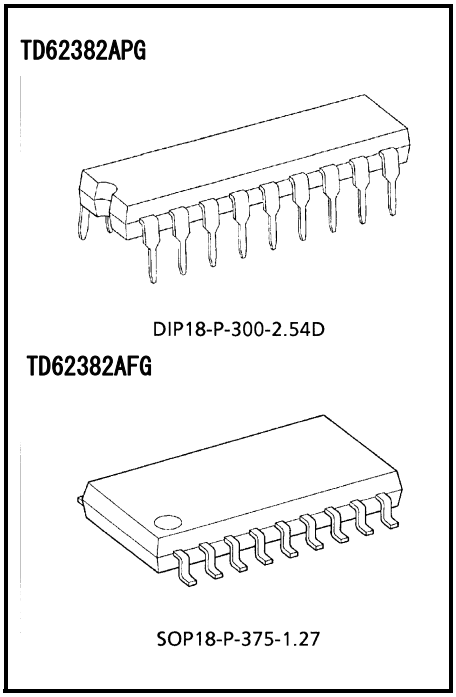
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62382APG,TD62382AFG

8CH LOW INPUT ACTIVE SINK DRIVER

The TD62382APG / AFG 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.
This devices are a product for the Pb free(Sn-Ag).

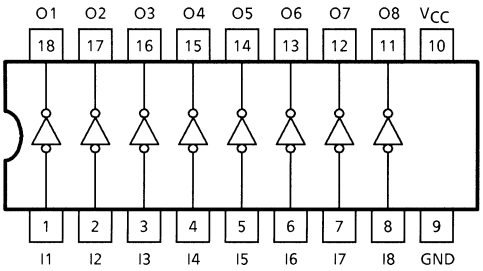


Weight
DIP18−P−300−2.54D : 1.47 g (Typ.)
SOP18−P−375−1.27 : 0.41 g (Typ.)

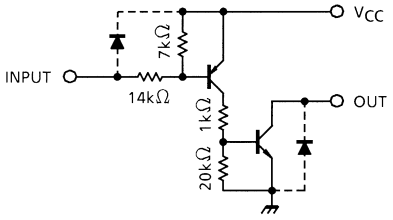
FEATURES

- Low saturation output 0.23 V MAX. @I_{OUT} = 40 mA MAX.
- Output rating 50 V MIN. / 50 mA MAX.
- Input compatible with TTL and 5 V CMOS
- Low level active inputs
- Standard supply voltage
- Package type−APG ：DIP−18 pin
- Package type−AFG ：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		$V_{CE\ (SUS)}$	−0.5~50	V
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	APG	P_D (Note)	1.47	W
	AFG		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 (APG−Type), 7.7 mW / °C (AFG−Type).

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

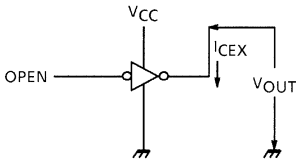
CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage		V_{CC}	—	4.5	5.0	5.5	V
Output Sustaining Voltage		$V_{CE\ (SUS)}$	—	0	—	50	V
			—				
Output Current		I_{OUT}	DC 1 Circuit	0	—	40	mA / ch
	APG		8 Circuits	0	—	40	
	AFG		8 Circuits	0	—	40	
Input Voltage		V_{IN}	—	−20	—	V_{CC}	V
	Output 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	APG	P_D	—	—	—	0.52	W
	AFG		—	—	—	0.35	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

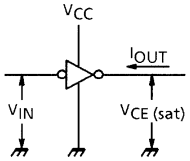
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CC} = 5.5 V, I_{IN} = 0 V_{OUT} = 35 V, Ta = 75°C		—	—	100	μA
Output Saturation Voltage		$V_{CE\ (sat)}$	2	V_{CC} = 4.5 V, V_{IN} = 0.8 V I_{OUT} = 40 mA		—	—	0.23	V
Input Current	Output On	$I_{IN\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

TEST CIRCUIT

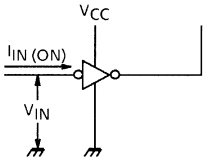
1. I_{CEX}



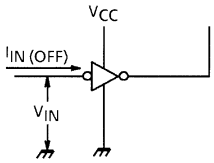
2. $V_{CE\ (sat)}$



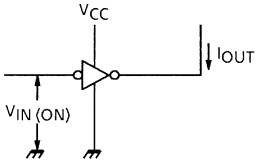
3. $I_{IN\ (ON)}$



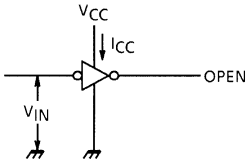
4. $I_{IN\ (OFF)}$



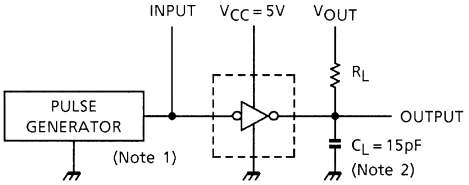
5. $V_{IN\ (ON)}$

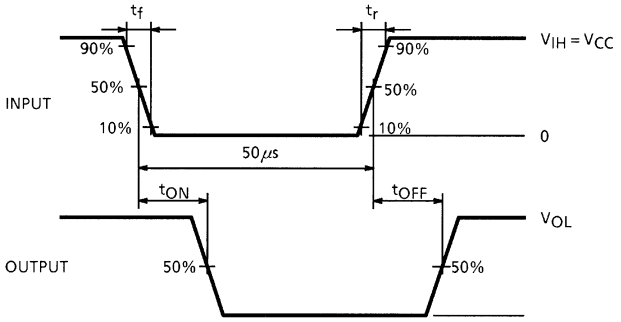


6. I_{CC}



7. t_{ON}, t_{OFF}





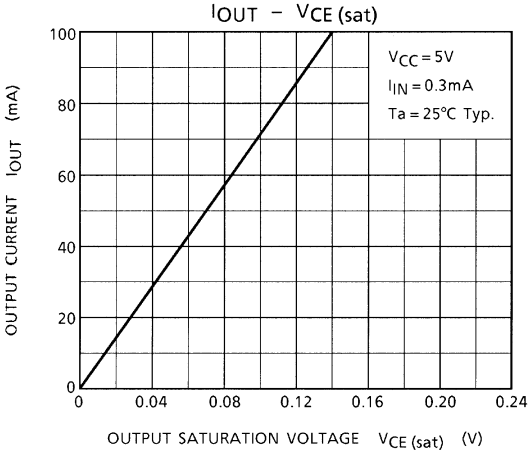
Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 10$ ns, $t_f \leq 5$ ns

Note 2: C_L includes probe and jig capacitance.

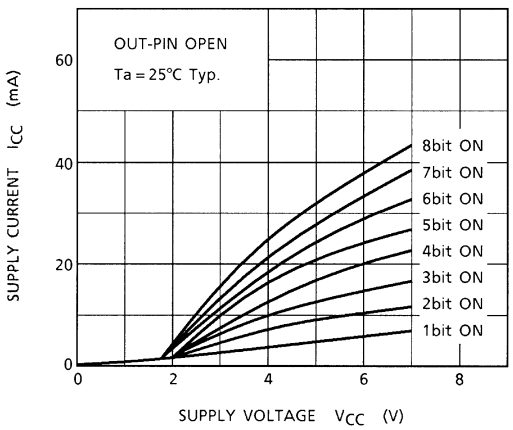
PRECAUTIONS for USING

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.

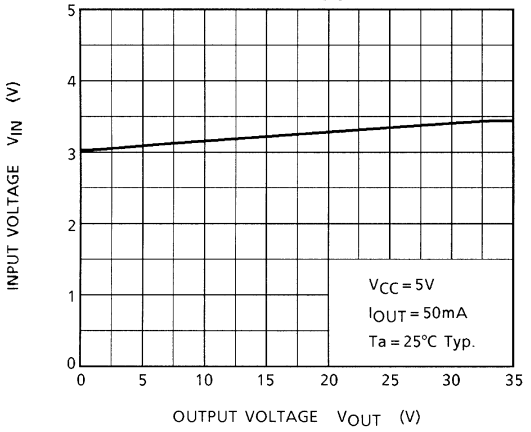
I_{OUT} – $V_{CE\,(sat)}$



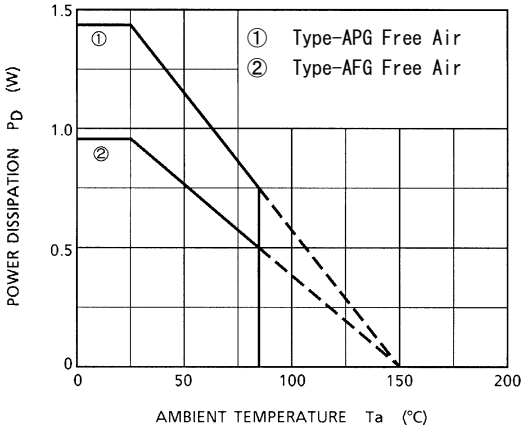
V_{CC} – I_{CC}



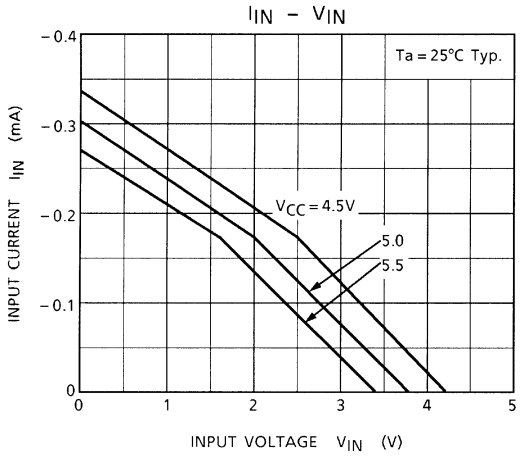
V_{IN} – V_{OUT}



P_D – Ta

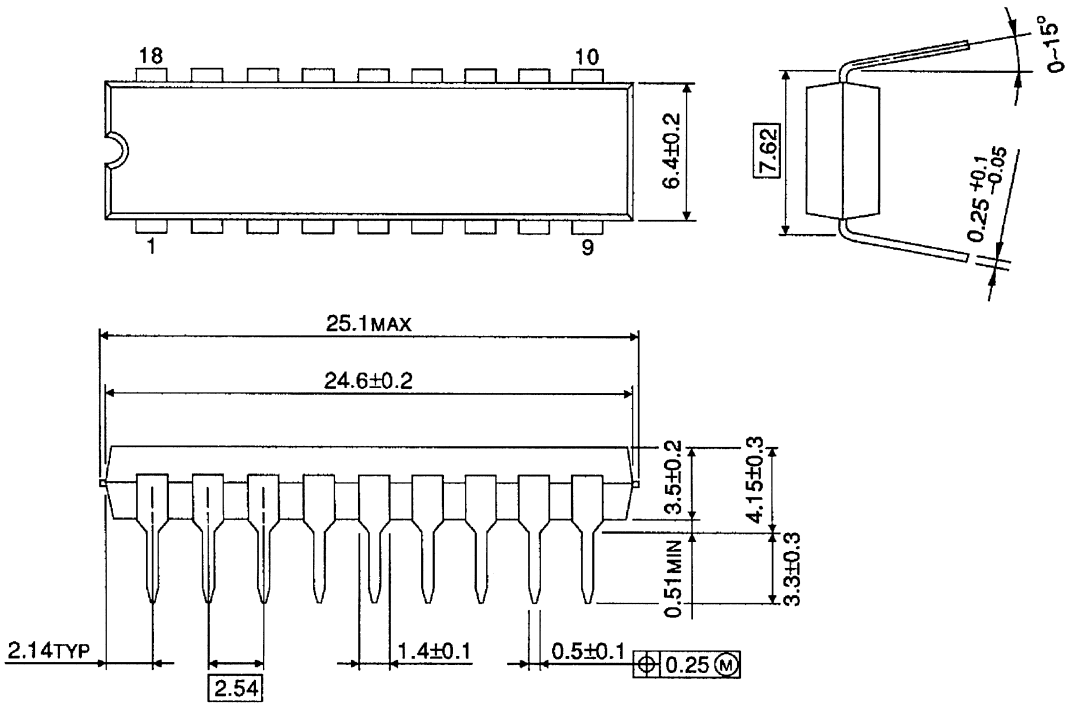


I_{IN} – V_{IN}



PACKAGE DIMENSIONS

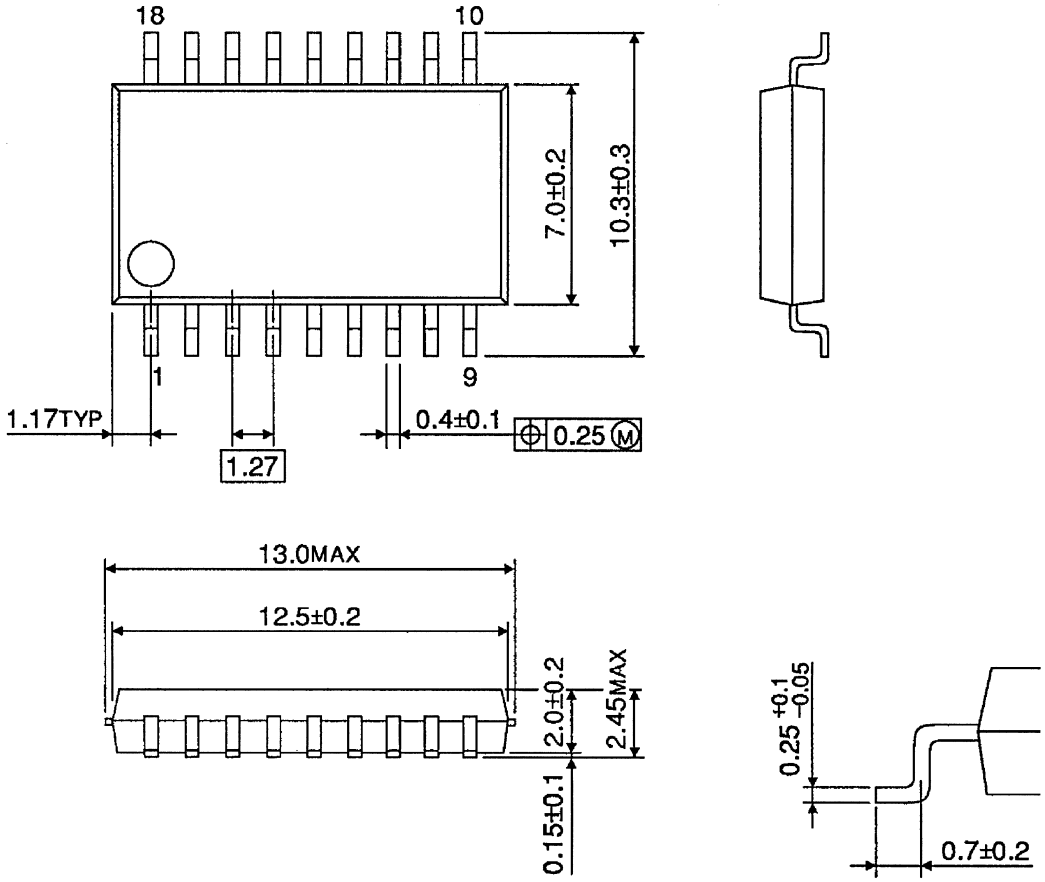
DIP18−P−300−2.54D Unit: mm



Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18−P−375−1.27 Unit: mm



Weight: 0.41 g (Typ.)

About solderability, following conditions were confirmed

- Solderability

  (1) Use of Sn-63Pb solder Bath
  - solder bath temperature = 230°C
  - dipping time = 5 seconds
  - the number of times = once
  - use of R-type flux

  (2) Use of Sn-3.0Ag-0.5Cu solder Bath
  - solder bath temperature = 245°C
  - dipping time = 5 seconds
  - the number of times = once
  - use of R-type flux

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