

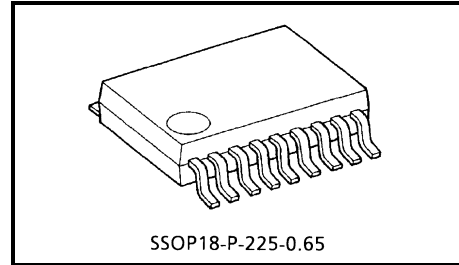
TD62381FNG

8ch Low Saturation Sink Driver

The TD62381FNG is comprised of eight NPN low saturation drivers. This device are specifically designed for multiplexed eight driving of eight digit common-cathode LED and also can be employed as a sink driver for multiplexed LED displays using with the TD62785FN at standard supply voltage, 5 V.

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

The suffix (G) appended to the part number represents a Lead (Pb)-Free product.

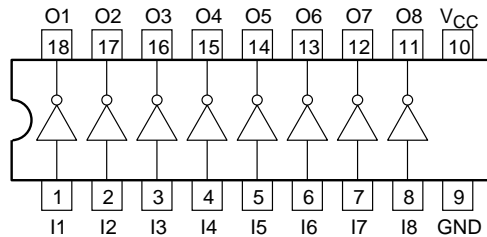


Weight: 0.09 g (typ.)

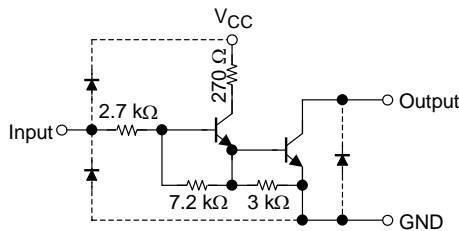
Features

- Package type: SSOP18 pin
- Low saturation output: $V_{CE(sat)} = 0.9\text{ V (max)}$
@ $I_{OUT} = 500\text{ mA}$
- Output rating: $V_{OUT} = 15\text{ V (min)}$
- Input compatible with TTL and 5 V CMOS
- Low level active inputs
- Standard supply voltage

Pin Assignment (top view)



Schematics (each driver)



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

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	V _{CC}	7	V
Output sustaining voltage	V _{CE (SUS)}	15	V
Output current	I _{OUT}	500	mA/ch
Input voltage	V _{IN}	7	V
Input current	I _{IN}	5	mA
Power dissipation	P _{D (Note)}	0.96	W
Operating temperature	T _{opr}	-40~85	°C
Storage temperature	T _{stg}	-55~150	°C

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

Recommended Operating Conditions (Ta = -40~85°C)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit	
Supply voltage	V _{CC}		4.5	5.0	5.5	V	
Output voltage	V _{OUT}		—	—	12	V	
Output current	I _{OUT (Note)}	DC 1 Circuit, Ta = 25°C	0	—	400	mA/ch	
		T _{pw} = 25 ms, 8 Circuit on Ta = 85°C, T _j = 120°C	Duty = 10%	0	—		350
			Duty = 20%	0	—		215
Input voltage	V _{IN}		0	—	V _{CC}	V	
	Output on	V _{IN (ON)}	2.4	—	V _{CC}		
	Output off	V _{IN (OFF)}	0	—	0.4		
Power dissipation	P _{D (Note)}		—	—	0.4	W	

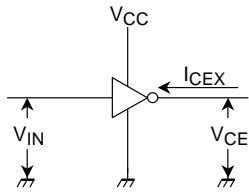
Note: On Glass Epoxy PCB (50 × 50 × 1.6 mm Cu 40%).

Electrical Characteristics (Ta = 25°C, V_{CC} = 5 V)

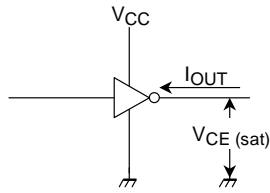
Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output leakage current	I _{CEX}	1	V _{IN} = OPEN V _{OUT} = 12 V, Ta = 85°C	—	—	100	μA
Output saturation voltage	V _{CE (sat)}	2	I _{OUT} = 500 mA	—	—	0.9	V
			I _{OUT} = 350 mA	—	—	0.7	
Input current	I _{IN (ON)}	3	V _{CC} = 5 V, V _{IN} = 2.4 V	—	0.4	0.7	mA
Input voltage (Output on)	V _{IN (ON)}	—	V _{CC} = 5 V	—	—	2.4	V
Supply current	I _{CC}	4	V _{CC} = V _{IN} = 5 V	—	—	17	mA/ch
Turn-on delay	t _{ON}	5	V _{OUT} = 10 V, R _L = 25 Ω C _L = 15 pF	—	0.1	—	μs
Turn-off delay	t _{OFF}			—	1.2	—	

Test Circuit

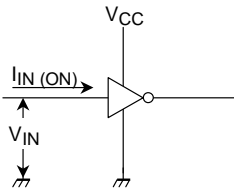
1. I_{CEX}



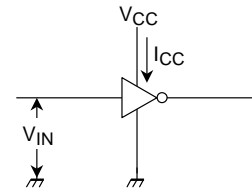
2. $V_{CE(sat)}$



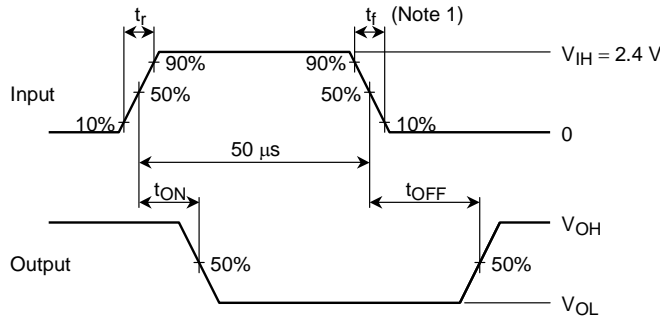
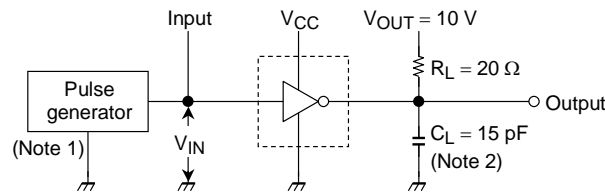
3. $I_{IN(ON)}$



4. I_{CC}



5. t_{ON}, t_{OFF}

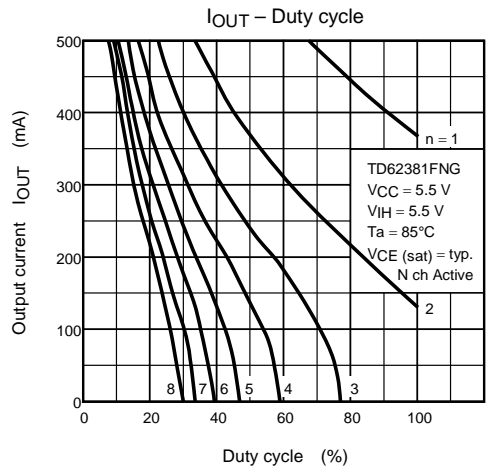
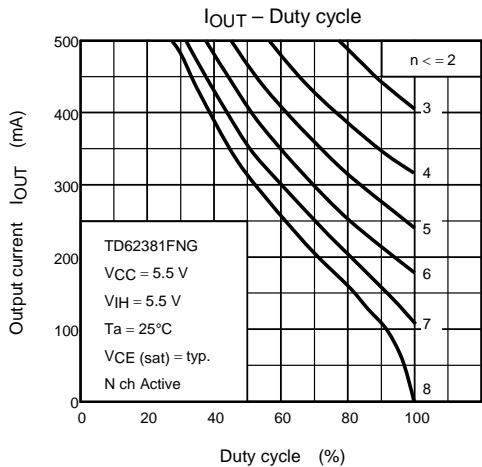
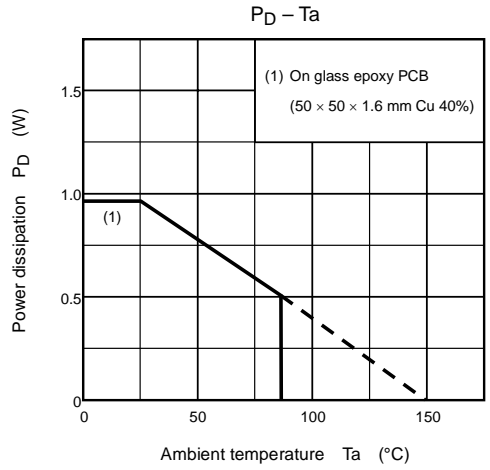
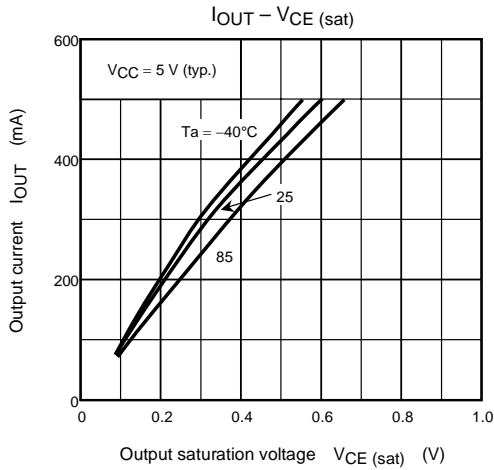
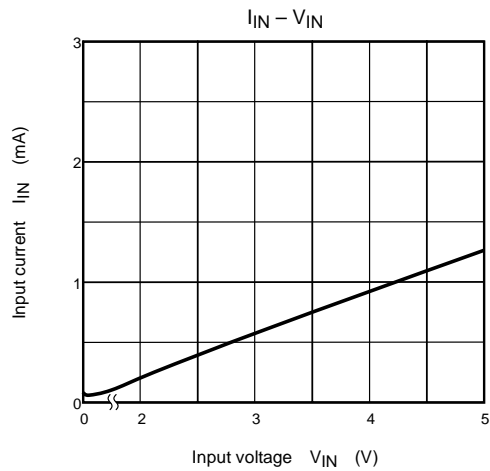
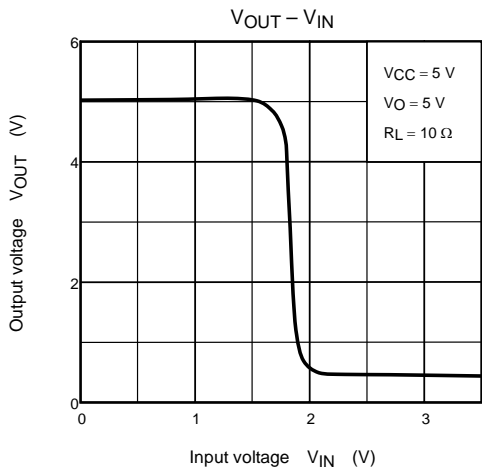


Note 1: Pulse width 50 μ s, Duty cycle 10%
Output impedance 50 Ω , $t_r \leq 5$ ns, $t_f \leq 10$ ns

Note 2: C_L includes probe and jig capacitance.

Precautions for Using

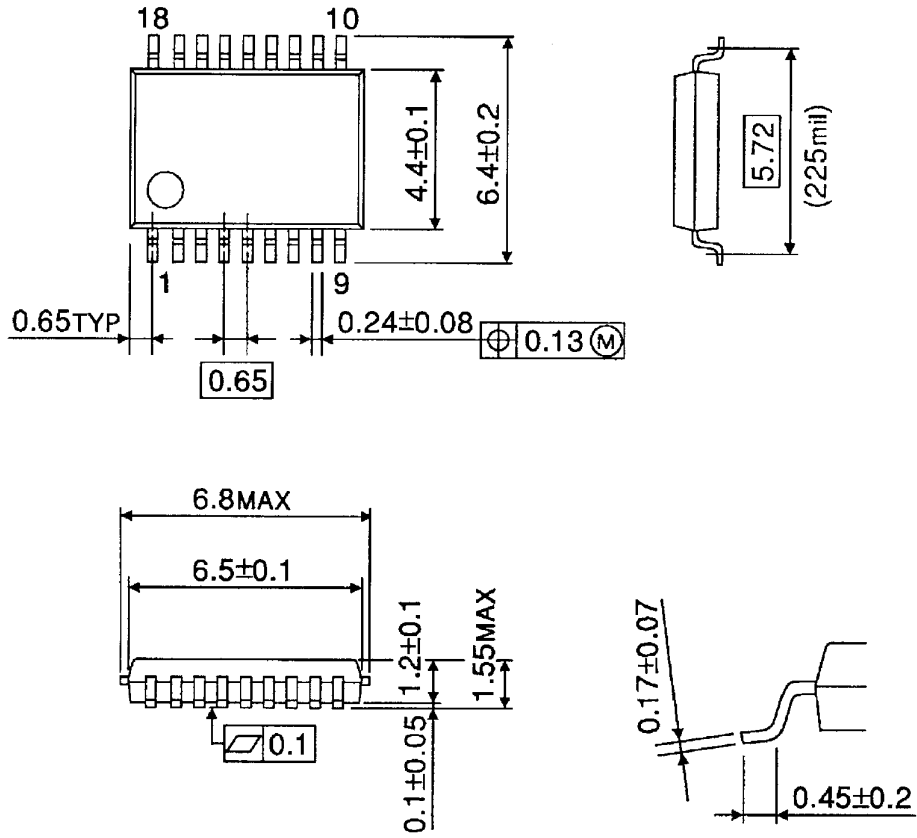
This IC does not include built-in protection circuits for excess current or overvoltage. If this IC is subjected to excess current or overvoltage, it may be destroyed. Hence, the utmost care must be taken when systems which incorporate this IC are designed. Utmost care is necessary in the design of the output line, VCC, and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



Package Dimensions

SSOP18-P-225-0.65

Unit : mm



Weight: 0.09 g (typ.)

Notes on Contents**1. Schematics**

The schematics may be simplified or some parts of them may be omitted for explanatory purposes.

2. Absolute Maximum Ratings

The absolute maximum ratings of a semiconductor device are a set of specified parameter values that must not be exceeded during operation, even for an instant.

If any of these ratings are exceeded during operation, the electrical characteristics of the device may be irreparably altered and the reliability and lifetime of the device can no longer be guaranteed.

Moreover, any exceeding of the ratings during operation may cause breakdown, damage and/or degradation in other equipment. Applications using the device should be designed so that no absolute maximum rating will ever be exceeded under any operating conditions.

Before using, creating and/or producing designs, refer to and comply with the precautions and conditions set forth in this document.

3. Recommended Operating Conditions

The values of the conditions are applied within the range of the operating temperature and not guaranteed.

4. AC Characteristics

AC characteristics that mean turn-on and turn-off time are targeted design values and not guaranteed.

5. Application Circuits

The application circuits shown in this document are provided for reference purposes only. Thorough evaluation is required, especially in the phase of mass production design.

In furnishing these examples of application circuits, Toshiba does not grant the use of any industrial property rights.

6. Graphics Characteristics

Graphics characteristics are reference ones and not guaranteed.

Handling of the IC

Ensure that the product is installed correctly to prevent breakdown, damage and/or degradation in the product or equipment.

About solderability, following conditions were confirmed

- Solderability
 - (1) Use of Sn-37Pb 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

RESTRICTIONS ON PRODUCT USE

060116EBA

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