

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

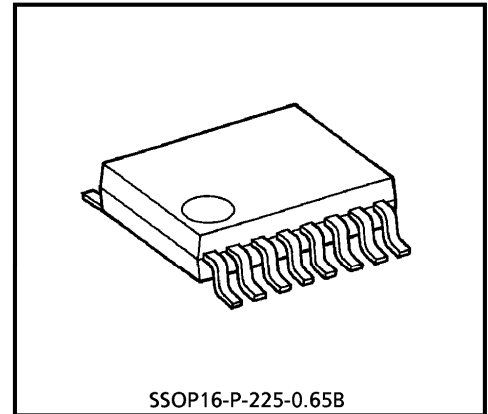
TD62304AFN, TD62305AFN

7ch LOW INPUT ACTIVE DARLINGTON SINK DRIVER

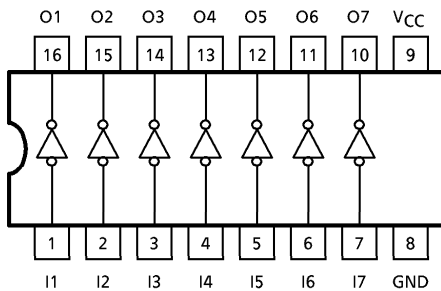
The TD62304AFN and TD62305AFN are non-inverting transistor arrays, which are comprised of seven NPN darlington output stages PNP input stages. These devices are Low Level input active drivers and are suitable for operations with TTL, 5V CMOS and 5V Microprocessor which have sink current output drivers.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

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

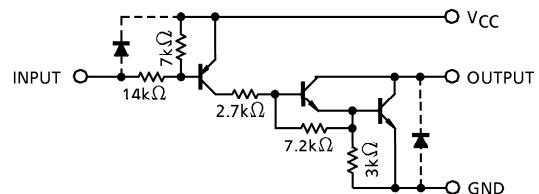


PIN CONNECTION (TOP VIEW)

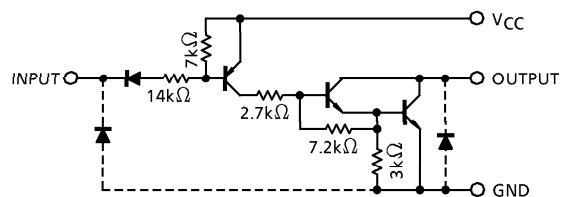


SCHEMATICS (EACH DRIVER)

TD62304AFN



TD62305AFN



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

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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}	V
	TD62305		
		- 22 ~ V _{CC} + 0.5	
		- 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} ≤ 25ms 7 Circuit	Duty = 10%	0	—		260
		T _j = 120°C Ta = 85°C		Duty = 50%	0		—
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	

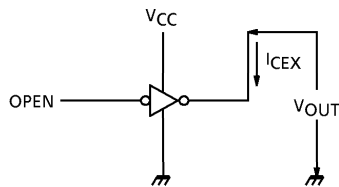
* : On Glass Epoxy PCB (50 × 50 × 1.6mm Cu 40%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

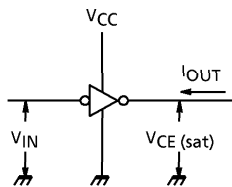
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX	UNIT
Output Leakage Current	I _{CEX}	1	V _{CC} = 5.5V, V _{OUT} = 50V Ta = 85°C, I _{IN} = 0	—	—	100	μA
Output Saturation Voltage	V _{CE (sat)}	2	V _{CC} = 4.5V	—	1.4	2.0	V
			I _{OUT} = 350mA		V _{IN} = V _{IN (ON)} MAX. V _{IN} = 0.8V	1.4	
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	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

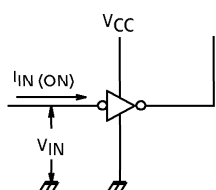
1. I_{CEX}



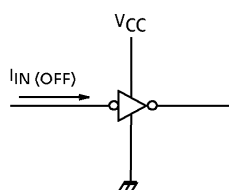
2. $V_{CE(sat)}$



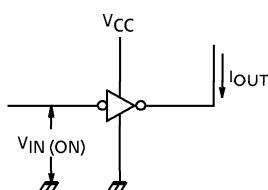
3. $I_{IN(ON)}$



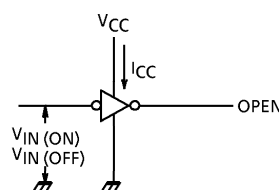
4. $I_{IN(OFF)}$



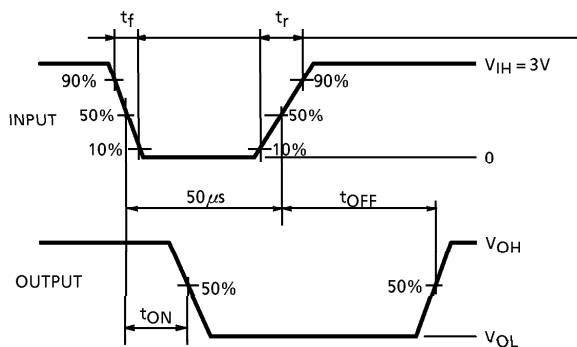
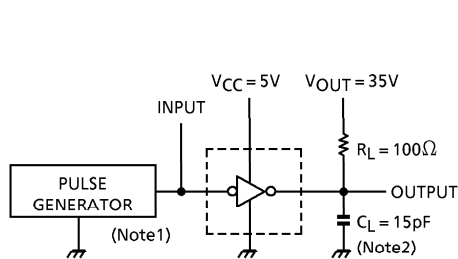
5. $V_{IN(ON)}$



6. I_{CC}



7. t_{ON}, t_{OFF}

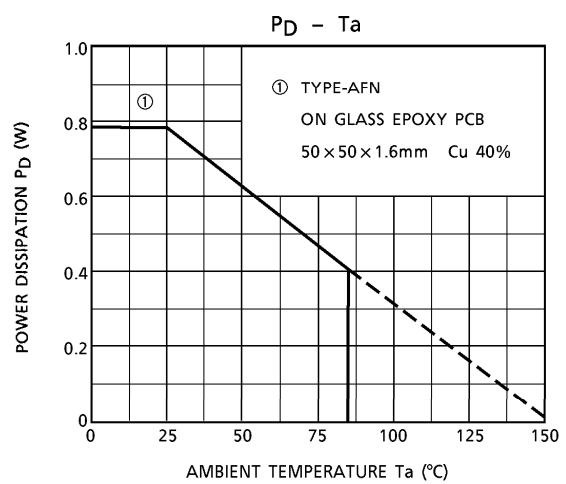
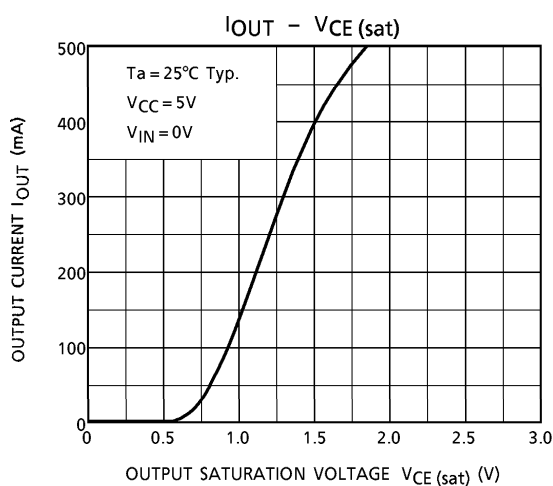
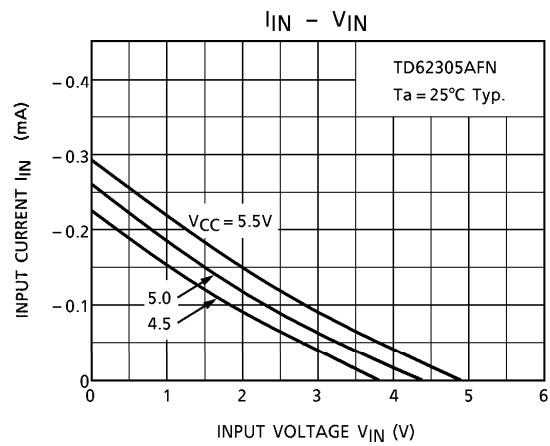
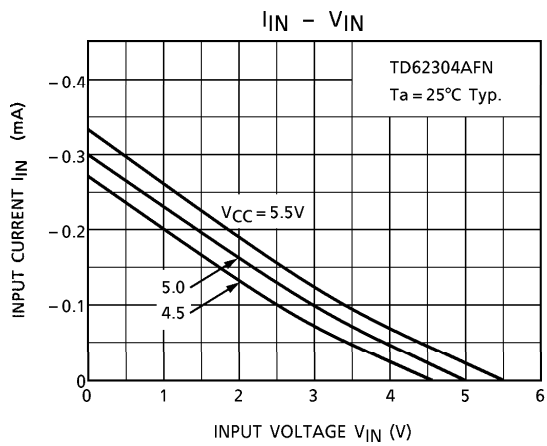
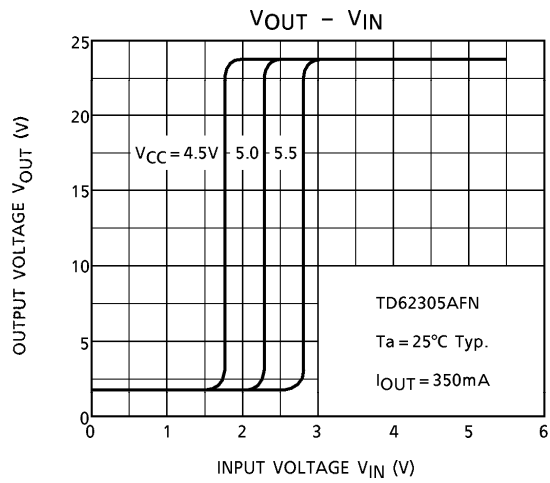
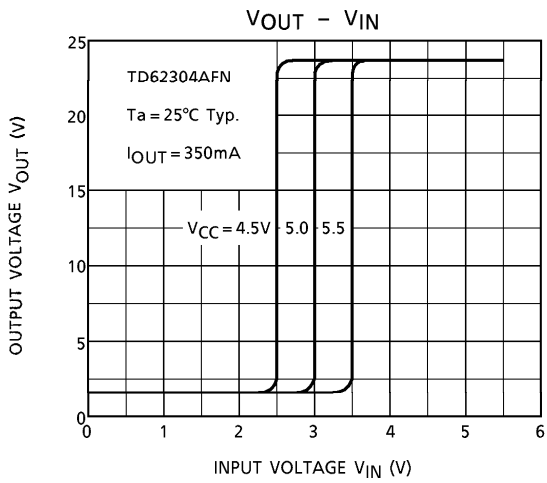


(Note 1) Pulse Width $50\mu s$, Duty Cycle 10%,
Output Impedance 50Ω , $t_r \leq 10ns$, $t_f \leq 5ns$

(Note 2) C_L includes probe and jig capacitance

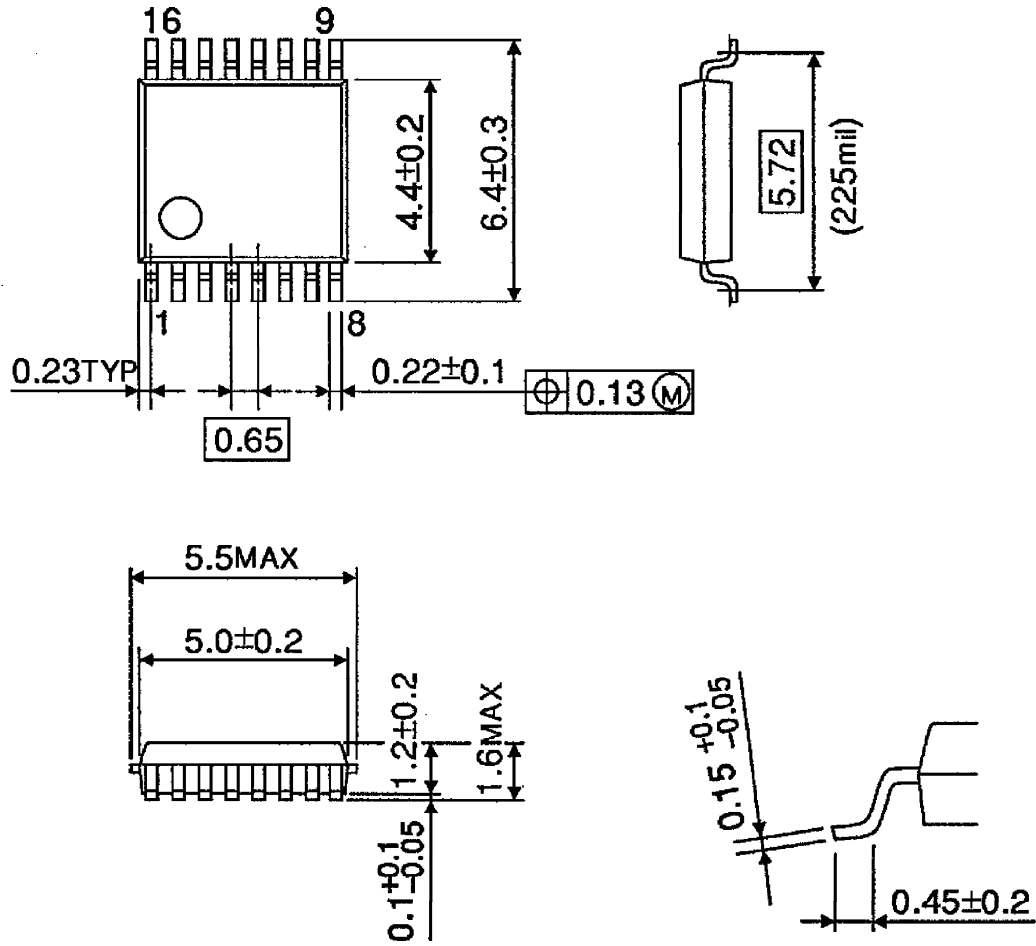
PRECAUTIONS for USING

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.



OUTLINE DRAWING
SSOP16-P-225-0.65B

Unit : mm



Weight : 0.07g (Typ.)