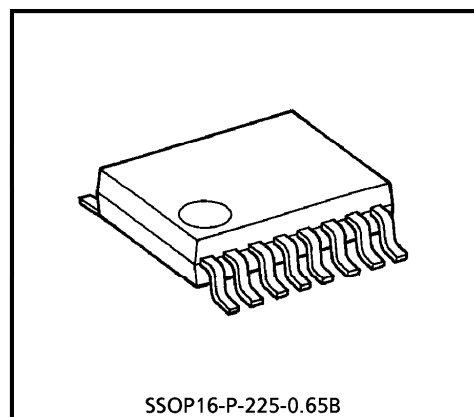


**TD62502FN, TD62503FN, TD62504FN**

**7ch SINGLE DRIVER : COMMON EMITTER**

TD62502, 503, 504FN : COMMON EMITTER

The TD62502FN, TD62503FN and TD62504FN are comprised of seven or five NPN Transistor Arrays. For proper operation, the substrate (SUB) must be connected to the most negative voltage. Applications include relay, hammer, Lamp and display (LED) drivers.



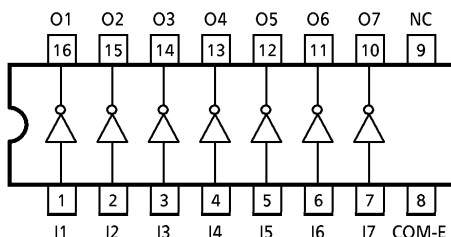
SSOP16-P-225-0.65B

Weight : 0.07g (Typ.)

**FEATURES**

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

**PIN CONNECTION (Top view)**



961001EBA2

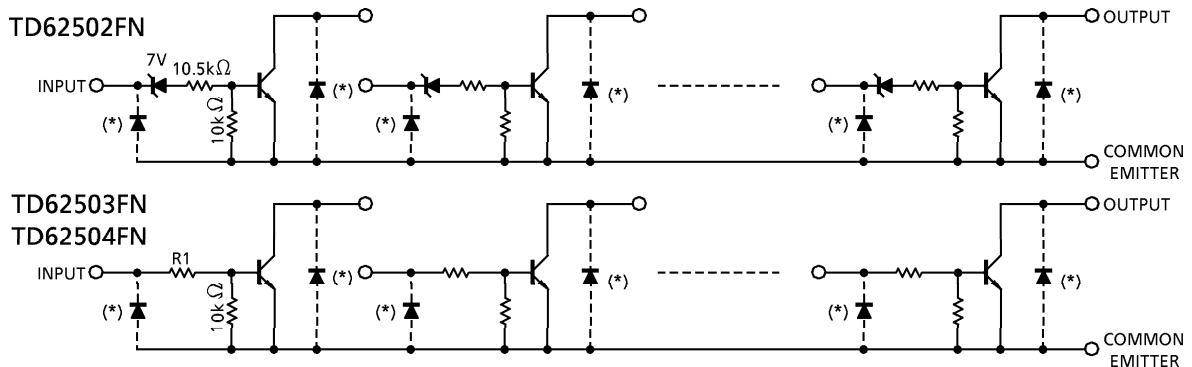
● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

● The products described in this document are subject to foreign exchange and foreign trade control laws.

● The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.

● The information contained herein is subject to change without notice.

**SCHEMATICS (Each driver)**



TD62503FN R1 = 2.7kΩ  
 TD62504FN R1 = 10.5kΩ

(\*) The input and output parasitic diodes cannot be used as clamp diodes.

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	V <sub>CEO</sub>	35	V
Collector-Base Voltage	V <sub>CB0</sub>	50	V
Collector Current	I <sub>C</sub>	200	mA / ch
Input Voltage	V <sub>IN</sub>	-0.5~30	V
Power Dissipation	P <sub>D</sub> (Note 1)	0.78	W
Operating Temperature	T <sub>opr</sub>	-40~85	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

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

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Collector-Emitter Voltage	V <sub>CEO</sub>		0	—	35	V
Collector-Base Voltage	V <sub>CB0</sub>		0	—	50	V
Collector Current	I <sub>C</sub>		0	—	150	mA / ch
Input Voltage	V <sub>IN</sub>		0	—	25	V
Power Dissipation	P <sub>D</sub> (Note 1)	On PCB	—	—	0.325	W

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

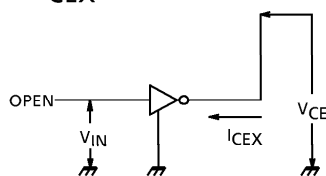
**ELECTRICAL CHARACTERISTICS** (Ta = 25°C Unless otherwise noted)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current	ICEX	1	V <sub>CE</sub> = 35V, V <sub>IN</sub> = 0V	—	—	10	μA
Collector-Emitter Saturation Voltage	V <sub>CE (sat)</sub>	2	I <sub>IN</sub> = 1mA, I <sub>C</sub> = 10mA	—	—	0.2	V
			I <sub>IN</sub> = 3mA, I <sub>C</sub> = 150mA (Note 1)	—	—	0.8	
DC Current Transfer Ration	h <sub>FE</sub>	2	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA	50	—	—	
Input Voltage	V <sub>IN (ON)</sub>	3	I <sub>IN</sub> = 1mA, I <sub>C</sub> = 10mA	13	17	23	V
				2.4	3.4	4.2	
				7.5	11.5	15	
Turn-On Delay	t <sub>ON</sub>	4	V <sub>OUT</sub> = 35V, R <sub>L</sub> = 220Ω C <sub>L</sub> = 15pF	—	50	—	ns
Turn-Off Delay	t <sub>OFF</sub>			—	200	—	

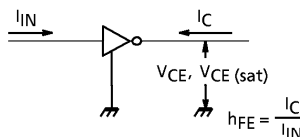
(Note 1) Except TD62502FN

**TEST CIRCUIT**

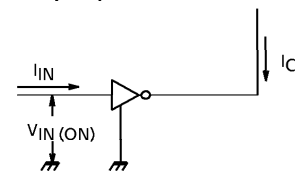
1. I<sub>CEX</sub>



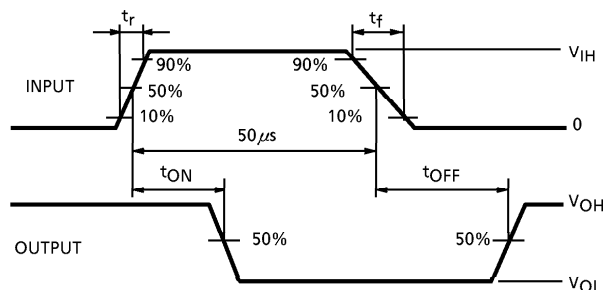
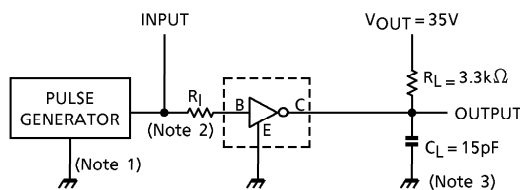
2. h<sub>FE</sub>, V<sub>CE (sat)</sub>



3. V<sub>IN (ON)</sub>



4. t<sub>ON</sub>, t<sub>OFF</sub>



(Note 1) Pulse Width 50μs, Duty Cycle 10%  
Output Impedance 50Ω, tr ≤ 5ns, tf ≤ 10ns

(Note 2) See below

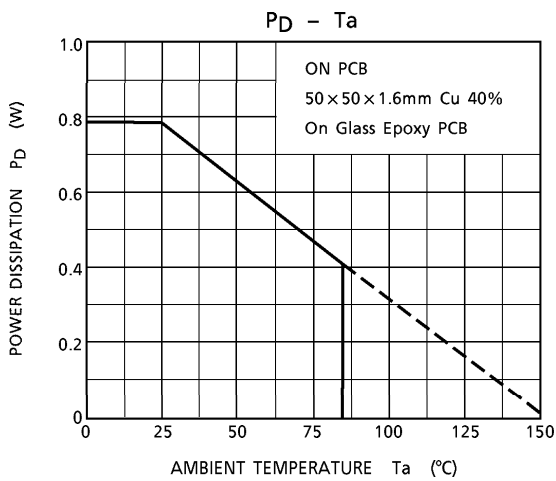
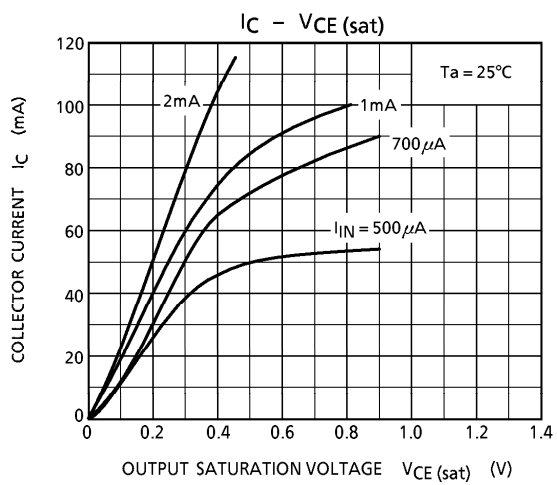
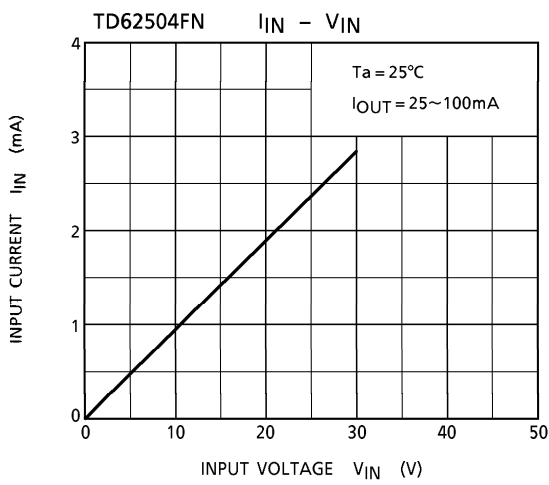
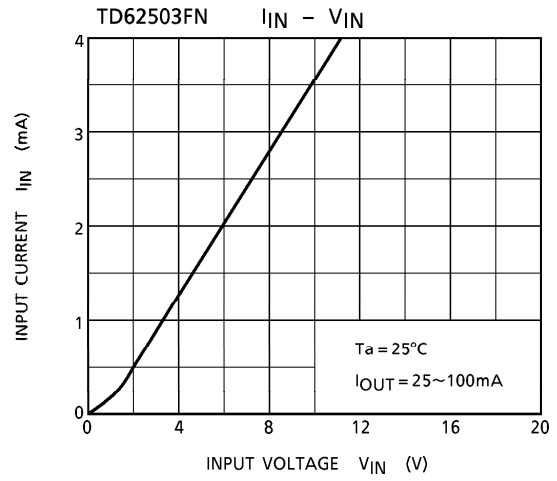
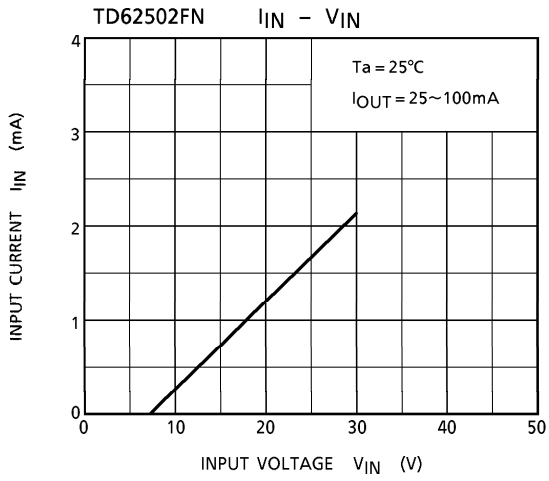
**INPUT CONDITION**

TYPE NUMBER	R <sub>I</sub>	V <sub>IH</sub>
TD62502FN	0Ω	15V
TD62503FN	0Ω	3V
TD62504FN	0Ω	10V

(Note 3) C<sub>L</sub> includes probe and jig capacitance

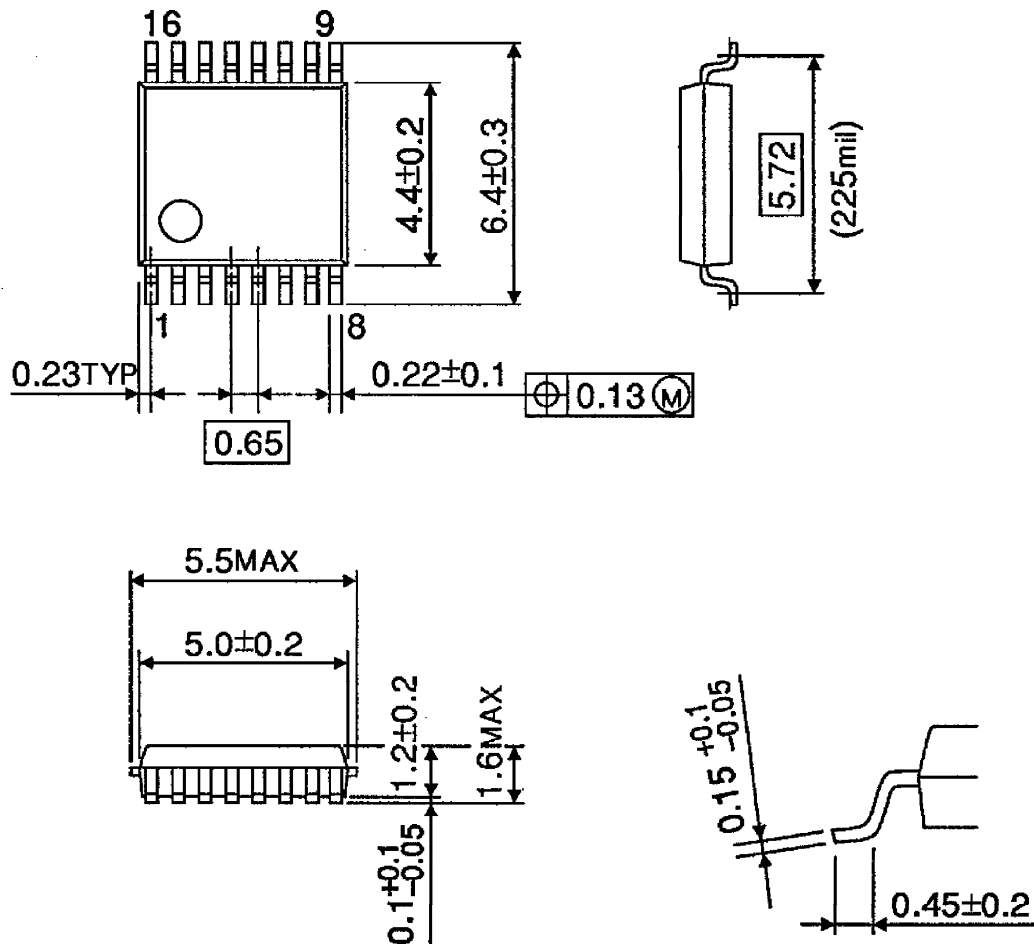
**PRECAUTIONS for USING**

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



**OUTLINE DRAWING**  
SSOP16-P-225-0.65B

Unit : mm



Weight : 0.07g (Typ.)