

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

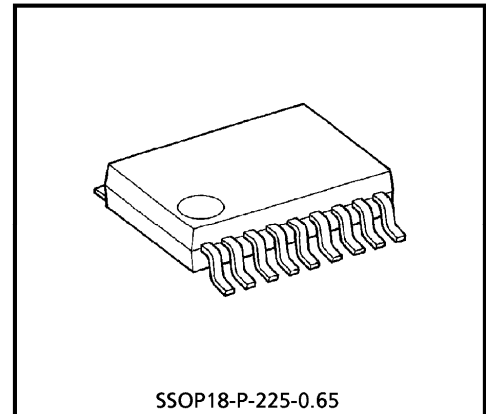
# TD62083AFN, TD62084AFN

## 8ch DARLINGTON SINK DRIVER

The TD62083AFN and TD62084AFN are high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.  
 All units feature integral clamp diodes for switching inductive loads.  
 Applications include relay, hammer, lamp and display (LED) drivers.

### FEATURES

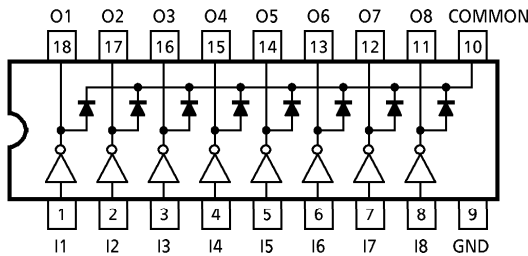
- Package Type : SSOP18 pin
- High Sustaining Voltage Output : 50V (Min.)
- Output Current (Single Output) : 500mA / ch (Max.)
- Output Clamp Diodes
- Inputs compatible with Various Types of Logic.



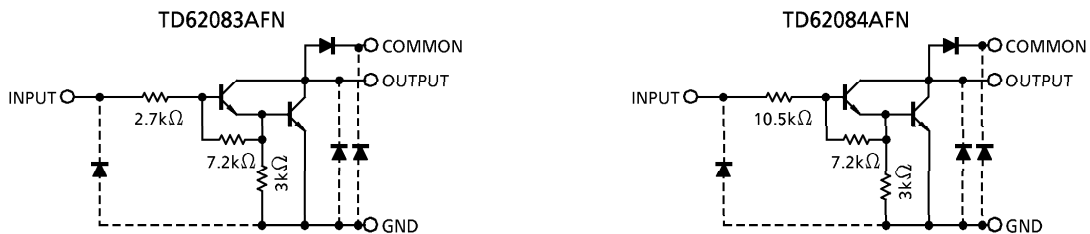
Weight : 0.09g (Typ.)

TYPE	INPUT BASE RESISTOR	DESIGNATION
TD62083AFN	2.7kΩ	TTL, 5V C-MOS
TD62084AFN	10.5kΩ	6~15V P-MOS, C-MOS

### PIN CONNECTION (TOP VIEW)



### SCHEMATICS (EACH DRIVER)



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

961001EBA2

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**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
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>	-0.5~30	V
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	
Output Sustaining Voltage		V <sub>CE(SUS)</sub>		0	—	50	V	
Output Current		I <sub>OUT</sub> *	DC 1 Circuit	—	—	350	mA / ch	
			T <sub>pw</sub> = 25ms, 8 Circuits Ta = 85°C, T <sub>j</sub> = 120°C	Duty = 10%	0	—		260
				Duty = 50%	0	—		90
Input Voltage		V <sub>IN</sub>		0	—	30	V	
Input Voltage (Output ON)	TD62083	V <sub>IN(ON)</sub>		3.5	—	30	V	
	TD62084			8	—	30		
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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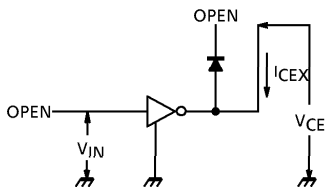
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**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

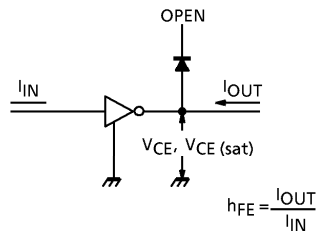
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current	TD62083	ICEX	1	VCE = 50V Ta = 25°C	—	—	50	μA
				VCE = 50V Ta = 85°C	—	—	100	
	TD62084			VCE = 50V VIN = 1V	—	—	500	
Output Saturation Voltage		VCE (sat)	2	IOUT = 350mA, IIN = 500μA	—	1.3	1.6	V
				IOUT = 200mA, IIN = 350μA	—	1.1	1.3	
				IOUT = 100mA, IIN = 250μA	—	0.9	1.1	
Input Current	TD62083	IIN (ON)	3	VIN = 3.85V	—	0.93	1.35	mA
	TD62084			VIN = 5V	—	0.35	0.5	
				VIN = 12V	—	1.0	1.45	
			IIN (OFF)	4	IOUT = 500μA, Ta = 85°C	50	65	—
Input Voltage	TD62083	VIN (ON)	5	VCE = 2V, IOUT = 200mA	—	—	2.4	V
				VCE = 2V, IOUT = 250mA	—	—	2.7	
				VCE = 2V, IOUT = 300mA	—	—	3.0	
	TD62084			VCE = 2V, IOUT = 125mA	—	—	5.0	
				VCE = 2V, IOUT = 200mA	—	—	6.0	
				VCE = 2V, IOUT = 275mA	—	—	7.0	
				VCE = 2V, IOUT = 350mA	—	—	8.0	
DC Current Transfer Ratio		hFE	2	VCE = 2V, IOUT = 350mA	1000	—	—	
Clamp Diode Reverse Current		IR	6	Ta = 25°C VR = 50V	—	—	50	μA
				Ta = 85°C VR = 50V	—	—	100	
Clamp Diode Forward Voltage		VF	7	IF = 350mA	—	—	2.0	V
Input Capacitance		CIN	—		—	15	—	pF
Turn-On Delay		tON	8	RL = 125Ω, VOUT = 50V	—	0.1	—	μs
Turn-Off Delay		tOFF		RL = 125Ω, VOUT = 50V	—	0.2	—	

**TEST CIRCUIT**

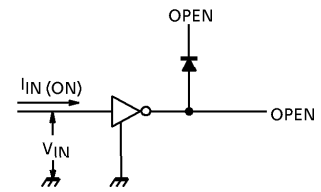
1.  $I_{CEX}$



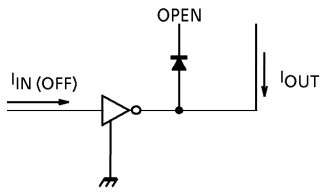
2.  $V_{CE(sat)}$ ,  $h_{FE}$



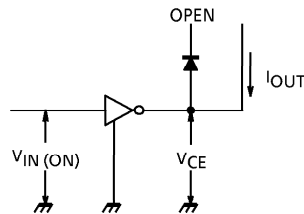
3.  $I_{IN(ON)}$



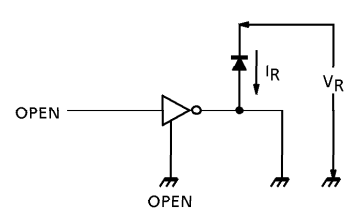
4.  $I_{IN(OFF)}$



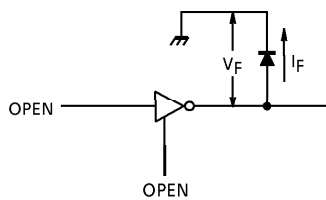
5.  $V_{IN(ON)}$



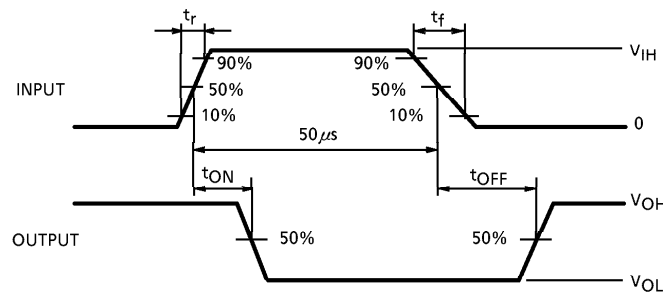
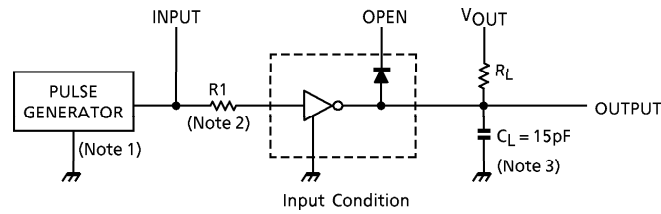
6.  $I_R$



7.  $V_F$



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



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

(Note 2) See below

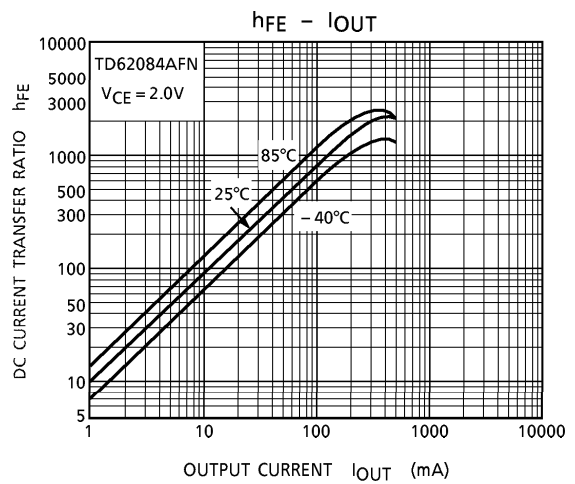
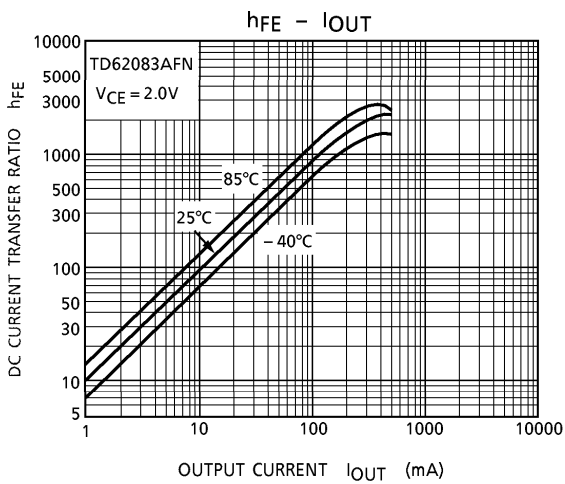
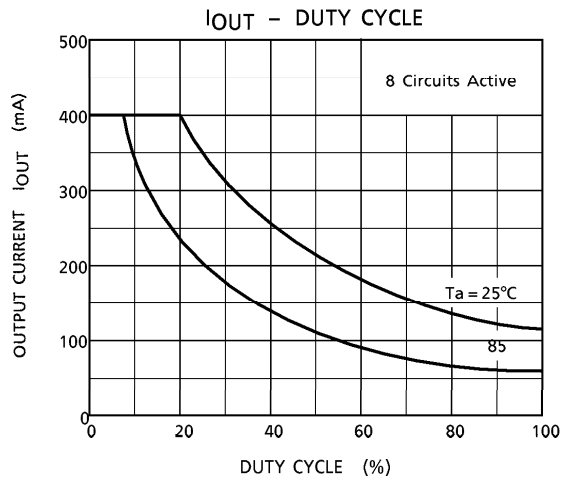
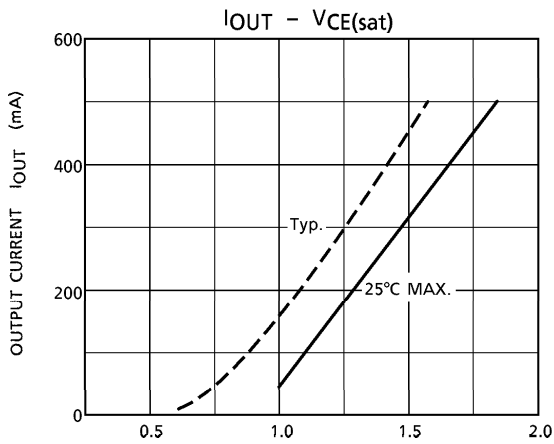
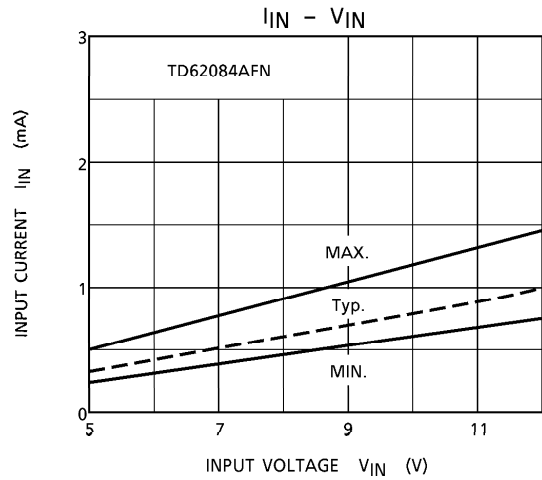
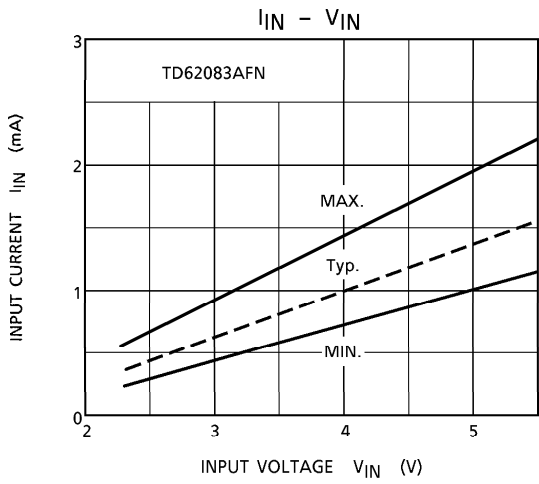
Input Condition

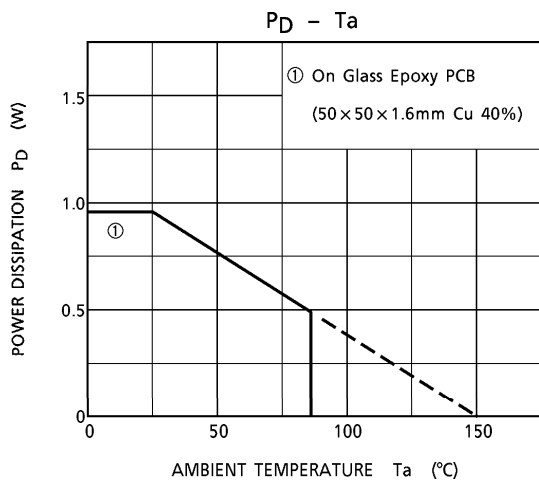
TYPE NUMBER	R1	$V_{IH}$
TD62083AFN	0	3V
TD62084AFN	0	8V

(Note 3)  $C_L$  includes probe and jig capacitance.

PRECAUTIONS for USING

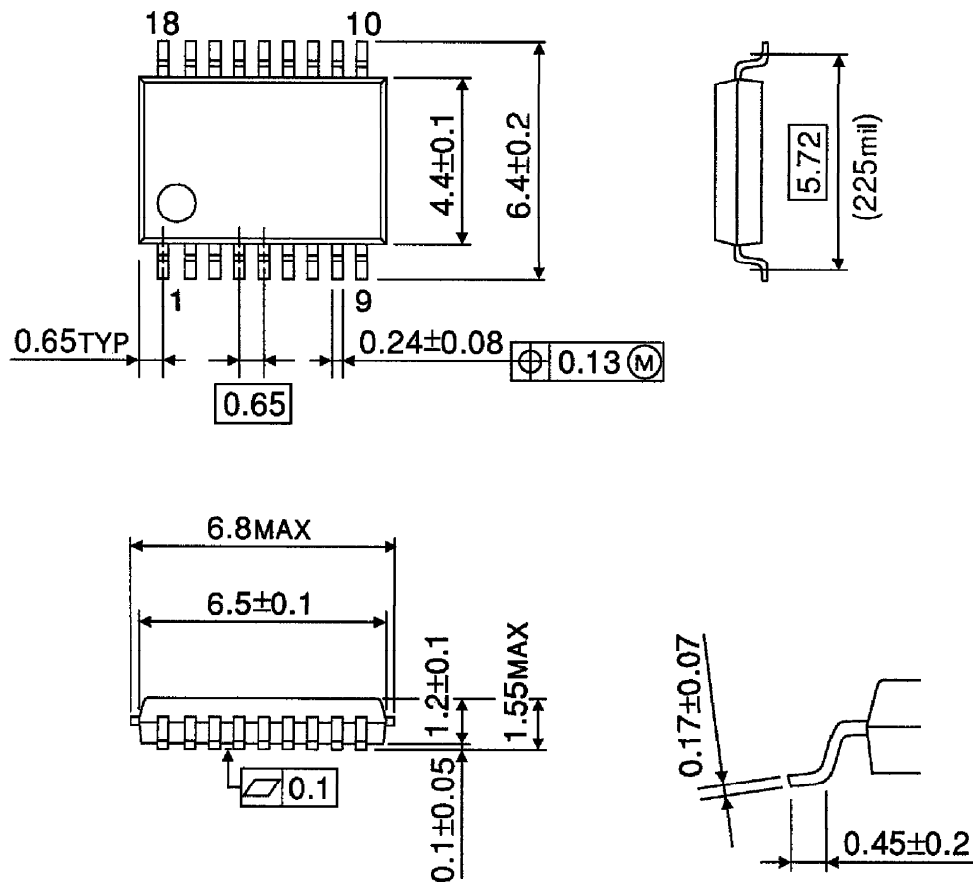
Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.





**OUTLINE DRAWING**  
SSOP18-P-225-0.65

Unit : mm



Weight : 0.09g (Typ.)