

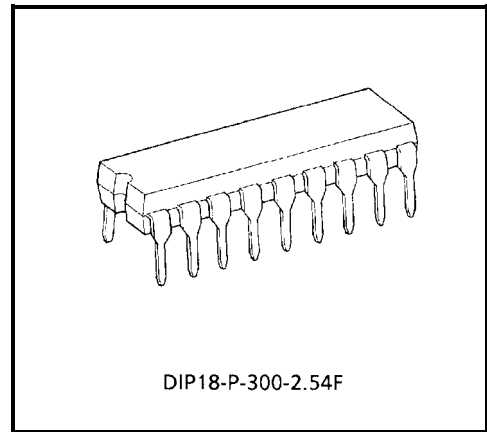
# TD62083APA

## 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.

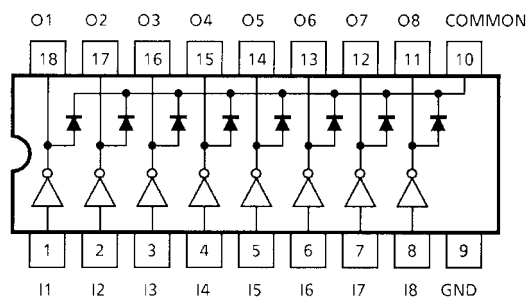
### FEATURES

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

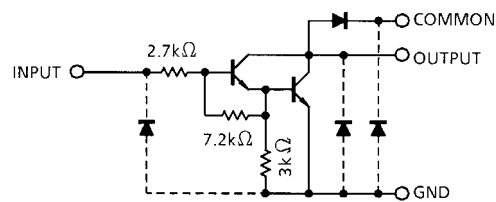


Weight: 1.478 g (Typ.)

### PIN CONNECTION (TOP VIEW)



### SCHEMATICS (EACH DRIVER)



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	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>	1.47	W
Operating Temperature	T <sub>opr</sub>	-40~85	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

## RECOMMENDED OPERATING CONDITIONS (Ta = -40~85°C)

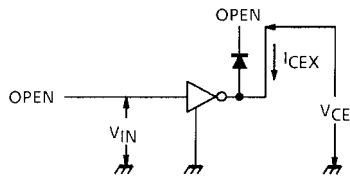
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Output Sustaining Voltage		V <sub>CE (SUS)</sub>		0	—	50	V	
Output Current		I <sub>OUT</sub>	DC 1 Circuit, Ta = 25°C	0	—	400	mA / ch	
			T <sub>pw</sub> = 25 ms 8 Circuits Ta = 85°C T <sub>j</sub> = 120°C	Duty = 10%	0	—		347
				Duty = 50%	0	—		123
Input Voltage		V <sub>IN</sub>		0	—	30	V	
Input Voltage	Output On	V <sub>IN (ON)</sub>		2.5	—	30	V	
	Output Off	V <sub>IN (OFF)</sub>		0	—	0.5		
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>		—	—	0.52	W	

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

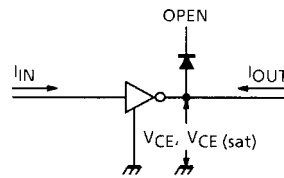
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I <sub>CEX</sub>	1	V <sub>CE</sub> = 50 V, Ta = 25°C	—	—	50	μA
				V <sub>CE</sub> = 50 V, Ta = 85°C	—	—	100	
Collector-Emitter Saturation Voltage		V <sub>CE (sat)</sub>	2	I <sub>OUT</sub> = 350 mA, I <sub>IN</sub> = 500 μA	—	1.3	1.6	V
				I <sub>OUT</sub> = 200 mA, I <sub>IN</sub> = 350 μA	—	1.1	1.3	
				I <sub>OUT</sub> = 100 mA, I <sub>IN</sub> = 250 μA	—	0.9	1.1	
DC Current Transfer Ratio		h <sub>FE</sub>	2	V <sub>CE</sub> = 2 V, I <sub>OUT</sub> = 350 mA	1000	—	—	
Input Current	Output On	I <sub>IN (ON)</sub>	3	V <sub>IN</sub> = 3.85 V	—	0.93	1.35	mA
	Output Off	I <sub>IN (OFF)</sub>	4	I <sub>OUT</sub> = 500 μA, Ta = 85°C	50	65	—	μA
Input Voltage	Output On	V <sub>IN (ON)</sub>	5	V <sub>CE</sub> = 2 V, I <sub>OUT</sub> = 250 mA	—	—	2.7	V
				V <sub>CE</sub> = 2 V, I <sub>OUT</sub> = 300 mA	—	—	3.0	
Clamp Diode Reverse Current		I <sub>R</sub>	6	V <sub>R</sub> = 50 V, Ta = 25°C	—	—	50	μA
				V <sub>R</sub> = 50 V, Ta = 85°C	—	—	100	
Clamp Diode Forward Voltage		V <sub>F</sub>	7	I <sub>F</sub> = 350 mA	—	—	2.0	V
Input Capacitance		C <sub>IN</sub>	—		—	15	—	pF
Turn-On Delay		t <sub>ON</sub>	8	V <sub>OUT</sub> = 50 V, R <sub>L</sub> = 125 Ω, C <sub>L</sub> = 15 pF	—	0.1	—	μs
Turn-Off Delay		t <sub>OFF</sub>	8		—	0.2	—	

**TEST CIRCUIT**

**1. I<sub>CEX</sub>**

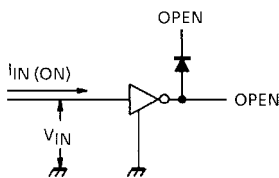


**2. V<sub>CE (sat)</sub>, h<sub>FE</sub>**

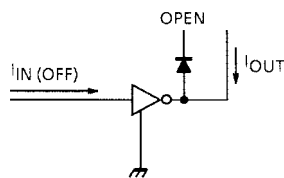


$$h_{FE} = \frac{I_{OUT}}{I_{IN}}$$

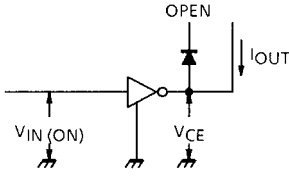
**3. I<sub>IN (ON)</sub>**



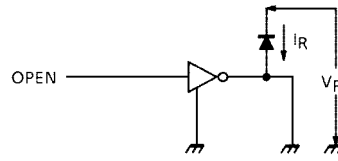
**4. I<sub>IN (OFF)</sub>**



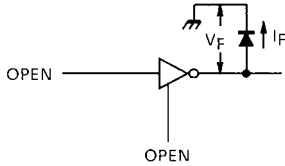
5.  $V_{IN(ON)}$



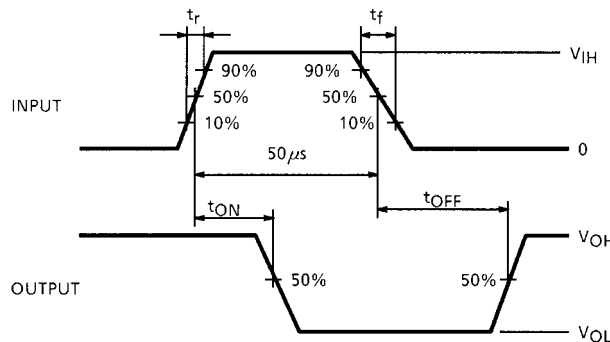
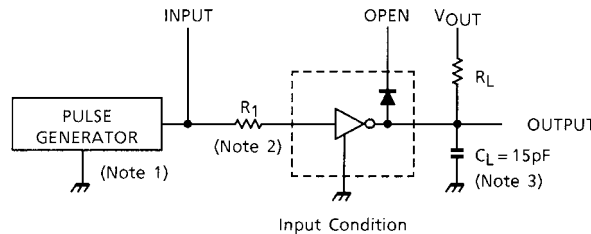
6.  $I_R$



7.  $V_F$



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



Note 1: Pulse width 50  $\mu$ s, duty cycle 10%  
Output impedance 50  $\Omega$ ,  $t_r \leq 5$  ns,  $t_f \leq 10$  ns

Note 2: See below

INPUT CONDITION

TYPE NUMBER	$R_{IN}$	$V_{IH}$
TD62083APA	0	3 V

Note 3:  $C_L$  includes probe and jig capacitance.

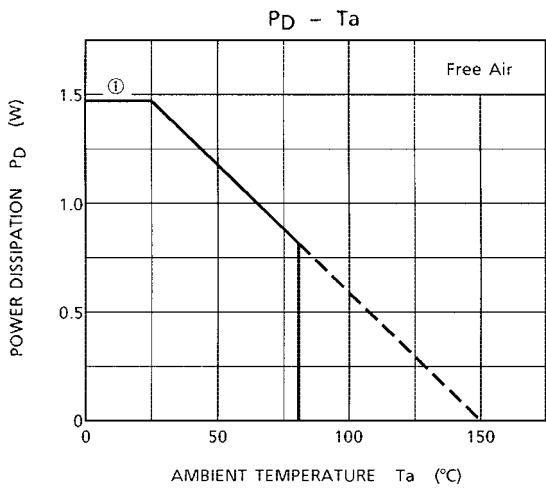
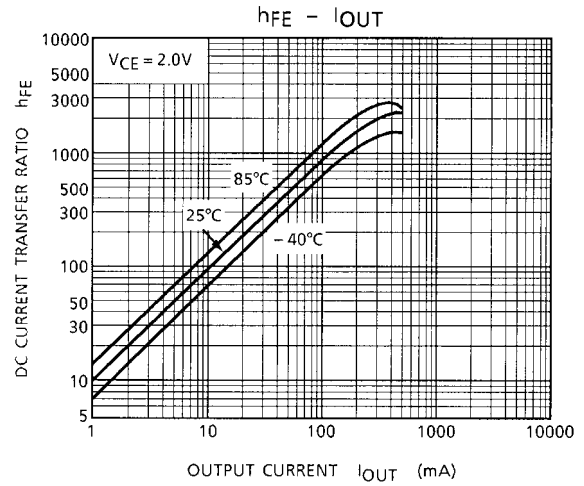
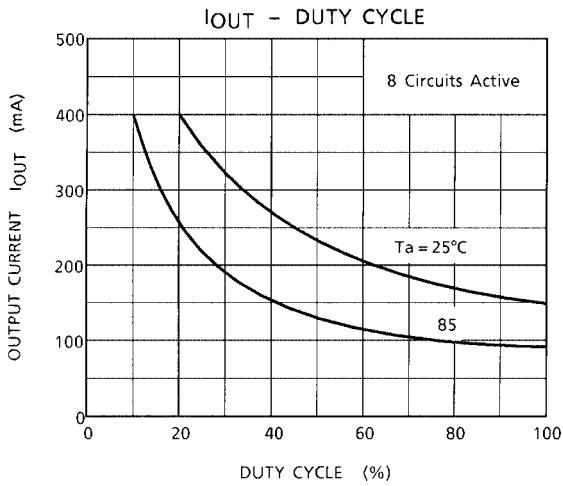
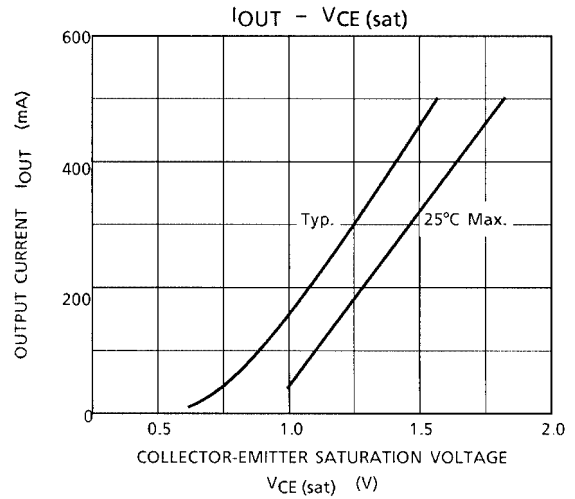
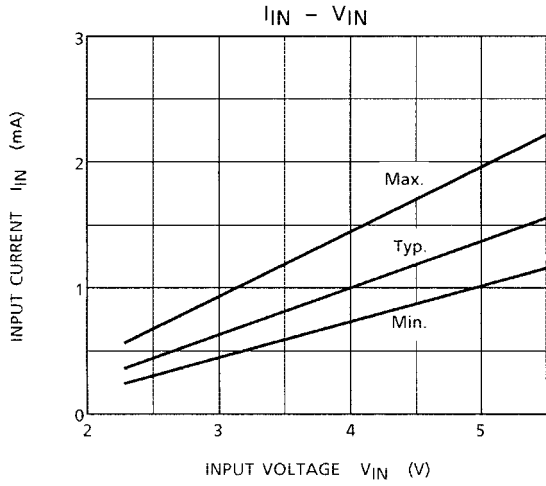
PRECAUTIONS for USING

This IC does not include built-in protection circuits for excess current or overvoltage.

If this IC is subjected to excess current or overvoltage, it may be destroyed.

Hence, the utmost care must be taken when systems which incorporate this IC are designed.

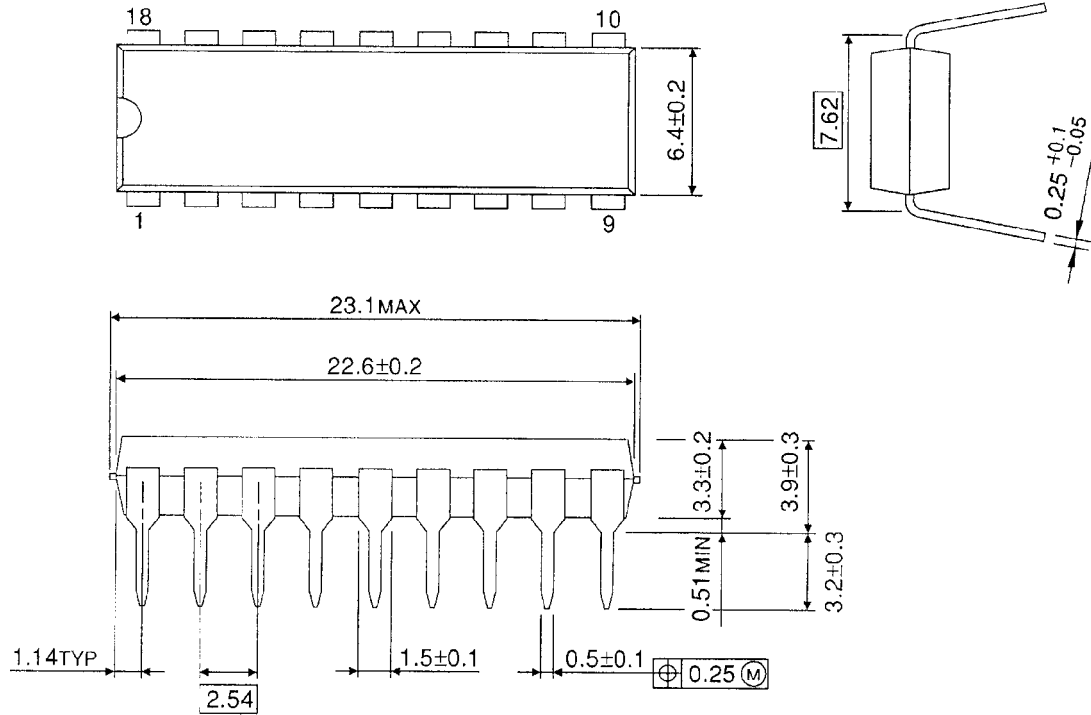
Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



## PACKAGE DIMENSIONS

DIP18-P-300-2.54F

Unit : mm



Weight: 1.478 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

000707EBA

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