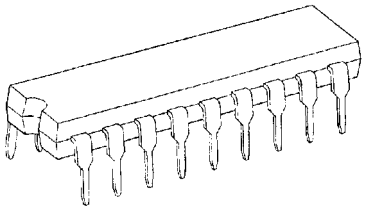
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62583AP,TD62583F,TD62583AF

8CH SINGLE DRIVER

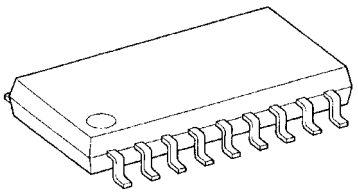
The TD62583AP / F / AF have a 2.7 kΩ series base resistor, and thus allows operation directly with TTL or CMOS operating at supply voltage of 5 V.
Applications include relay, hammer, lamp and display (LED) drivers.

TD62583AP



DIP18-P-300-2.54D

TD62583F
TD62583AF



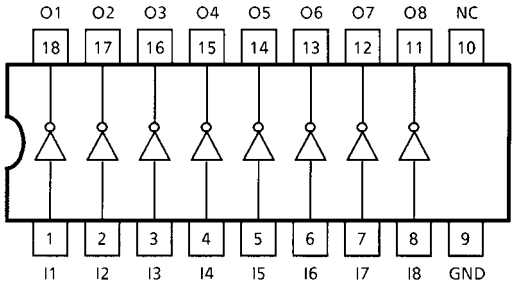
SOP18-P-375-1.27

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

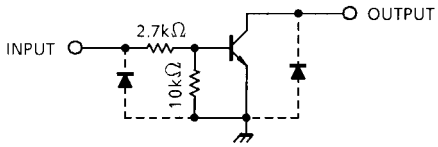
FEATURES

- Output current (single output) 50 mA (Max)
- High sustaining voltage output 35 V (Min) (TD62583F)
  50 V (Min) (TD62583AP / AF)
- Low saturation voltage $V_{CE\ (sat)}$ = 0.4 V @I_C = 16 mA
- Inputs compatible with TTL, 5 V CMOS
- Package type−AP : DIP−18 pin
- Package type−F, AF : SOP−18 pin

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage	AP, AF	V_{CEO}	50	V
	F		35	
Output Current		I_{OUT}	50	mA / ch
Input Voltage		V_{IN}	10	V
Power Dissipation	AP	P_D	1.47	W
	F, AF		0.96	
Operating Temperature		T_{opr}	−40~85	°C
Storage Temperature		T_{stg}	−55~150	°C

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

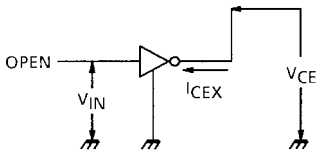
CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Output Sustaining Voltage	AP, AF	V_{CEO}	—	0	—	50	V
	F		—	0	—	35	
Output Current		I_{OUT}	—	0	—	30	mA / ch
Input Voltage		V_{IN}	—	0	—	7	V
	Output On	$V_{IN\ (ON)}$	—	3.5	—	7	
Power Dissipation	AP	P_D	—	—	—	0.52	W
	F, AF		—	—	—	0.4	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

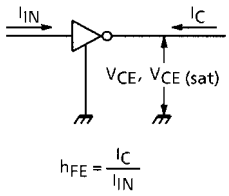
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN	TYP.	MAX	UNIT
Output Leakage Current	AP, AF	I_{CEX}	1	V_{CE} = 50 V	V_{IN} = 0 V	—	—	10	μA
	F			V_{CE} = 35 V		—	—	10	
Output Saturation Voltage		$V_{CE\ (sat)}$	2	I_C = 16 mA, I_{IN} = 0.3 mA		—	0.2	0.4	V
				I_C = 30 mA, I_{IN} = 0.45 mA		—	0.3	0.7	
DC Current Transfer Ratio		h_{FE}	2	V_{CE} = 4 V, I_C = 30 mA		70	130	—	—
Input Current		$I_{IN\ (ON)}$	3	V_{IN} = 2.5 V, I_C = 16 mA		—	0.65	1.7	mA
Turn−On Delay	F	t_{ON}	4	V_{OUT} = 35 V, R_L = 0.87 kΩ		—	0.1	—	μs
	AP, AF			V_{OUT} = 50 V, R_L = 1.25 kΩ		—	0.1	—	
Turn−Off Delay	F	t_{ON}		V_{OUT} = 35 V, R_L = 0.87 kΩ		—	0.5	—	
	AP, AF			V_{OUT} = 50 V, R_L = 1.25 kΩ		—	0.5	—	

TEST CIRCUIT

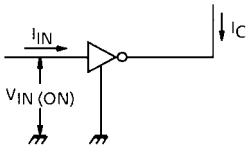
1. I_{CEX}



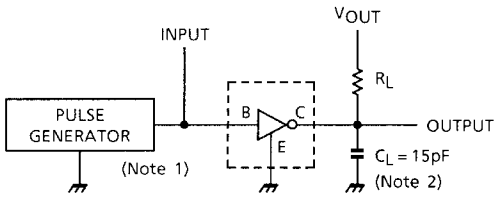
2. h_{FE}, $V_{CE\ (sat)}$

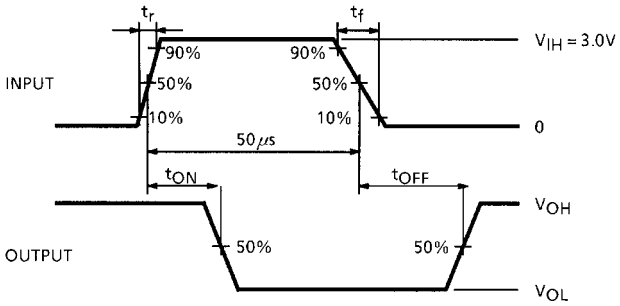


3. $V_{IN\ (ON)}$



4. t_{ON}, t_{OFF}

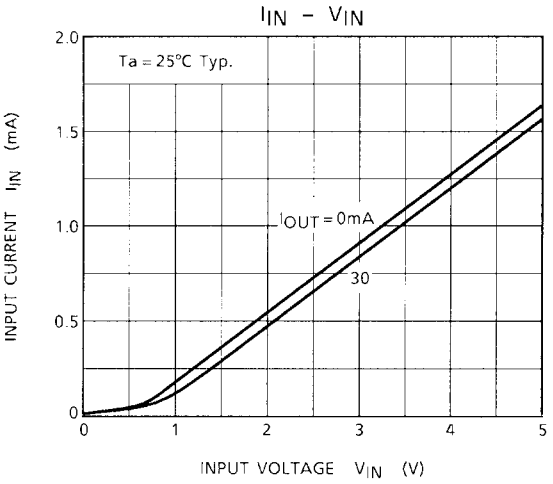


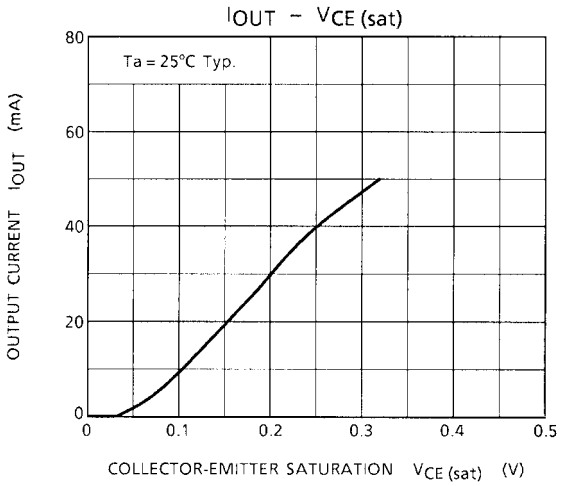


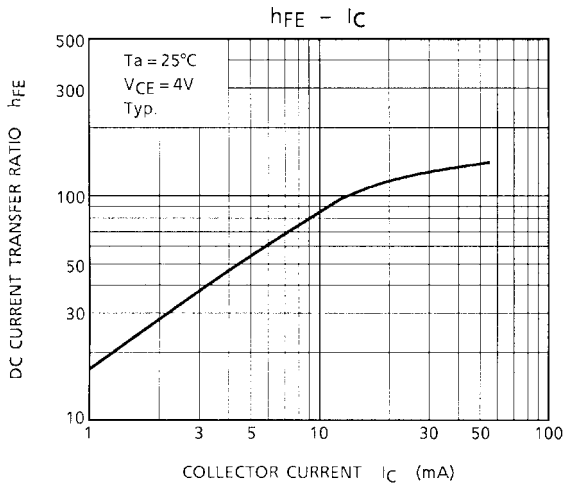
Note 1: Pulse width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 5$ ns, $t_f \leq 10$ ns
Note 2: C_L includes probe and jig capacitance.

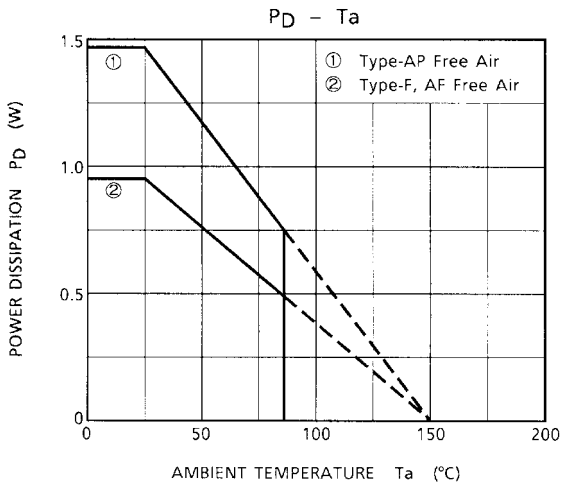
PRECAUTIONS for USING

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_{IN} – V_{IN}
Ta = 25°C Typ.
I_{OUT} = 0mA
30
INPUT CURRENT I_{IN} (mA)
INPUT VOLTAGE V_{IN} (V)
2.0
1.5
1.0
0.5
0
0
1
2
3
4
5

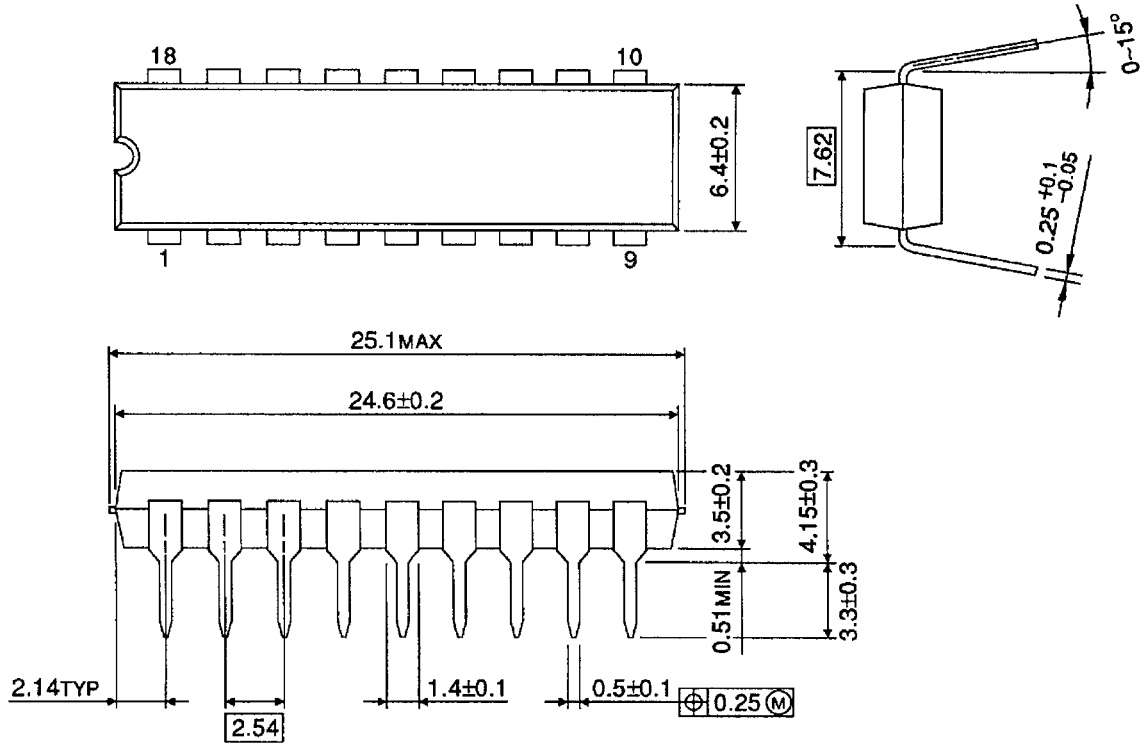

I_{OUT} – $V_{CE\ (sat)}$
Ta = 25°C Typ.
OUTPUT CURRENT I_{OUT} (mA)
COLLECTOR-EMITTER SATURATION $V_{CE\ (sat)}$ (V)
80
60
40
20
0
0
0.1
0.2
0.3
0.4
0.5


h_{FE} – I_C
Ta = 25°C
V_{CE} = 4V
Typ.
DC CURRENT TRANSFER RATIO h_{FE}
COLLECTOR CURRENT I_C (mA)
500
300
100
50
30
10
1
3
5
10
30
50
100


P_D – Ta
① Type-AP Free Air
② Type-F, AF Free Air
POWER DISSIPATION P_D (W)
AMBIENT TEMPERATURE Ta (°C)
1.5
1.0
0.5
0
0
50
100
150
200

PACKAGE DIMENSIONS

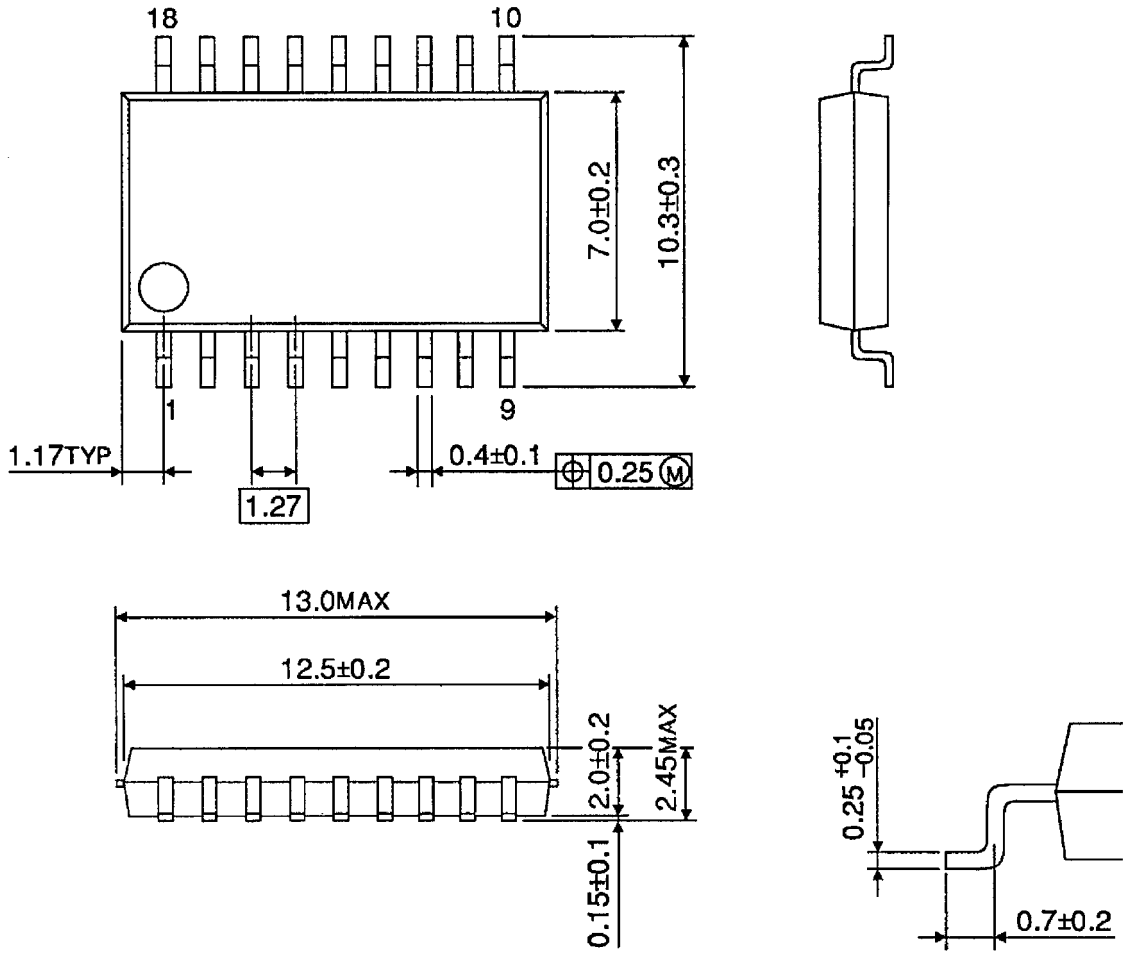
DIP18−P−300−2.54D Unit: mm



Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18−P−375−1.27 Unit: mm



Weight: 0.41 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc..
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