TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

# TD62783AP, TD62783F, TD62783AF TD62784AP, TD62784F, TD62784AF

### 8CH HIGH-VOLTAGE SOURCE DRIVER

The TD62783AP/F/AF Series are comprised of eight source current Transistor Array.

These drivers are specifically designed for fluorescent display applications.

Applications include relay, hammer and lamp drivers.

#### **FEATURES**

High output voltage Type-AP, AF :  $V_{CC} = 50V$  MIN. :  $V_{CC} = 35V$  MIN.

Output current (single output) IOUT = -500mA MIN.

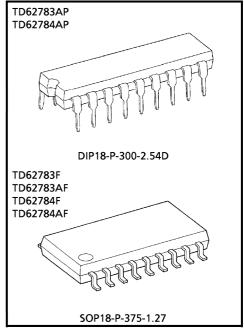
Output clamp diodes

Single supply voltage

Input compatible with various types of logic

Package Type-AP : DIP-18pin Package Type-F, AF: SOP-18pin

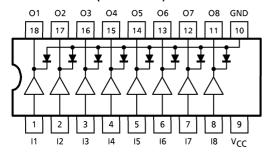
TYPE	DESIGNATION
TD62783AP/F/AF	TTL, 5V CMOS
TD62784AP/F/AF	6~15V PMOS, CMOS



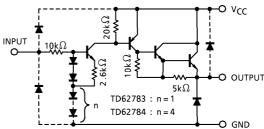
Weight

DIP18-P-300-2.54D: 1.47g (Typ.) SOP18-P-375-1.27 : 0.41g (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** (Ta = 25°C)

CHARACTERISTI	С	SYMBOL	RATING	UNIT	
Supply Voltage	AP, AF	Vaa	50	V	
Supply Voltage	F	Vcc	35	] '	
Output Current		IOUT	<b>–</b> 500	mA / ch	
Input Voltage		V <sub>IN</sub> (Note 1)	15	\ \	
input voitage		V <sub>IN</sub> (Note 2)	30	V	
Clamp Diode Reverse	AP, AF	V-	50	V	
Voltage	F	V <sub>R</sub>	35		
Clamp Diode Forward	Current	IF	500	mA	
Power Dissipation	AP	Dr. (Noto 2)	1.47	W	
Power Dissipation	F, AF	P <sub>D</sub> (Note 3)	0.96		
Operating Temperature	e	T <sub>opr</sub>	- 40~85	°C	
Storage Temperature		T <sub>stg</sub>	<b>-</b> 55∼150	°C	

(Note 1) Only TD62783AP/F/AF

(Note 2) Only TD62784AP/F/AF

(Note 3) Delated above 25°C in the proportion of 11.7W/°C (AP Type), 7.7W/°C (F, AF Type).

### **RECOMMENDED OPERATING CONDITIONS** ( $Ta = -40 \sim 85$ °C)

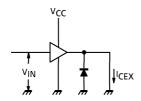
CHARACTERISTIC			SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT	
Supply Voltage AP, AF		VCC	_		_	_	50	V		
Supply Voltage F			, ,,,	<del>_</del>		_	_		35	
Output Current			Гоит	Ta = 85°C T <sub>j</sub> = 120°C T <sub>pw</sub> = 25ms	Duty = 10% 8 Circuits	_	1	- 260	mA / ch	
					Duty = 50% 8 Circuits	1		- 59		
Output Current  AF, F		Duty = 10% 8 Circuits			_	1	- 180			
		AF, F			Duty = 50% 8 Circuits		1	- 38		
Input	Input TD62783AP / F / AF		P/F/AF	Mari			_	_	12	v
Voltage		TD62784AF	P/F/AF	VIN	_		_	_	24	] <b>'</b>
	Output	TD62783AF	P/F/AF	VIN (ON)	_		2.0	5.0	15	V
Input	On	TD62784AF	P/F/AF		_		4.5	12.0	30	
Voltage	Output Off	TD62783AF	P/F/AF	VIN (OFF)	<u> </u>		0	_	0.8	
		TD62784AF	P/F/AF		<u> </u>		0	_	2.0	
Clamp Diode Reverse AP			V <sub>R</sub>	<del></del>		_		50	V	
Voltage F, AF				<del>_</del>		_		35	V	
Clamp Diode Forward Current			ΙF					400	mA	
Power Dissipation AP F, AF			D-			_		0.52	W	
			PD	_		_		0.35		

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

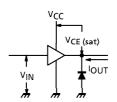
CHARACTERISTIC			SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Leakage Current		ICEX	1	V <sub>C</sub> C = V <sub>C</sub> C MAX. V <sub>IN</sub> = 0.4V Ta = 25°C	_	_	100	μΑ		
Output Saturation Voltage		V <sub>CE</sub> (sat)	2	V <sub>IN</sub> = V <sub>IN</sub> (ON), I <sub>OUT</sub> = -350mA	_	_	2.0	V		
				$V_{IN} = V_{IN} (ON)$ , $I_{OUT} = -225 mA$	1	_	1.9			
					$V_{IN} = V_{IN} (ON)$ , $I_{OUT} = -100 \text{mA}$	1	_	1.8		
	TD62702 A E	D/E/AE			V <sub>IN</sub> = 2.4V	1	36	52		
Input Current	TD62783AP/F/AF		lin (on)	3	V <sub>IN</sub> = 3.85V		180	260	<b>μ</b> Α	
	TD62784AP/F/AF				V <sub>IN</sub> = 5V	_	92	130		
					V <sub>IN</sub> = 12V	_	790	1130		
	TD62783AP/F/AF		VIN (ON)		V <sub>CE</sub> = 2.0V	_	_	2.0	2.0	
Input	TD62784AP/F/AF			4	I <sub>OUT</sub> = -350mA	<u> </u>		4.5	7 , 1	
Voltage	TD62783AP/F/AF		VIN (OFF)		I <sub>OUT</sub> = -500μA	0.8	_	_	- V	
	TD62784AP/F/AF					2.0	_	_		
Supply C	Supply Current		ICC (ON)	3	$V_{IN} = V_{IN} (ON), V_{CC} = 50V$		_	2.5	mA / ch	
Clamp D	Clamp Diode AP, AF			5	V <sub>R</sub> = 50V	_	_	50		
Reverse Current F		IR	3	V <sub>R</sub> = 35V	_	_	50	$\mu A$		
Clamp Diode Forward		V <sub>F</sub>	6	I= 250m A			2.0	V		
Voltage				I <sub>F</sub> = 350mA	_	_	2.0	<b>'</b>		
Turn-On Delay		ton	7	$V_{CC} = V_{CC MAX}$ $R_L = 125\Omega$	_	0.15	_			
Turn-Off Delay		t <sub>OFF</sub> ′		$C_L = 15pF$ , $R_L = 88\Omega$ (F)		1.8		$\mu$ s		

#### **TEST CIRCUIT**

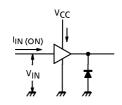
# 1. ICEX



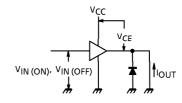
# 2. V<sub>CE</sub> (sat)



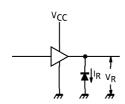
### 3. I<sub>IN</sub> (ON), I<sub>CC</sub>



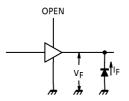
4. VIN (ON), VIN (OFF)



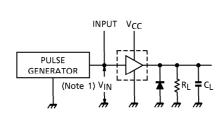
#### 5. I<sub>R</sub>

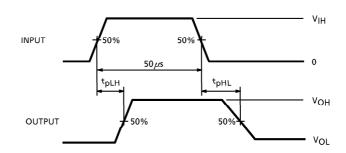


6. V<sub>F</sub>



# 7. ton, toff

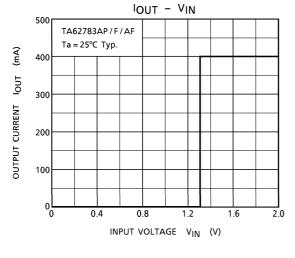


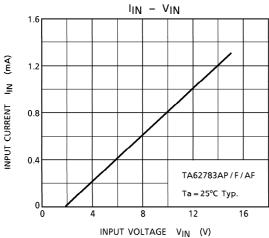


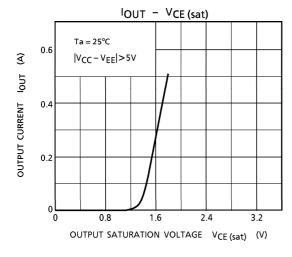
- (Note 1) Pulse width  $50\mu s$ , duty cycle 10% Output impedance  $50\Omega$ ,  $t_r \le 5ns$ ,  $t_f \le 10ns$
- (Note 2) C<sub>L</sub> includes probe and jig capacitance

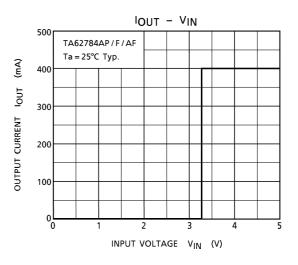
### PRECAUTIONS for USING

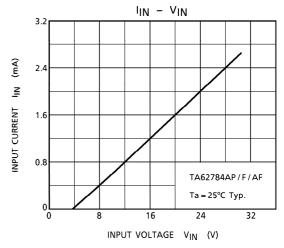
Utmost care is necessary in the design of the output line, V<sub>CC</sub> and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

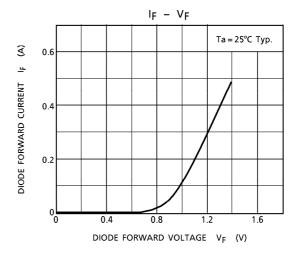


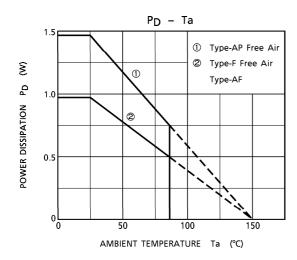






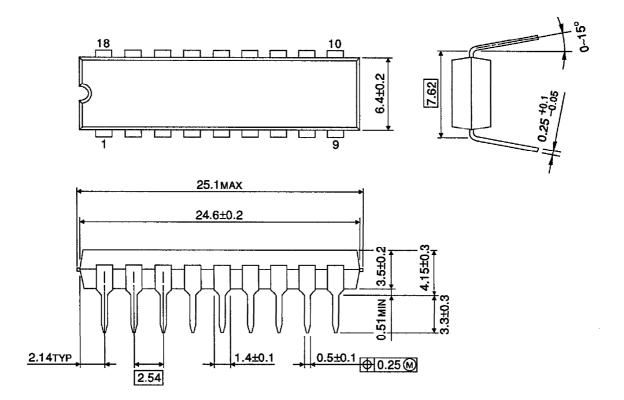






#### OUTLINE DRAWING DIP18-P-300-2.54D

Unit: mm



Weight: 1.47g (Typ.)

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