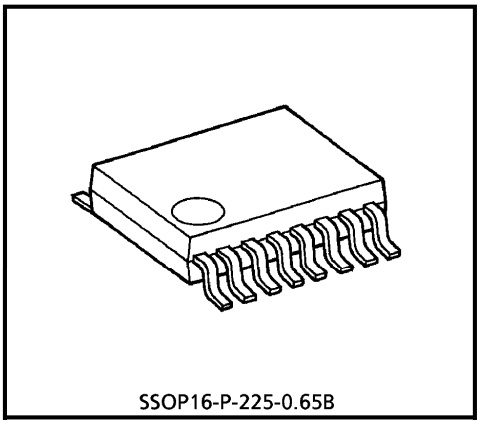
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62304AFN, TD62305AFN

7ch LOW INPUT ACTIVE DARLINGTON SINK DRIVER

The TD62304AFN and TD62305AFN are non-inverting transistor arrays, which are comprised of seven NPN darlington output stages PNP input stages.
These devices are Low Level input active drivers and are suitable for operations with TTL, 5V CMOS and 5V Microprocessor which have sink current output drivers.
Applications include relay, hammer, lamp and led driver.



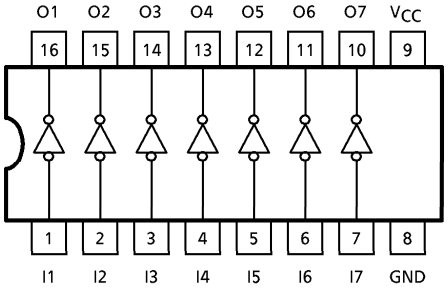
SSOP16-P-225-0.65B

Weight : 0.07g (Typ.)

FEATURES

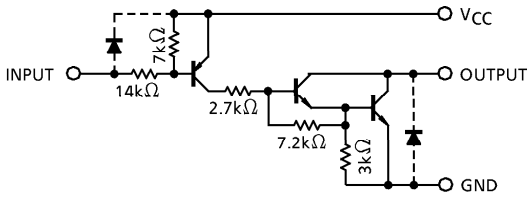
- Package Type : SSOP16 pin
- High Sustaining Voltage : $V_{CE\ (SUS)}$ = 50V (MIN.)
- Output Current (Single Output) : I_{OUT} = 500mA / ch (MAX.)
- Low Level Active Input
- Input Compatible with TTL and 5V CMOS
- Standard Supply Voltage

PIN CONNECTION (TOP VIEW)

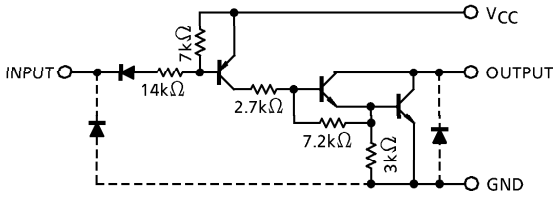


SCHEMATICS (EACH DRIVER)

TD62304AFN



TD62305AFN



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

961001EBA2

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		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}	500	mA / ch
Input Voltage	TD62304	V_{IN}	− 22 ~ V_{CC} + 0.5	V
	TD62305		− 0.5 ~ 7	
Input Current		I_{IN}	− 10	mA
Power Dissipation		P_D	0.78 (*1)	W
Operating Temperature		T_{opr}	− 40 ~ 85	°C
Storage Temperature		T_{stg}	− 55 ~ 150	°C

*1 : On Glass Epoxy PCB (50 × 50 × 1.6mm Cu 40%)

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 Sustaining Voltage		$V_{CE\ (SUS)}$			0	—	50	V
Output Current		I_{OUT}*	DC 1 Circuit		0	—	400	mA / ch
			$T_{pw} \leqq$ 25ms 7 Circuit T_j = 120°C Ta = 85°C	Duty = 10%	0	—	260	
				Duty = 50%	0	—	65	
Input Voltage	TD62304	V_{IN}			− 20	—	V_{CC}	V
	TD62305				0	—	5.5	
Input Voltage (Output On)	TD62304	$V_{IN\ (ON)}$			− 22	—	V_{CC} − 3.5	V
	TD62305				− 0.5	—	V_{CC} − 3.7	
Input Voltage (Output Off)	TD62304	$V_{IN\ (OFF)}$			V_{CC} − 0.4	—	V_{CC}	V
	TD62305				V_{CC} − 0.6	—	V_{CC}	
Power Dissipation		P_D*			—	—	0.325	W

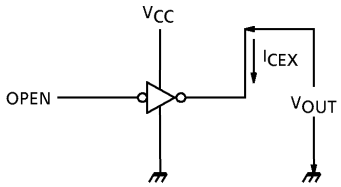
* : On Glass Epoxy PCB (50 × 50 × 1.6mm Cu 40%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

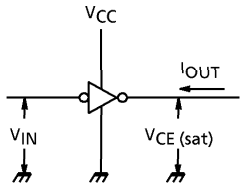
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN.	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CC} = 5.5V, V_{OUT} = 50V Ta = 85°C, I_{IN} = 0		—	—	100	μA
Output Saturation Voltage		$V_{CE\ (sat)}$	2	V_{CC} = 4.5V I_{OUT} = 350mA	V_{IN} = $V_{IN\ (ON)}$ MAX.	—	1.4	2.0	V
					V_{IN} = 0.8V	—	1.4	2.2	
Input Current		$I_{IN\ (ON)}$	3	V_{CC} = 5.5V, V_{IN} = 0.4V		—	− 0.32	− 0.45	mA
				V_{CC} = 5.5V, V_{IN} = − 20V		—	—	− 2.6	
Output Current		$I_{IN\ (OFF)}$	4			—	—	− 40	μA
Output Voltage	TD62304	$V_{IN\ (ON)}$	5			—	—	V_{CC} − 2.8	V
	TD62305					—	—	V_{CC} − 3.7	
Supply Current		$I_{CC\ (ON)}$	6	V_{CC} = 5.5V, V_{IN} = 0V		—	17	22	mA
Supply Current		$I_{CC\ (OFF)}$		V_{CC} = V_{IN} = 5.5V		—	—	100	μA
Turn-On Delay		t_{ON}	7	V_{CC} = 5V, C_L = 15pF V_{OUT} = 50V, R_L = 125Ω		—	0.1	—	μs
Turn-Off Delay		t_{OFF}				—	3	—	

TEST CIRCUIT

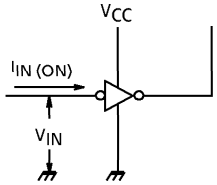
1. I_{CEX}



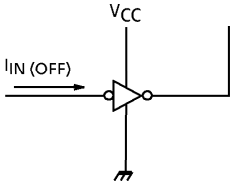
2. $V_{CE\ (sat)}$



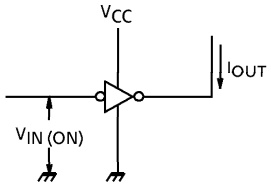
3. $I_{IN\ (ON)}$



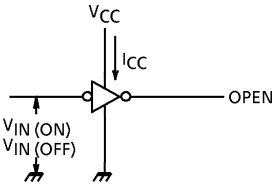
4. $I_{IN\ (OFF)}$



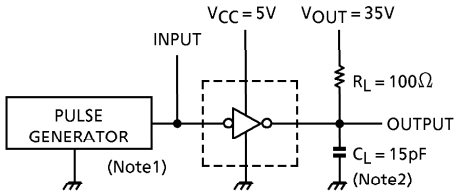
5. $V_{IN\ (ON)}$

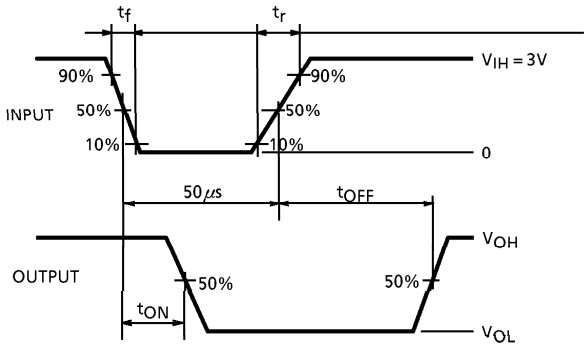


6. I_{CC}



7. t_{ON}, t_{OFF}





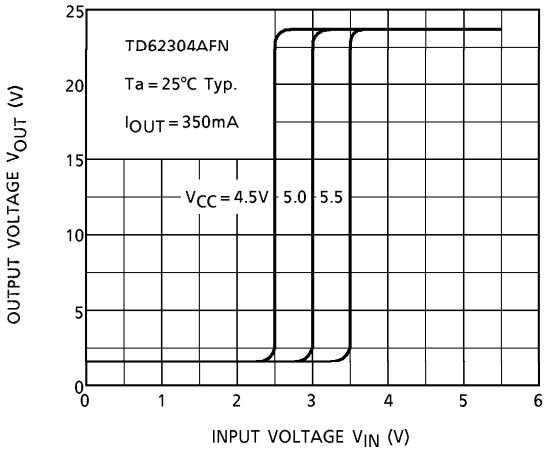
(Note 1) Pulse Width 50μs, Duty Cycle 10%,
Output Impedance 50Ω, $t_r \leqq$ 10ns, $t_f \leqq$ 5ns

(Note 2) CL includes probe and jig capacitance

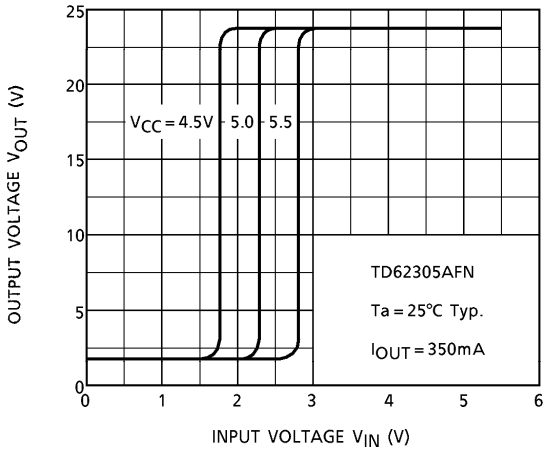
PRECAUTIONS for USING

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.

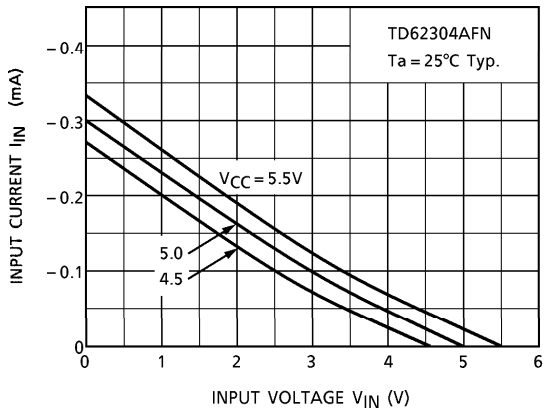
V_{OUT} – V_{IN}



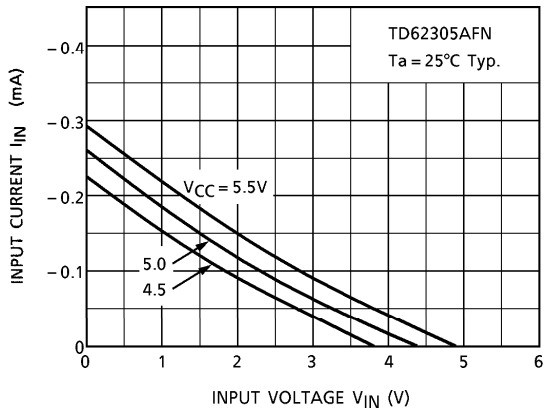
V_{OUT} – V_{IN}



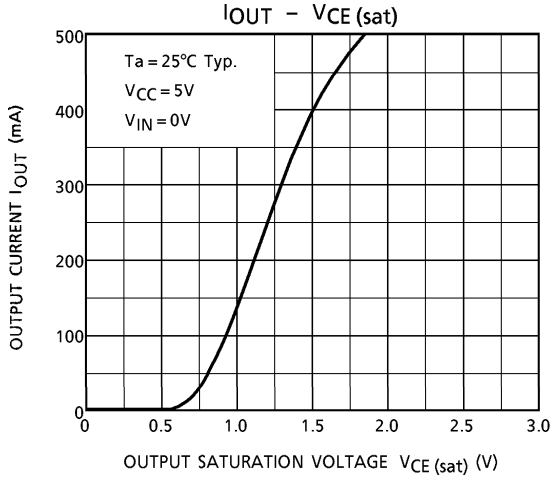
I_{IN} – V_{IN}



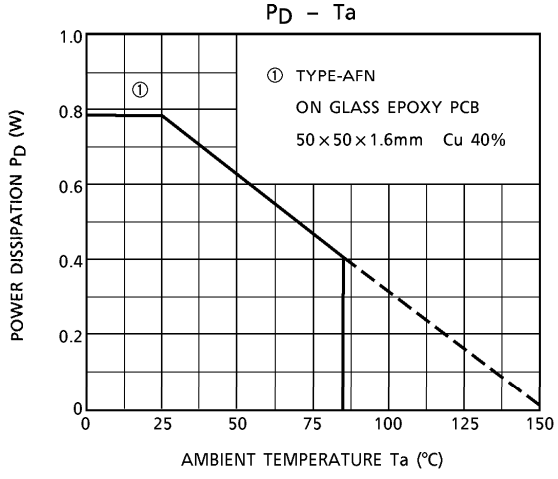
I_{IN} – V_{IN}



I_{OUT} – $V_{CE\ (sat)}$



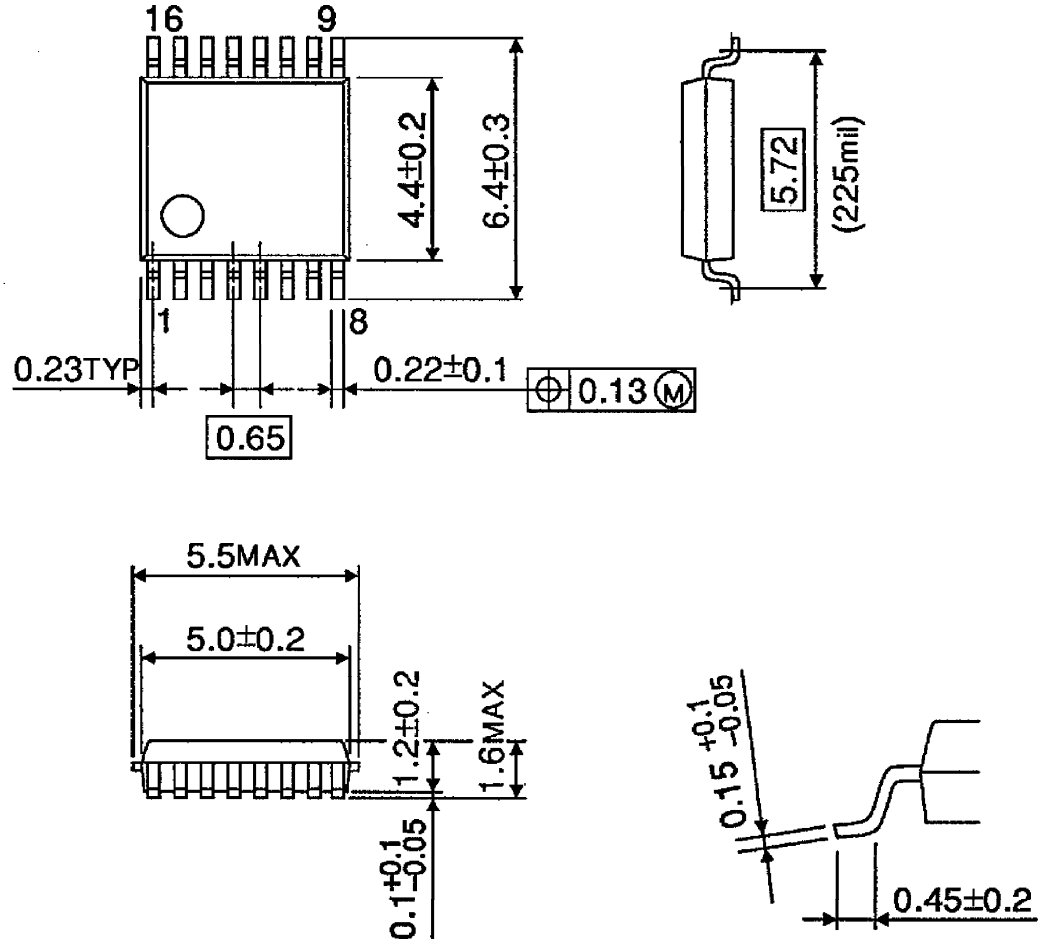
P_D – Ta



OUTLINE DRAWING

SSOP16-P-225-0.65B

Unit : mm



Weight : 0.07g (Typ.)