

**TOSHIBA**

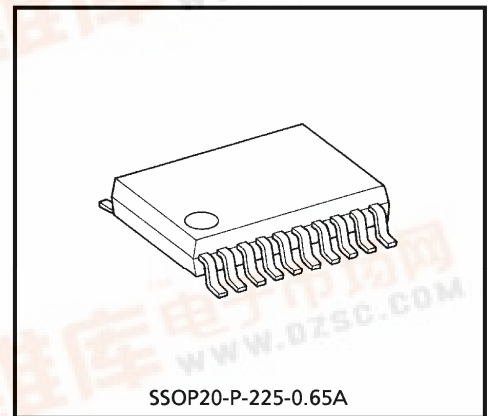
**TD62387,388AFN**

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

# TD62387AFN, TD62388AFN

## 8ch LOW INPUT ACTIVE DARLINGTON SINK DRIVER

The TD62387AFN and TD62388AFN are non-inverting transistor arrays, which are comprised of eight NPN darlington output stages and PNP input stages. All units feature integral clamp diodes for switching inductive loads. 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.



SSOP20-P-225-0.65A

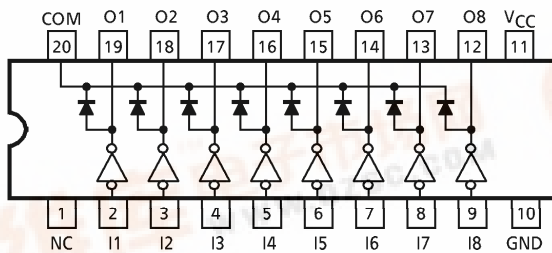
Weight : 0.09g (Typ.)

### FEATURES

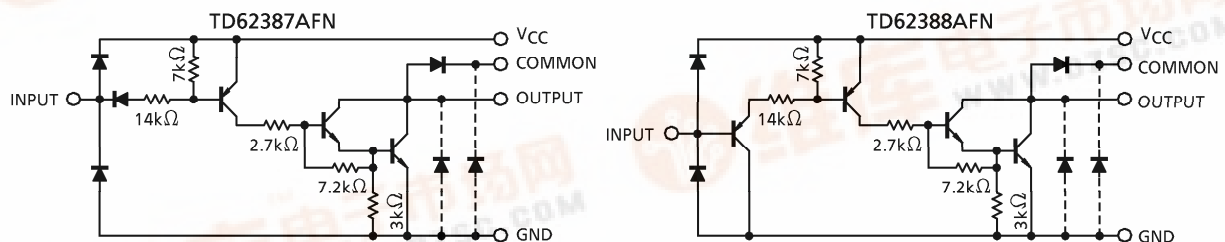
- Package Type : SSOP20 pin
- High Sustaining Voltage : 50V (Min.)
- Output Current (Single Output) : 500mA / ch (Max.)
- Output Clamp Diodes
- Input : LOW LEVEL ACTIVE
- Standard Supply Voltage
- Inputs Compatible with TTL and 5V CMOS

TYPE	V <sub>IN</sub> (ON)
TD62387AFN	0V~V <sub>CC</sub> -3.7V
TD62388AFN	

### PIN CONNECTION (TOP VIEW)



### SCHEMATICS (EACH DRIVER)



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

961001EBA2

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### MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5~7.0	V
Output Sustaining Voltage	V <sub>CE(SUS)</sub>	-0.5~50	V
Output Current	I <sub>OUT</sub>	500	mA / ch
Input Voltage	V <sub>IN</sub>	-0.5~7.0	V
Input Current	I <sub>IN</sub>	-10	mA
Clamp Diode Reverse Voltage	V <sub>R</sub>	50	V
Clamp Diode Forward Current	I <sub>F</sub>	500	mA
Power Dissipation	P <sub>D</sub> *	0.96	W
Operating Temperature	T <sub>opr</sub>	-40~85	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

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

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Voltage	V <sub>CC</sub>		4.5	5.0	5.5	V	
Output Sustaining Voltage	V <sub>CE(SUS)</sub>		0	—	50	V	
Output Current	I <sub>OUT</sub> *	DC 1Circuit	0	—	350	mA / ch	
		T <sub>pw</sub> = 25ms, 8Circuits Ta = 85°C, T <sub>j</sub> = 120°C	Duty = 10%	0	—		180
			Duty = 50%	0	—		90
Input Voltage	V <sub>IN</sub>		0	—	5.5	V	
Clamp Diode Reverse Voltage	V <sub>R</sub>		—	—	50	V	
Clamp Diode Forward Current	I <sub>F</sub>		—	—	400	mA	
Power Dissipation	P <sub>D</sub>		—	—	0.4	W	

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

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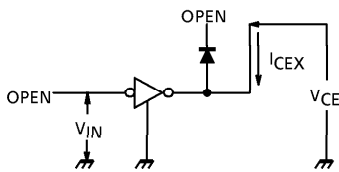
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

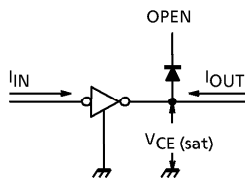
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current	$I_{CEX}$	1	$V_{CC} = 5.5V, I_{IN} = 0$ $V_{OUT} = 50V, T_a = 85^\circ C$	—	—	100	$\mu A$
Output Saturation Voltage	$V_{CE(sat)}$	2	$V_{CC} = 4.5V, V_{IN} = V_{IN(ON)Max.}$ $I_{OUT} = 350mA$	—	1.4	2.0	V
Input Current	Output On	$I_{IN(ON)}$	$V_{CC} = 5.5V, V_{IN} = 0.4V$	—	-0.32	-0.45	mA
	Output Off	$I_{IN(OFF)}$	$V_{CC} = 5.5V, V_{IN} = -20V$	—	—	-2.6	
Input Voltage (Output on)	$V_{IN(ON)}$	4		—	—	-4.0	$\mu A$
Clamp Diode Reverse Current	$I_R$	6	$V_R = 50V, T_a = 25^\circ C * 1$	—	—	50	$\mu A$
			$V_R = 50V, T_a = 85^\circ C * 1$	—	—	100	
Clamp Diode Forward Current	$V_F$	7	$I_F = 350mA$	—	—	2.0	V
			$I_F = 280mA$	—	—	1.8	
Supply Current	$I_{CC(ON)}$	8	$V_{CC} = 5.5V, V_{IN} = 0$	—	17	22	mA
	$I_{CC(OFF)}$		$V_{CC} = 5.5V, V_{IN} = V_{CC}$	—	—	100	
Turn-On Delay	$t_{ON}$	9	$V_{CC} = 5V, V_{OUT} = 50V * 1$ $R_L = 125\Omega, C_L = 15pF$	—	0.1	—	$\mu s$
Turn-Off Delay	$t_{OFF}$			—	3	—	

TEST CIRCUIT

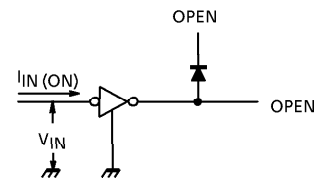
1.  $I_{CEX}$



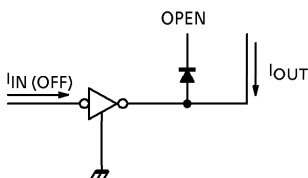
2.  $V_{CE(sat)}$



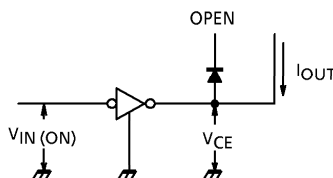
3.  $I_{IN(ON)}$



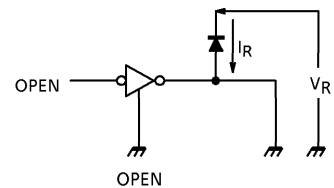
4.  $I_{IN(OFF)}$



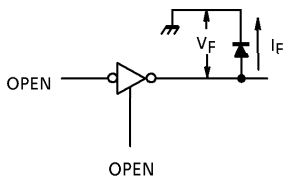
5.  $V_{IN(ON)}$



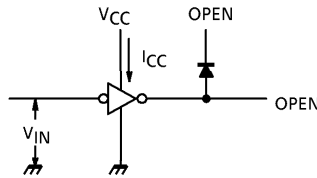
6.  $I_R$



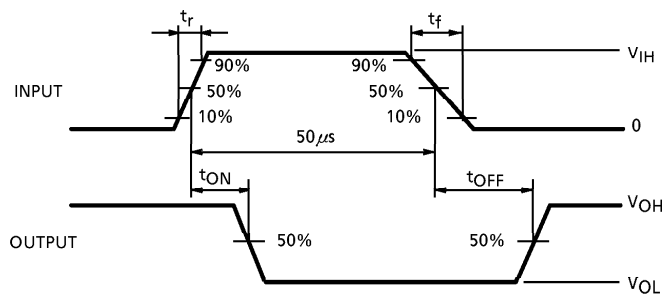
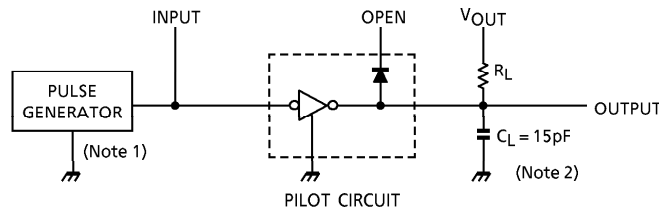
7.  $V_F$



8.  $I_{CC}$



9.  $t_{ON}$ ,  $t_{OFF}$

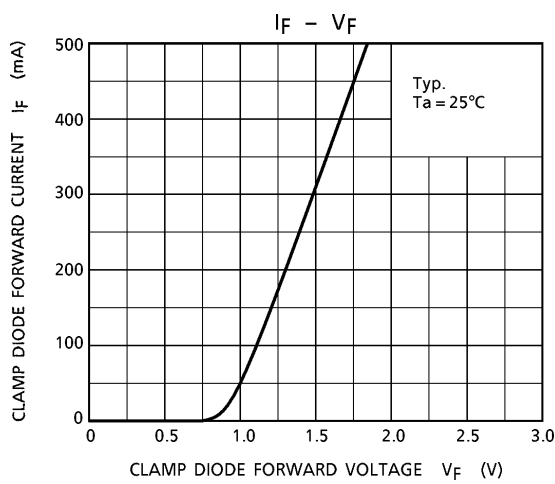
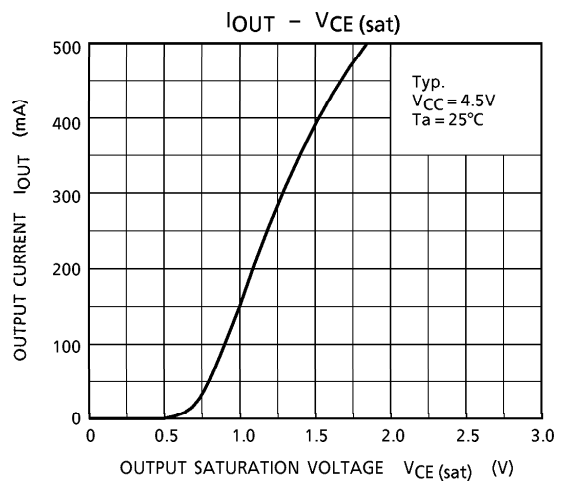
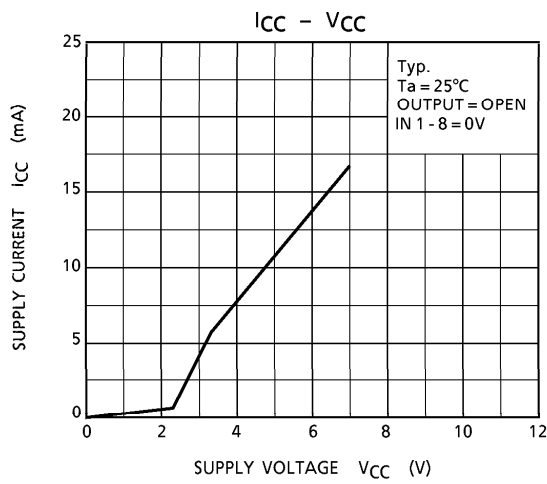
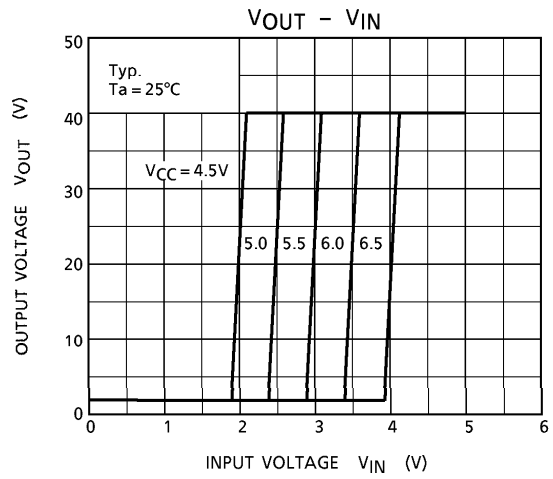
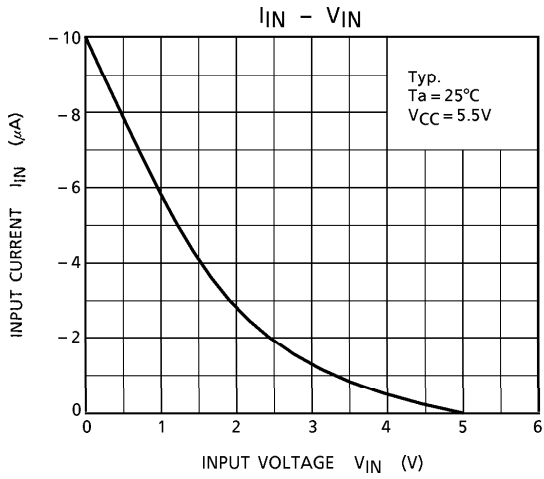


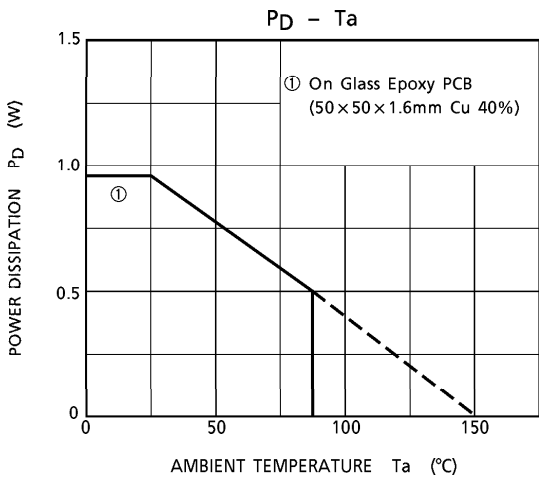
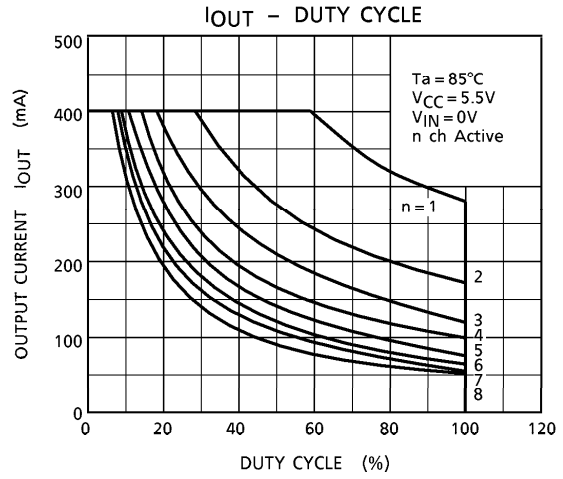
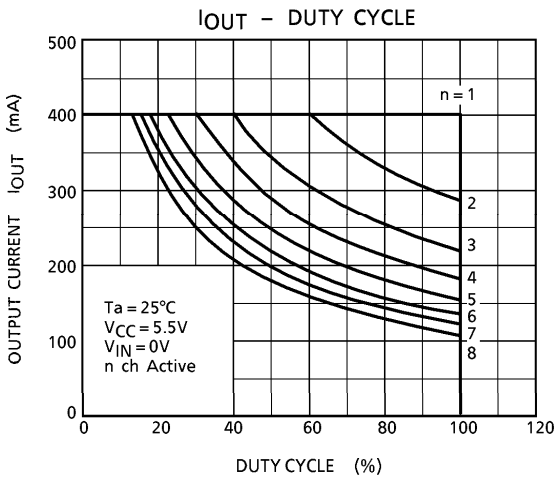
(Note 1) Pulse Width  $50\mu s$ , Duty Cycle 10%  
 Output Impedance  $50\Omega$ ,  $t_r \leq 5ns$ ,  $t_f \leq 10ns$

(Note 2)  $C_L$  includes probe and jig capacitance.

**PRECAUTIONS for USING**

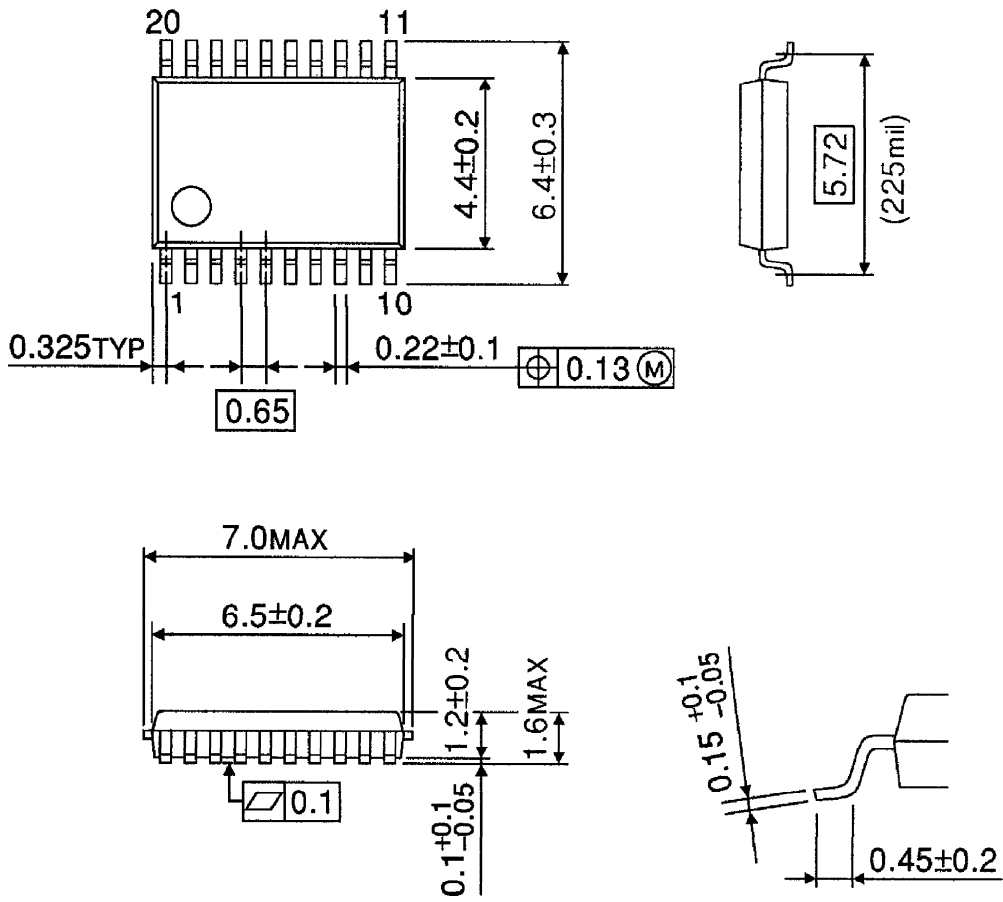
Utmost care is necessary in the design of the output line,  $V_{CC}$ , COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.





OUTLINE DRAWING  
SSOP20-P-225-0.65A

Unit : mm



Weight : 0.09g (Typ.)