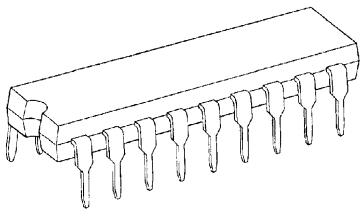
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62382AP,TD62382F,TD62382AF

8CH LOW INPUT ACTIVE SINK DRIVER

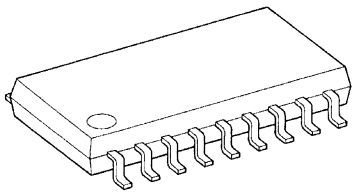
The TD62382AP / F / AF are non−inverting transistor array which are comprised of eight Low saturation output stages and PNP input stages.
This device is low level input active driver and is suitable for operation with TTL, 5 V CMOS and 5 V Microprocessor which have sink current output drivers.
Applications include relay, hammer, lamp and LED display drivers.

TD62382AP



DIP18-P-300-2.54D

TD62382F
TD62382AF



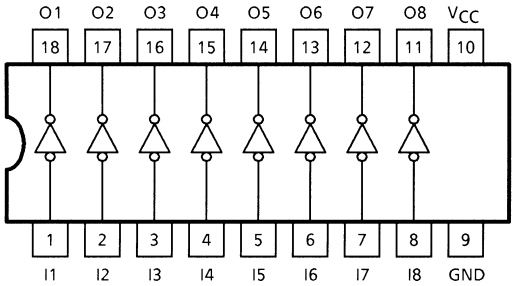
SOP18-P-375-1.27

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

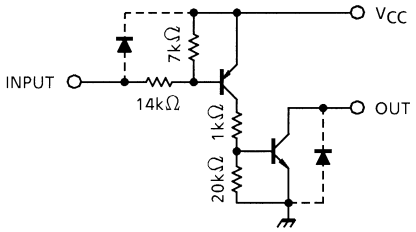
FEATURES

- Low saturation output 0.23 V MAX. @I_{OUT} = 40 mA MAX.
- Output rating 35 V MIN. / 50 mA MAX. (TD62382F)
  50 V MIN. / 50 mA MAX. (TD62382AP, TD62382AF)
- Input compatible with TTL and 5 V CMOS
- Low level active inputs
- Standard supply voltage
- 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)

CHARACTERISTIS		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}	50	mA / ch
Input Voltage		V_{IN}	−22~V_{CC} + 0.5	V
Input Current		I_{IN}	10	mA
Power Dissipation	AP	P_D (Note)	1.47	W
	F, AF		0.96	
Operating Temperature		T_{opr}	−40~85	°C
Storage Temperature		T_{stg}	−55~150	°C

Note: 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)

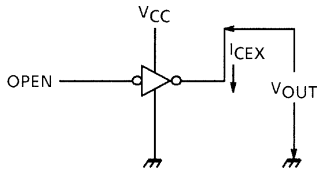
CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage		V_{CC}	—	4.5	5.0	5.5	V
Output Sustaining Voltage	AP, AF	$V_{CE\ (SUS)}$	—	0	—	50	V
	F		—	0	—	35	
Output Current		I_{OUT}	DC 1 Circuit	0	—	40	mA / ch
	AP		8 Circuits	0	—	40	
	AF, F		8 Circuits	0	—	40	
Input Voltage		V_{IN}	—	−20	—	V_{CC}	V
	Output On	$V_{IN\ (ON)}$	—	−20	—	V_{CC} − 3.5	V
	Output Off	$V_{IN\ (OFF)}$	—	V_{CC} − 0.3	—	V_{CC} + 0.5	
Power Dissipation	AP	P_D	—	—	—	0.52	W
	F, AF		—	—	—	0.35	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

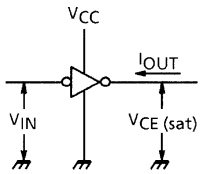
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CC} = 5.5 V, I_{IN} = 0 V_{OUT} = 35 V, Ta = 75°C		—	—	100	μA
Output Saturation Voltage		$V_{CE\ (sat)}$	2	V_{CC} = 4.5 V, V_{IN} = 0.8 V I_{OUT} = 40 mA		—	—	0.23	V
Input Current	Output On	$I_{IN\ (ON)}$	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	—		—	—	−40	μA
Input Voltage	Output on	$V_{IN\ (ON)}$	5	—		−20	—	V_{CC} − 3.5	V
Supply Current	Output On	$I_{CC(ON)}$	6	V_{CC} = 5.5 V, V_{IN} = 0 V		—	—	6	mA / ch
	Output Off	$I_{CC(OFF)}$		V_{CC} = V_{IN} = 5.5 V Ta = 75°C		—	—	100	μA
Turn−On Delay	AP, AF	t_{ON}	7	V_{CC} = 5 V C_L = 15 pF	V_{OUT} = 35 V R_L = 82 kΩ	—	0.1	—	μs
	F				V_{OUT} = 50 V R_L = 1 kΩ	—	0.1	—	
Turn−Off Delay	AP, AF	t_{OFF}			V_{OUT} = 35 V R_L = 82 kΩ	—	3.0	—	
	F				V_{OUT} = 50 V R_L = 1 kΩ	—	3.0	—	

TEST CIRCUIT

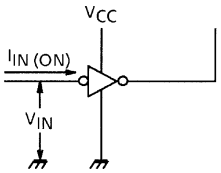
1. I_{CEX}



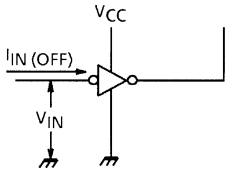
2. $V_{CE\ (sat)}$



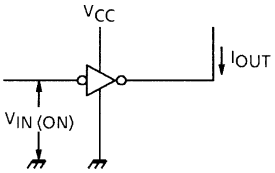
3. $I_{IN\ (ON)}$



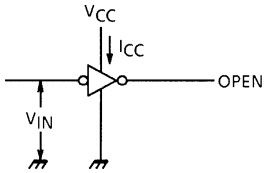
4. $I_{IN\ (OFF)}$



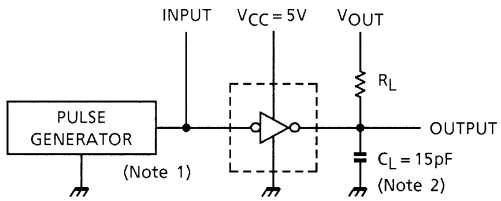
5. $V_{IN\ (ON)}$

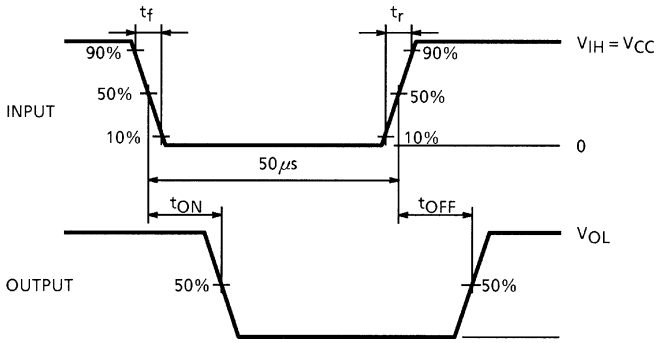


6. I_{CC}



7. t_{ON}, t_{OFF}





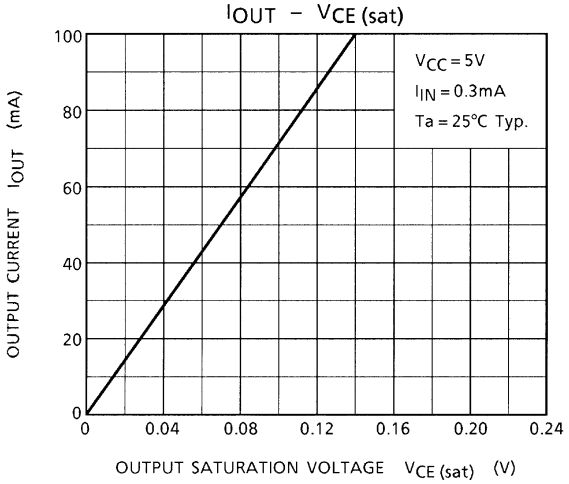
Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 10$ ns, $t_f \leq 5$ ns

Note 2: C_L includes probe and jig capacitance.

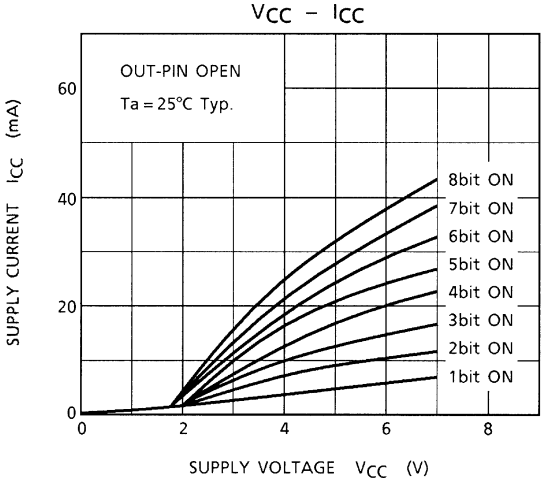
PRECAUTIONS for USING

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.

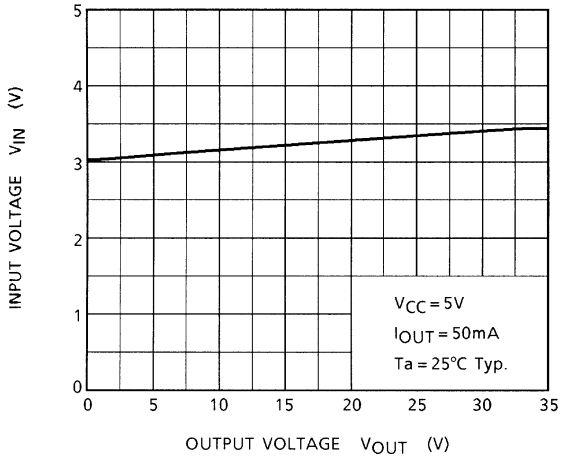
I_{OUT} – $V_{CE\,(sat)}$



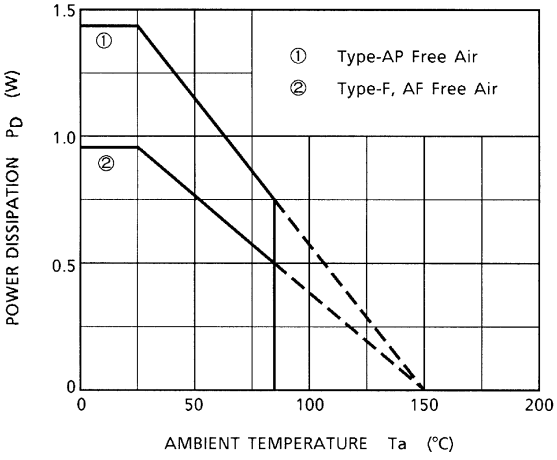
V_{CC} – I_{CC}



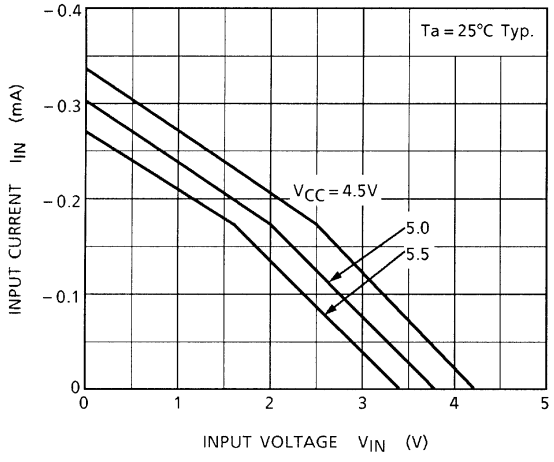
V_{IN} – V_{OUT}



P_D – Ta

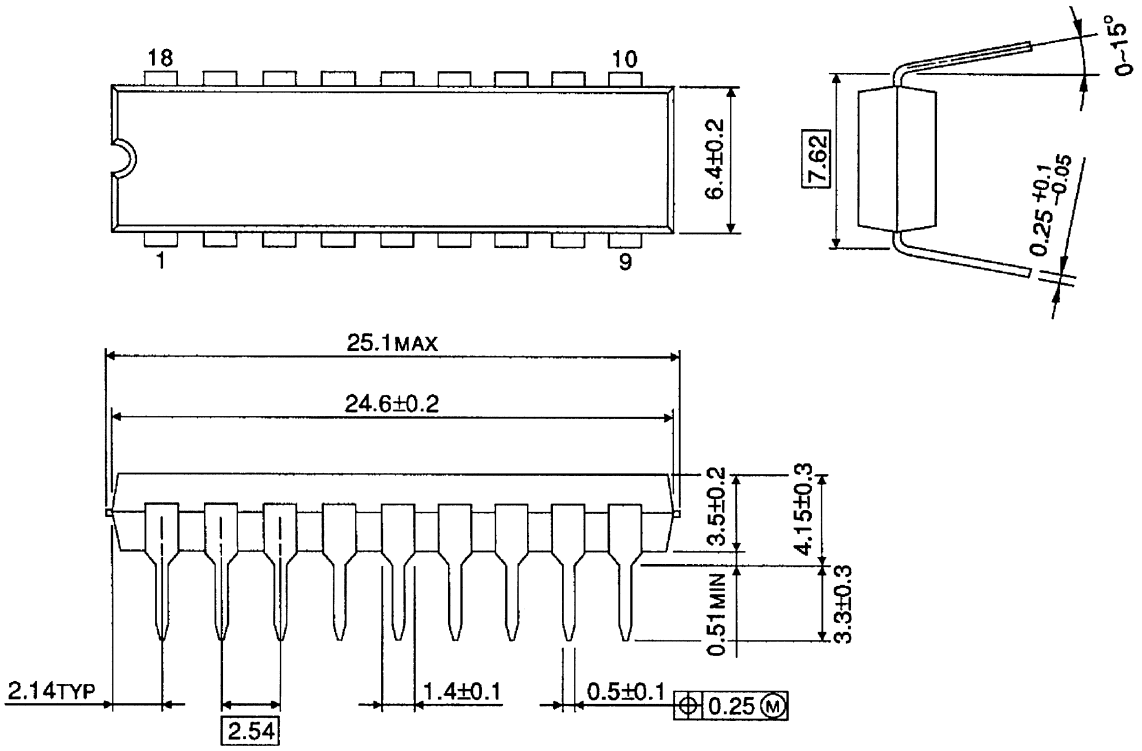


I_{IN} – V_{IN}



PACKAGE DIMENSIONS

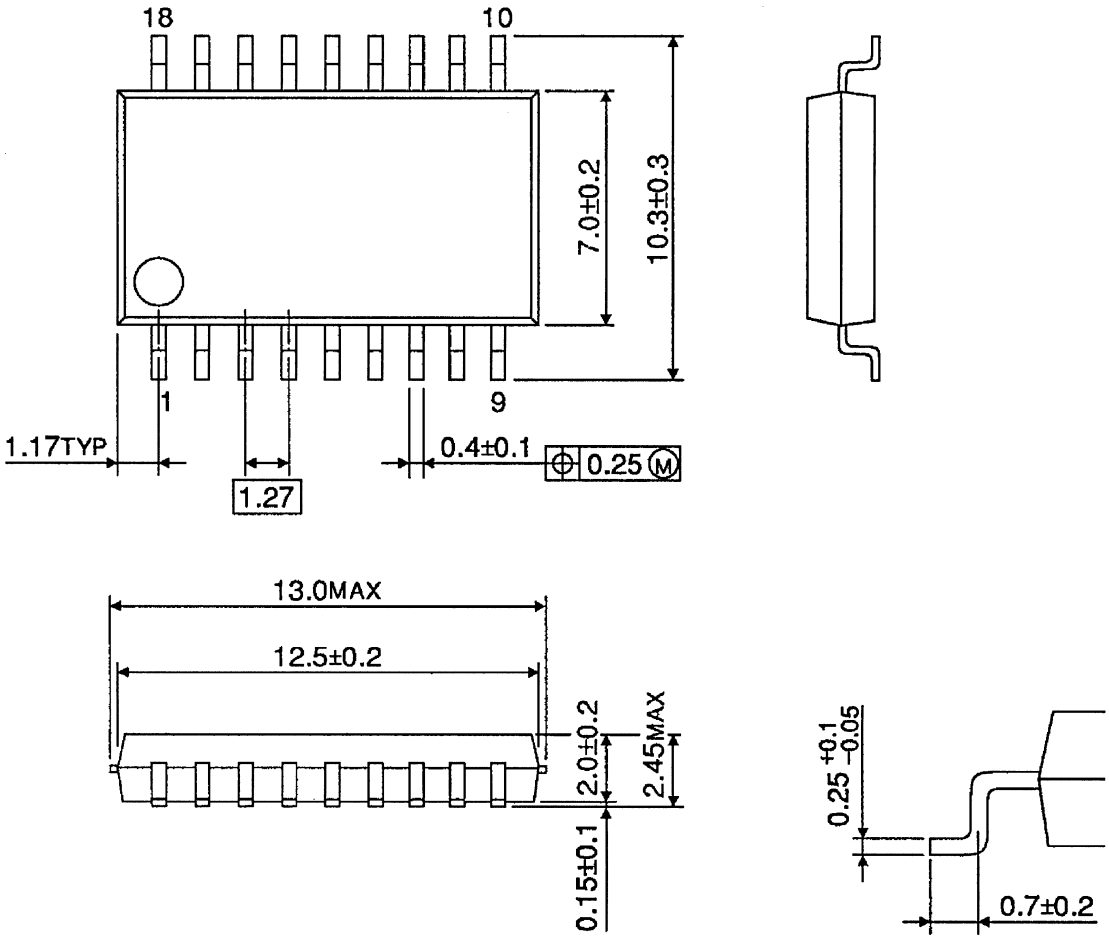
DIP18−P−300−2.54D Unit: mm



Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18−P−375−1.27 Unit: mm



Weight: 0.41 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  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..
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.). These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in this document shall be made at the customer’s own risk.
- The products described in this document are subject to the foreign exchange and foreign trade laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.