	mA
Power Dissipation	P <sub>D</sub> (Note)	0.9	W
Operating Temperature	T <sub>opr</sub>	-30~75	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

Note: Delated above 25°C in the proportion of 7.2 mW / °C.

## RECOMMENDED OPERATING CONDITIONS (Ta = -30~75°C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage	V <sub>CC</sub>	—	4.5	5.0	5.5	V
Output Sustaining Voltage	V <sub>CE (SUS)</sub>	—	0	—	35	V
Output Current	I <sub>OUT</sub>	DC 1 Circuit	0	—	300	mA / ch
		DC 2 Circuits	0	—	200	
Input Voltage	V <sub>IN</sub>	—	4.5	—	V <sub>CC</sub>	V
Clamp Diode Reverse Voltage	V <sub>R</sub>	—	—	—	35	V
Clamp Diode Forward Current	I <sub>F</sub>	—	—	—	300	mA
Power Dissipation	P <sub>D</sub>	—	—	—	0.4	W

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

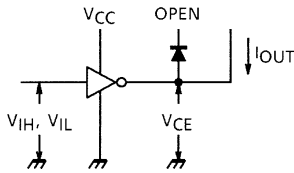
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT		
Input Voltage	"H" Level	$V_{IH}$	1	—	2.0	—	—	V		
	"L" Level	$V_{IL}$	1	—	—	—	0.8			
Output Current	"H" Level	$I_{OH}$	2	$V_{CC} = 4.5V, V_{IH} = 2.0V$ $V_{IL} = 0.8V, V_{OH} = 35V$	—	—	10	$\mu A$		
Output Voltage	"L" Level	$V_{OL}$	3	$V_{CC} = 4.5V$ $V_{IH} = 2.0V$ $V_{IL} = 0.8V$	$I_{OUT} = 100mA$	—	0.15	0.30	V	
					$I_{OUT} = 200mA$	—	0.28	0.45		
					$I_{OUT} = 300mA$	—	0.45	0.60		
Input Current	"H" Level	$I_{IH}$	4	$V_{CC} = 5.5V, V_{IN} = 5.5V$	—	—	10	$\mu A$		
	"L" Level	$I$	5	$V_{CC} = 5.5V, V_{IN} = 0.4V$	—	-0.26	-0.4	mA		
$C_{IN}$		—			-0.52	-0.8				
Clamp Diode Reverse Current		$I_R$	6	$V_{CC} = 4.5V, V_R = 35V$	—	—	10	$\mu A$		
Clamp Diode Forward Voltage		$V_F$	7	$V_{CC} = 4.5V, I_F = 300mA$	—	1.5	1.75	V		
Supply Current	Output Off	TD62476P	$I_{CCH}$	5	$V_{CC} = 5.5V$	$V_{IN} = 5V$	—	8.4	14	mA
		TD62477P				$V_{IN} = 0V$	—	0.6	0.85	
		TD62478P				$V_{IN} = 5V$	—	9	14	
		TD62479P				$V_{IN} = 0V$	—	1.1	1.8	
	Output On	TD62476P	$I_{CCL}$	4		$V_{IN} = 5V$	—	38	55	
		TD62477P				$V_{IN} = 0V$	—	36	53	
		TD62478P				$V_{IN} = 5V$	—	39	56	
		TD62479P				$V_{IN} = 0V$	—	36	63	

## SWITCHING CHARACTERISTICS (Ta = 25°C)

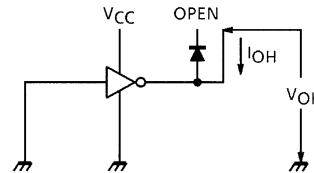
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	CONDITION	MIN	TYP.	MAX	UNIT
Propagation Delay Time	"H" Level	$t_{pLH}$	—	$C_L = 15pF, R_L = 120\Omega$	—	0.7	—	$\mu s$
	"L" Level	$t_{pHL}$	—		—	0.2	—	

## TEST CIRCUIT

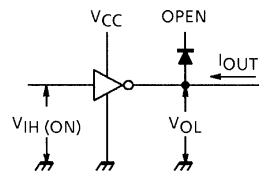
### 1. $V_{IH}, V_{IL}$



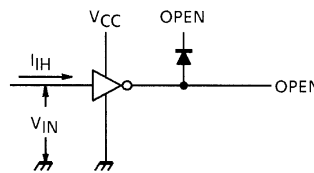
### 2. $I_{OH}$



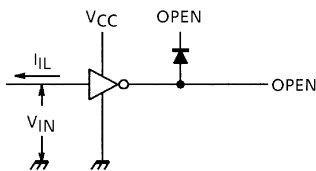
### 3. $V_{OL}$



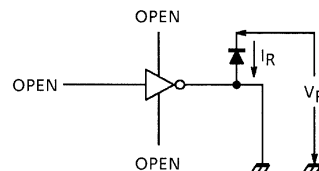
### 4. $I_{IH}, I_{CCL}$



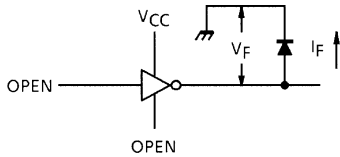
### 5. $I_{IL}, I_{CCH}$



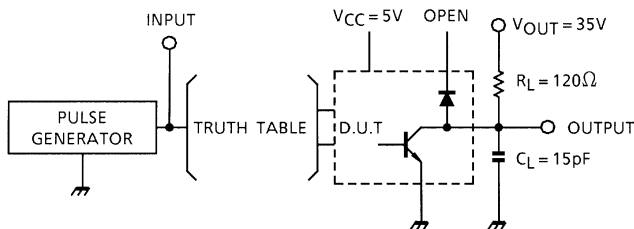
### 6. $I_R$



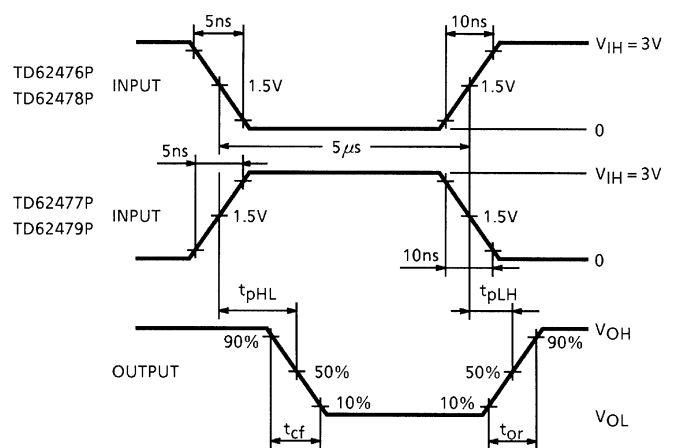
### 7. $V_F$



## TEST CIRCUIT OF SWITCHING CHARACTERISTIC



## TEST WAVEFORM



## PRECAUTIONS for USING

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

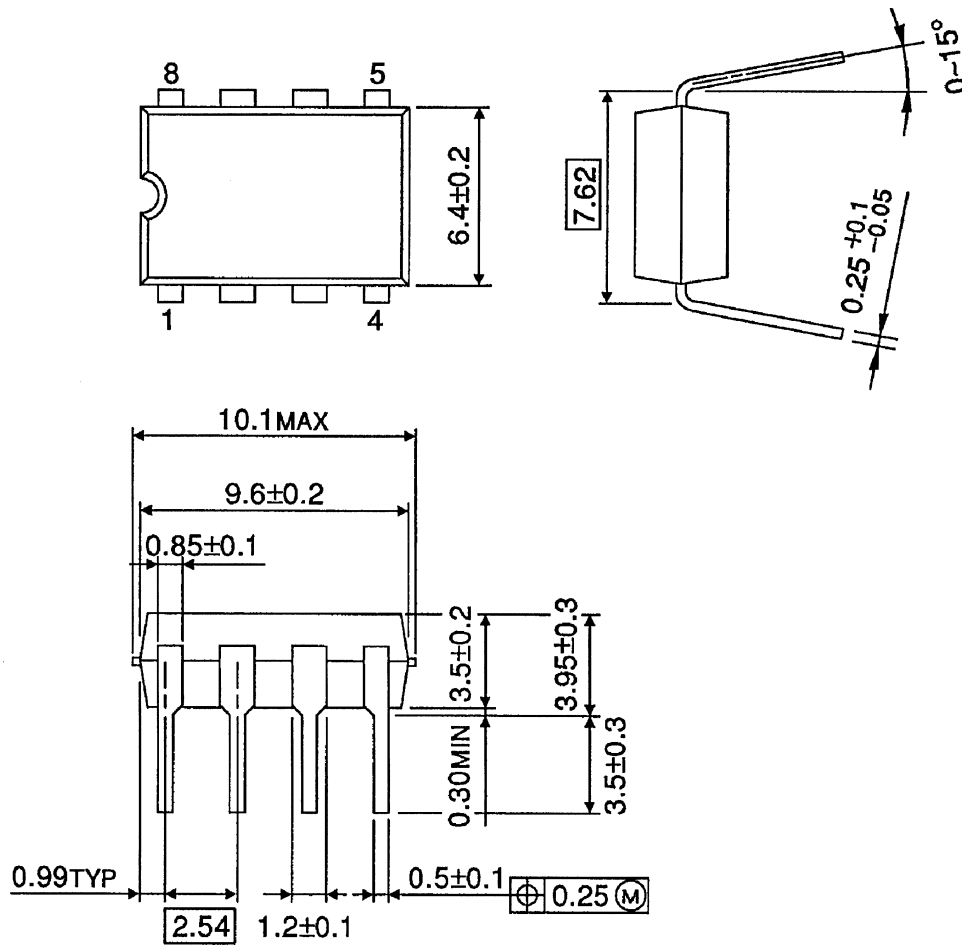
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

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

## PACKAGE DIMENSIONS

DIP8-P-300-2.54

Unit: mm



Weight: 0.45 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

000707EBA

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