

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.

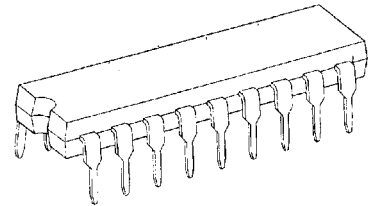
Applications include relay, hammer and lamp drivers.

### FEATURES

- High output voltage Type-AP, AF :  $V_{CC} = 50 \text{ V MIN.}$   
Type-F :  $V_{CC} = 35 \text{ V MIN.}$
- Output current (single output)  $I_{OUT} = -500 \text{ mA MIN.}$
- Output clamp diodes
- Single supply voltage
- Input compatible with various types of logic
- Package Type-AP : DIP-18 pin
- Package Type-F, AF : SOP-18 pin

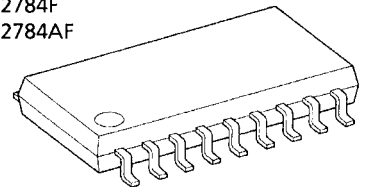
TYPE	DESIGNATION
TD62783AP / F / AF	TTL, 5 V CMOS
TD62784AP / F / AF	6~15 V PMOS, CMOS

TD62783AP  
TD62784AP



DIP18-P-300-2.54D

TD62783F  
TD62783AF  
TD62784F  
TD62784AF



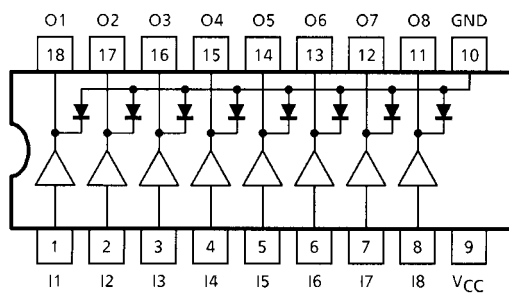
SOP18-P-375-1.27

Weight

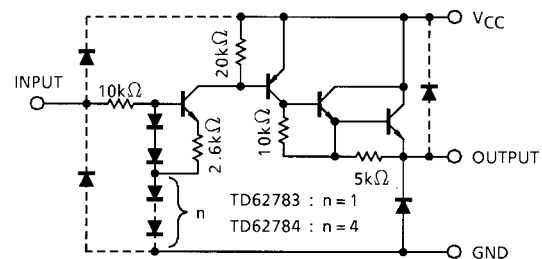
DIP18-P-300-2.54D : 1.47 g (Typ.)

SOP18-P-375-1.27 : 0.41 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
Supply Voltage	AP, AF	V <sub>CC</sub>	50	V
	F		35	
Output Current		I <sub>OUT</sub>	−500	mA / ch
Input Voltage		V <sub>IN</sub> (Note 1)	15	V
		V <sub>IN</sub> (Note 2)	30	
Clamp Diode Reverse Voltage	AP, AF	V <sub>R</sub>	50	V
	F		35	
Clamp Diode Forward Current		I <sub>F</sub>	500	mA
Power Dissipation	AP	P <sub>D</sub> (Note 3)	1.47	W
	F, AF		0.96	
Operating Temperature		T <sub>opr</sub>	−40~85	°C
Storage Temperature		T <sub>stg</sub>	−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 11.7 W / °C (AP Type), 7.7 W / °C (F, AF Type)

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

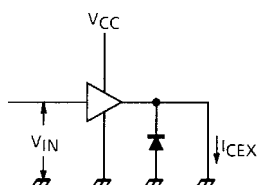
CHARACTERISTIC			SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT	
Supply Voltage			AP, AF	V <sub>CC</sub>	—		—	—	50	V
			F		—		—	—	35	
Output Current			AF, F	I <sub>OUT</sub>	Ta = 85°C T <sub>j</sub> = 120°C T <sub>pw</sub> = 25ms	Duty = 10% 8Circuits	—	—	−260	mA / ch
						Duty = 50% 8Circuits	—	—	−59	
						Duty = 10% 8Circuits	—	—	−180	
						Duty = 50% 8Circuits	—	—	−38	
Input Voltage		TD62783AP / F / AF	V <sub>IN</sub>	—		—	—	12	V	
		TD62784AP / F / AF		—		—	—	24		
Input Voltage	Output On	TD62783AP / F / AF	V <sub>IN</sub> (ON)	—		2.0	5.0	15	V	
		TD62784AP / F / AF		—		4.5	12.0	30		
	Output Off	TD62783AP / F / AF	V <sub>IN</sub> (OFF)	—		0	—	0.8		
		TD62784AP / F / AF		—		0	—	2.0		
Clamp Diode Reverse Voltage			AP	V <sub>R</sub>	—		—	—	50	V
			F, AF		—		—	—	35	
Clamp Diode Forward Current			I <sub>F</sub>	—		—	—	400	mA	
Power Dissipation			AP	P <sub>D</sub>	—		—	—	0.52	W
			F, AF		—		—	—	0.35	

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

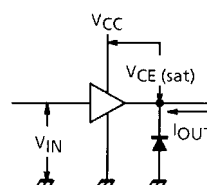
CHARACTERISTIC		SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I <sub>CEX</sub>	1	V <sub>CC</sub> = V <sub>CC</sub> MAX. V <sub>IN</sub> = 0.4 V T <sub>a</sub> = 25°C	—	—	100	μA
Output Saturation Voltage		V <sub>CE</sub> (sat)	2	V <sub>IN</sub> = V <sub>IN</sub> (ON), I <sub>OUT</sub> = -350 mA	—	—	2.0	V
				V <sub>IN</sub> = V <sub>IN</sub> (ON), I <sub>OUT</sub> = -225 mA	—	—	1.9	
				V <sub>IN</sub> = V <sub>IN</sub> (ON), I <sub>OUT</sub> = -100 mA	—	—	1.8	
Input Current	TD62783AP / F / AF	I <sub>IN</sub> (ON)	3	V <sub>IN</sub> = 2.4 V	—	36	52	μA
	V <sub>IN</sub> = 3.85 V			—	180	260		
	TD62784AP / F / AF			V <sub>IN</sub> = 5 V	—	92	130	
	V <sub>IN</sub> = 12 V			—	790	1130		
Input Voltage	TD62783AP / F / AF	V <sub>IN</sub> (ON)	4	V <sub>CE</sub> = 2.0 V	—	—	2.0	V
	TD62784AP / F / AF			I <sub>OUT</sub> = -350 mA	—	—	4.5	
	TD62783AP / F / AF	V <sub>IN</sub> (OFF)		I <sub>OUT</sub> = -500 μA	0.8	—	—	
	TD62784AP / F / AF				2.0	—	—	
Supply Current		I <sub>CC</sub> (ON)	3	V <sub>IN</sub> = V <sub>IN</sub> (ON), V <sub>CC</sub> = 50 V	—	—	2.5	mA / ch
Clamp Diode Reverse Current		AP, AF	5	V <sub>R</sub> = 50 V	—	—	50	μA
		F		V <sub>R</sub> = 35 V	—	—	50	
Clamp Diode Forward Voltage		V <sub>F</sub>	6	I <sub>F</sub> = 350 mA	—	—	2.0	V
Turn-On Delay		t <sub>ON</sub>	7	V <sub>CC</sub> = V <sub>CC</sub> MAX. R <sub>L</sub> = 125 Ω C <sub>L</sub> = 15 pF, R <sub>L</sub> = 88 Ω (F)	—	0.15	—	μs
Turn-Off Delay		t <sub>OFF</sub>			—	1.8	—	

## TEST CIRCUIT

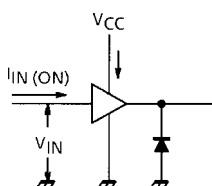
### 1. $I_{CEX}$



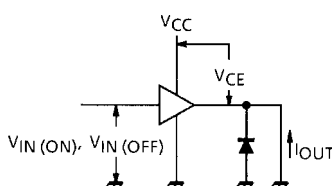
### 2. $V_{CE(sat)}$



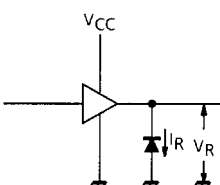
### 3. $I_{IN(ON)}$ , $I_{CC}$



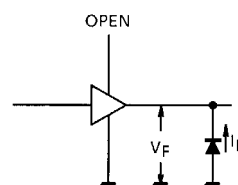
### 4. $V_{IN(ON)}$ , $V_{IN(OFF)}$



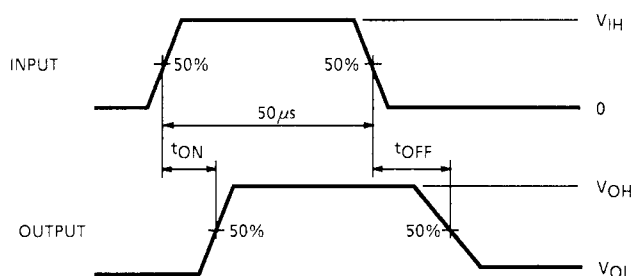
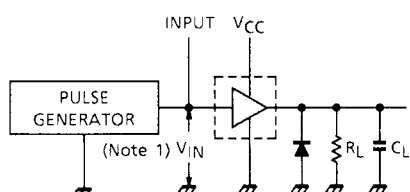
### 5. $I_R$



### 6. $V_F$



### 7. $t_{ON}$ , $t_{OFF}$



Note 1: Pulse width 50  $\mu$ s, duty cycle 10%

Output impedance 50  $\Omega$ ,  $t_r \leq 5$  ns,  $t_f \leq 10$  ns

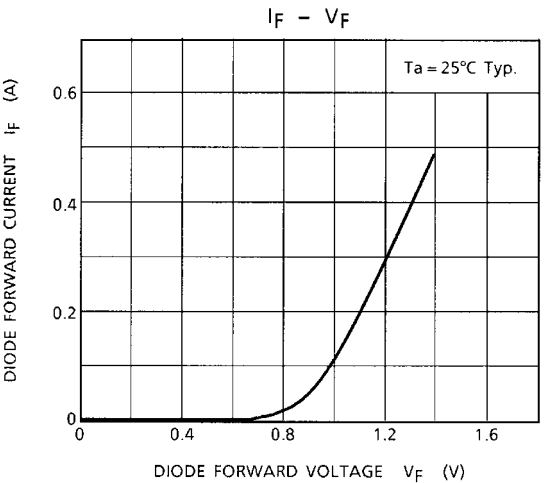
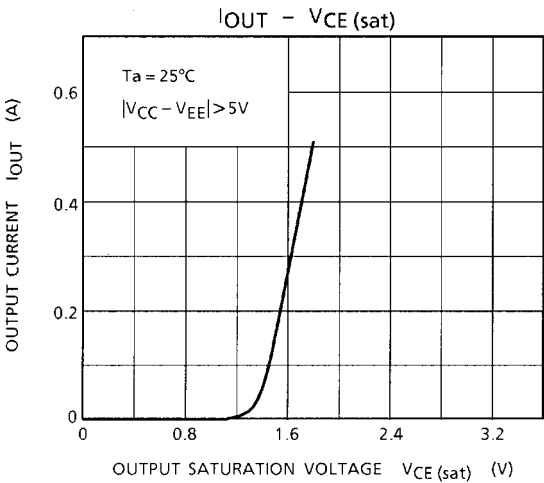
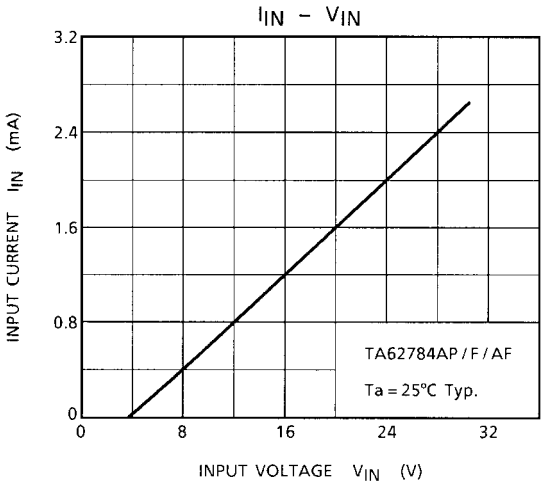
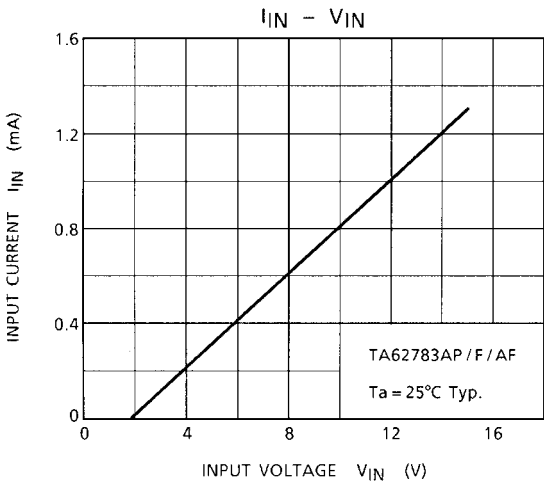
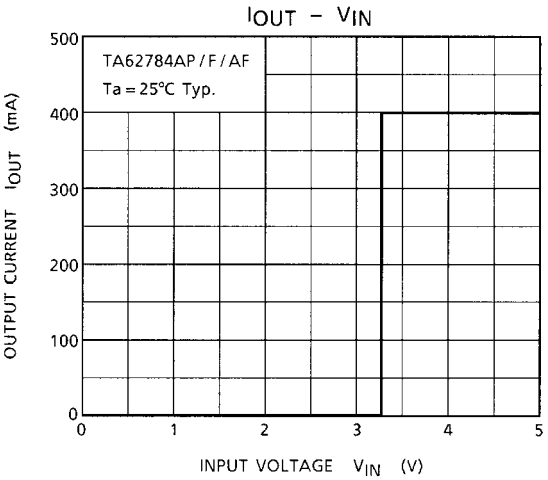
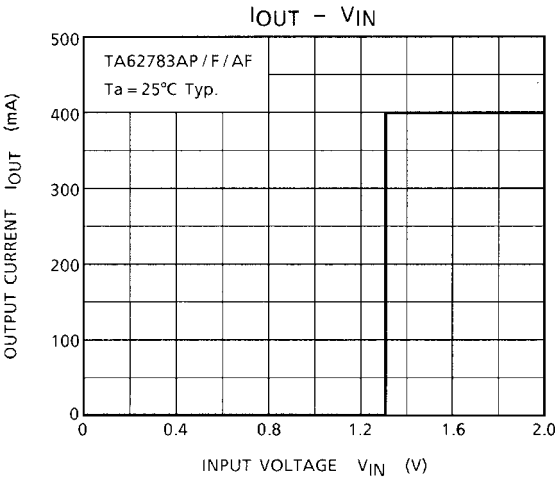
Note 2:  $C_L$  includes probe and jig capacitance

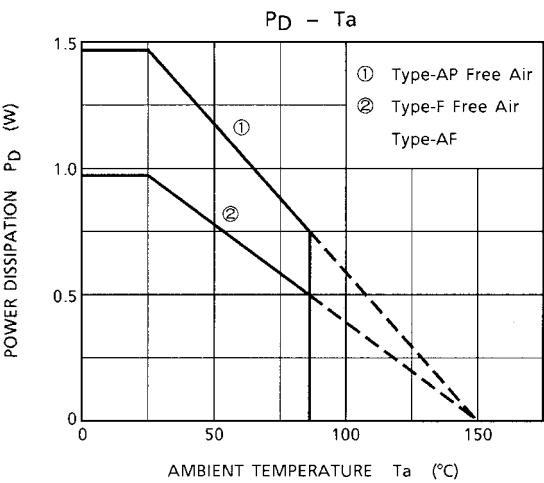
## PRECAUTIONS for USING

This IC does not integrate protection circuits such as overcurrent and overvoltage protectors.

Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

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

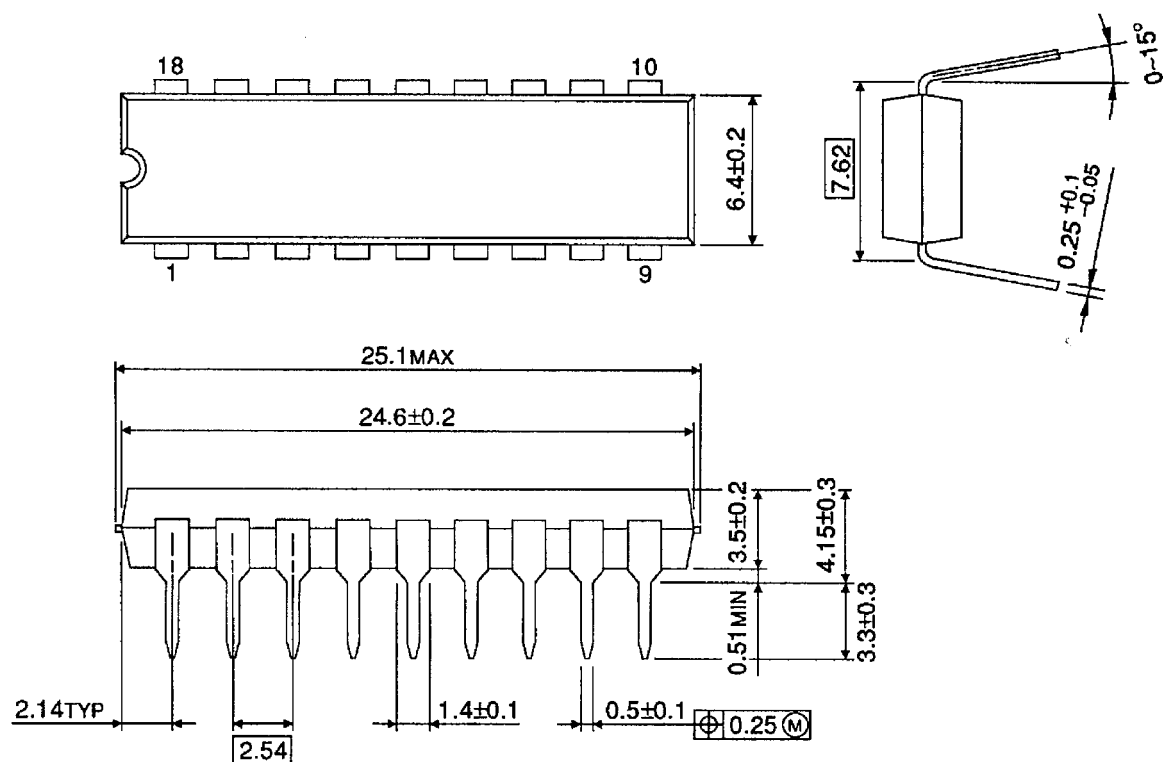




## PACKAGE DIMENSIONS

DIP18-P-300-2.54D

Unit: mm

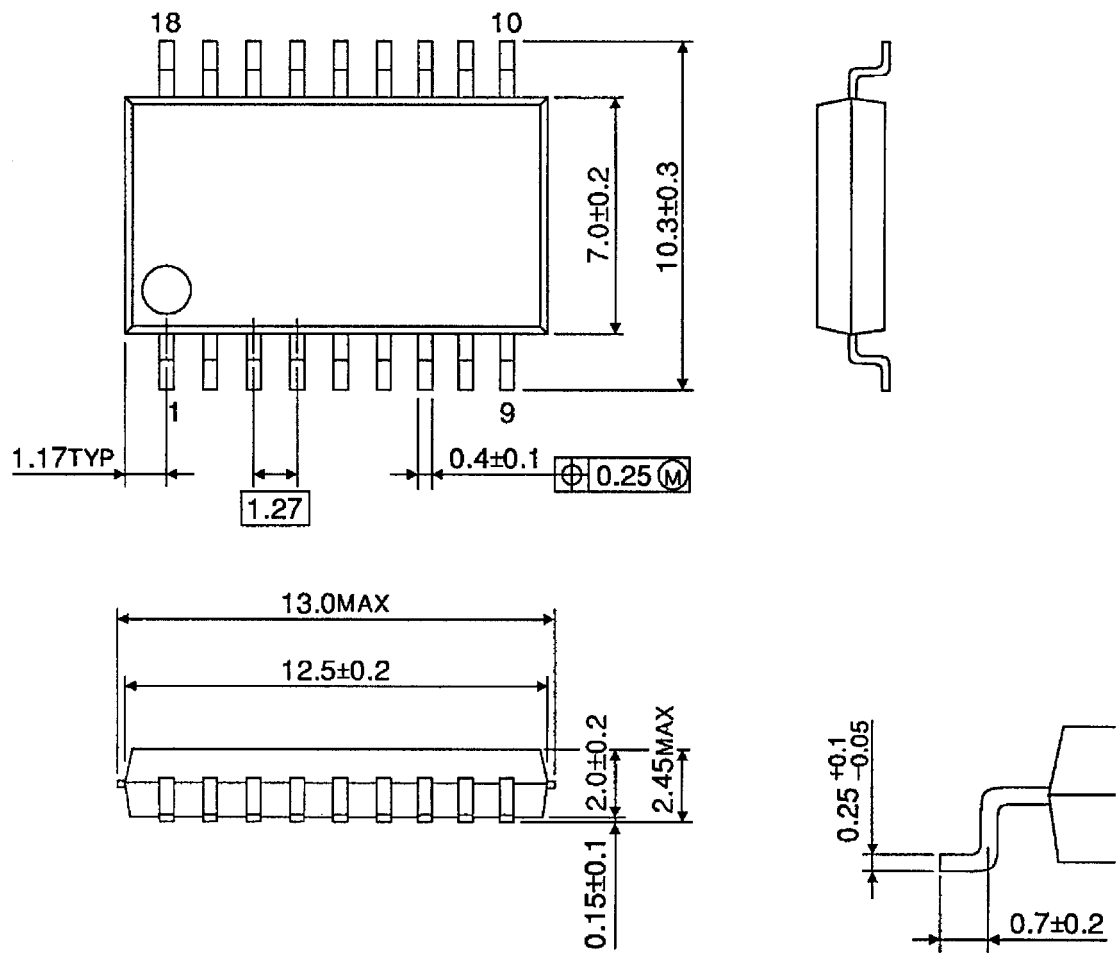


Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18-P-375-1.27

Unit: mm



Weight: 0.41 g (Typ.)



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000707EBA

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