

## TD62502FNG,TD62503FNG,TD62504FNG

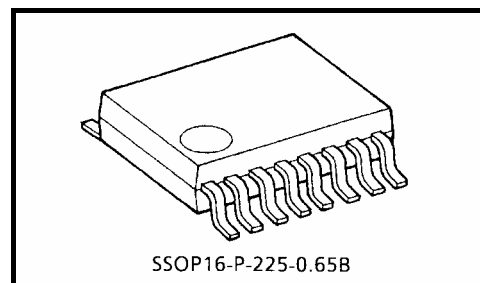
7ch Single Driver: Common Emitter

### TD62502, 503, 504FN: Common Emitter

The TD62502FNG, TD62503FNG and TD62504FNG are comprised of seven or five NPN Transistor Arrays. Applications include relay, hammer, Lamp and display (LED) drivers.

### Features

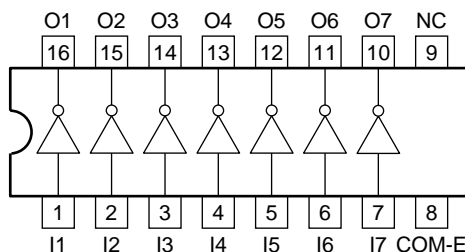
- Output current (single output) 200 mA max
- High sustaining voltage output 35 V min
- Inputs compatible with various types of logic.
- TD62502FNG:  $R_{IN} = 10.5 \text{ k}\Omega + 7 \text{ V}$   
Zener diode... 14 V to 25 V P-MOS
- TD62503FNG:  $R_{IN} = 2.7 \text{ k}\Omega$ ... TTL, 5 V C-MOS
- TD62504FNG:  $R_{IN} = 10.5 \text{ k}\Omega$ ... 6 V to 15 V P-MOS, C-MOS
- Package type: SSOP-16 pin (0.65 mm pitch)



SSOP16-P-225-0.65B

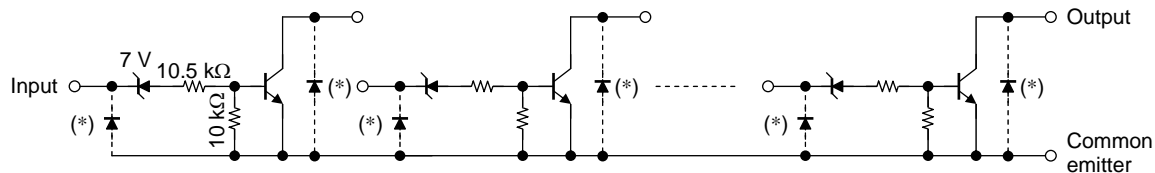
Weight: 0.07 g (typ.)

### Pin Connection (top view)



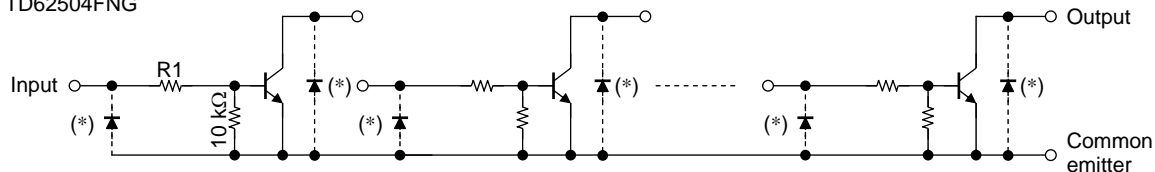
### Schematics (each driver)

TD62502FNG



TD62503FNG

TD62504FNG



TD62503FNG  $R_1 = 2.7 \text{ k}\Omega$

TD62504FNG  $R_1 = 10.5 \text{ k}\Omega$

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

## Maximum Ratings (Ta = 25°C unless otherwise noted)

Characteristics	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 to 30	V
Power dissipation	$P_D$ (Note 1)	0.78	W
Operating temperature	$T_{opr}$	−40 to 85	°C
Storage temperature	$T_{stg}$	−55 to 150	°C

Note 1: On glass epoxy PCB (50 × 50 × 1.6 mm, Cu 40%)

## Recommended Operating Conditions (Ta = −40 to 85°C)

Characteristics	Symbol	Test 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%)

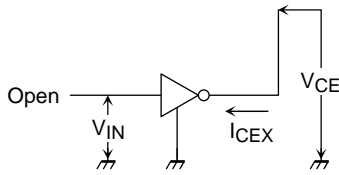
## Electrical Characteristics (Ta = 25°C unless otherwise noted)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output leakage current	$I_{CEX}$	1	$V_{CE} = 35V, V_{IN} = 0V$	—	—	10	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	2	$I_{IN} = 1mA, I_C = 10mA$	—	—	0.2	V
			$I_{IN} = 3mA, I_C = 150mA$ (Note 1)	—	—	0.8	
DC current transfer ration	$h_{FE}$	2	$V_{CE} = 10V, I_C = 10mA$	50	—	—	
Input voltage (Output on)	TD62502FNG	3	$I_{IN} = 1mA, I_C = 10mA$	14.0	—	25	V
	TD62503FNG			2.4	—	25	
	TD62504FNG			7.0	—	25	
Input voltage (Output off)	TD62502FNG	3	$I_C \leq 10\mu A$	0	—	7.0	V
	TD62503FNG			0	—	0.4	
	TD62504FNG			0	—	0.8	
Turn-on delay	$t_{ON}$	4	$V_{OUT} = 35V, R_L = 220\Omega$ $C_L = 15pF$	—	50	—	ns
Turn-off delay	$t_{OFF}$			—	200	—	

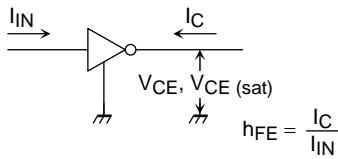
Note 1: Except TD62502FNG

Test Circuit

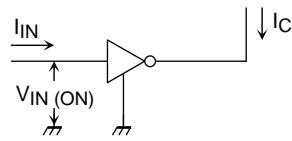
1.  $I_{CEX}$



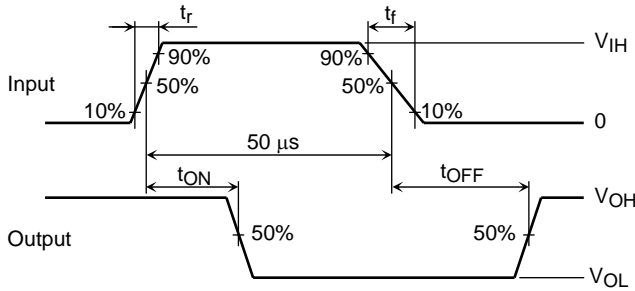
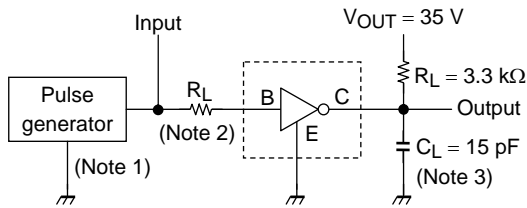
2.  $h_{FE}$ ,  $V_{CE(sat)}$



3.  $V_{IN(ON)}$



4.  $t_{ON}$ ,  $t_{OFF}$



Note 1: Pulse width 50  $\mu$ s, duty cycle 10%  
Output impedance 50  $\Omega$ ,  $t_r \leq 5$  ns,  $t_f \leq 10$  ns

Note 2: See below

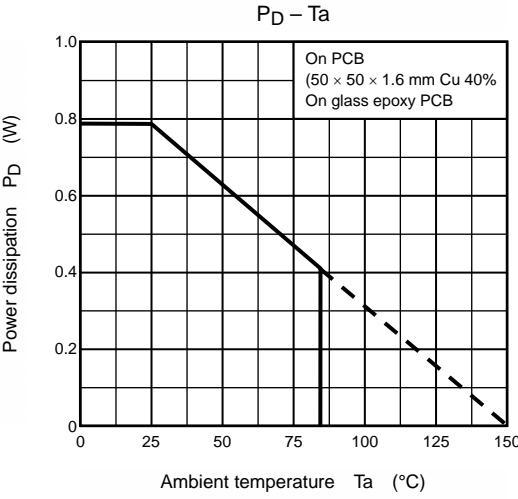
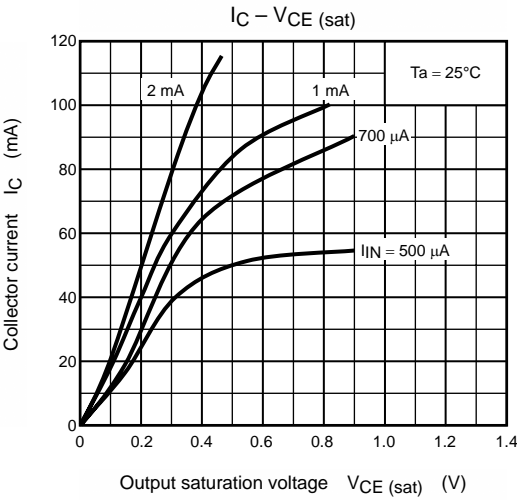
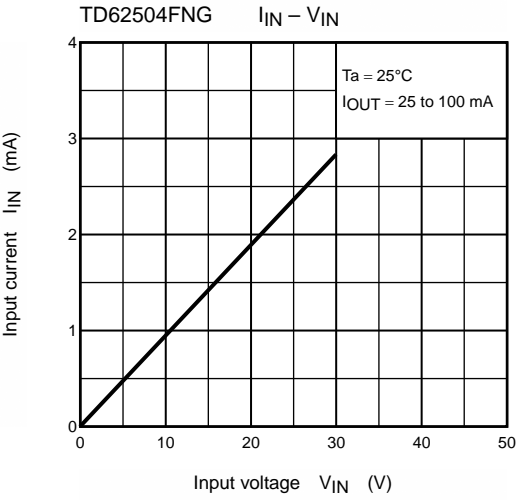
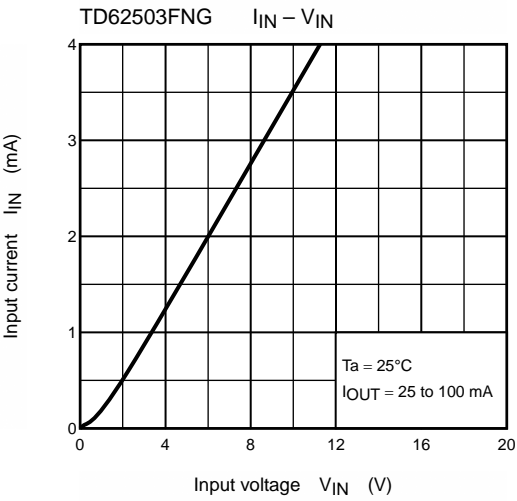
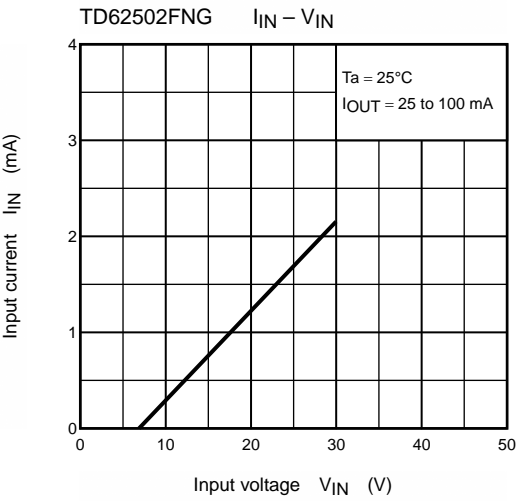
Input Condition

Type Number	$R_I$	$V_{IH}$
TD62502FN	0 $\Omega$	15 V
TD62503FN	0 $\Omega$	3 V
TD62504FN	0 $\Omega$	10 V

Note 3:  $C_L$  includes probe and jig capacitance

Precautions for Using

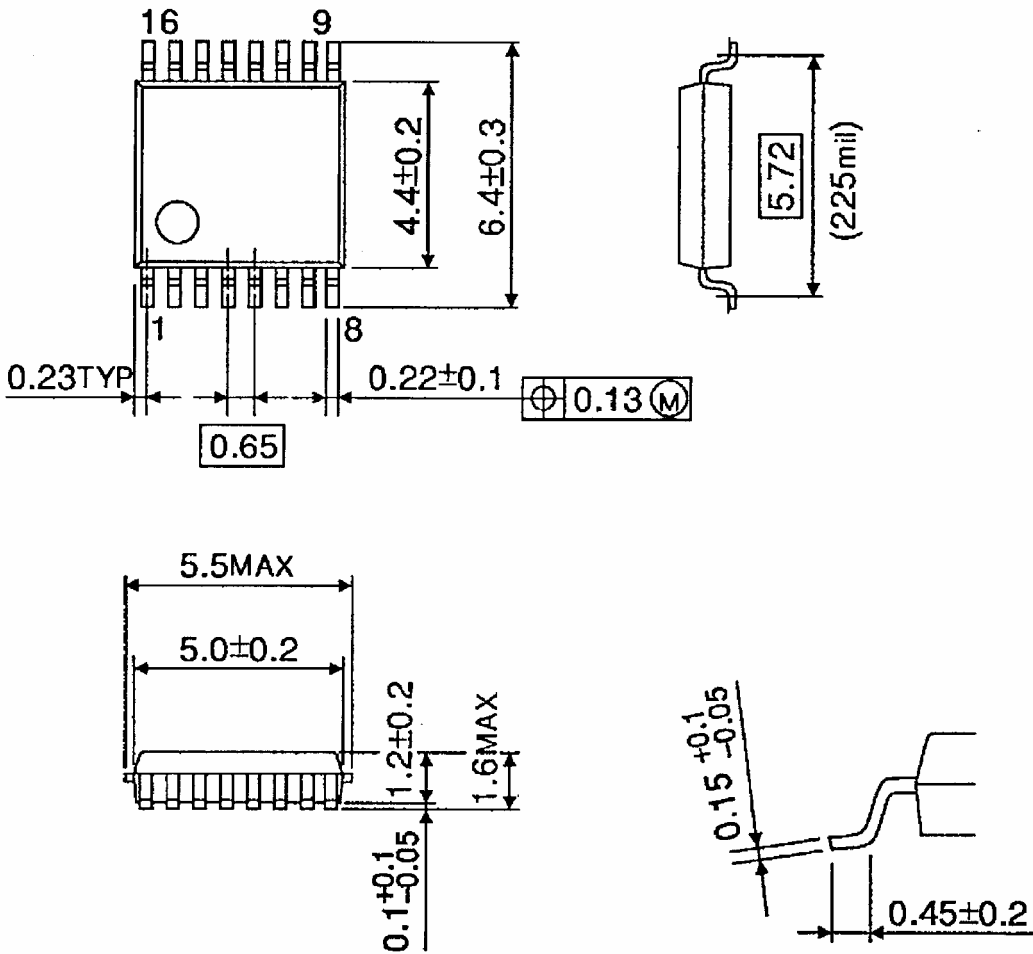
This IC does not integrate protection circuits such as overcurrent and overvoltage protectors. Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC. Utmost care is necessary in the design of 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

SSOP16-P-225-0.65B

Unit : mm



Weight: 0.07 g (typ.)

About solderability, following conditions were confirmed

- Solderability

- (1) Use of Sn-63Pb solder Bath

- solder bath temperature = 230°C
    - dipping time = 5 seconds
    - the number of times = once
    - use of R-type flux

- (2) Use of Sn-3.0Ag-0.5Cu solder Bath

- solder bath temperature = 245°C
    - dipping time = 5 seconds
    - the number of times = once
    - use of R-type flux

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