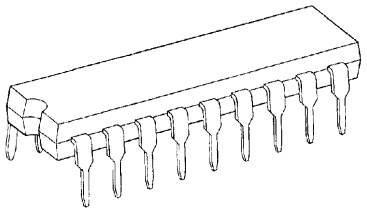
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62384AP,TD62384F,TD62384AF
TD62385AP,TD62385F,TD62385AF

8CH LOW INPUT ACTIVE DARLINGTON SINK DRIVER

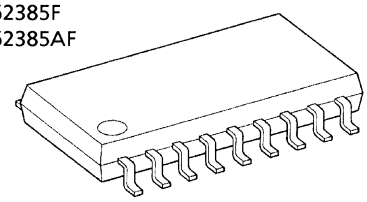
The TD62384AP / F / AF and TD62385AP / F / AF are non−inverting transistor arrays, which are comprised of eight NPN darlington output stages and PNP input stages.
These devices can be operated by source input voltage and are suitable for operations with a 5-V general purposed logic IC such as 5-V TTL, 5-V CMOS and 5-V Microprocessor which have sink current output drivers.
Please observe the thermal condition for using.

TD62384AP
TD62385AP



DIP18-P-300-2.54D

TD62384F
TD62384AF
TD62385F
TD62385AF



SOP18-P-375-1.27

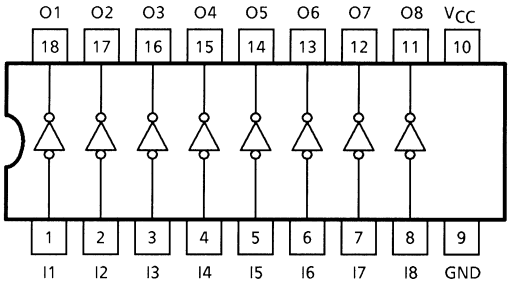
Weight
DIP18−P−300−2.54D : 1.47 g (Typ.)
SOP18−P−375−1.27 : 0.41 g (Typ.)

FEATURES

- Output current (single output) 500 mA (Max)
- High sustaining voltage 35 V (TD62384F, 385F)
  50 V (TD62384AP / AF, 385AP / AF) (Min)
- Low level active input
- Inputs compatible with 5-V TTL and 5-V CMOS
- Package type−AP : DIP−18 pin
- Package type−F, AF : SOP−18 pin

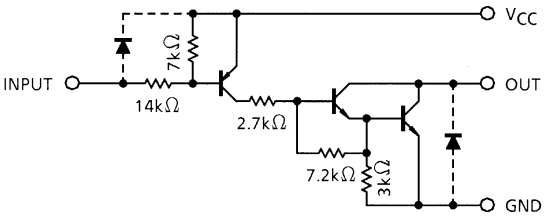
TYPE	$V_{IN\ (ON)}$
TD62384AP / F / AF	−20 V~V_{CC} − 2.8 V
TD62385AP / F / AF	0 V~V_{CC} − 3.7 V

PIN CONNECTION (TOP VIEW)

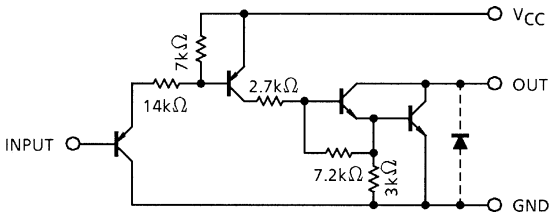


SCHEMATICS (EACH DRIVER)

TD62384AP / F / AF



TD62385AP / F / AF



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	−0.5~7.0	V
Output Sustaining Voltage	AP / AF	$V_{CE\ (SUS)}$	−0.5~50	V
	F		−0.5~35	
Output Current		I_{OUT}	500	mA / ch
Input Voltage		V_{IN} (Note 1)	−22~V_{CC} + 0.5	V
		V_{IN} (Note 2)	−0.5~7	
Input Current		I_{IN}	−10	mA
Power Dissipation	AP	P_D (Note 3)	1.47	W
	F / AF		0.96	
Operating Temperature		T_{opr}	−40~85	°C
Storage Temperature		T_{stg}	−55~150	°C

Note 1: TD62384AP / AF / F
Note 2: TD62385AP / AF / F
Note 3: Delated above 25°C in the proportion of 11.7 mW / °C (AP−Type), 7.7 mW / °C (F, AF−Type).

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage		V_{CC}	—	4.5	5.0	5.5	V
Output Sustaining Voltage	AP / AF	$V_{CE\ (SUS)}$	—	0	—	50	V
	F		—	0	—	35	
Output Current	AP	I_{OUT}	T_{pw} = 25 ms, Duty = 50% 8 Circuits, Ta = 85°C, Tj = 120°C	0	—	115	mA / ch
	F / AF			0	—	78	
			T_{pw} = 25 ms, Duty = 10% 1 Circuit	0	—	400	
Input Voltage	TD62384	V_{IN}	—	−20	—	V_{CC}	V
	TD62385			0	—	5.5	
Power Dissipation	AP	P_D	—	—	—	0.52	W
	F / AF		—	—	—	0.35	

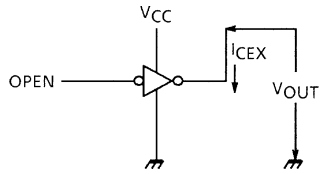
ELECTRICAL CHARACTERISTIC (Ta = 25°C)

CHARACTERISTIC			SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN	TYP.	MAX	UNIT
OutputLeakage Current		AP / AF	I_{CEX}	1	V_{CC} = 5.5 V, I_{IN} = 0, Ta = 85°C	V_{OUT} = 50 V	—	—	100	μA
		F				V_{OUT} = 35 V				
Output Saturation Voltage			$V_{CE\ (sat)}$	2	V_{CC} = 4.5 V, I_{OUT} = 350 mA, V_{IN} = V_{IN} (ON) MAX.		—	1.4	2.0	V
Input Current	(Output On)		$I_{IN\ (ON)}$	3	V_{CC} = 5.5 V, V_{IN} = 0.4 V		—	−0.32	−0.45	mA
					V_{CC} = 5.5 V, V_{IN} = −20 V		—	—	−2.6	
	(Output Off)		$I_{IN\ (OFF)}$	4	—		—	—	−4.0	μA
Input Voltage	(Output on)	TD62384	$V_{IN\ (ON)}$	5	—		—	—	V_{CC} − 2.8	V
		TD62385			—		—	—	V_{CC} − 3.7	
Supply Current			$I_{CC\ (ON)}$	6	V_{CC} = 5.5 V, V_{IN} = 0		—	17	22	mA
			$I_{CC\ (OFF)}$		V_{CC} = 5.5 V, V_{IN} = V_{CC}		—	—	100	μA
Turn−On Delay			t_{ON}	7	V_{CC} = 5 V, V_{OUT} = 50 V, R_L = 163 Ω, C_L = 15 pF (Note 1)		—	0.1	—	μs
Turn−Off Delay			t_{OFF}				—	3	—	

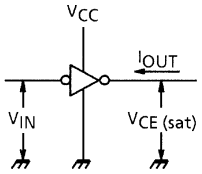
Note 1: F−Type: V_{OUT} = 35 V, R_L = 116 Ω

TEST CIRCUIT

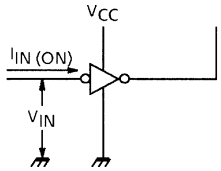
1. I_{CEX}



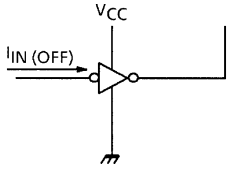
2. $V_{CE\ (sat)}$



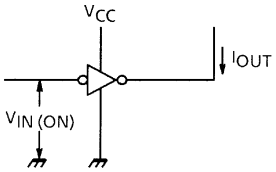
3. $I_{IN\ (ON)}$



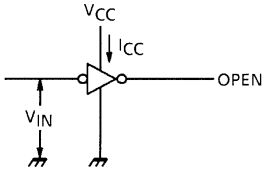
4. $I_{IN\ (OFF)}$



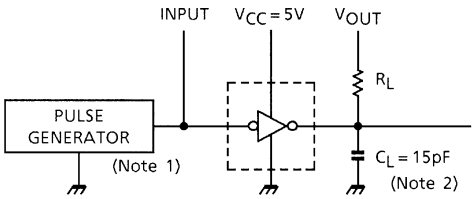
5. $V_{IN\ (ON)}$

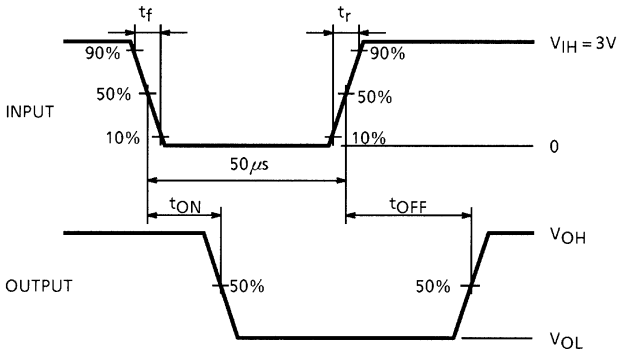


6. I_{CC}



7. t_{ON}, t_{OFF}





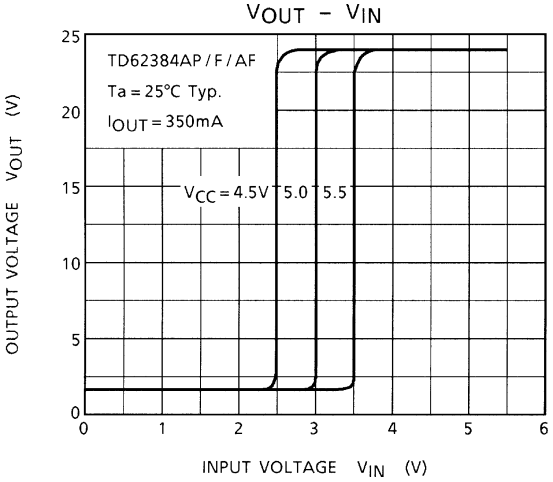
Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 5$ ns, $t_f \leq 10$ ns

Note 2: C_L includes probe and jig capacitance.

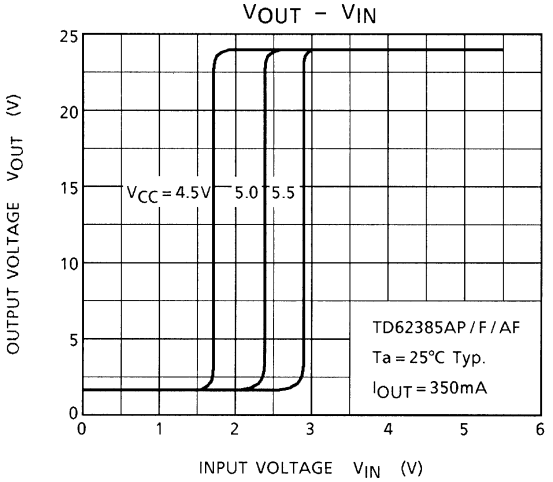
PRECAUTIONS for USING

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.

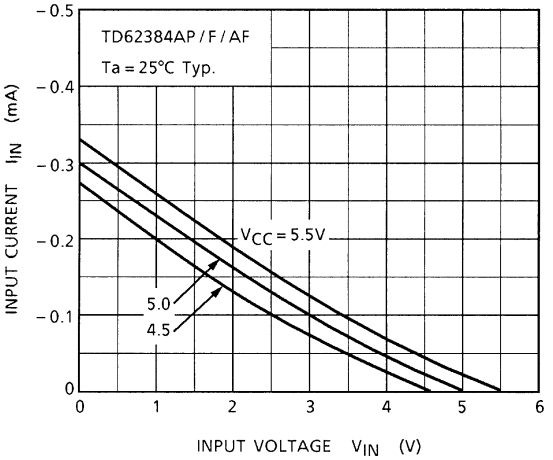
V_{OUT} – V_{IN}



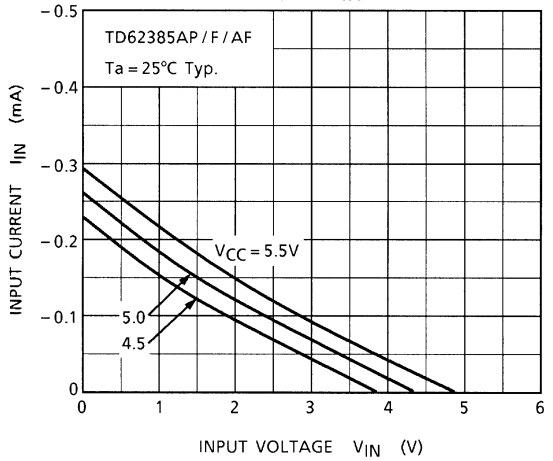
V_{OUT} – V_{IN}



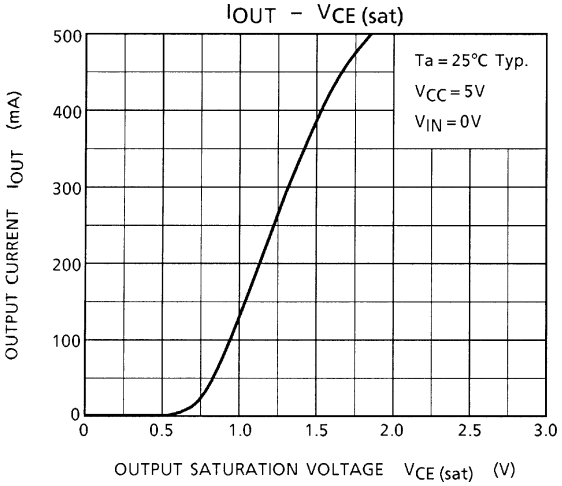
I_{IN} – V_{IN}



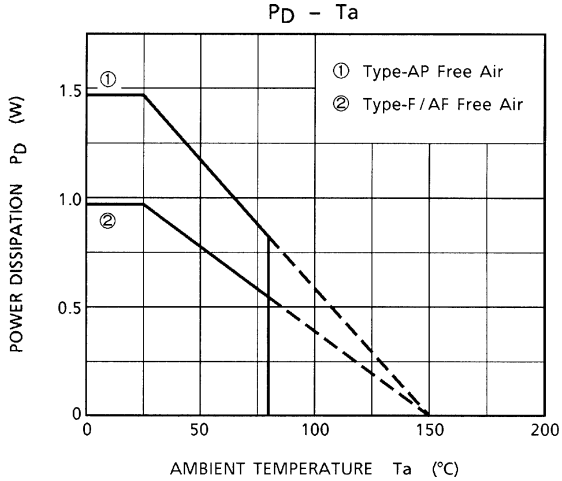
I_{IN} – V_{IN}



I_{OUT} – $V_{CE\ (sat)}$

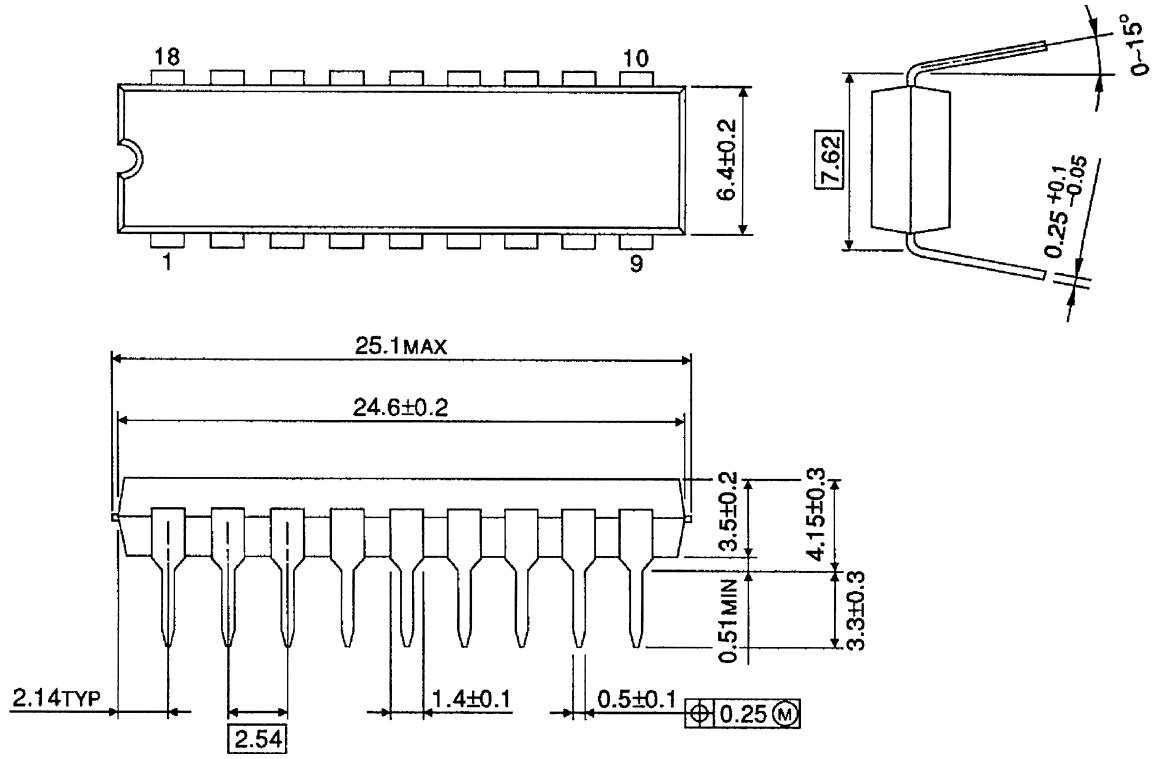


P_D – Ta



PACKAGE DIMENSIONS

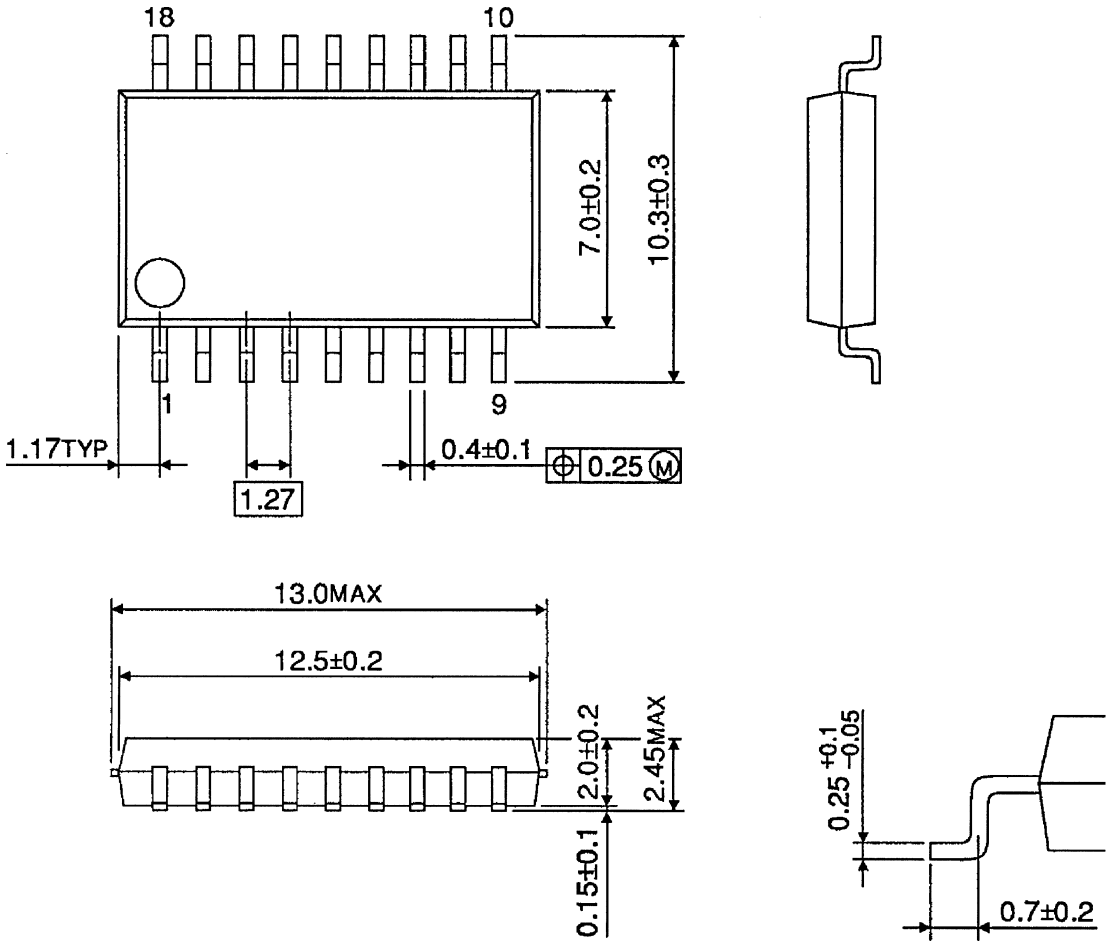
DIP18−P−300−2.54D Unit: mm



Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18−P−375−1.27 Unit: mm



Weight: 0.41 g (Typ.)

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000707EBA

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