TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62081AP, TD62081CP, TD62081F, TD62081AF, TD62082AP, TD62082CP TD62082F, TD62082AF, TD62083AP, TD62083CP, TD62083F, TD62083AF TD62084AP, TD62084CP, TD62084F, TD62084AF

8CH DARLINGTON SINK DRIVER

The TD62081AP/CP/F/AF Series are high-voltage, highcurrent 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

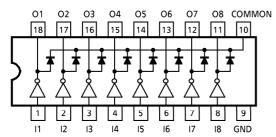
ТҮРЕ	INPUT BASE RESISTOR	DESIGNATION		
TD62081AP/CP/F/AF	External	General Purpose		
TD62082AP/CP/F/AF	10.5-k Ω + 7V Zenner diode	14~25V PMOS		
TD62083AP/CP/F/AF	2.7k Ω	TTL, 5V CMOS		
TD62084AP/CP/F/AF	10.5k Ω	6~15V PMOS, CMOS		

TD62081AP/CP, TD62082AP/CP TD62083AP/CP, TD62084AP/CP DIP18-P-300-2.54D TD62081F/AF, TD62082F/AF TD62083F/AF, TD62084F/AF SOP18-P-375-1.27

Weight

DIP18-P-300-2.54D : 1.478g (Typ.) SOP18-P-375-1.27 : 0.41g (Typ.)

PIN CONNECTION (TOP VIEW)



- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

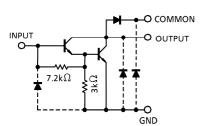
 The products described in this document are subject to foreign exchange and foreign trade control laws.

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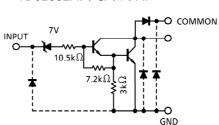
 The information contained herein is subject to change without notice.

SCHEMATICS (EACH DRIVER)

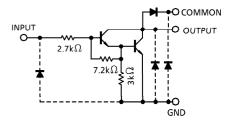
TD62081AP/CP/F/AF



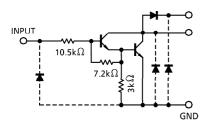
TD62082AP/CP/F/AF



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	AP, AF		-0.5~50		
Output Sustaining Voltage	СР	V _{CE} (SUS)	-0.5~100	V	
Voltage	F		-0.5~35		
Output Current		lou-	500	mA / ch	
Output Current	СР	IOUT	400	IIIA / Ch	
Input Voltage		V _{IN} (Note 1)	-0.5~30	V	
Input Current	Input Current		25	mA	
Clamp Diode Reverse	AP, AF		50	V	
Voltage	СР	V _R	100		
Voltage	F		35		
Clamp Diode Forward		1_	500		
Current		lF	400	mA	
Power Dissination	AP, CP	D=	1.47	w	
Power Dissipation	F, AF	PD	0.96	VV	
Operating Temperature	Operating Temperature		-40∼8 5	°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 ($Ta = -40 \sim 85$ °C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Sustaining		AP, AF	V _{CE} (SUS)		0	<u> </u>	50 100	V
		F		T _{pw} = 25ms, Duty = 10%,	0	_	35	
		AD CD		8 Circuits	0	_	347	
		AP, CP		T _{pw} = 25ms, Duty = 50%, 8 Circuits	0	_	123	ma A / ala
Output Current		F, AF	- 'оит	T _{pw} = 25ms, Duty = 10%, 8 Circuits	0	_	268	mA / ch
				T _{pw} = 25ms, Duty = 50%, 8 Circuits	0	_	90	
Input Voltage	Except TD62081AP/ CP/F/AF		V _{IN}		0	_	30	V
	TD62 CP/F	082AP / / AF			14	_	30	
(Output On) CP/		083AP / / AF	VIN (ON)		3.5	_	30	V
		084AP / / AF			8	_	30	
Input Current	Only TD62081AP / CP / F / AF		IIN		0	_	5	mA
Clamp Diode Reverse		AP, AF			_	_	50	
Voltage		CP F	V _R		<u> </u>		100 35	V
Clamp Diode Forward		<u> ' </u>			+=		400	_
Current CP		СР	lF IF		_	_	320	mA
Power Dissipation AP, CP F, AF		PD				0.52	W	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

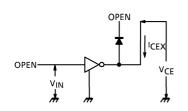
CHARA	CTERISTIC		SYMBOL	TEST CIR- CUIT	TEST CONDI	TION	MIN.	TYP.	MAX.	UNIT
		AP, AF			V _{CE} = 50V					
					V _{CE} = 100V	Ta = 25°C	_	—	50	
		F			V _{CE} = 35V					
		AP, AF			V _{CE} = 50V					
Output Leakag		СР			V _{CE} = 100V	Ta = 85°C	_	_	100	
Current		F	leny	1	V _{CE} = 35V					
Current		AP, AF	ICEX	'	V _{CE} = 50V					μ A
	TD62082	СР			V _{CE} = 100V	$V_{IN} = 6V$	_	_	500	
		F			$V_{CE} = 35V$					
		AP, AF			V _{CE} = 50V					
	TD62084	СР			V _{CE} = 100V	V _{IN} = 1V	_	-	500	
		F			V _{CE} = 35V					
Collector-Emitt	ar Caturati	on			I _{OUT} = 350mA, I _{II}	η = 500 μ Α		1.3	1.6	
Voltage	er saturati	On	VCE (sat)	2	I _{OUT} = 200mA, I _I I	_V = 350μA		1.1	1.3	V
Voltage					I _{OUT} = 100mA, I _{II}	_V = 250μA	_	0.9	1.1	
	TD62082AP / CP / F / AF TD62083AP / CP / F / AF		lin (on)	2	V _{IN} = 17V			0.82	1.25	
-					V _{IN} = 3.85V		1	0.93	1.35	mA
Current		084AP/	,		V _{IN} = 5V			0.35	0.5	
	CP/F				V _{IN} = 12V			1.0	1.45	
			IN (OFF)	4	$I_{OUT} = 500 \mu A$, Ta	1 = 85°C	50	65	_	μΑ
	TD62082AP / CP / F / AF		114 (011)		V _{CE} = 2V, I _{OUT} =		_	_	13	,
					V _{CE} = 2V, I _{OUT} = 200mA			_	2.4	
_	I	083AP/			V _{CE} = 2V, I _{OUT} =		_	_	2.7	
Input Voltage	CP/F	/ AF	VIN (ON)	5	V _{CE} = 2V, I _{OUT} = 300mA		_	_	3.0	1 v 1
(Output On) TD62084. CP/F/AF			- V (O V) 		V _{CE} = 2V, I _{OUT} = 125mA			_	5.0	-
		084AP/			V _{CE} = 2V, I _{OUT} =		_	_	6.0	
					V _{CE} = 2V, I _{OUT} = 275mA V _{CE} = 2V, I _{OUT} = 350mA				7.0	1
								_	8.0	
DC Current Transfer Ratio		h _{FE}	2	V _{CE} = 2V, I _{OUT} =		1000	_	_		
				Ta = 25°C (Note)			_	50	_	
Clamp Diode Reverse Current		I _R	6	Ta = 85°C (Note)				100	μ A	
Clamp Diode Forward		.		I _F = 350mA			_	2.0	, <i>.</i>	
Voltage		СР	├ V _F	7	I _F = 280mA			_	1.8	V
Input Capacita	nce	•	C _{IN}	l —			_	15	_	pF

(Note) $V_R = V_R MAX$.

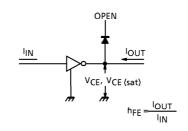
CHARACTERISTIC		SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
	AP, AF			$R_L = 125\Omega$, $V_{OUT} = 50V$	_	0.1	_	
Turn-On Delay	СР	ton		$R_L = 312\Omega$, $V_{OUT} = 100V$	_	0.1	_	
	F		8	$R_L = 87.5\Omega$, $V_{OUT} = 35V$	_	0.1	—	
	AP, AF] °	$R_L = 125\Omega$, $V_{OUT} = 50V$	_	0.2	_	μ S
Turn-Off Delay	СР	tOFF		$R_L = 312\Omega$, $V_{OUT} = 100V$	_	3.0	_	
	F			$R_L = 87.5\Omega$, $V_{OUT} = 35V$	_	0.2	_	

TEST CIRCUIT

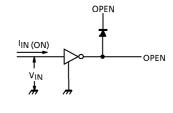
1. I_{CEX}



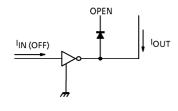
2. V_{CE} (sat), h_{FE}



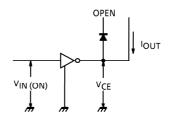
3. I_{IN} (ON)



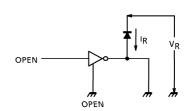
4. IIN (OFF)



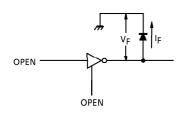
5. V_{IN} (ON)



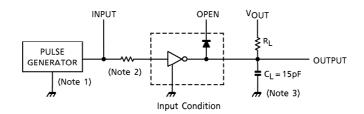
6. I_R

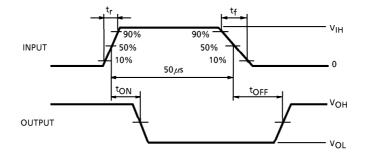


7. V_F



8. ton, toff





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

(Note 2) See below.

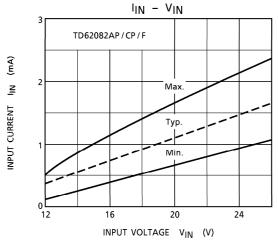
INPUT CONDITION

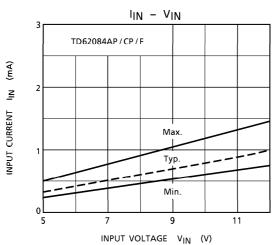
TYPE NUMBER	R1	v_{IH}
TD62081AP/CP/F/AF	2.7k Ω	3V
TD62082AP/CP/F/AF	0Ω	13V
TD62083AP/CP/F/AF	0Ω	3V
TD62084AP/CP/F/AF	0Ω	8V

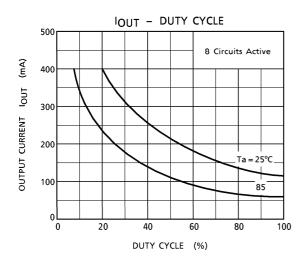
(Note 3) C_L includes probe and jig capacitance

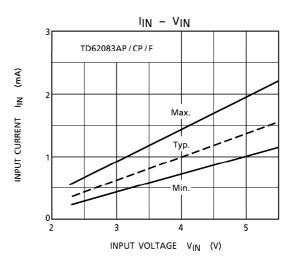
PRECAUTIONS for USING

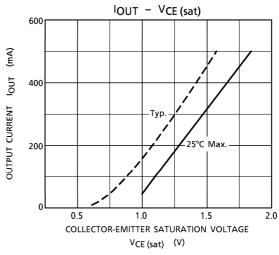
Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

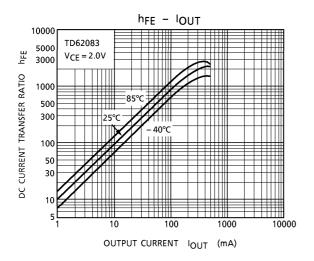


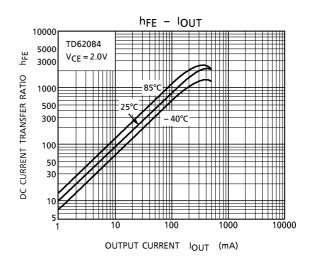


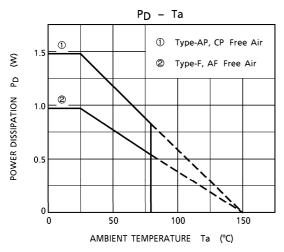






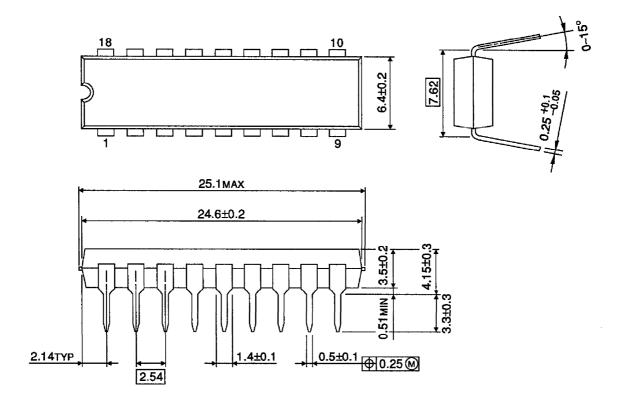






OUTLINE DRAWING DIP18-P-300-2.54D

Unit: mm



Weight: 1.478g (Typ.)

Weight: 0.41g (Typ.)

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