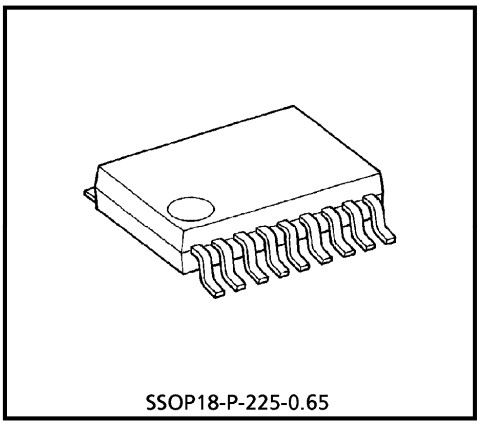
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

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.



SSOP18-P-225-0.65

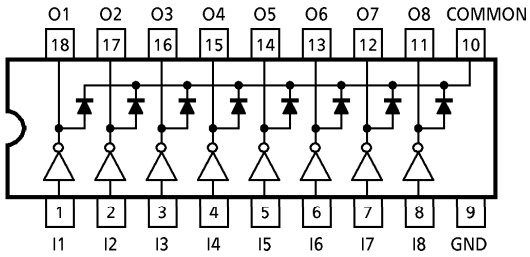
Weight : 0.09g (Typ.)

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.

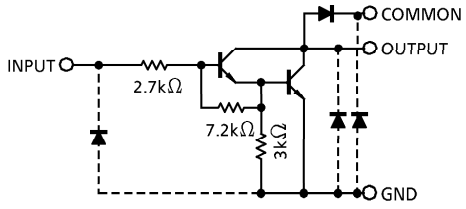
TYPE	INPUT BASE RESISTOR	DESIGNATION
TD62083AFN	2.7kΩ	TTL, 5V C-MOS
TD62084AFN	10.5kΩ	6~15V P-MOS, C-MOS

PIN CONNECTION (TOP VIEW)

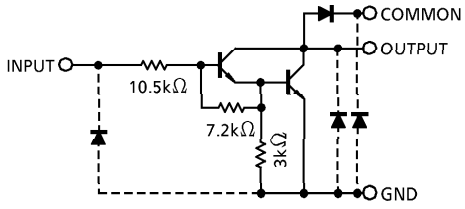


SCHEMATICS (EACH DRIVER)

TD62083AFN



TD62084AFN



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

961001EBA2

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Output Sustaining Voltage	$V_{CE\ (SUS)}$	−0.5~50	V
Output Current	I_{OUT}	500	mA / ch
Input Voltage	V_{IN}	−0.5~30	V
Clamp Diode Reverse Voltage	V_R	50	V
Clamp Diode Forward Current	I_F	500	mA
Power Dissipation	P_D*	0.96	W
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−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		$V_{CE\ (SUS)}$			0	—	50	V
Output Current		I_{OUT}*	DC 1 Circuit		—	—	350	mA / ch
			T_{pw} = 25ms, 8 Circuits	Duty = 10%	0	—	260	
			Ta = 85°C, T_j = 120°C	Duty = 50%	0	—	90	
Input Voltage		V_{IN}			0	—	30	V
Input Voltage (Output ON)	TD62083	$V_{IN(ON)}$			3.5	—	30	V
	TD62084				8	—	30	
Clamp Diode Reverse Voltage		V_R			—	—	50	V
Clamp Diode Forward Current		I_F			—	—	400	mA
Power Dissipation		P_D*			—	—	0.4	W

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

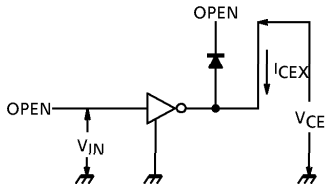
961001EBA2'

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

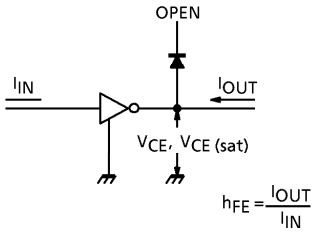
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Leakage Current	TD62083	I_{CEX}	1	V_{CE} = 50V	Ta = 25°C	—	—	50	μA
				V_{CE} = 50V	Ta = 85°C	—	—	100	
	TD62084			V_{CE} = 50V	V_{IN} = 1V	—	—	500	
Output Saturation Voltage		$V_{CE\ (sat)}$	2	I_{OUT} = 350mA, I_{IN} = 500μA		—	1.3	1.6	V
				I_{OUT} = 200mA, I_{IN} = 350μA		—	1.1	1.3	
				I_{OUT} = 100mA, I_{IN} = 250μA		—	0.9	1.1	
Input Current	TD62083	$I_{IN\ (ON)}$	3	V_{IN} = 3.85V		—	0.93	1.35	mA
	TD62084			V_{IN} = 5V		—	0.35	0.5	
				V_{IN} = 12V		—	1.0	1.45	
		$I_{IN\ (OFF)}$	4	I_{OUT} = 500μA, Ta = 85°C		50	65	—	μA
Input Voltage	TD62083	$V_{IN\ (ON)}$	5	V_{CE} = 2V, I_{OUT} = 200mA		—	—	2.4	V
				V_{CE} = 2V, I_{OUT} = 250mA		—	—	2.7	
				V_{CE} = 2V, I_{OUT} = 300mA		—	—	3.0	
	TD62084			V_{CE} = 2V, I_{OUT} = 125mA		—	—	5.0	
				V_{CE} = 2V, I_{OUT} = 200mA		—	—	6.0	
				V_{CE} = 2V, I_{OUT} = 275mA		—	—	7.0	
				V_{CE} = 2V, I_{OUT} = 350mA		—	—	8.0	
DC Current Transfer Ratio		h_{FE}	2	V_{CE} = 2V, I_{OUT} = 350mA		1000	—	—	
Clamp Diode Reverse Current		I_R	6	Ta = 25°C	V_R = 50V	—	—	50	μA
				Ta = 85°C	V_R = 50V	—	—	100	
Clamp Diode Forward Voltage		V_F	7	I_F = 350mA		—	—	2.0	V
Input Capacitance		C_{IN}	—			—	15	—	pF
Turn-On Delay		t_{ON}	8	R_L = 125Ω, V_{OUT} = 50V		—	0.1	—	μs
Turn-Off Delay		t_{OFF}		R_L = 125Ω, V_{OUT} = 50V		—	0.2	—	

TEST CIRCUIT

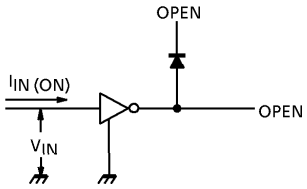
1. I_{CEX}



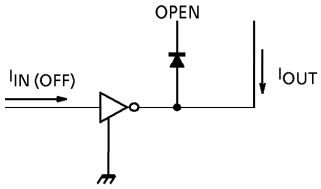
2. $V_{CE\ (sat)}$, h_{FE}



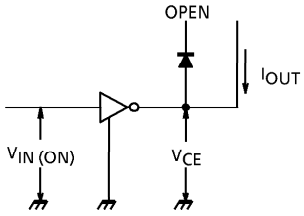
3. $I_{IN\ (ON)}$



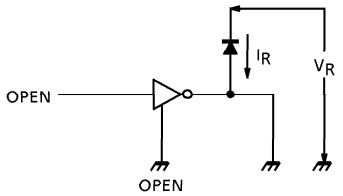
4. $I_{IN\ (OFF)}$



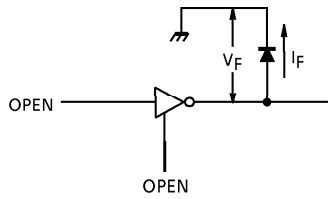
5. $V_{IN\ (ON)}$



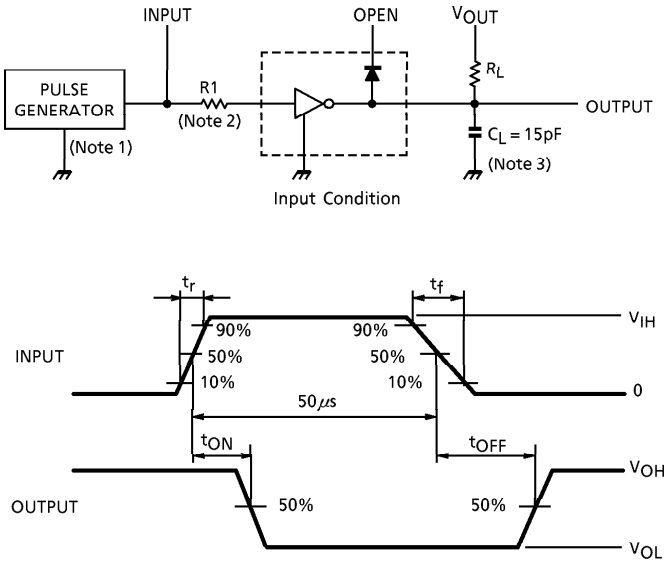
6. I_R



7. V_F



8. t_{ON}, t_{OFF}



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

(Note 2) See below

Input Condition

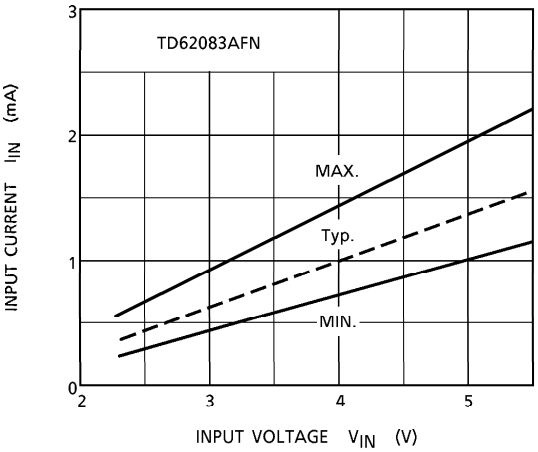
TYPE NUMBER	R1	V_{IH}
TD62083AFN	0	3V
TD62084AFN	0	8V

(Note 3) CL includes probe and jig capacitance.

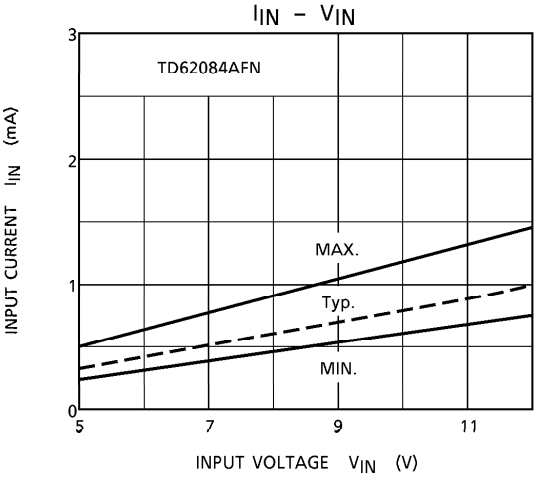
PRECAUTIONS for USING

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.

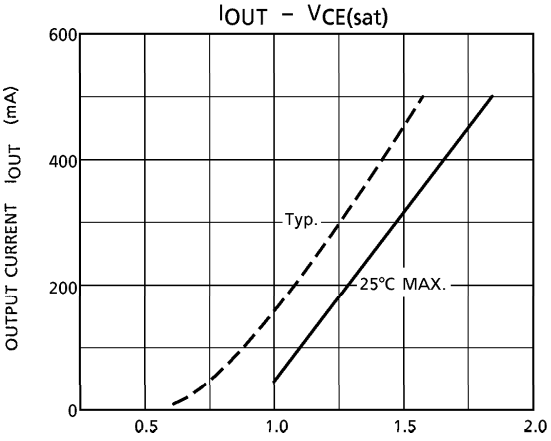
I_{IN} – V_{IN}



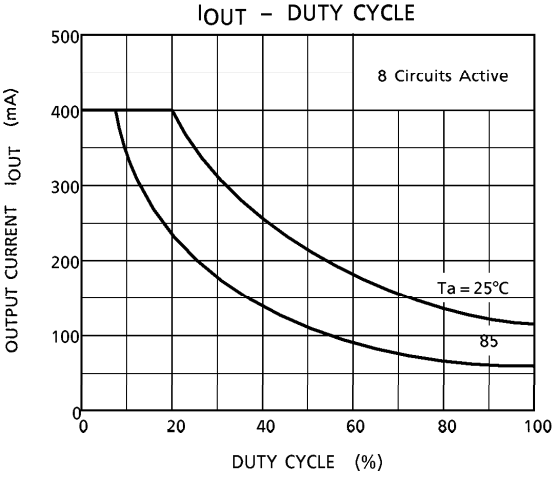
I_{IN} – V_{IN}



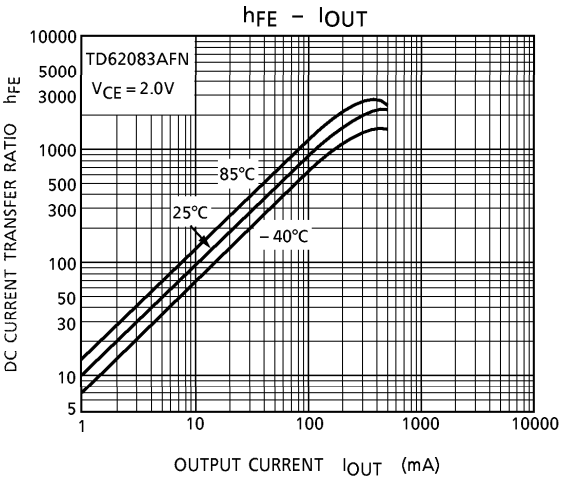
I_{OUT} – $V_{CE(sat)}$



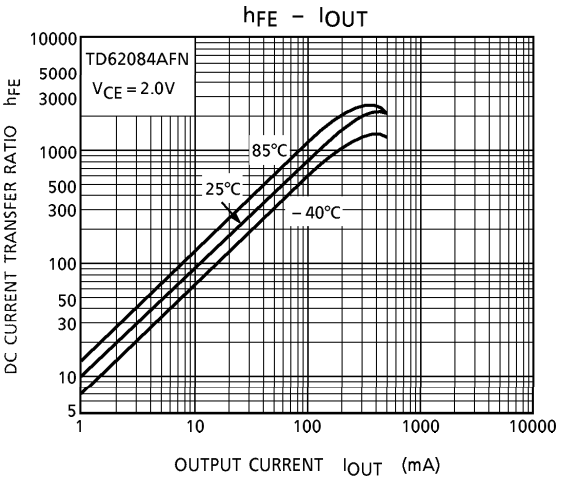
I_{OUT} – DUTY CYCLE

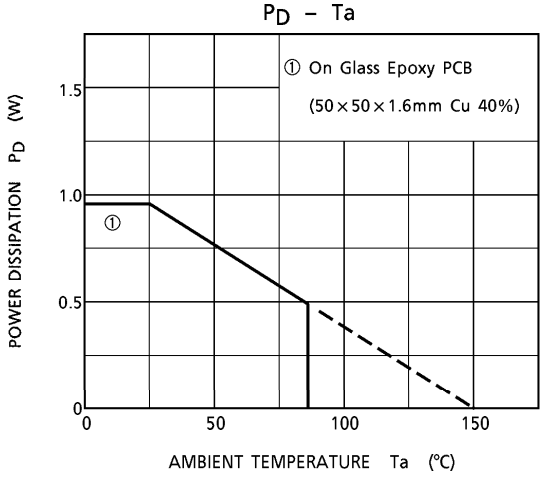


h_{FE} – I_{OUT}



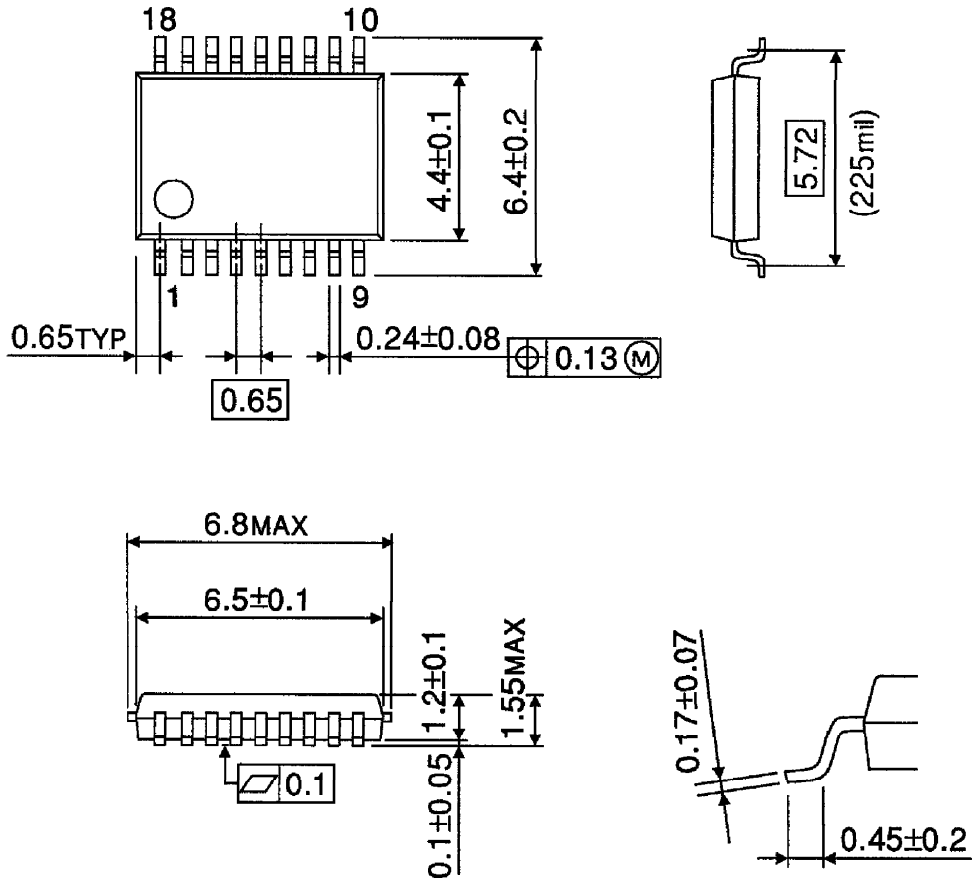
h_{FE} – I_{OUT}




P_D – Ta
① On Glass Epoxy PCB
(50×50×1.6mm Cu 40%)
POWER DISSIPATION P_D (W)
1.5
1.0
0.5
0
①
0
50
100
150
AMBIENT TEMPERATURE Ta (°C)

OUTLINE DRAWING

SSOP18-P-225-0.65 Unit : mm



Weight : 0.09g (Typ.)