

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.

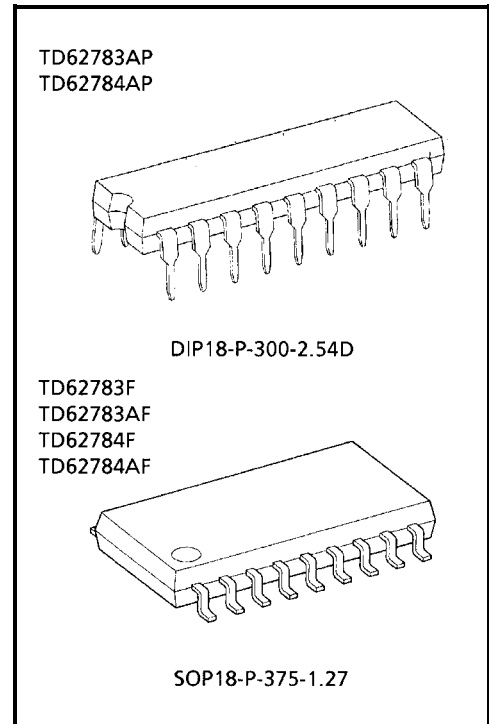
These drivers are specifically designed for fluorescent display applications.

Applications include relay, hammer and lamp drivers.

### FEATURES

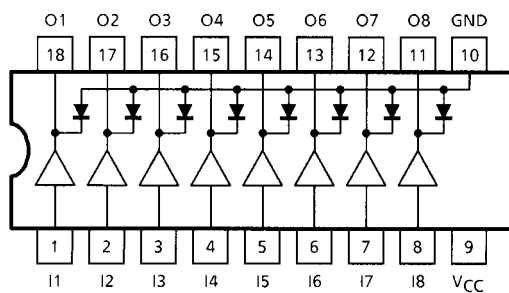
- High output voltage Type-AP, AF :  $V_{CC} = 50 \text{ V MIN.}$   
Type-F :  $V_{CC} = 35 \text{ V MIN.}$
- Output current (single output)  $I_{OUT} = -500 \text{ mA MIN.}$
- Output clamp diodes
- Single supply voltage
- Input compatible with various types of logic
- Package Type-AP : DIP-18 pin
-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

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

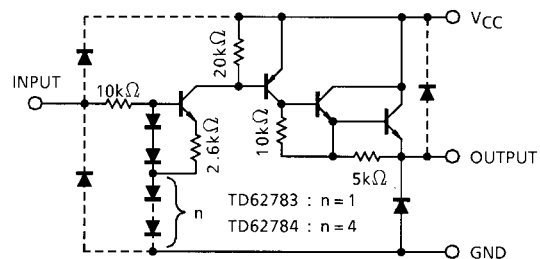


Weight  
 DIP18-P-300-2.54D : 1.47 g (Typ.)  
 SOP18-P-375-1.27 : 0.41 g (Typ.)

### 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)

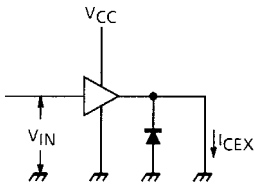
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT	
Supply Voltage	AP, AF	V <sub>CC</sub>	—	—	—	50	V	
	F		—	—	—	35		
Output Current		I <sub>OUT</sub>	Ta = 85°C T <sub>J</sub> = 120°C T <sub>pw</sub> = 25ms	Duty = 10% 8Circuits	—	—	-260	mA / ch
				Duty = 50% 8Circuits	—	—	-59	
				Duty = 10% 8Circuits	—	—	-180	
				Duty = 50% 8Circuits	—	—	-38	
Input Voltage		V <sub>IN</sub>	TD62783AP / F / AF	—	—	12	V	
			TD62784AP / F / AF	—	—	24		
Input Voltage	Output On	V <sub>IN</sub> (ON)	TD62783AP / F / AF	—	2.0	5.0	V	
			TD62784AP / F / AF	—	4.5	12.0		30
	Output Off	V <sub>IN</sub> (OFF)	TD62783AP / F / AF	—	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)

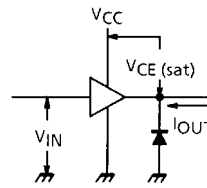
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		$I_{CEX}$	1	$V_{CC} = V_{CC \text{ MAX.}}$ , $V_{IN} = 0.4 \text{ V}$ $T_a = 25^\circ\text{C}$	—	—	100	$\mu\text{A}$
Output Saturation Voltage		$V_{CE \text{ (sat)}}$	2	$V_{IN} = V_{IN \text{ (ON)}}$ , $I_{OUT} = -350 \text{ mA}$	—	—	2.0	V
				$V_{IN} = V_{IN \text{ (ON)}}$ , $I_{OUT} = -225 \text{ mA}$	—	—	1.9	
				$V_{IN} = V_{IN \text{ (ON)}}$ , $I_{OUT} = -100 \text{ mA}$	—	—	1.8	
Input Current	TD62783AP / F / AF	$I_{IN \text{ (ON)}}$	3	$V_{IN} = 2.4 \text{ V}$	—	36	52	$\mu\text{A}$
	TD62784AP / F / AF			$V_{IN} = 3.85 \text{ V}$	—	180	260	
				$V_{IN} = 5 \text{ V}$	—	92	130	
				$V_{IN} = 12 \text{ V}$	—	790	1130	
Input Voltage	TD62783AP / F / AF	$V_{IN \text{ (ON)}}$	4	$V_{CE} = 2.0 \text{ V}$	—	—	2.0	V
	TD62784AP / F / AF			$I_{OUT} = -350 \text{ mA}$	—	—	4.5	
	TD62783AP / F / AF	$V_{IN \text{ (OFF)}}$		$I_{OUT} = -500 \mu\text{A}$	0.8	—	—	
	TD62784AP / F / AF			2.0	—	—		
Supply Current		$I_{CC \text{ (ON)}}$	3	$V_{IN} = V_{IN \text{ (ON)}}$ , $V_{CC} = 50 \text{ V}$	—	—	2.5	$\text{mA / ch}$
Clamp Diode Reverse Current	AP, AF	$I_R$	5	$V_R = 50 \text{ V}$	—	—	50	$\mu\text{A}$
	F			$V_R = 35 \text{ V}$	—	—	50	
Clamp Diode Forward Voltage		$V_F$	6	$I_F = 350 \text{ mA}$	—	—	2.0	V
Turn-On Delay		$t_{ON}$	7	$V_{CC} = V_{CC \text{ MAX.}}$ , $R_L = 125 \Omega$ $C_L = 15 \text{ pF}$ , $R_L = 88 \Omega \text{ (F)}$	—	0.15	—	$\mu\text{s}$
Turn-Off Delay		$t_{OFF}$			—	1.8	—	

## TEST CIRCUIT

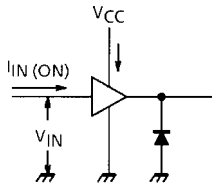
### 1. $I_{CEX}$



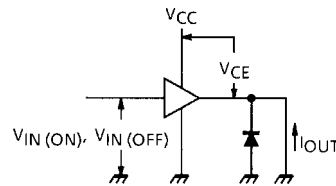
### 2. $V_{CE(sat)}$



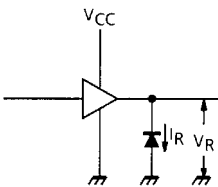
### 3. $I_{IN(ON)}, I_{CC}$



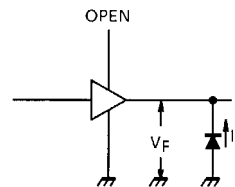
### 4. $V_{IN(ON)}, V_{IN(OFF)}$



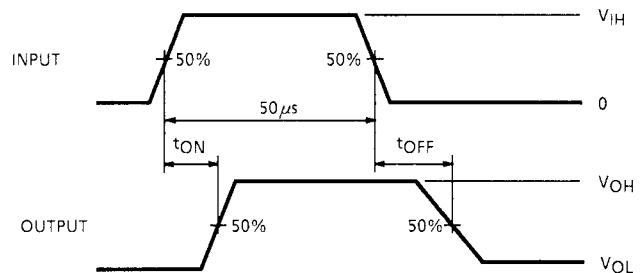
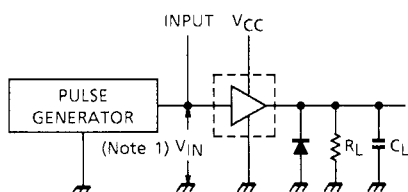
### 5. $I_R$



### 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

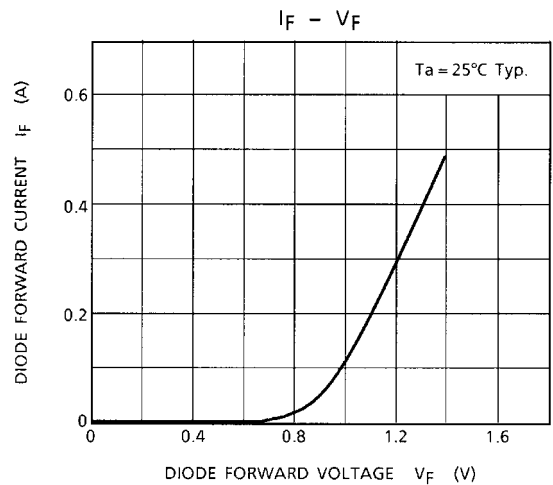
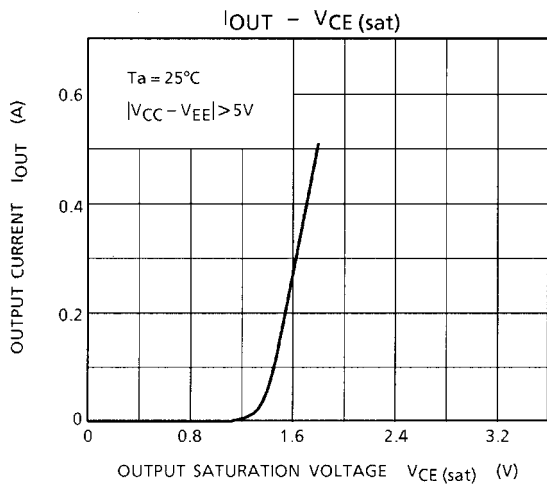
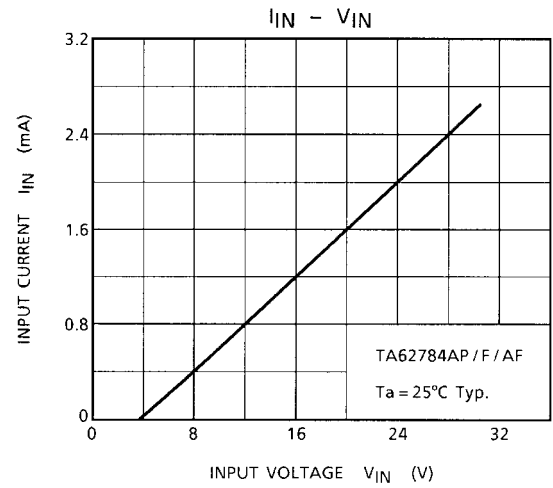
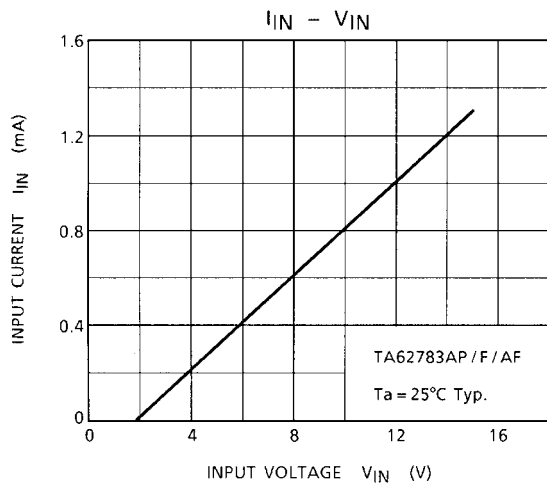
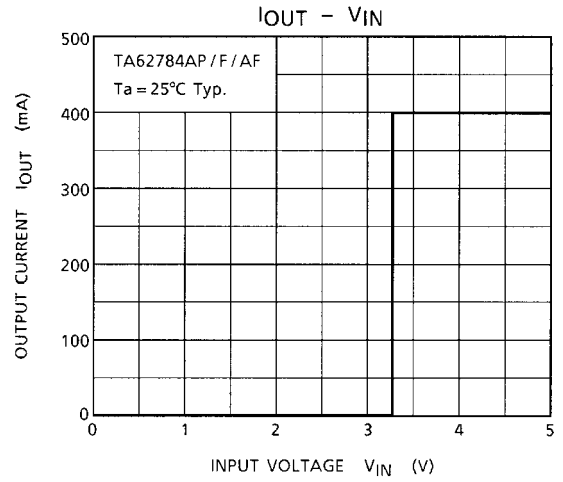
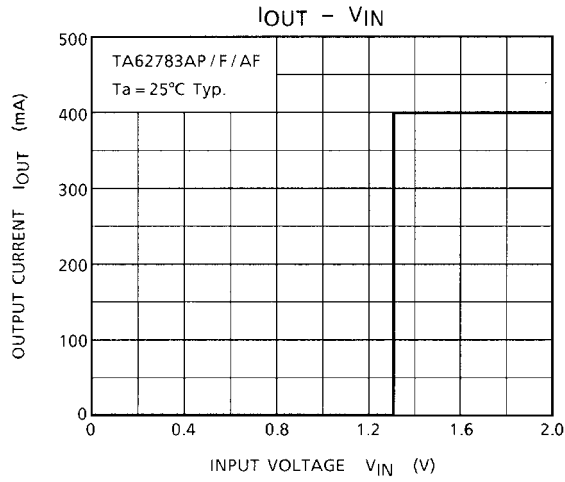
Note 2:  $C_L$  includes probe and jig capacitance

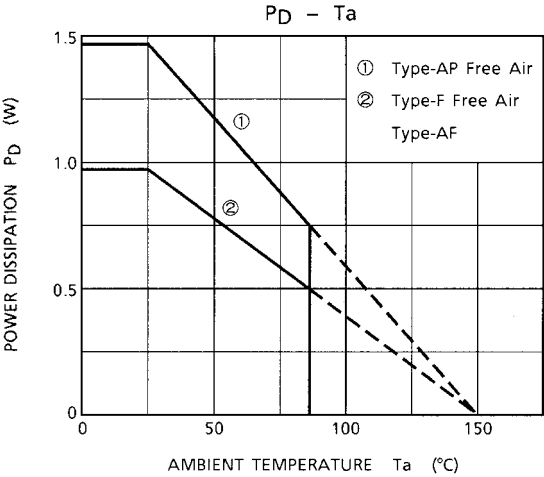
## PRECAUTIONS for USING

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.

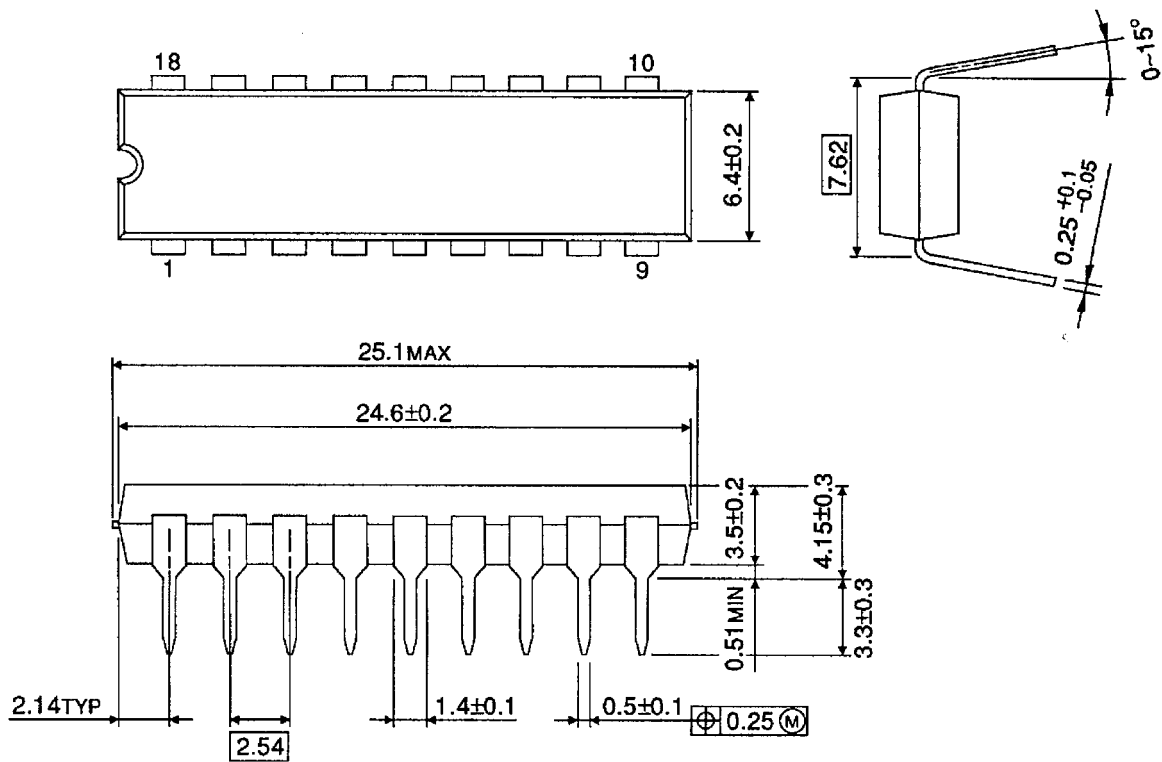




## PACKAGE DIMENSIONS

DIP18-P-300-2.54D

Unit: mm

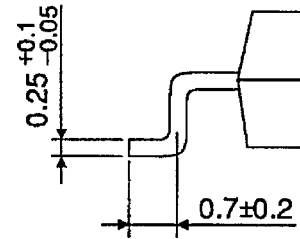
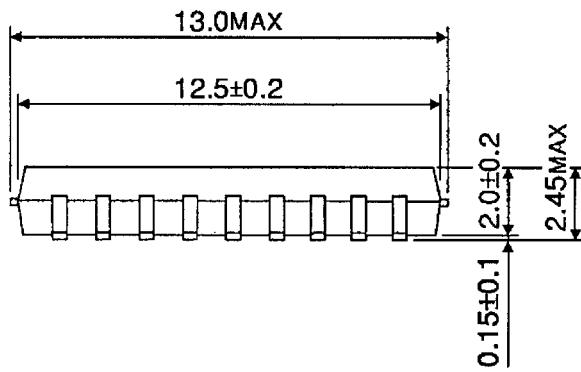
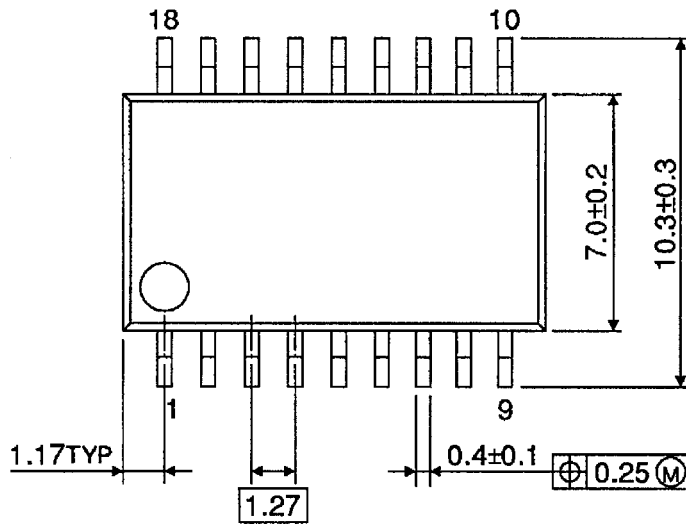


Weight: 1.47 g (Typ.)

## PACKAGE DIMENSIONS

SOP18-P-375-1.27

Unit: mm



Weight: 0.41 g (Typ.)



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000707EBA

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