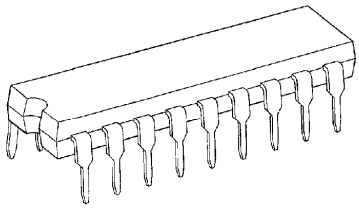
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62785P, TD62785F

8CH SOURCE DRIVER

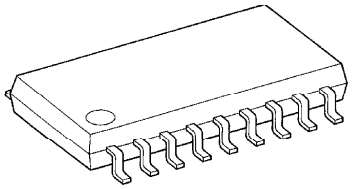
The TD62785P, TD62785F are eight Channel Non-Inverting Source current transistor Array.
All units feature input pull-up resistors and output pull-down resistors. These device are specifically designed for multiplexed digit driving of eight digit common-anode LED and also can be employed as a source drivers for multiplexed LED displays using with the TD62381P, TD62381F at standard supply voltage, 5V.
Applications include relay, hammer and lamp drivers.

TD62785P



DIP18-P-300-2.54D

TD62785F



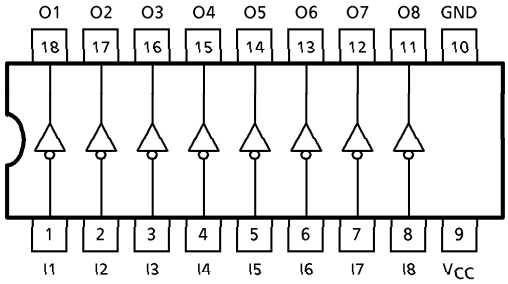
SOP18-P-375-1.27

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

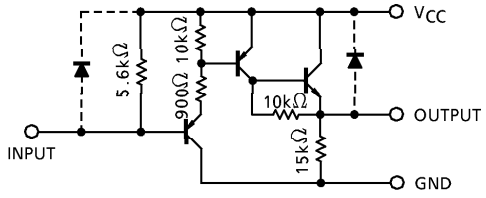
FEATURES

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

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

961001EBA2

MAXIMUM RATING (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	7.0	V
Output Voltage		V_{OUT}	V_{CC}	V
Output Current		I_{OUT}	− 500	mA / ch
Input Voltage		V_{IN}	V_{CC}	V
Input Current		I_{IN}	− 10	mA
Power Dissipation	P	P_D (Note 1)	1.47	W
	F		0.96	
Operating Temperature		T_{opr}	− 40~85	°C
Storage Temperature		T_{stg}	− 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)

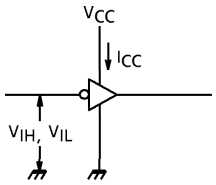
CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Supply Voltage		V_{CC}	—		4.5	5.0	5.5	V
Output Voltage		V_{OUT}	—		0	—	$-V_{CC}$	V
Output Current	P	I_{OUT}	DC 1 Circuit, Ta = 25°C		0	—	− 400	mA / ch
	F				0	—	− 400	
	P		$T_{pw} \leqq$ 25ms, 8 Circuits On, Ta = 85°C, T_j = 120°C	Duty = 10%	0	—	− 376	
				Duty = 50%	0	—	− 67	
	F			Duty = 10%	0	—	− 248	
				Duty = 50%	0	—	− 38	
Input Voltage		V_{IN}	—		0	—	V_{CC}	V
	Output On	$V_{IN (ON)}$	—		0	—	0.8	V
	Output Off	$V_{IN (OFF)}$	—		V_{CC} − 1.0	—	V_{CC}	
Power Dissipation	P	P_D	—		—	—	0.52	W
	F		—		—	—	0.35	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

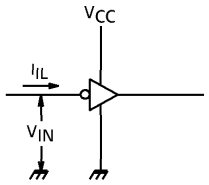
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Input Voltage	"H" Level	V_{IH}	1	—		V_{CC} − 1.0	—	—	V
	"L" Level	V_{IL}		—		—	—	0.8	
Input Current	"L" Level	I_{IL}	2	V_{CC} = 5.5V, V_{IN} = 0.8V		—	− 1.5	− 2.3	mA
Input Pull-Up Resistor		R_{IP}	—	—		—	5.6	—	kΩ
Output Pull-Down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

TEST CIRCUIT

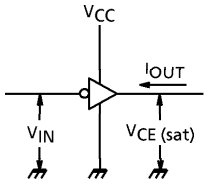
1. V_{IH}, V_{IL}, I_{CC}



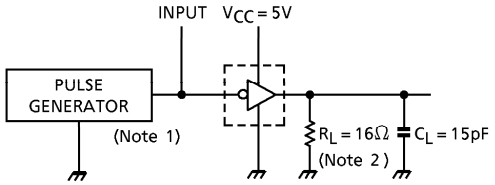
2. I_{IL}

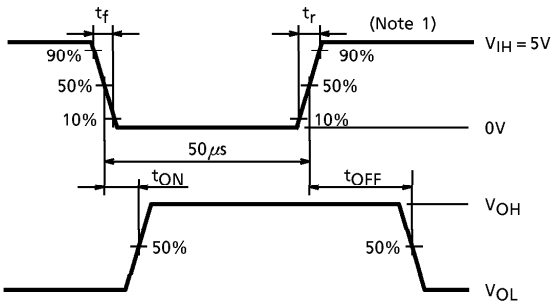


3. $V_{CE\ (sat)}$



4. t_{ON}, t_{OFF}



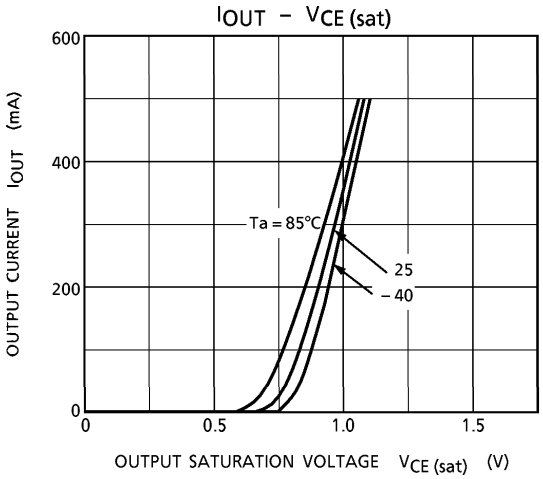


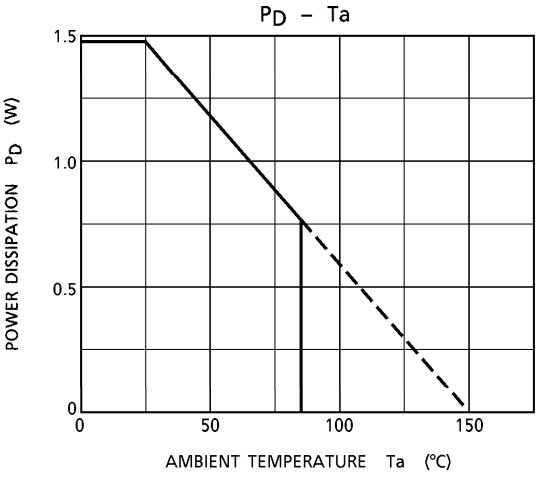
(Note 1) Pulse width 50μs, duty cycle 10%
Output impedance 50Ω, $t_r \leqq 5$ns, $t_f \leqq 10$ns

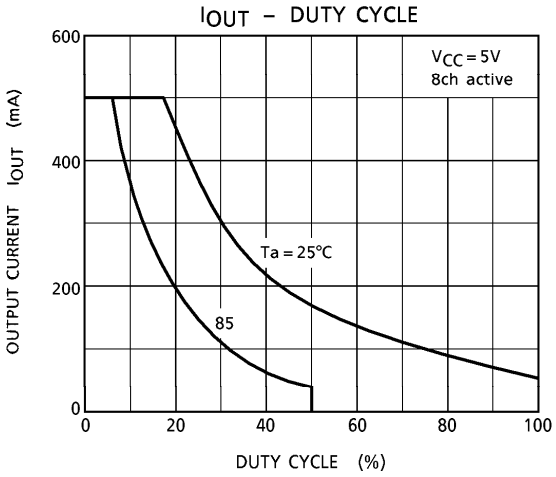
(Note 2) C_L includes probe and jig capacitance

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.


I_{OUT} – $V_{CE\ (sat)}$
OUTPUT CURRENT I_{OUT} (mA)
600
400
200
0
0
0.5
1.0
1.5
Ta = 85°C
25
– 40
OUTPUT SATURATION VOLTAGE $V_{CE\ (sat)}$ (V)

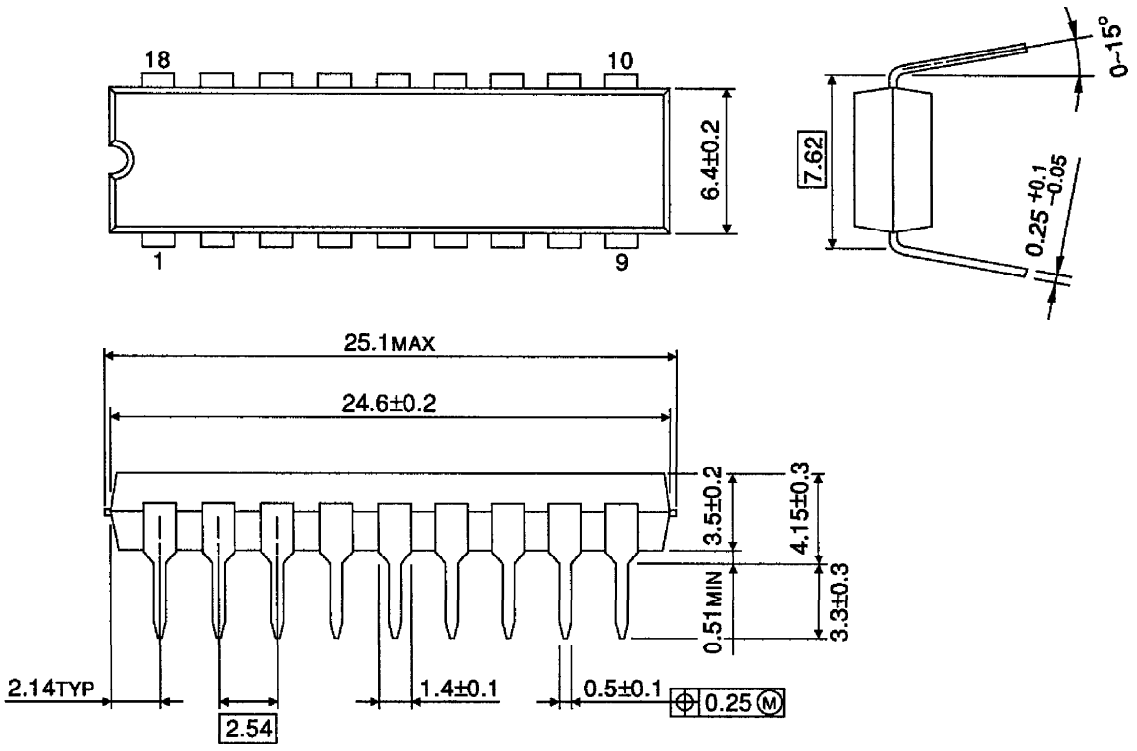

P_D – Ta
POWER DISSIPATION P_D (W)
1.5
1.0
0.5
0
0
50
100
150
AMBIENT TEMPERATURE Ta (°C)


I_{OUT} – DUTY CYCLE
OUTPUT CURRENT I_{OUT} (mA)
600
400
200
0
V_{CC} = 5V
8ch active
Ta = 25°C
85
0
20
40
60
80
100
DUTY CYCLE (%)

OUTLINE DRAWING

DIP18-P-300-2.54D

Unit : mm

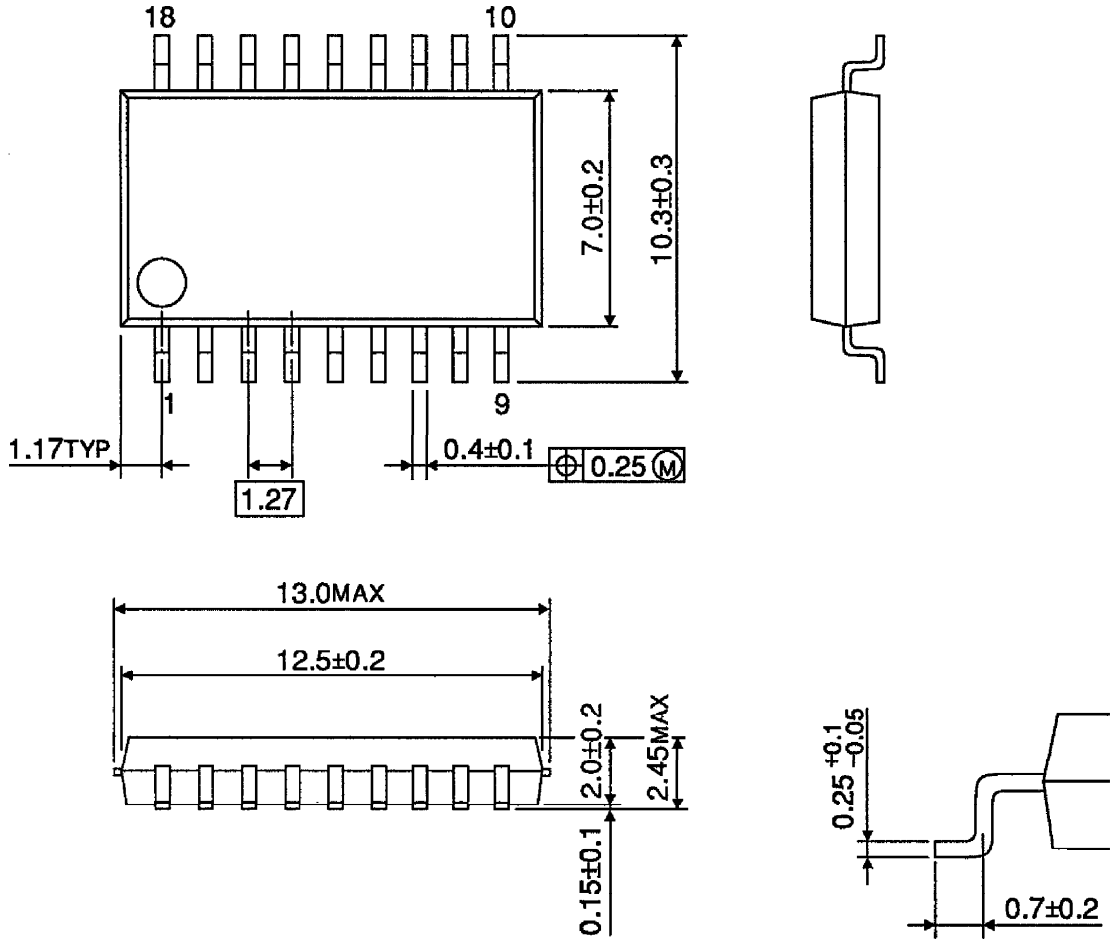


Weight : 1.47g (Typ.)

OUTLINE DRAWING

SOP18-P-375-1.27

Unit : mm



Weight : 0.41g (Typ.)