

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62083APA

8CH DARLINGTON SINK DRIVER

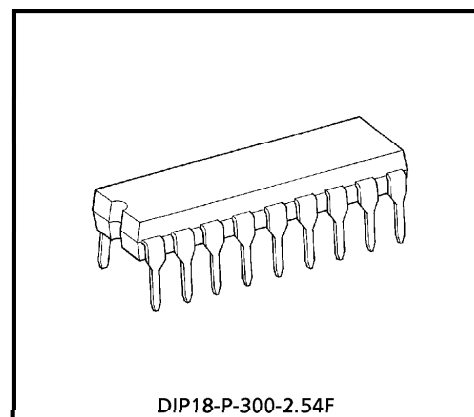
The TD62083APA is high-voltage, high-current darlington drivers comprised of eight NPN darlington pairs.

All units feature integral clamp diodes for switching inductive loads.

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

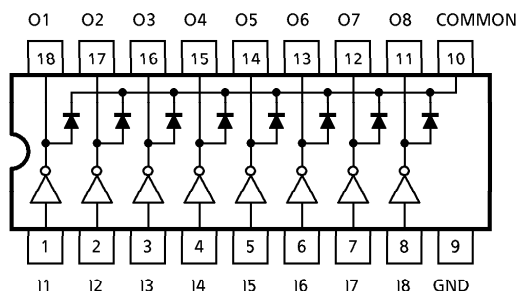
FEATURES

- Output current (single output) 500mA MAX.
- High sustaining voltage output 50V MIN.
- Output clamp diodes
- Inputs resistor : $R_{IN} = 2.7k\Omega$ Typ.
- Inputs compatible with TTL, 5V CMOS
- Package Type-AP : DIP-18pin

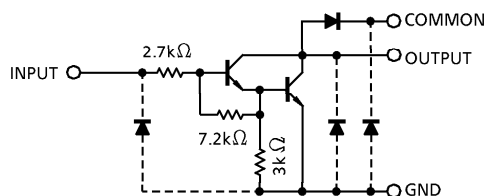


Weight : 1.478g (Typ.)

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

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MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

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	1.47	W
Operating Temperature	T_{opr}	- 40~85	$^\circ\text{C}$
Storage Temperature	T_{stg}	- 55~150	$^\circ\text{C}$

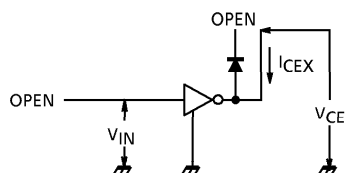
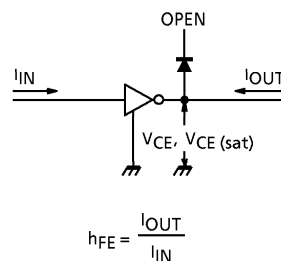
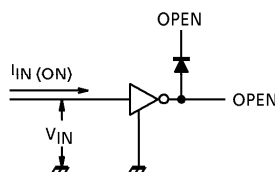
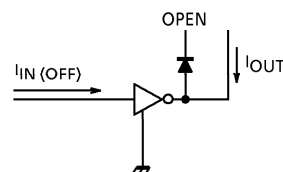
RECOMMENDED OPERATING CONDITIONS ($T_a = -40\sim 85^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage		V _{CE (SUS)}			0	—	50	V
Output Current		I _{OUT}	DC 1 Circuit, Ta = 25°C		0	—	400	mA / ch
			T _{pw} = 25ms, 8 Circuits Ta = 85°C, Tj = 120°C	Duty = 10%	0	—	347	
				Duty = 50%	0	—	123	
Input Voltage		V _{IN}			0	—	30	V
Input Voltage	Output On	V _{IN (ON)}			2.5	—	30	V
	Output Off	V _{IN (OFF)}			0	—	0.5	
Clamp Diode Reverse Voltage		V _R			—	—	50	V
Clamp Diode Forward Current		I _F			—	—	400	mA
Power Dissipation		P _D			—	—	0.52	W

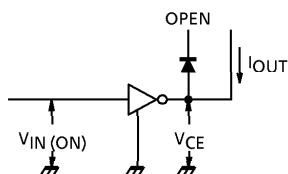
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current		I _{CEX}	1	V _{CE} = 50V, Ta = 25°C	—	—	50	μA
				V _{CE} = 50V, Ta = 85°C	—	—	100	
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	
DC Current Transfer Ratio		h _{FE}	2	V _{CE} = 2V, I _{OUT} = 350mA	1000	—	—	
Input Current	Output On	I _{IN (ON)}	3	V _{IN} = 3.85V	—	0.93	1.35	mA
	Output Off	I _{IN (OFF)}	4	I _{OUT} = 500μA, Ta = 85°C	50	65	—	μA
Input Voltage	Output On	V _{IN (ON)}	5	V _{CE} = 2V, I _{OUT} = 250mA	—	—	2.7	V
				V _{CE} = 2V, I _{OUT} = 300mA	—	—	3.0	
Clamp Diode Reverse Current		I _R	6	V _R = 50V, Ta = 25°C	—	—	50	μA
				V _R = 50V, Ta = 85°C	—	—	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	V _{OUT} = 50V, R _L = 125Ω,	—	0.1	—	μs
Turn-Off Delay		t _{OFF}	8	C _L = 15pF	—	0.2	—	

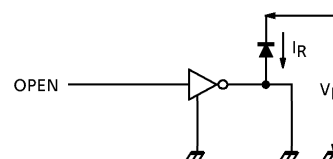
TEST CIRCUIT

1. I_{CEX} 2. $V_{CE(sat)}, h_{FE}$ 3. $I_{IN(ON)}$ 4. $I_{IN(OFF)}$ 

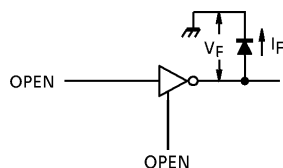
5. $V_{IN(ON)}$



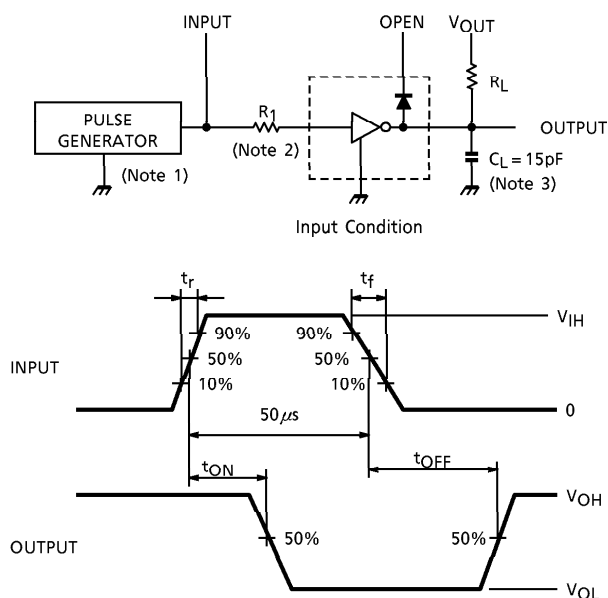
6. I_R



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	R_{IN}	V_{IH}
TD62083APA	0	3V

(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.

