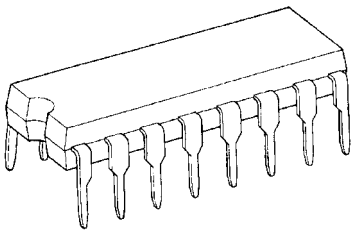
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62503PA,TD62504PA

7CH SINGLE DRIVER : COMMON EMITTER

The TD62503PA and TD62504PA are comprised of seven or five NPN transistor arrays.
Applications include relay, hammer, lamp and display (LED) drivers.



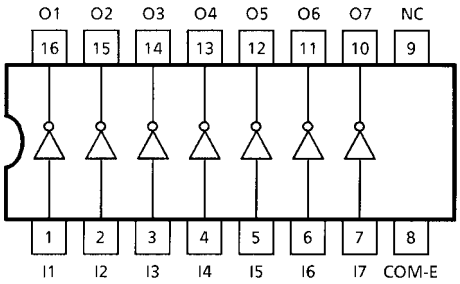
DIP16-P-300-2.54A

Weight: 1.11 g Typ.)

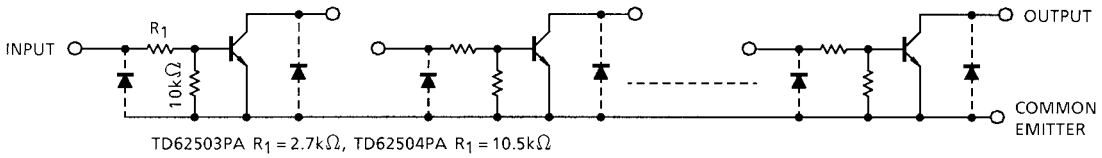
FEATURES

- Output current (single output) 200 mA / ch (Max)
- High sustaining voltage output 35 V (Min)
- Low saturation voltage $V_{CE\ (sat)}$ = 0.8 V @I_{OUT} = 150 mA
- Inputs compatible with various types of logic.
- TD62503PA : R_{IN} = 2.7 kΩ ..... TTL, 5 V CMOS
- TD62504PA : R_{IN} = 10.5 kΩ ..... PMOS, CMOS
- Package type−PA : DIP−16 pin

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 (Note)	1.0	W
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

Note: Delated above 25°C in the proportion of 8.0 mW / °C.

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

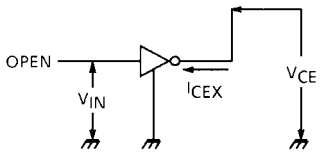
CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Collector−Emitter Voltage		V_{CEO}	—	0	—	35	V
Collector−Base Voltage		V_{CBO}	—	0	—	50	V
Collector Current		I_C	—	0	—	150	mA / ch
Input Voltage	TD62503PA	V_{IN}	—	0	—	25	V
	TD62504PA						
Power Dissipation		P_D	—	—	—	0.360	W

ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

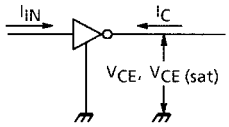
CHARACTERISTIC		SYMBOL	TEST CIR−CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CE} = 25 V, V_{IN} = 0 V	—	—	10	μA
Collector−Emitter Saturation Voltage		$V_{CE\ (sat)}$	2	I_{IN} = 1 mA, I_C = 10 mA	—	—	0.2	V
				I_{IN} = 3 mA, I_C = 150 mA	—	—	0.8	
DC Current Transfer Ratio		h_{FE}	2	V_{CE} = 10 V, I_C = 10 mA	50	—	—	—
Input Voltage (Output On)	TD62503PA	$V_{IN\ (ON)}$	3	I_{IN} = 1 mA, I_C = 10 mA	2.4	3.4	4.2	V
	TD62504PA				7.5	11.5	15	
Input Voltage (Output Off)	TD62505PA	$V_{IN\ (OFF)}$	—	—	0.6	0.8	1.0	V
	TD62506PA				1.1	1.6	1.9	
Turn−On Delay		t_{ON}	4	V_{OUT} = 35 V, R_L = 3.3 kΩ C_L = 15 pF	—	50	—	ns
Turn−Off Delay		t_{OFF}			—	200	—	

TEST CIRCUIT

1. I_{CEX}

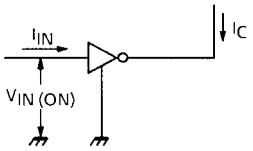


2. h_{FE}, $V_{CE\ (sat)}$

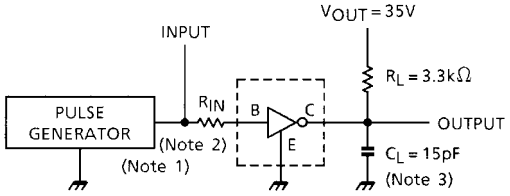


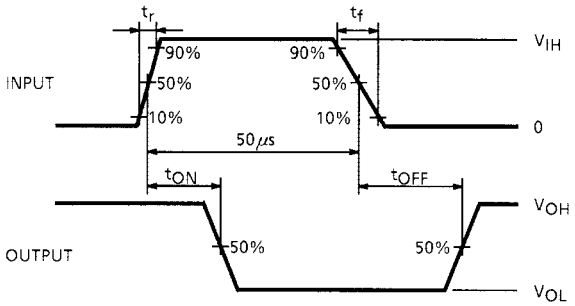
$$h_{FE} = \frac{I_C}{I_{IN}}$$

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



4. t_{ON}, t_{OFF}





Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 5$ ns, $t_f \leq 10$ ns

Note 2: See below

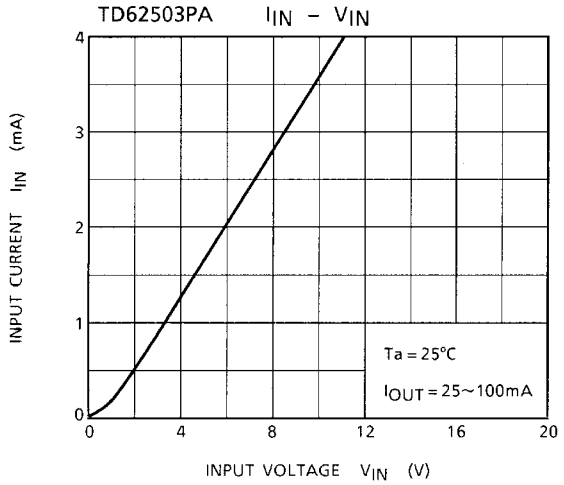
INPUT CONDITION

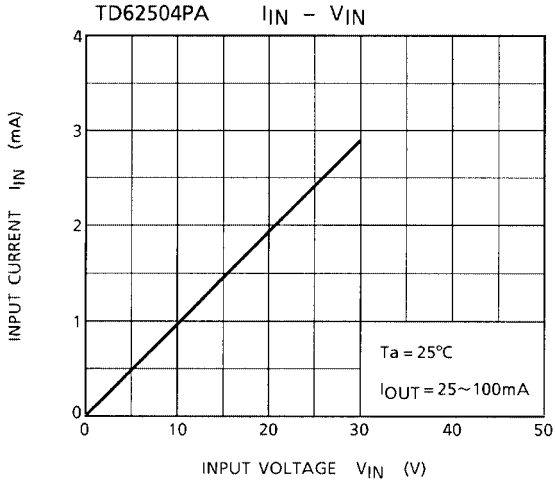
TYPE NUMBER	R_{IN}	V_{IH}
TD62503PA	0 Ω	3 V
TD62504PA	0 Ω	10 V

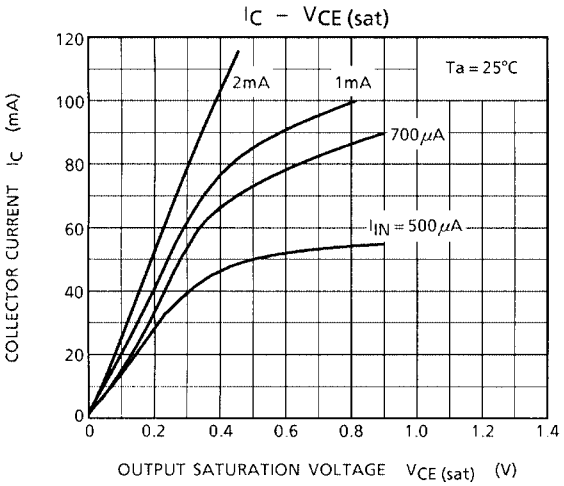
Note 3: C_L includes probe and jig capacitance.

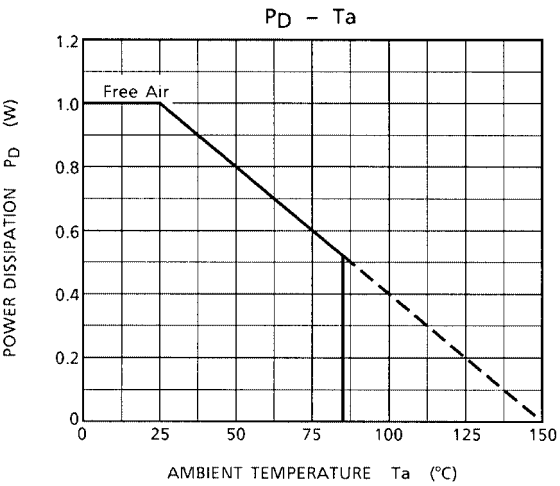
PRECAUTIONS for USING

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.


TD62503PA I_{IN} – V_{IN}
INPUT CURRENT I_{IN} (mA)
INPUT VOLTAGE V_{IN} (V)
Ta = 25°C
I_{OUT} = 25~100mA
0
1
2
3
4
0
4
8
12
16
20

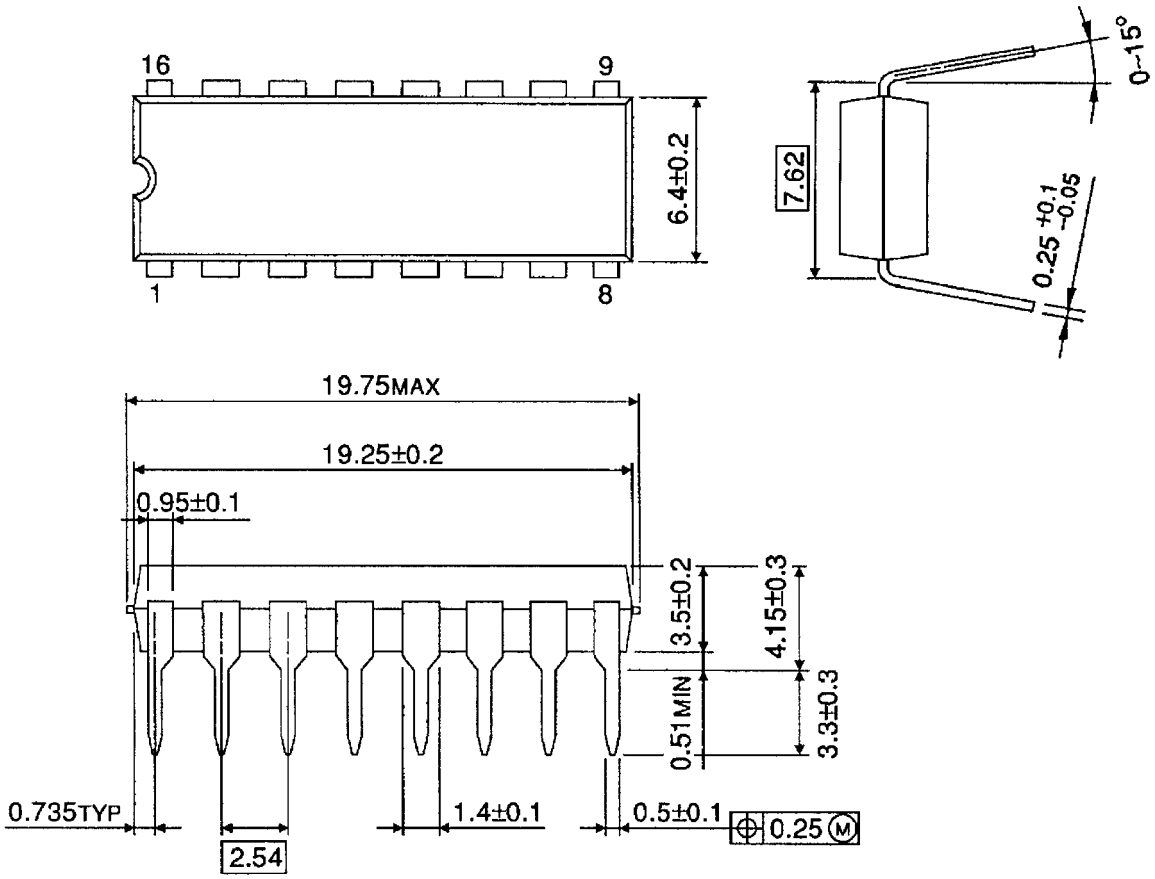

TD62504PA I_{IN} – V_{IN}
INPUT CURRENT I_{IN} (mA)
INPUT VOLTAGE V_{IN} (V)
Ta = 25°C
I_{OUT} = 25~100mA
0
1
2
3
4
0
10
20
30
40
50


I_C – $V_{CE\ (sat)}$
COLLECTOR CURRENT I_C (mA)
OUTPUT SATURATION VOLTAGE $V_{CE\ (sat)}$ (V)
Ta = 25°C
2mA
1mA
700μA
I_{IN} = 500μA
0
20
40
60
80
100
120
0
0.2
0.4
0.6
0.8
1.0
1.2
1.4


P_D – Ta
POWER DISSIPATION P_D (W)
AMBIENT TEMPERATURE Ta (°C)
Free Air
0
0.2
0.4
0.6
0.8
1.0
1.2
0
25
50
75
100
125
150

PACKAGE DIMENSIONS

DIP16−P−225−2.54A Unit: mm



Weight: 1.11 g (Typ.)

RESTRICTIONS ON PRODUCT USE

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