

8CH DARLINGTON SINK DRIVER

The TD62081AP/CP/F/AF Series are high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.

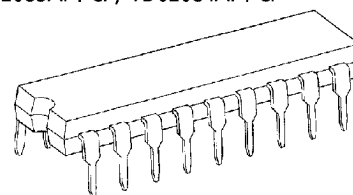
All units feature integral clamp diodes for switching inductive loads.

Applications include relay, hammer, lamp and display (LED) drivers.

FEATURES

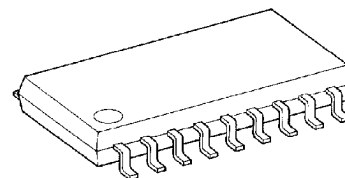
- Output current (single output)
500mA (Max.) (TD62081AP/F/AF series)
400mA (Max.) (TD62081CP series)
- High sustaining voltage output
35V (Min.) (TD62081F series)
50V (Min.) (TD62081AP/AF series)
100V (Min.) (TD62081CP series)
- Output clamp diodes
- Inputs compatible with various types of logic.
- Package type-AP, CP : DIP-18pin
- Package type-F, AF : SOP-18pin

TD62081AP/CP, TD62082AP/CP
TD62083AP/CP, TD62084AP/CP



DIP18-P-300D

TD62081F/AF, TD62082F/AF
TD62083F/AF, TD62084F/AF

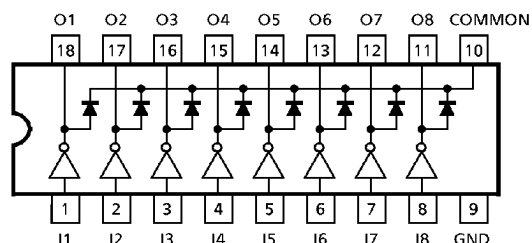


SOP18-P-375

Weight DIP18-P-300D : 1.478g (Typ.)
SOP18-P-375 : 0.41g (Typ.)

TYPE	INPUT BASE RESISTOR	DESIGNATION
TD62081AP/CP/F/AF	External	General Purpose
TD62082AP/CP/F/AF	10.5-k Ω + 7V Zenner diode	14~25V PMOS
TD62083AP/CP/F/AF	2.7k Ω	TTL, 5V CMOS
TD62084AP/CP/F/AF	10.5k Ω	6~15V PMOS, CMOS

PIN CONNECTION (TOP VIEW)

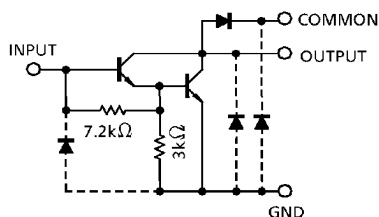


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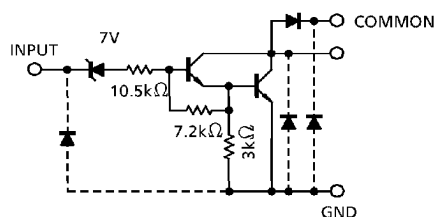
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SCHEMATICS (EACH DRIVER)

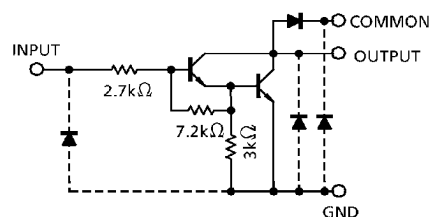
TD62081AP / CP / F / AF



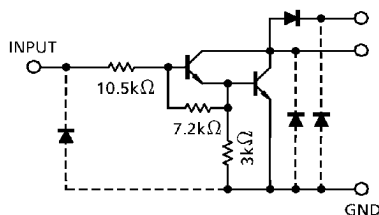
TD62082AP / CP / F / AF



TD62083AP / CP / F / AF



TD62084AP / CP / F / AF



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage	AP, AF	V _{CE (SUS)}	– 0.5~50	V
	CP		– 0.5~100	
	F		– 0.5~35	
Output Current		I _{OUT}	500	mA / ch
	CP		400	
Input Voltage		V _{IN} (Note 1)	– 0.5~30	V
Input Current		I _{IN} (Note 2)	25	mA
Clamp Diode Reverse Voltage	AP, AF	V _R	50	V
	CP		100	
	F		35	
Clamp Diode Forward Current		I _F	500	mA
	CP		400	
Power Dissipation	AP, CP	P _D	1.47	W
	F, AF		0.96	
Operating Temperature		T _{opr}	– 40~85	°C
Storage Temperature		T _{stg}	– 55~150	°C

(Note 1) Except TD62081AP / CP / F / AF

(Note 2) Only TD62081AP / CP / F / AF

RECOMMENDED OPERATING CONDITIONS ($T_a = -40 \sim 85^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage	AP, AF	V _{CE (SUS)}		0	—	50	V
	CP			0	—	100	
	F			0	—	35	
Output Current	AP, CP	I _{OUT}	T _{pw} = 25ms, Duty = 10%, 8 Circuits	0	—	347	mA / ch
			T _{pw} = 25ms, Duty = 50%, 8 Circuits	0	—	123	
	F, AF		T _{pw} = 25ms, Duty = 10%, 8 Circuits	0	—	268	
			T _{pw} = 25ms, Duty = 50%, 8 Circuits	0	—	90	
Input Voltage	Except TD62081AP / CP / F / AF	V _{IN}		0	—	30	V
Input Voltage (Output On)	TD62082AP / CP / F / AF	V _{IN (ON)}		14	—	30	V
	TD62083AP / CP / F / AF			3.5	—	30	
	TD62084AP / CP / F / AF			8	—	30	
Input Current	Only TD62081AP / CP / F / AF	I _{IN}		0	—	5	mA
Clamp Diode Reverse Voltage	AP, AF	V _R		—	—	50	V
	CP			—	—	100	
	F			—	—	35	
Clamp Diode Forward Current		I _F		—	—	400	mA
	CP			—	—	320	
Power Dissipation	AP, CP	P _D		—	—	0.52	W
	F, AF			—	—	0.4	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

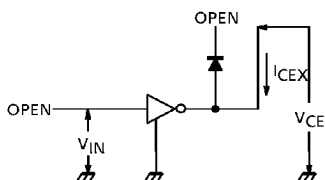
CHARACTERISTIC			SYMBOL	TEST CIR- CUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT				
Output Leakage Current		AP, AF	I _{CEX}	1	V _{CE} = 50V	Ta = 25°C	—	—	50	μA				
		CP			V _{CE} = 100V									
		F			V _{CE} = 35V									
		AP, AF			V _{CE} = 50V	Ta = 85°C								
		CP			V _{CE} = 100V									
		F			V _{CE} = 35V									
	TD62082	AP, AF			V _{CE} = 50V	V _{IN} = 6V	—	—	500					
		CP			V _{CE} = 100V									
		F			V _{CE} = 35V									
		TD62084			AP, AF	V _{CE} = 50V					V _{IN} = 1V	—	—	500
					CP	V _{CE} = 100V								
					F	V _{CE} = 50V								
V _{CE} = 35V														
Collector-Emitter 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	TD62082AP / CP / F / AF	TD62083AP / CP / F / AF	I _{IN} (ON)	2	V _{IN} = 17V	—	0.82	1.25	mA					
					V _{IN} = 3.85V	—	0.93	1.35						
					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 (Output On)	TD62082AP / CP / F / AF	V _{IN} (ON)	5	V _{CE} = 2V, I _{OUT} = 300mA		—	—	13	V					
				V _{CE} = 2V, I _{OUT} = 200mA		—	—	2.4						
	V _{CE} = 2V, I _{OUT} = 250mA			—	—	2.7								
	V _{CE} = 2V, I _{OUT} = 300mA			—	—	3.0								
	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 (Note)		—	—	50	μA				
					Ta = 85°C (Note)		—	—	100					
Clamp Diode Forward Voltage	CP	V _F	7	I _F = 350mA		—	—	2.0	V					
				I _F = 280mA		—	—	1.8						
Input Capacitance			C _{IN}	—			—	15	—	pF				

(Note) V_R = V_R MAX.

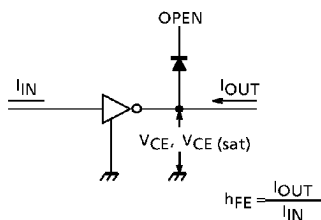
CHARACTERISTIC		SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-On Delay	AP, AF	t _{ON}	8	R _L = 125Ω, V _{OUT} = 50V	—	0.1	—	μs
	CP			R _L = 312Ω, V _{OUT} = 100V	—	0.1	—	
	F			R _L = 87.5Ω, V _{OUT} = 35V	—	0.1	—	
Turn-Off Delay	AP, AF	t _{OFF}		R _L = 125Ω, V _{OUT} = 50V	—	0.2	—	
	CP			R _L = 312Ω, V _{OUT} = 100V	—	3.0	—	
	F			R _L = 87.5Ω, V _{OUT} = 35V	—	0.2	—	

TEST CIRCUIT

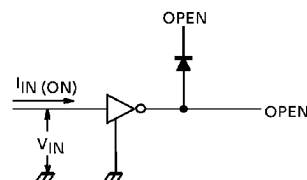
1. I_{CEX}



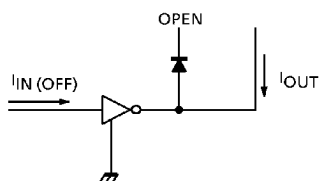
2. $V_{CE(sat)}$, h_{FE}



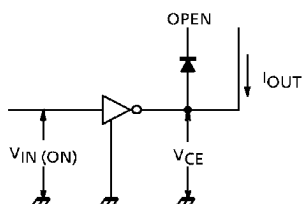
3. $I_{IN(ON)}$



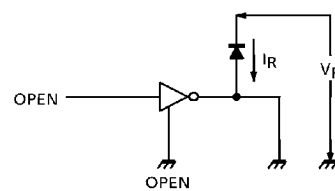
4. $I_{IN(OFF)}$



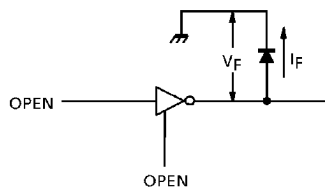
5. $V_{IN(ON)}$



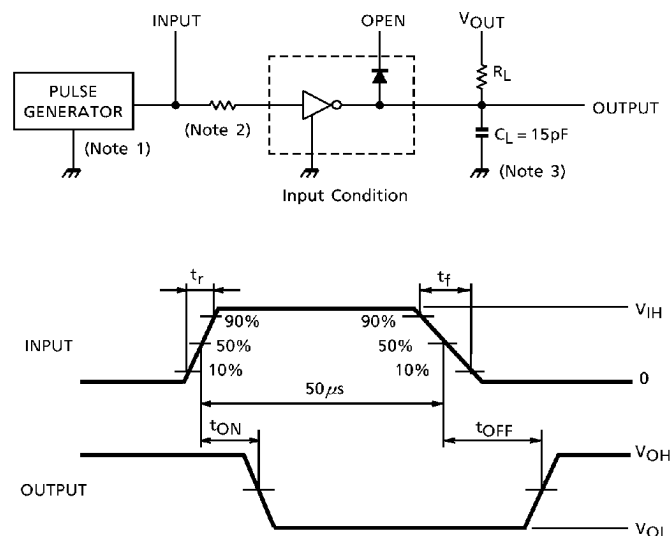
6. I_R



7. V_F



8. t_{ON} , t_{OFF}



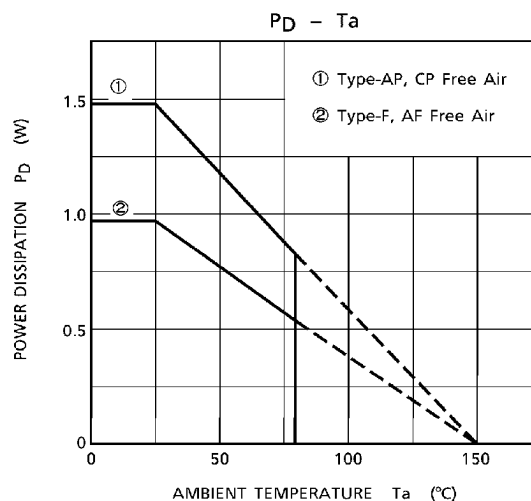
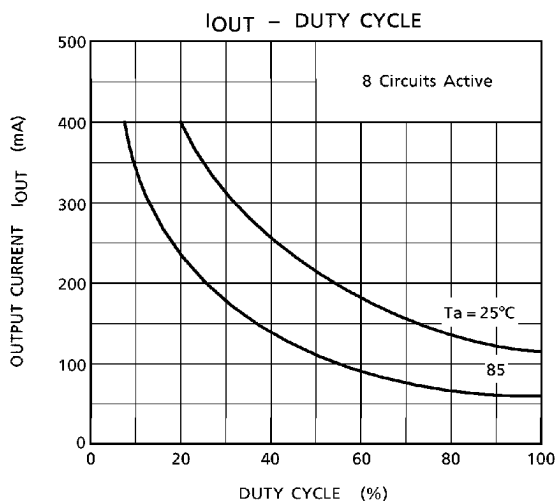
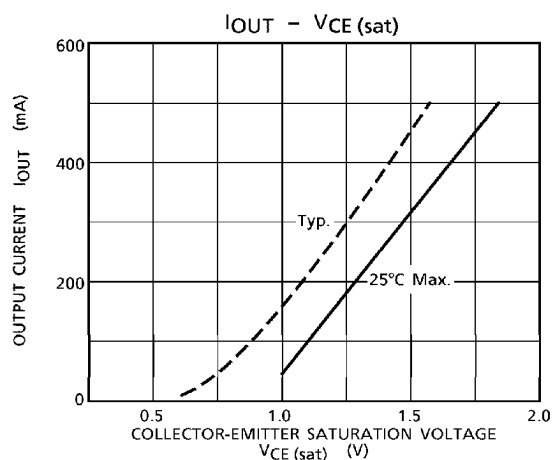
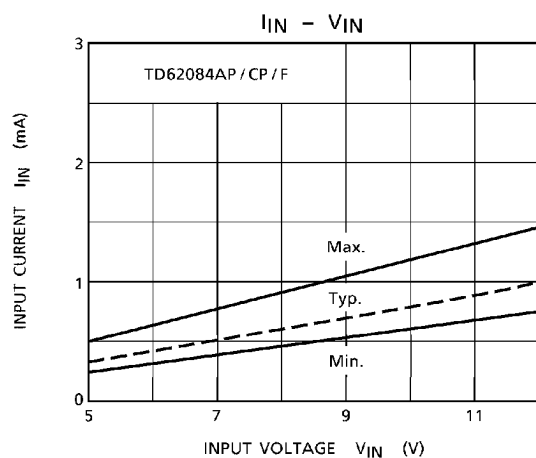
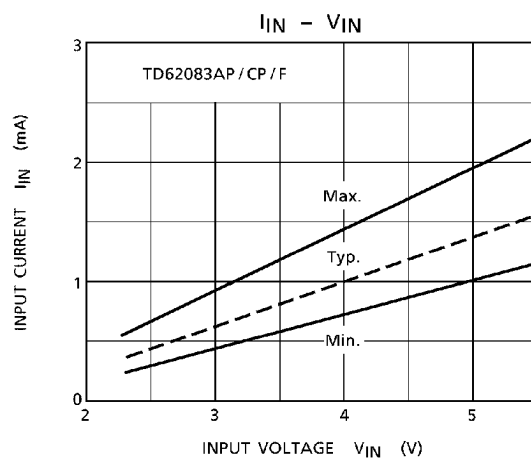
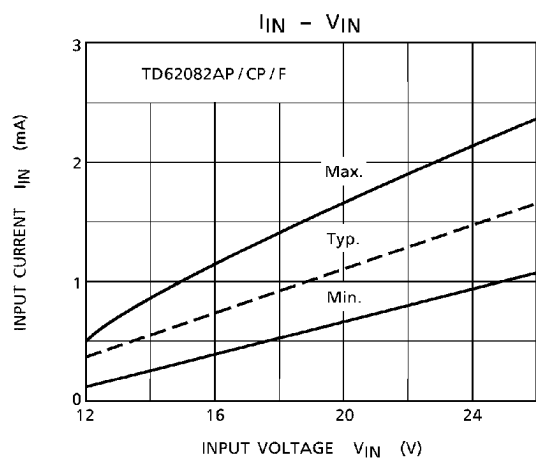
(Note 1) Pulse Width $50\mu s$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5ns$, $t_f \leq 10ns$

(Note 2) See below.

INPUT CONDITION

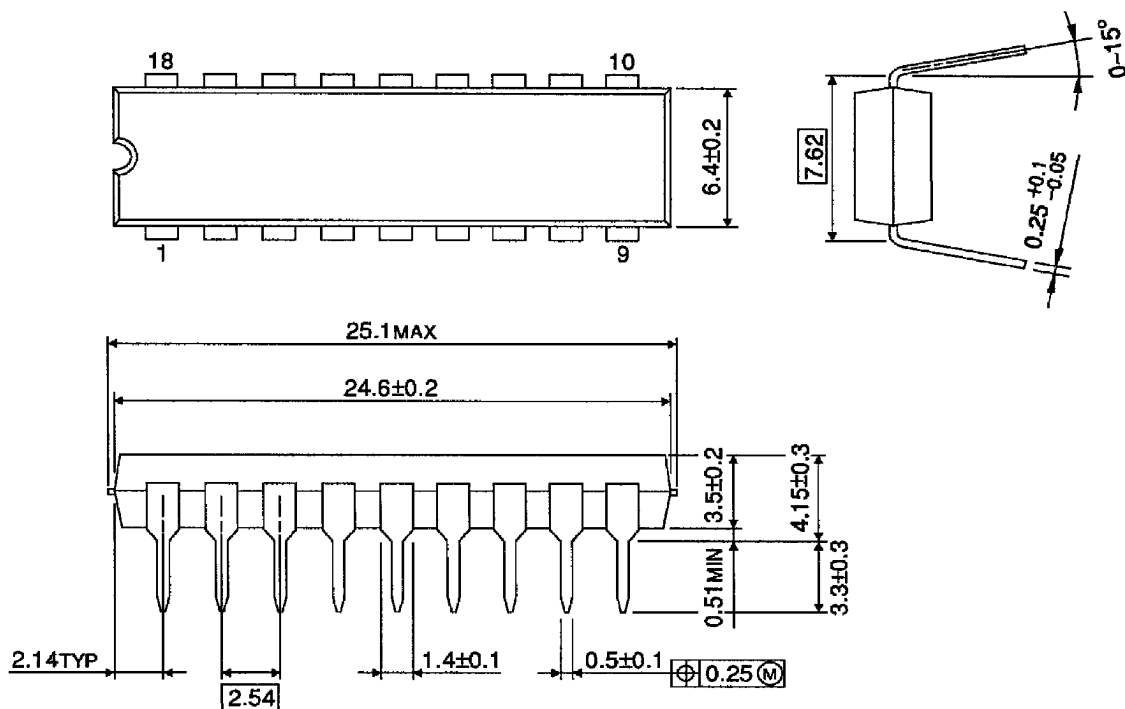
TYPE NUMBER	R1	V_{IH}
TD62081AP/CP/F/AF	$2.7k\Omega$	3V
TD62082AP/CP/F/AF	0Ω	13V
TD62083AP/CP/F/AF	0Ω	3V
TD62084AP/CP/F/AF	0Ω	8V

(Note 3) C_L includes probe and jig capacitance



OUTLINE DRAWING
DIP18-P-300D

Unit : mm

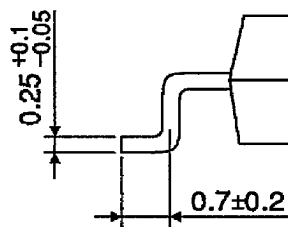
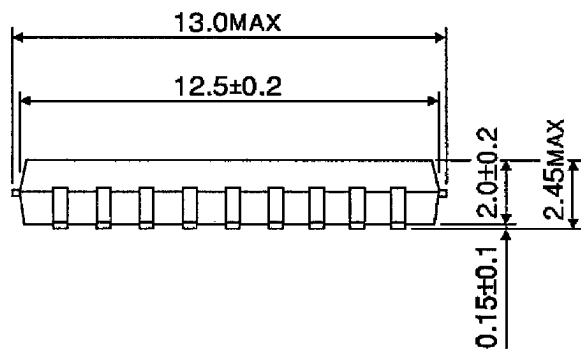
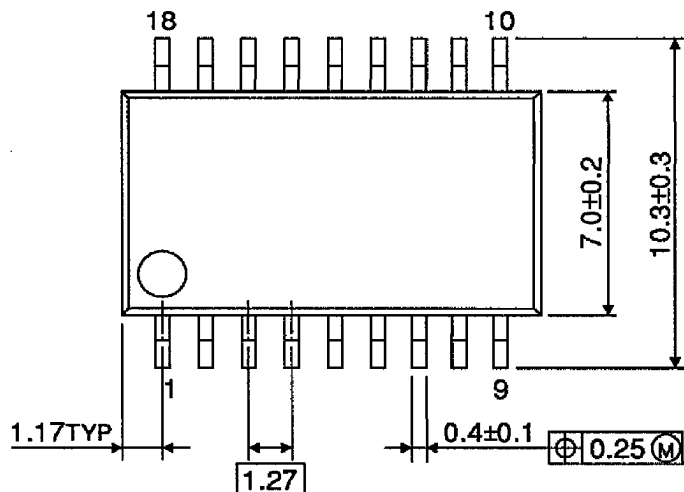


Weight : 1.478g (Typ.)

TD62081AP - 8
1995 - 5 - 29
TOSHIBA CORPORATION

OUTLINE DRAWING
SOP18-P-375

Unit : mm



Weight : 0.41g (Typ.)