

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62504P-H

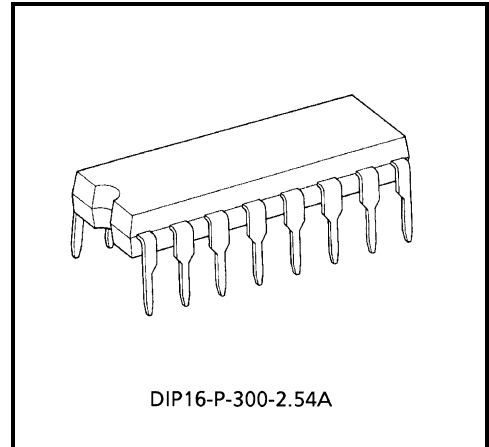
7CH SINGLE DRIVER : COMMON EMITTER

The TD62504P-H is comprised of seven or five NPN Transistor Arrays.

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

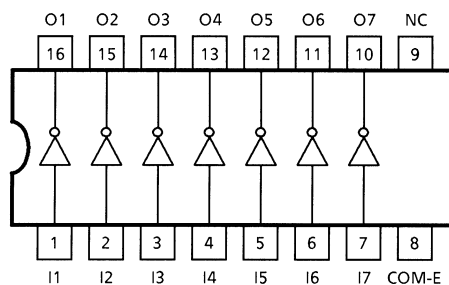
FEATURES

- Package Type : DIP16 pin
- $R_{IN} = 10.5 \text{ k}\Omega$
- High Sustaining Voltage Output : $V_{CEO} = 35 \text{ V (Min)}$
- Output Current (Single Output) : 200 mA (Max)
- Low Saturation Voltage : $V_{CE(sat)} = 0.8 \text{ V}$
@ $I_{out} = 150 \text{ mA}$
- Inputs Compatible with Various Types of Logic.
- Wide operating temperature range: $-40 \sim 105^\circ\text{C}$

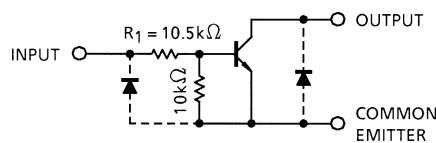


Weight: 0.11 g (Typ.)

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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_{CEO}	35	V
Collector-Base Voltage	V_{CBO}	50	V
Collector Current	I_C	200	mA / ch
Input Voltage	V_{IN}	-0.5~30	V
Power Dissipation	P_D	1.0	W
Operating Temperature	T_{opr}	-40~105	°C
Storage Temperature	T_{stg}	-55~150	°C

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Collector-Emitter Voltage	V_{CEO}	—	0	—	35	V
Collector-Base Voltage	V_{CBO}	—	0	—	50	V
Collector Current	I_C	—	0	—	150	mA / ch
Input Voltage	V_{IN}	—	0	—	25	V
	$V_{IN(ON)}$	$I_{IN} = 1 \text{ mA}$	15.0	—	25	
Power Dissipation	P_D	Ta = 85°C	—	—	0.52	W

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current	I_{CEX}	1	$V_{CE} = 35 \text{ V}, V_{IN} = 0 \text{ V}$	—	—	10	μA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	2	$I_{IN} = 1 \text{ mA}, I_C = 10 \text{ mA}$	—	—	0.2	V
			$I_{IN} = 3 \text{ mA}, I_C = 150 \text{ mA}$	—	—	0.8	
DC Current Transfer Ratio	h_{FE}	2	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$	50	—	—	—
Input Voltage	$V_{IN(ON)}$	3	$I_{IN} = 1 \text{ mA}, I_C = 10 \text{ mA}$	7.5	11.5	15.0	V
Turn-On Delay	t_{ON}	4	$V_{CEO} = 35 \text{ V}, R_L = 220 \Omega$ $C_L = 15 \text{ pF}$	—	50	—	ns
Turn-Off Delay	t_{OFF}			—	200	—	

RECOMMENDED OPERATING CONDITIONS (Ta = -40~105°C)

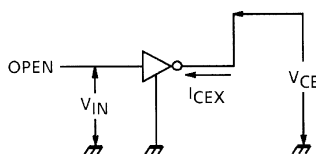
CHARACTERISTIC	SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Collector-Emitter Voltage	V_{CEO}	—	0	—	35	V
Collector-Base Voltage	V_{CBO}	—	0	—	50	V
Collector Current	I_C	DC 1 circuits	0	—	150	mA / ch
		7 circuits	0	—	100	
Input Voltage	V_{IN}	—	0	—	25	V
	$V_{IN(ON)}$	$I_{IN} = 1 \text{ mA}$	15.0	—	25	
	$V_{IN(OFF)}$	—	0	—	0.50	
Power Dissipation	P_D	Ta = 105°C	—	—	0.36	W

ELECTRICAL CHARACTERISTICS (Ta = 105°C)

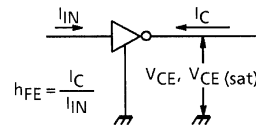
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current	I_{CEX}	1	$V_{CE} = 35\text{ V}$, $V_{IN} = 0\text{ V}$	—	—	300	μA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	2	$I_{IN} = 1\text{ mA}$, $I_C = 10\text{ mA}$	—	—	0.3	V
			$I_{IN} = 3\text{ mA}$, $I_C = 150\text{ mA}$	—	—	0.9	
DC Current Transfer Ratio	h_{FE}	2	$V_{CE} = 10\text{ V}$, $I_C = 10\text{ mA}$	50	—	—	—
Input Voltage	$V_{IN(ON)}$	3	$I_{IN} = 1\text{ mA}$, $I_C = 10\text{ mA}$	6.5	11.5	16.0	V
Turn-On Delay	t_{ON}	4	$V_{CEO} = 35\text{ V}$, $R_L = 220\ \Omega$ $C_L = 15\text{ pF}$	—	100	—	ns
Turn-Off Delay	t_{OFF}			—	500	—	

TEST CIRCUIT

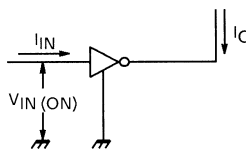
1. I_{CEX}



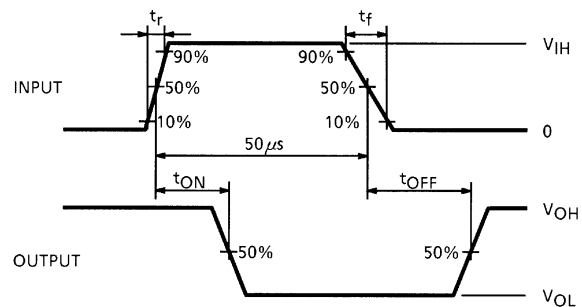
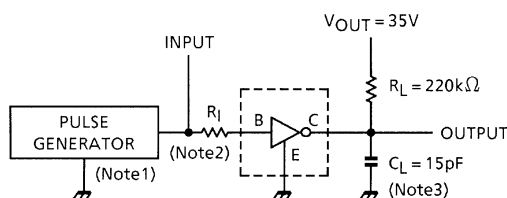
2. h_{FE} , $V_{CE(sat)}$



3. $V_{IN(ON)}$



4. t_{ON} , t_{OFF}



Note 1: Pulse Width 50 μs , Duty Cycle 10%

Output Impedance 50 Ω , $t_r \leq 5\text{ ns}$, $t_f \leq 10\text{ ns}$

Note 2: See below

Input Condition

TYPE NUMBER	R_I	V_{IH}
TD62504P-H	0 Ω	10 V

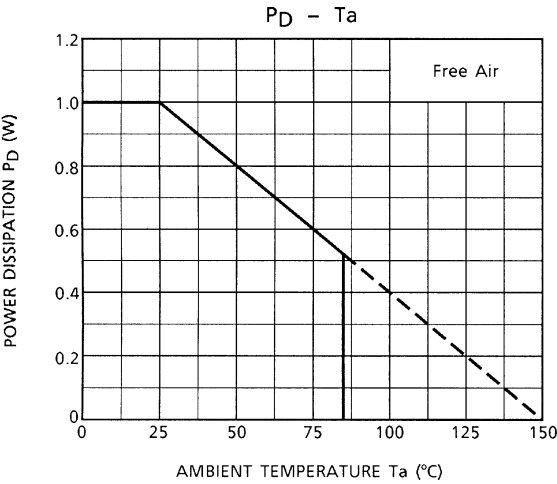
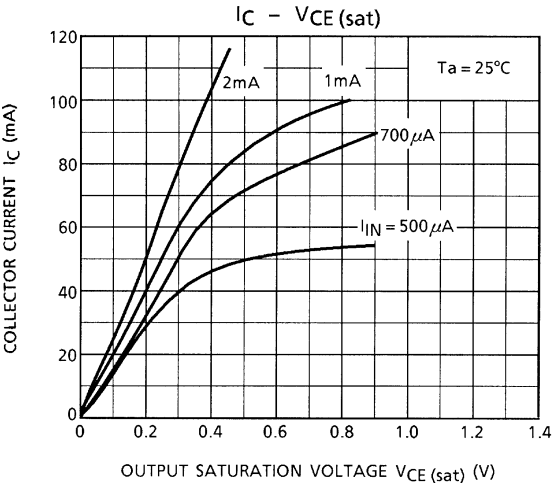
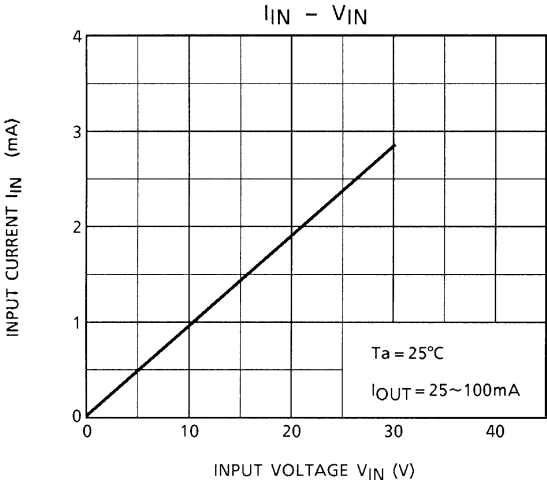
Note 3: C_L includes probe and jig capacitance

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.

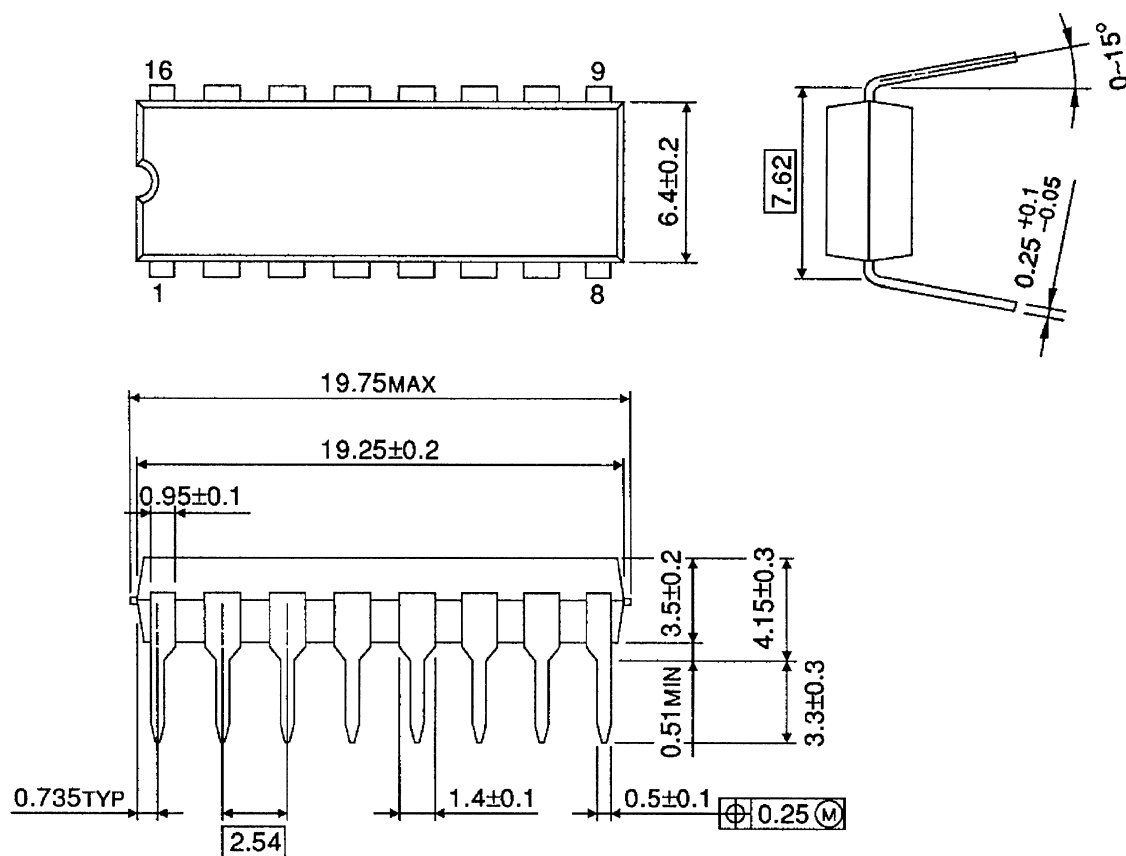
Utmost care is necessary in the design of the output line, V_{CC} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit: mm



Weight: 1.11 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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