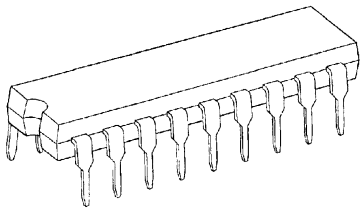
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62785P,TD62785F

8CH SOURCE DRIVER

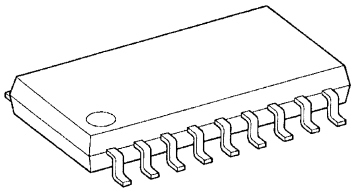
The TD62785P, TD62785F are eight Channel Non−Inverting Source current transistor Array.
All units feature input pull−up resistors and output pull−down resistors. These device are specifically designed for multiplexed digit driving of eight digit common−anode LED and also can be employed as a source drivers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

TD62785P



DIP18-P-300-2.54D

TD62785F



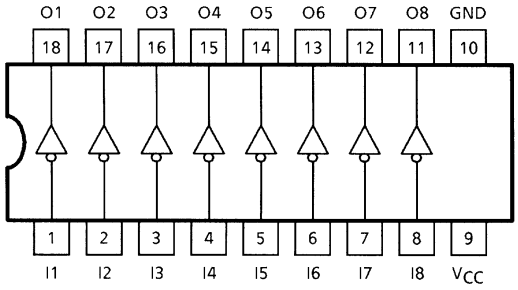
SOP18-P-375-1.27

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

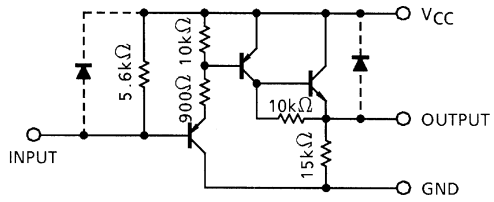
FEATURES

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

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

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 11.7 mW / °C (P−Type), 7.7 mW / °C (F−Type).

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

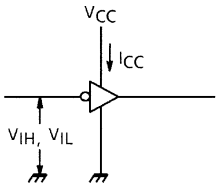
CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Supply Voltage		V_{CC}	—		4.5	5.0	5.5	V
Output Voltage		V_{OUT}	—		0	—	$-V_{CC}$	V
Output Current	P	I_{OUT}	DC 1 Circuit, Ta = 25°C		0	—	−400	mA / ch
	F				0	—	−400	
	P		T_{pw} ≤ 25 ms 8 Circuits On T_a = 85°C T_j = 120°C	Duty = 10%	0	—	−376	
				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)

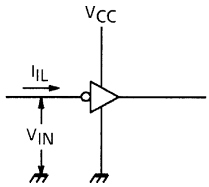
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN	TYP.	MAX	UNIT
Input Voltage	"H" Level	V_{IH}	1	—		V_{CC} −1.0	—	—	V
	"L" Level	V_{IL}		—		—	—	0.8	
Input Current	"L" Level	I_{IL}	2	V_{CC} = 5.5 V, V_{IN} = 0.8 V		—	−1.5	−2.3	mA
Input Pull-Up Resistor		R_{IP}	—	—		—	5.6	—	kΩ
Output Pull-Down Resistor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

TEST CIRCUIT

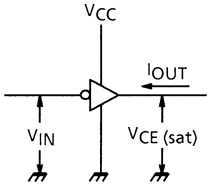
1. V_{IH}, V_{IL}, I_{CC}



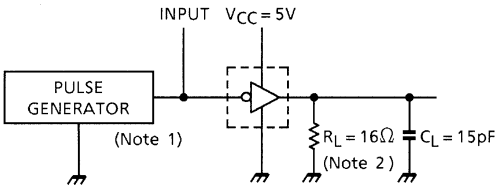
2. I_{IL}

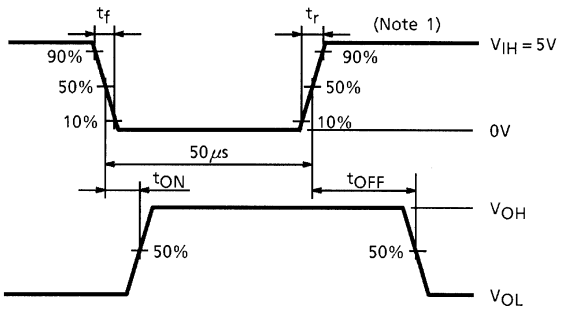


3. $V_{CE\ (sat)}$



4. t_{ON}, t_{OFF}



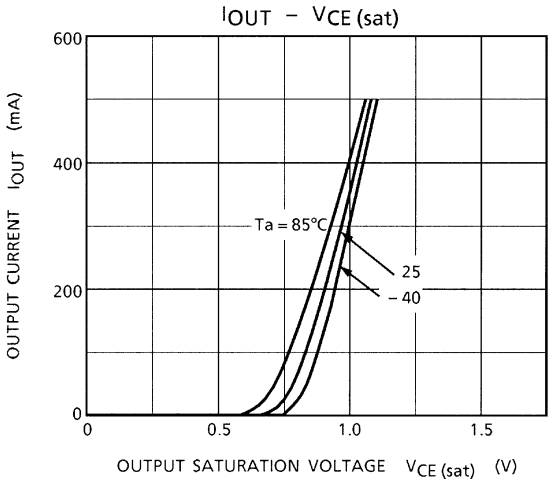


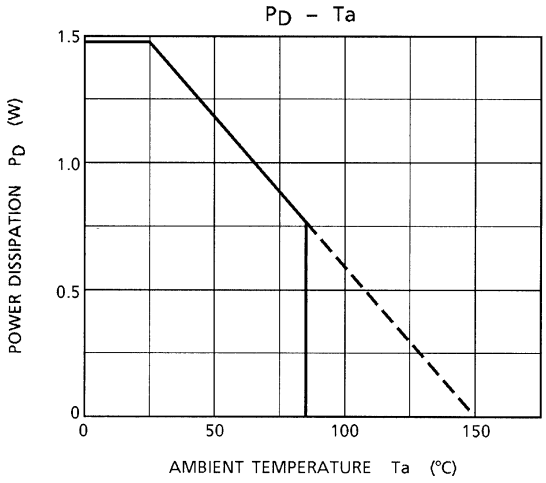
Note 1: Pulse width 50 μs, duty cycle 10%
Output impedance 50 Ω, $t_r \leq 5$ ns, $t_f \leq 10$ ns

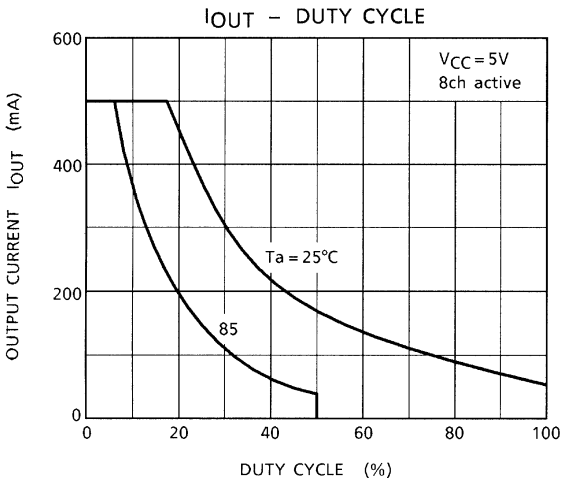
Note 2: C_L includes probe and jig capacitance

PRECAUTIONS for USING

This IC does not 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.

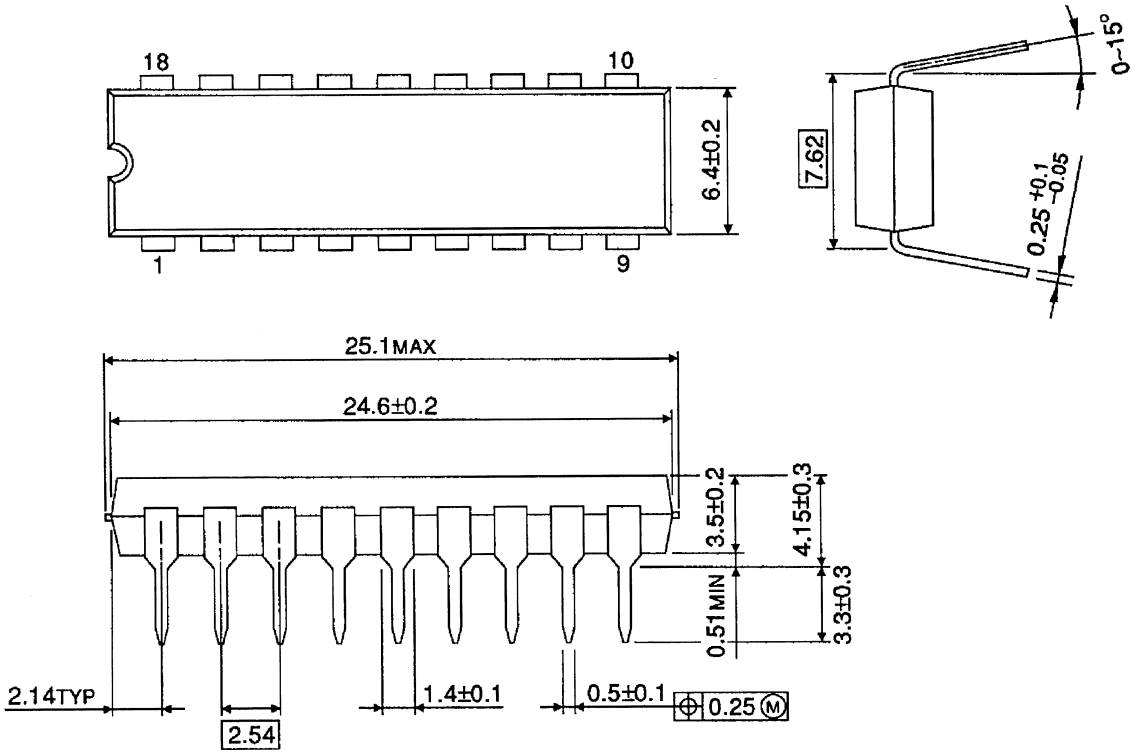

I_{OUT} – $V_{CE\,(sat)}$
OUTPUT CURRENT I_{OUT} (mA)
600
400
200
0
0
0.5
1.0
1.5
Ta = 85°C
25
– 40
OUTPUT SATURATION VOLTAGE $V_{CE\,(sat)}$ (V)


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 (%)

PACKAGE DIMENSIONS

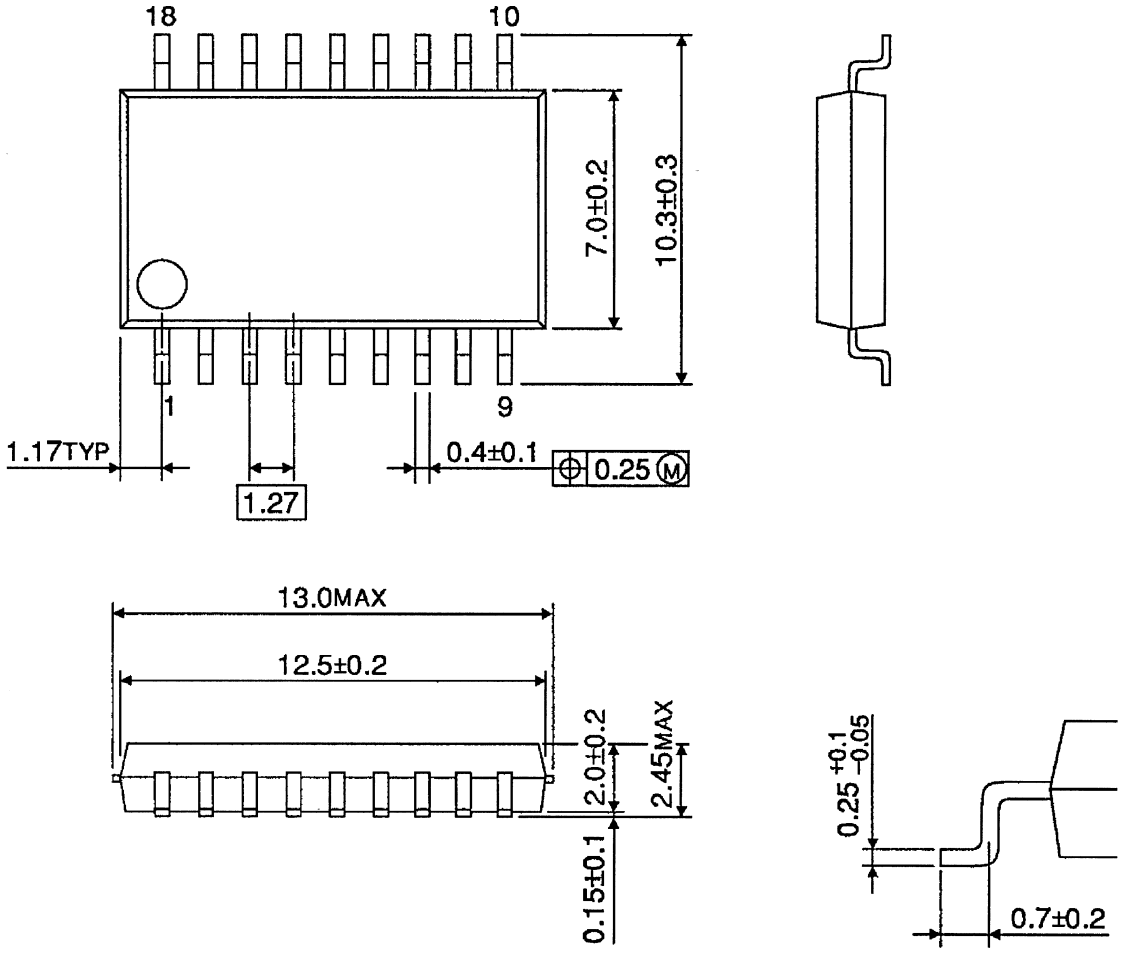
DIP18−P−300−2.54D Unit: mm



Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18−P−375−1.27 Unit: mm



Weight: 0.41 g (Typ.)

RESTRICTIONS ON PRODUCT USE

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