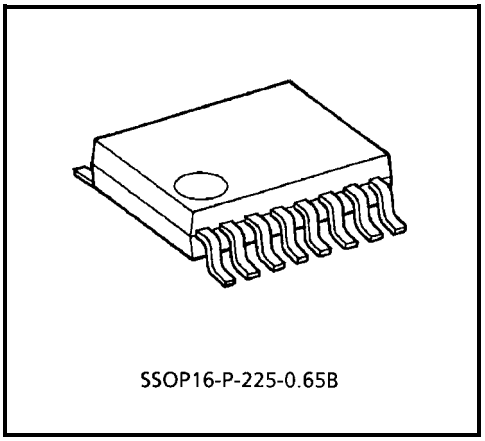
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62502FN,TD62503FN,TD62504FN

7CH SINGLE DRIVER: COMMON EMITTER

TD62502, 503, 504FN : COMMON EMITTER

The TD62502FN, TD62503FN and TD62504FN are comprised of seven or five NPN Transistor Arrays.
Applications include relay, hammer, Lamp and display (LED) drivers.

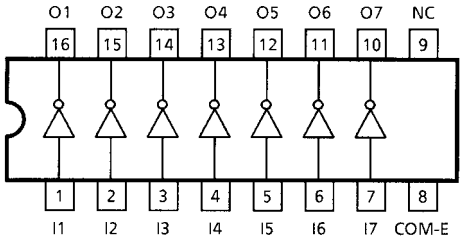


Weight: 0.07 g (Typ.)

FEATURES

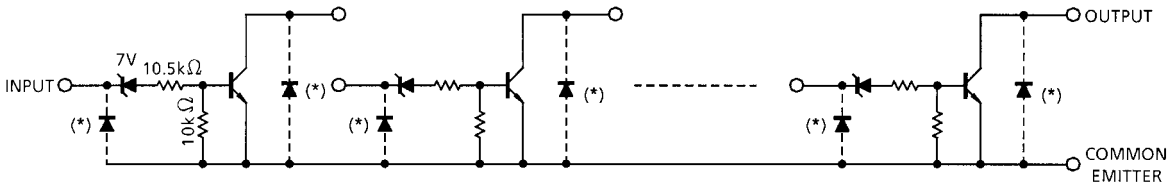
- Output Current (Single Output) 200mA MAX.
- High Sustaining Voltage Output 35V MIN.
- Inputs Compatible with Various Types of Logic.
- TD62502FN : R_{IN} = 10.5 kΩ + 7V
  Zener Diode···14~25 V P−MOS
- TD62503FN : R_{IN} = 2.7 kΩ···TTL, 5 V C−MOS
- TD62504FN : R_{IN} = 10.5 kΩ···6~15 V P−MOS, C−MOS
- Package Type : SSOP−16 pin (0.65 mm pitch)

PIN CONNECTION (Top view)

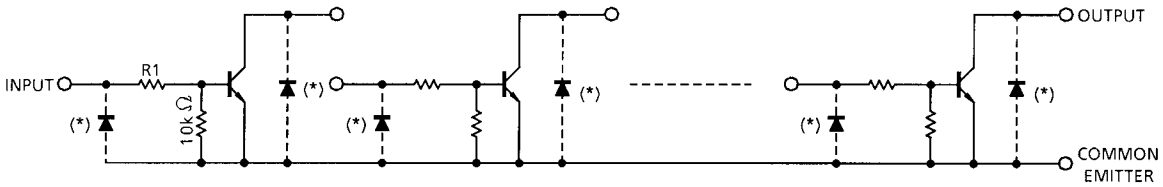


SCHEMATICS (Each driver)

TD62502FN



TD62503FN
TD62504FN



TD62503FN R1 = 2.7 kΩ
TD62504FN R1 = 10.5 kΩ

*: The input and output parasitic diodes cannot be used us clamp diodes.

MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

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

Note 1: On Glass Epoxy PCB (50 × 50 × 1.6 mm, Cu 40%)

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
Power Dissipation	P_D (Note 1)	On PCB	—	—	0.325	W

Note 1: On Glass Epoxy PCB (50 × 50 × 1.6 mm, Cu 40%)

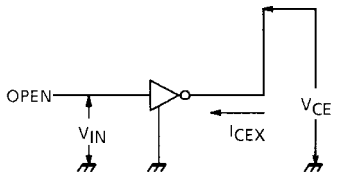
ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

CHARACTERISTIC		SYMBOL	TEST CIR−CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CE} = 35V, 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 (Note 1)	—	—	0.8	
DC Current Transfer Ration		h_{FE}	2	V_{CE} = 10 V, I_C = 10 mA	50	—	—	
Input Voltage	TD62502FN	$V_{IN\ (ON)}$	3	I_{IN} = 1 mA, I_C = 10 mA	13	17	23	V
	TD62503FN				2.4	3.4	4.2	
	TD62504FN				7.5	11.5	15	
Turn−On Delay		t_{ON}	4	V_{OUT} = 35 V, R_L = 220Ω C_L = 15 pF	—	50	—	ns
Turn−Off Delay		t_{OFF}			—	200	—	

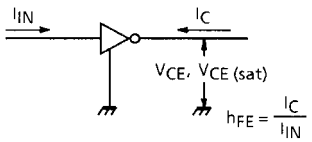
Note 1: Except TD62502FN

TEST CIRCUIT

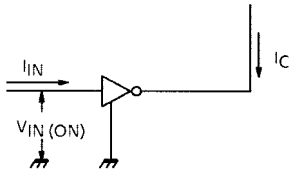
1. I_{CEX}



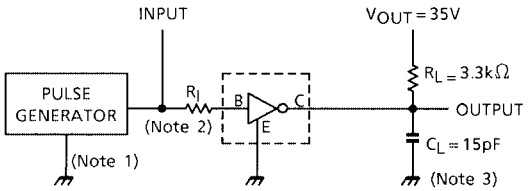
2. h_{FE}, $V_{CE\ (sat)}$

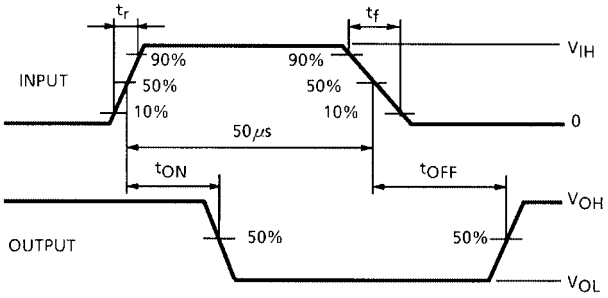


3. $V_{IN\ (ON)}$



4. t_{ON}, t_{OFF}





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

Note 2: See below

INPUT CONDITION

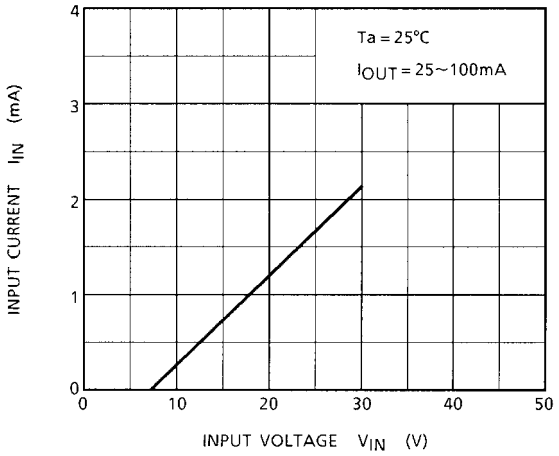
TYPE NUMBER	R_I	V_{IH}
TD62502FN	0 Ω	15 V
TD62503FN	0 Ω	3 V
TD62504FN	0 Ω	10 V

Note 3: C_L includes probe and jig capacitance

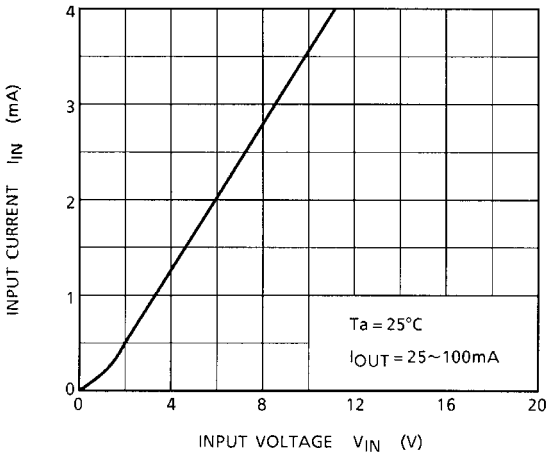
PRECAUTIONS for USING

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.

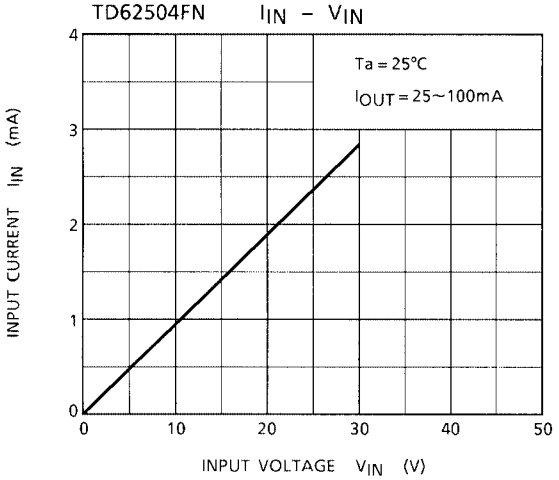
TD62502FN I_{IN} – V_{IN}



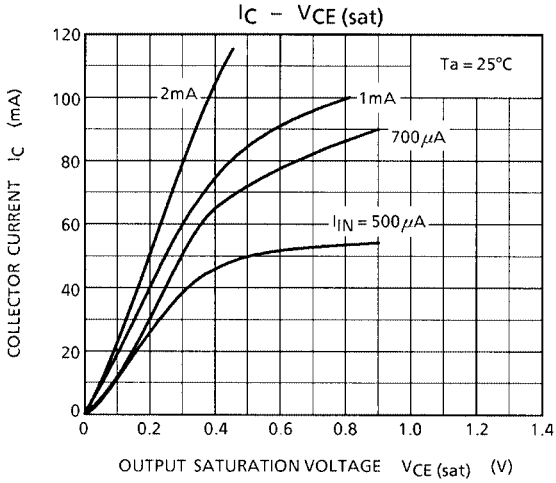
TD62503FN I_{IN} – V_{IN}



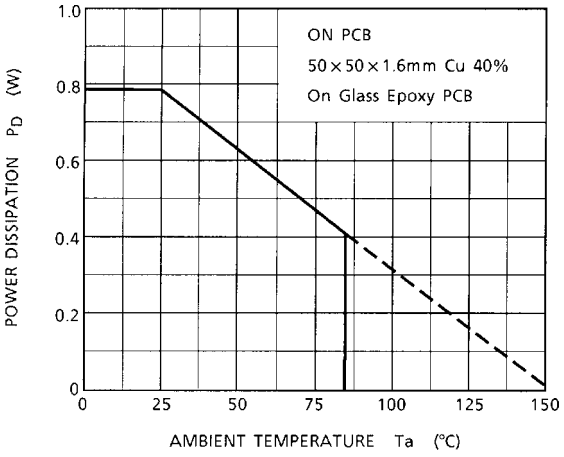
TD62504FN I_{IN} – V_{IN}



I_C – $V_{CE\ (sat)}$

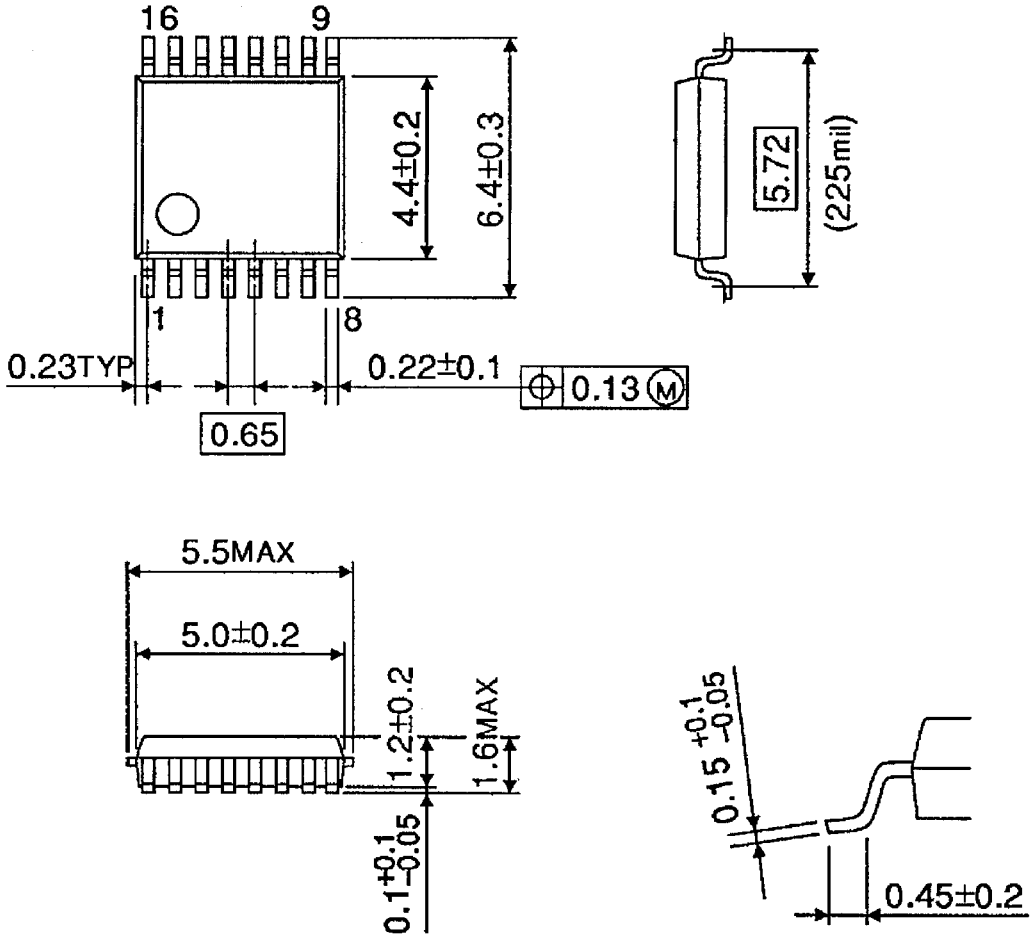


P_D – Ta



PACKAGE DIMENSIONS

SSOP16−P−225−0.65B Unit: mm



Weight: 0.07 g (Typ.)

RESTRICTIONS ON PRODUCT USE

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