

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

# TD62783AFN,TD62784AFN

## 8CH HIGH-VOLTAGE HIGH SOURCE-CURRENT DRIVER

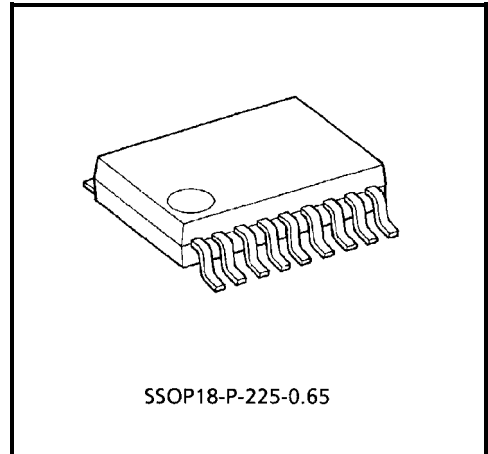
The TD62783AFN, TD62784AFN are comprised of eight source current Transistor Array.

These drivers are specifically designed for fluorescent display applications.

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

### FEATURES

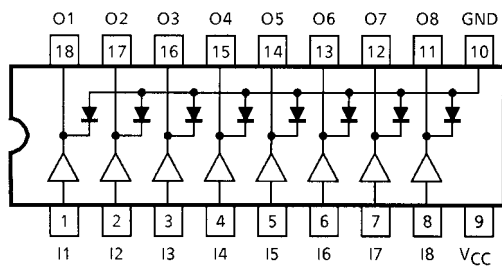
- Package Type : SSOP18 pin (0.65 mm pitch)
- High Output Voltage :  $V_{CE(SUS)} = 50\text{ V (MIN)}$
- Output Current (Single Output) :  $I_{OUT} = -500\text{ mA (MAX)}$
- Output Clamp Diodes
- Single Supply Voltage
- Input Compatible with Various Types of Logic



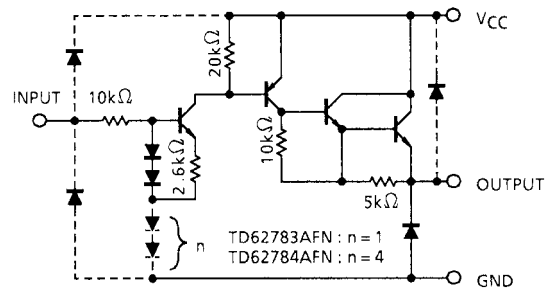
Weight: 0.09 g (Typ.)

TYPE	DESIGNATION
TD62783AFN	TTL, 5 V CMOS
TD62784AFN	6~15 V PMOS, CMOS

### 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	V <sub>CC</sub>	50	V
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	V <sub>R</sub>	50	V
Clamp Diode Forward Current	I <sub>F</sub>	500	mA
Power Dissipation	P <sub>D</sub> (Note 3)	0.96	W
Operating Temperature	T <sub>opr</sub>	-40~85	°C
Storage Temperature	T <sub>stg</sub>	-55~150	°C

Note 1: TD62783AFN

Note 2: TD62784AFN

Note 3: On Glass Epoxy PCB (50 × 50 × 1.6 mm Cu 40%)

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT	
Supply Voltage		V <sub>CC</sub>		—	—	50	V	
Output Current	(Note 3)	I <sub>OUT</sub>	DC 1 Circuit	—	—	-350	mA / ch	
			T <sub>pw</sub> = 25 ms, T <sub>j</sub> = 120°C Ta = 85°C, 8 Circuits	Duty = 10 %	—	—		-180
				Duty = 50 %	—	—		-38
Input Voltage	(Note 1)	V <sub>IN</sub>		—	—	12	V	
	(Note 2)			—	—	24		
Input Voltage	Output ON	(Note 1)	V <sub>IN(ON)</sub>	2.0	5.0	15	V	
		(Note 2)		4.5	12.0	30		
	Output OFF	(Note 1)	V <sub>IN(OFF)</sub>	0	—	0.8		
		(Note 2)		0	—	2.0		
Clamp Diode Reverse Voltage		V <sub>R</sub>		—	—	50	V	
Clamp Diode Forward Current		I <sub>F</sub>		—	—	400	mA	
Power Dissipation	(Note 3)	P <sub>D</sub>		—	—	0.4	W	

Note 1: TD62783AFN

Note 2: TD62784AFN

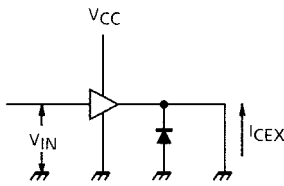
Note 3: On Glass Epoxy PCB (50 × 50 × 1.6 mm Cu 40%)

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

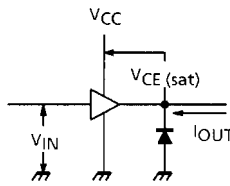
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		$I_{CEX}$	1	$V_{CC} = V_{CC\ MAX}$ , $V_{IN} = 0.4\ V$ $T_a = 25^\circ C$	—	—	100	$\mu A$
Output Saturation Voltage		$V_{CE\ (sat)}$	2	$V_{IN} = V_{IN\ (ON)}$ , $I_{OUT} = -350\ mA$	—	—	2.0	V
				$V_{IN} = V_{IN\ (ON)}$ , $I_{OUT} = -225\ mA$	—	—	1.9	
				$V_{IN} = V_{IN\ (ON)}$ , $I_{OUT} = -100\ mA$	—	—	1.8	
Input Current	TD62783AFN	$I_{IN\ (ON)}$	3	$V_{IN} = 2.4\ V$	—	36	52	$\mu A$
	TD62784AFN			$V_{IN} = 3.85\ V$	—	180	260	
				$V_{IN} = 5\ V$	—	92	130	
				$V_{IN} = 12\ V$	—	790	1130	
Input Voltage	TD62783AFN	$V_{IN\ (ON)}$	4	$V_{CE} = 2.0\ V$	—	—	2.0	V
	TD62784AFN			$I_{OUT} = -350\ mA$	—	—	4.5	
	TD62783AFN	$V_{IN\ (OFF)}$		$I_{OUT} = -500\ \mu A$	0.8	—	—	
	TD62784AFN			$I_{OUT} = -500\ \mu A$	2.0	—	—	
Supply Current		$I_{CC\ (ON)}$	3	$V_{IN} = V_{IN\ (ON)}$ , $V_{CC} = -50\ V$	—	—	2.5	$mA / ch$
Clamp Diode Reverse Current		$I_R$	5	$V_R = 50\ V$	—	—	50	$\mu A$
Clamp Diode Forward Voltage		$V_F$	6	$I_F = 350\ mA$	—	—	2.0	V
Turn-On Delay		$t_{ON}$	7	$V_{CC} = V_{CC\ MAX}$ , $R_L = 125\ \Omega$ $C_L = 15\ pF$	—	0.15	—	$\mu s$
Turn-Off Delay		$t_{OFF}$			—	3.0	—	

## TEST CIRCUIT

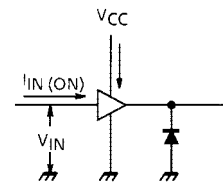
### 1. $I_{CEX}$



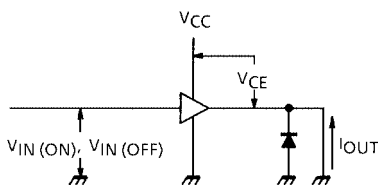
### 2. $V_{CE(sat)}$



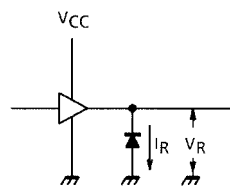
### 3. $I_{IN(ON)}$ , $I_{CC}$



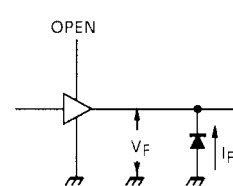
### 4. $V_{IN(ON)}$ , $V_{IN(OFF)}$



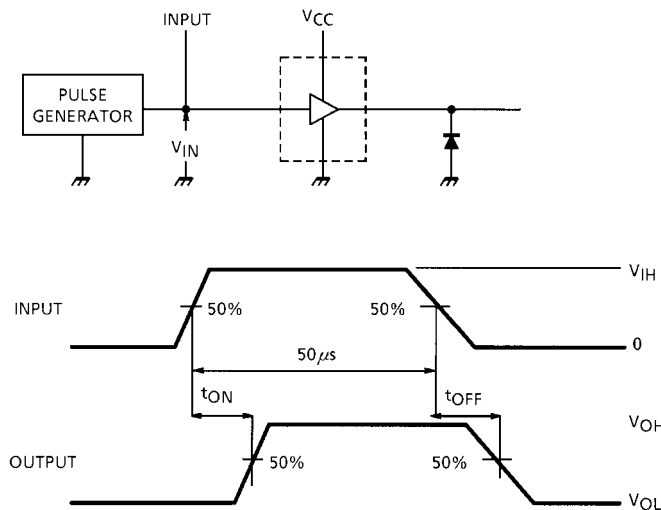
### 5. $I_R$



### 6. $V_F$



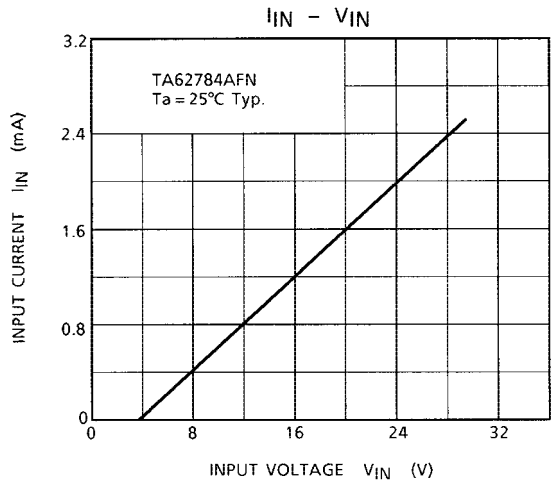
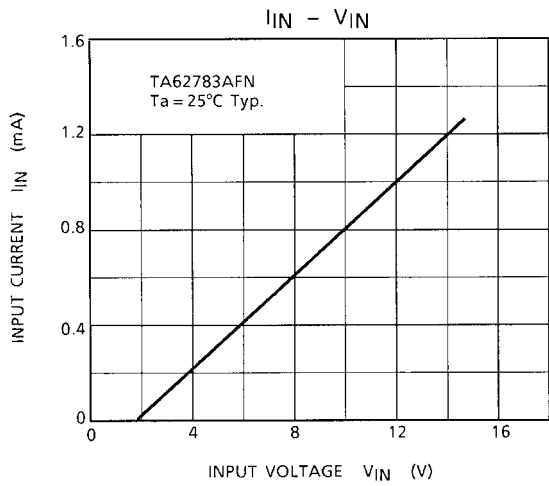
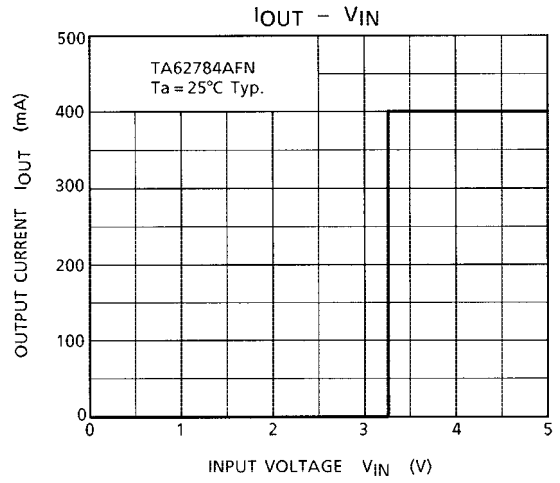
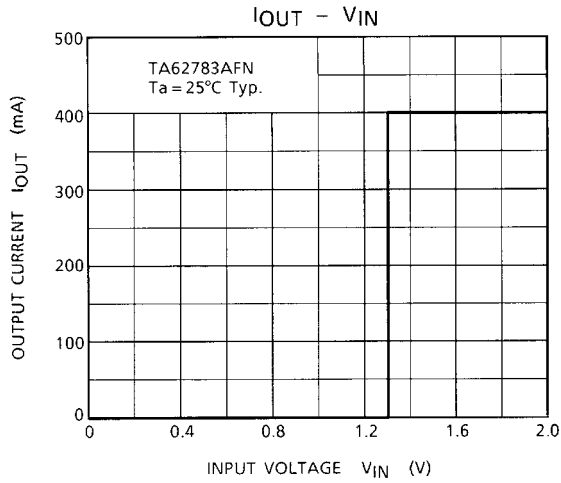
### 7. $t_{ON}$ , $t_{OFF}$

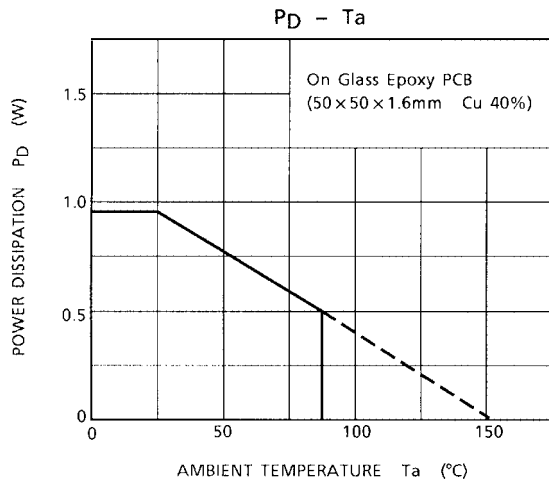
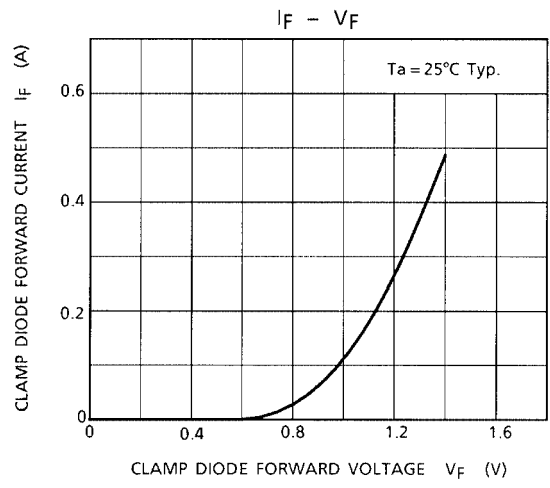
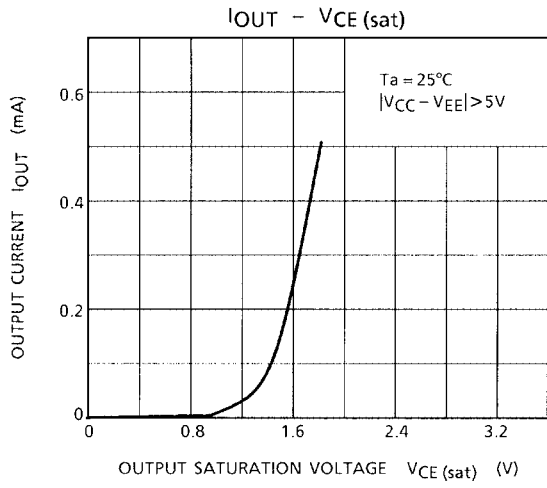


- Note 1: Pulse Width 50  $\mu$ s, Duty Cycle 10%  
 Output Impedance 50  $\Omega$ ,  $t_r \leq 5$  ns,  $t_f \leq 10$  ns  
 Note 2: CL includes probe and jig capacitance.

## 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.

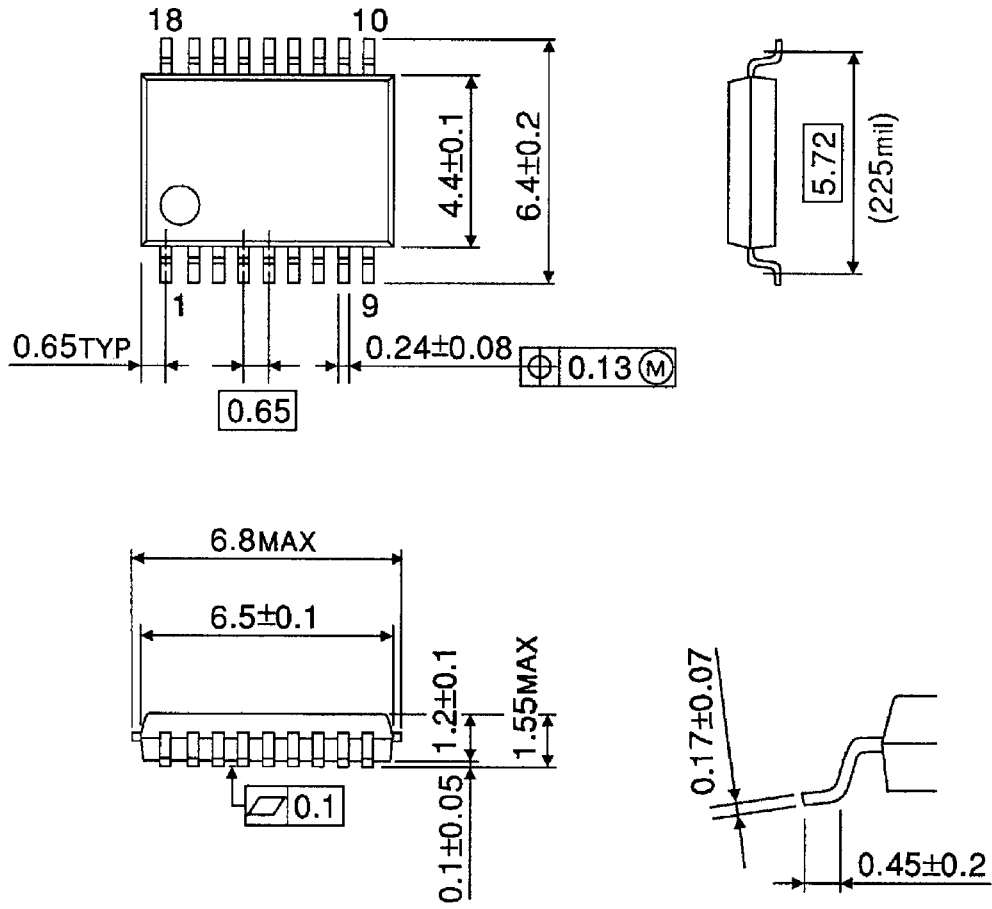




**PACKAGE DIMENSIONS**

SSOP18-P-225-0.65

Unit: mm



Weight: 0.09 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

000707EBA

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