

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

# TD62785P, TD62785F

## 8CH SOURCE DRIVER

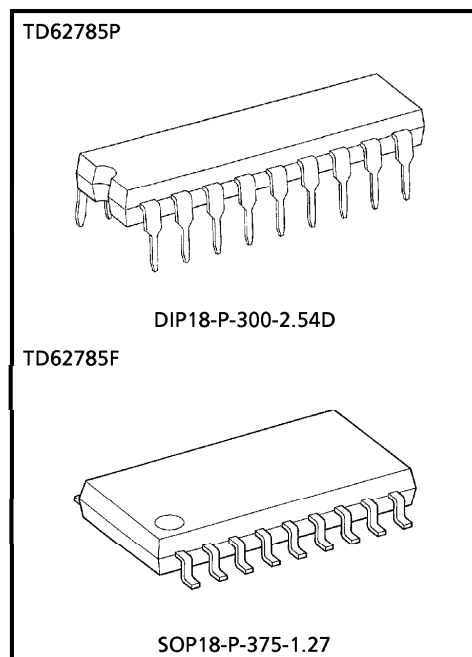
The TD62785P, TD62785F are eight Channel Non-Inverting Source current transistor Array.

All units feature input pull-up resistors and output pull-down resistors. These device are specifically designed for multiplexed digit driving of eight digit common-anode LED and also can be employed as a source drivers for multiplexed LED displays using with the TD62381P, TD62381F at standard supply voltage, 5V.

Applications include relay, hammer and lamp drivers.

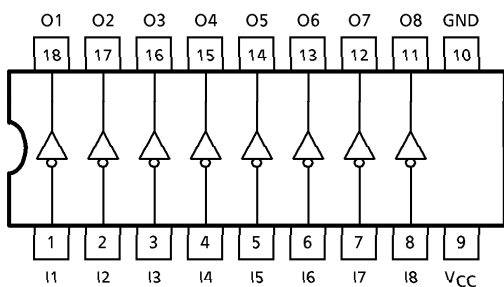
### FEATURES

- Low saturation voltage  $V_{CE(sat)} = 1.35V \text{ MAX.}$   
@ $I_{OUT} = -500mA$
- Output current (single output)  $I_{OUT} = -500mA \text{ MIN.}$
- Input pull-up resistor  $R_{IN} = 5.6k\Omega \text{ Typ.}$
- Output pull-down resistor  $R_{IN} = 15k\Omega \text{ Typ.}$
- Low level active inputs
- Package Type-P : DIP-18pin
- Package Type-F : SOP-18pin

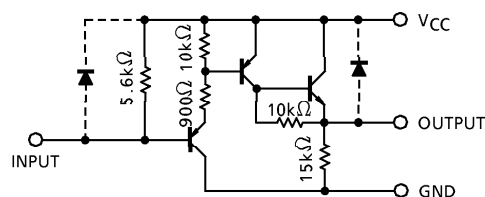


Weight  
 DIP18-P-300-2.54D : 1.47g (Typ.)  
 SOP18-P-375-1.27 : 0.41g (Typ.)

### PIN CONNECTION (TOP VIEW)



### SCHEMATICS (EACH DRIVER)



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

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**MAXIMUM RATING (Ta = 25°C)**

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V <sub>CC</sub>	7.0	V
Output Voltage		V <sub>OUT</sub>	V <sub>CC</sub>	V
Output Current		I <sub>OUT</sub>	- 500	mA / ch
Input Voltage		V <sub>IN</sub>	V <sub>CC</sub>	V
Input Current		I <sub>IN</sub>	- 10	mA
Power Dissipation	P	P <sub>D</sub> (Note 1)	1.47	W
	F		0.96	
Operating Temperature		T <sub>opr</sub>	- 40~85	°C
Storage Temperature		T <sub>stg</sub>	- 55~150	°C

(Note 1) Delated above 25°C in the proportion of 11.7mW/°C (P-Type), 7.7mW/°C (F-Type).

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

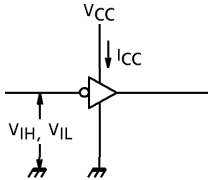
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Voltage		V <sub>CC</sub>	—	4.5	5.0	5.5	V	
Output Voltage		V <sub>OUT</sub>	—	0	—	- V <sub>CC</sub>	V	
Output Current	P	I <sub>OUT</sub>	DC 1 Circuit, Ta = 25°C	0	—	- 400	mA / ch	
				0	—	- 400		
	P		T <sub>pw</sub> ≤ 25ms	Duty = 10%	0	—		- 376
			8 Circuits On Ta = 85°C T <sub>j</sub> = 120°C	Duty = 50%	0	—		- 67
	F			Duty = 10%	0	—		- 248
				Duty = 50%	0	—		- 38
Input Voltage	V <sub>IN</sub>			—	0	—	V <sub>CC</sub>	V
	Output On	V <sub>IN (ON)</sub>	—	0	—	0.8	V	
	Output Off	V <sub>IN (OFF)</sub>	—	V <sub>CC</sub> - 1.0	—	V <sub>CC</sub>	V	
Power Dissipation	P	P <sub>D</sub>	—	—	—	0.52	W	
	F		—	—	—	0.35		

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

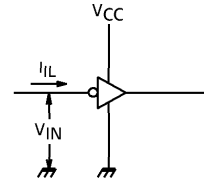
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Input Voltage	"H" Level	V <sub>IH</sub>	1	—	V <sub>CC</sub> - 1.0	—	—	V	
	"L" Level	V <sub>IL</sub>		—	—	—	0.8		
Input Current	"L" Level	I <sub>IL</sub>	2	V <sub>CC</sub> = 5.5V, V <sub>IN</sub> = 0.8V	—	- 1.5	- 2.3	mA	
Input Pull-Up Resistor		R <sub>IP</sub>	—	—	—	5.6	—	kΩ	
Output Pull-Down Resistor		R <sub>OP</sub>	—	—	—	15	—	kΩ	
Output Voltage	"H" Level	V <sub>OH</sub>	3	V <sub>CC</sub> = 0V GND = - 4.5V V <sub>IN</sub> = GND	I <sub>OUT</sub> = - 500mA	—	—	V <sub>CC</sub> - 1.35	V
				I <sub>OUT</sub> = - 350mA	—	—	V <sub>CC</sub> - 1.30		
Supply Current		I <sub>CC (ON)</sub>	1	V <sub>CC</sub> = 55V, V <sub>IN</sub> = GND	—	—	12.5	mA / ch	
		I <sub>CC (OFF)</sub>		V <sub>CC</sub> = 55V, V <sub>IN</sub> = OPEN	—	—	10	μA	
Turn-On Delay		t <sub>ON</sub>	4	V <sub>CC</sub> = 5V, R <sub>L</sub> = 16Ω C <sub>L</sub> = 15pF	—	0.1	—	μs	
Turn-Off Delay		t <sub>OFF</sub>			—	3.5	—	μs	

**TEST CIRCUIT**

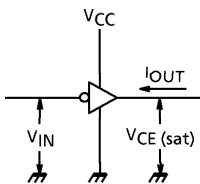
1.  $V_{IH}$ ,  $V_{IL}$ ,  $I_{CC}$



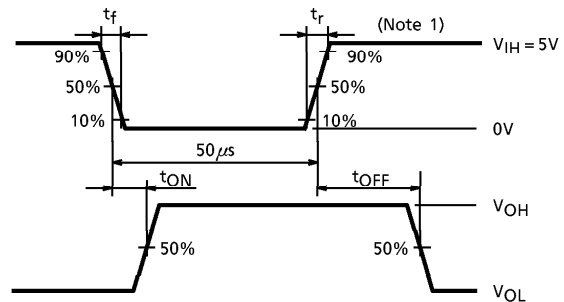
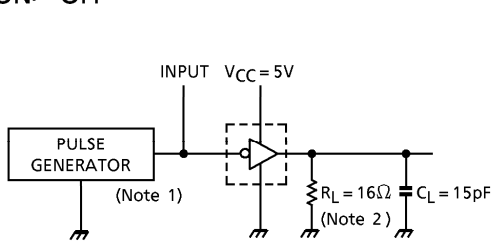
2.  $I_{IL}$



3.  $V_{CE(sat)}$



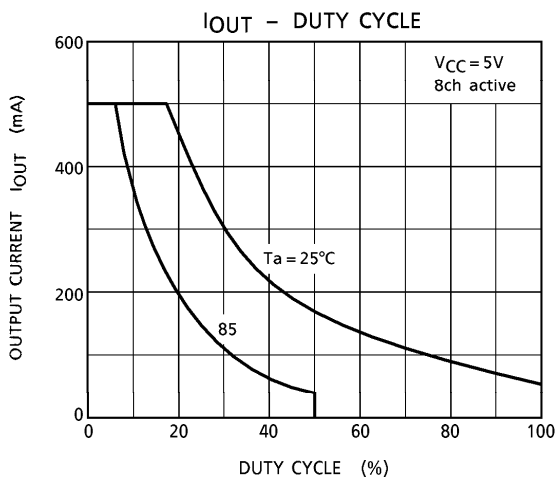
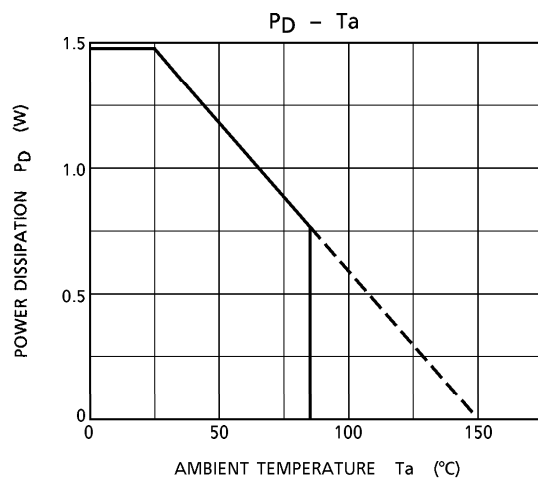
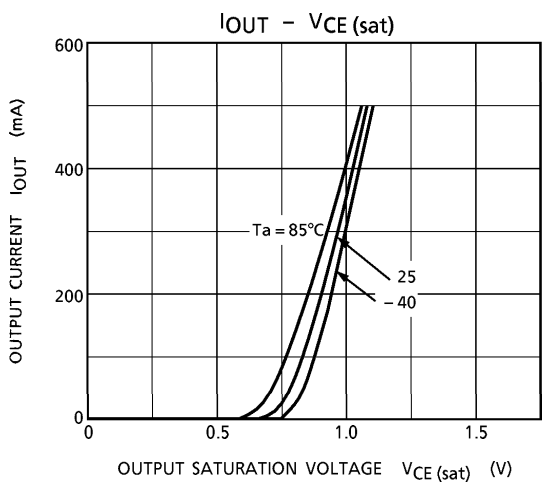
4.  $t_{ON}$ ,  $t_{OFF}$



- (Note 1) Pulse width  $50\mu s$ , duty cycle 10%  
Output impedance  $50\Omega$ ,  $t_r \leq 5ns$ ,  $t_f \leq 10ns$
- (Note 2)  $C_L$  includes probe and jig capacitance

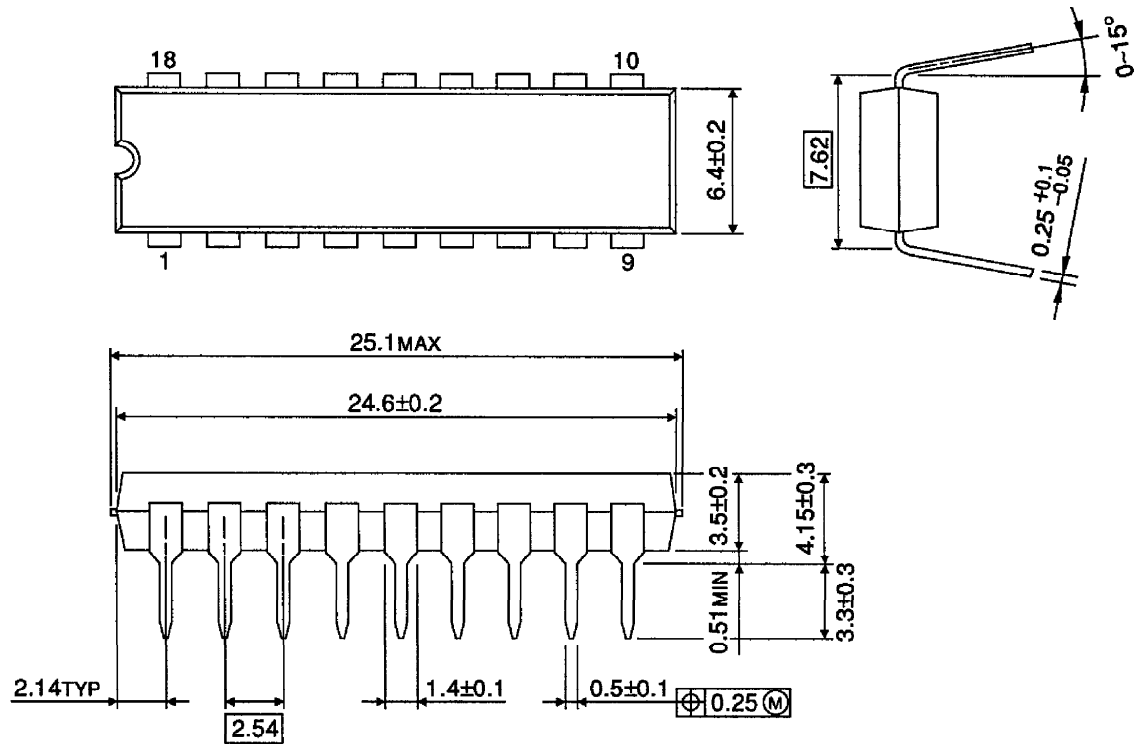
**PRECAUTIONS for USING**

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.



OUTLINE DRAWING  
DIP18-P-300-2.54D

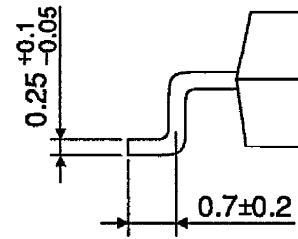
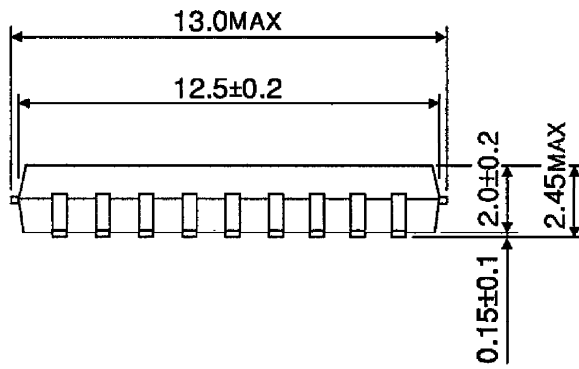
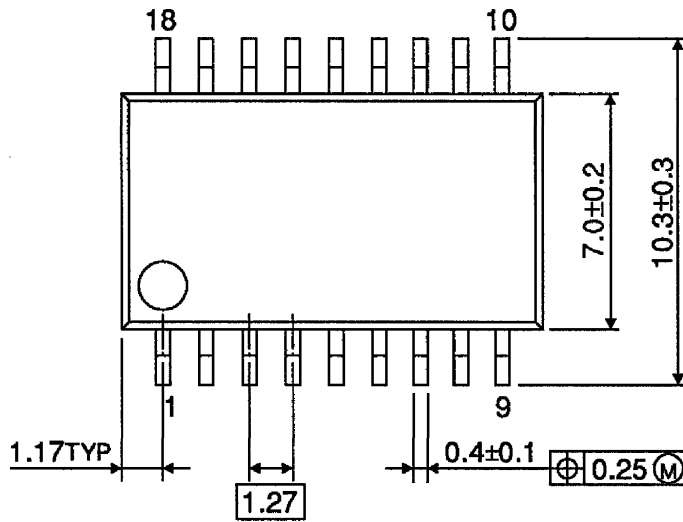
Unit : mm



Weight : 1.47g (Typ.)

OUTLINE DRAWING  
SOP18-P-375-1.27

Unit : mm



Weight : 0.41g (Typ.)