

TOSHIBA Bipolar Digital Integrated Circuit Silicon Monolithic

TD62783APG, TD62783AFG, TD62784APG, TD62784AFG

8 ch High-Voltage Source Driver

The TD62783APG/AFG Series are comprised of eight source current Transistor Array.

These drivers are specifically designed for fluorescent display applications.

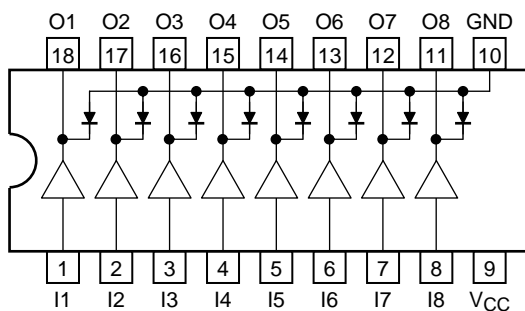
Applications include relay, hammer and lamp drivers.

Features

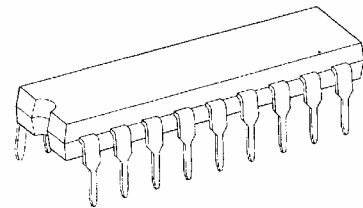
- High output voltage: $V_{CC} = 50\text{ V}$ (min)
- Output current (single output): $I_{OUT} = -500\text{ mA}$ (min)
- Output clamp diodes
- Single supply voltage
- Input compatible with various types of logic
- Package type-APG: DIP-18 pin
- Package type-AFG: SOP-18 pin

Type	Designation
TD62783APG/AFG	TTL, 5V CMOS
TD62784APG/AFG	6 to 15V PMOS, CMOS

Pin Assignment (top view)

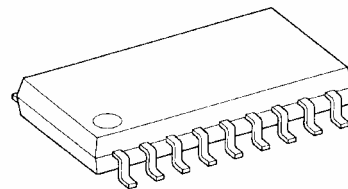


TD62783APG
TD62784APG



DIP18-P-300-2.54D

TD62783AFG
TD62784AFG



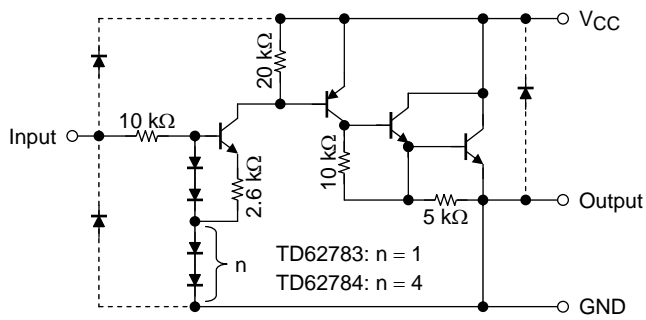
SOP18-P-375-1.27

Weight

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

SOP18-P-375-1.27: 0.41 g (typ.)

Schematics (each driver)



Note: The input and output parasitic diodes cannot be used as clamp diodes.

Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Supply voltage	V_{CC}	50	V
Output current	I_{OUT}	-500	mA/ch
Input voltage	V_{IN} (Note 1)	15	V
	V_{IN} (Note 2)	30	
Clamp diode reverse voltage	V_R	50	V
Clamp diode forward current	I_F	500	mA
Power dissipation	APG	P_D (Note 3)	1.47
	AFG		0.96
Operating temperature	T_{opr}	-40 to 85	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to 150	$^\circ\text{C}$

Note 1: Only TD62783APG/AFG

Note 2: Only TD62784APG/AFG

Note 3: Delated above 25°C in the proportion of $11.7\text{ W}/^\circ\text{C}$ (APG type), $7.7\text{ W}/^\circ\text{C}$ (AFG type)

Recommended Operating Conditions (Ta = -40 to 80°C)

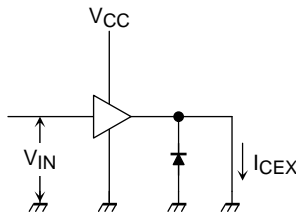
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit	
Supply voltage		V _{CC}	—	—	—	50	V	
Output current	AFG	I _{OUT}	Ta = 85°C, Tj = 120°C, T _{pw} = 25 ms	Duty = 10% 8 circuits	—	—	-260	mA/ch
				Duty = 50% 8 circuits	—	—	-59	
				Duty = 10% 8 circuits	—	—	-180	
				Duty = 50% 8 circuits	—	—	-38	
Input voltage		V _{IN}	—	—	—	12	V	
			—	—	—	24		
Input voltage	Output ON	V _{IN} (ON)	—	20	50	15	V	
			—	4.5	12.0	30		
	Output OFF	V _{IN} (OFF)	—	0	—	0.8		
			—	0	—	2.0		
Clamp diode reverse voltage		V _R	—	—	—	50	V	
			—	—	—	35		
Clamp diode forward current		I _F	—	—	—	400	mA	
Power dissipation		P _D	—	—	—	0.52	W	
			—	—	—	0.35		

Electrical Characteristics (Ta = 25°C)

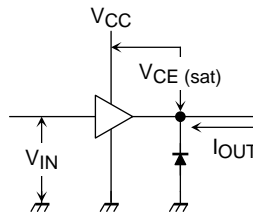
Characteristics		Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Output leakage current		I _{CEX}	1	V _{CC} = V _{CC} max V _{IN} = 0.4 V Ta = 25°C	—	—	100	μA
Output saturation voltage		V _{CE} (sat)	2	V _{IN} = V _{IN} (ON), I _{OUT} = -350 mA	—	—	2.0	V
				V _{IN} = V _{IN} (ON), I _{OUT} = -225 mA	—	—	1.9	
				V _{IN} = V _{IN} (ON), I _{OUT} = -100 mA	—	—	1.8	
Input current	TD62783APG/AFG	I _{IN} (ON)	3	V _{IN} = 2.4 V	—	36	52	μA
				V _{IN} = 3.85 V	—	180	260	
	TD62784APG/AFG			V _{IN} = 5 V	—	92	130	
				V _{IN} = 12 V	—	790	1130	
Input voltage	TD62783APG/AFG	V _{IN} (ON)	4	V _{CE} = 2.0 V	—	—	2.0	V
				I _{OUT} = -350 mA	—	—	4.5	
	TD62784APG/AFG	V _{IN} (OFF)		I _{OUT} = -500 μA	0.8	—	—	
				—	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	μA
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 Ω C _L = 15 pF, R _L = 88 Ω	—	0.15	—	μs
Turn-OFF delay		t _{OFF}	7	V _{CC} = V _{CC} max R _L = 125 Ω C _L = 15 pF, R _L = 88 Ω	—	1.8	—	μs

Test Circuit

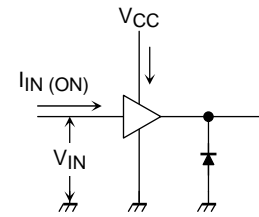
1. I_{CEX}



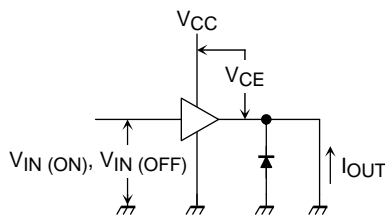
2. $V_{CE(sat)}$



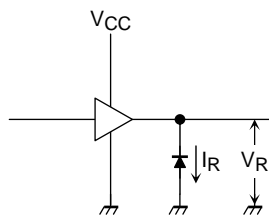
3. $I_{IN(ON)}$, I_{CC}



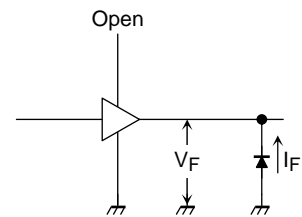
4. $V_{IN(ON)}$, $V_{IN(OFF)}$



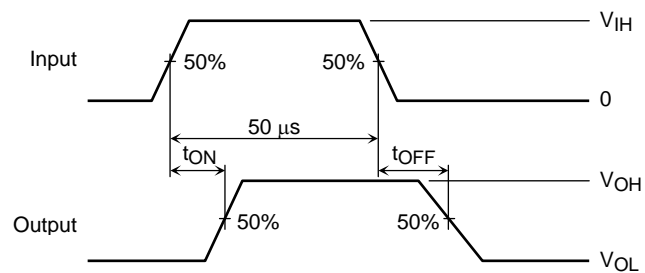
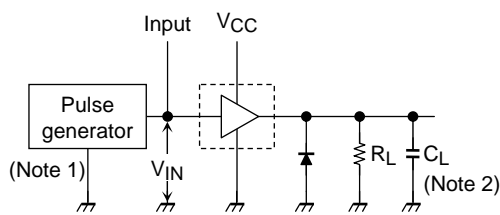
5. I_R



6. V_F



7. t_{ON} , t_{OFF}



Note 1: Pulse Width 50 μ s, Duty Cycle 10%
Output Impedance 50 Ω , $t_r \leq 5$ ns, $t_f \leq 10$ ns

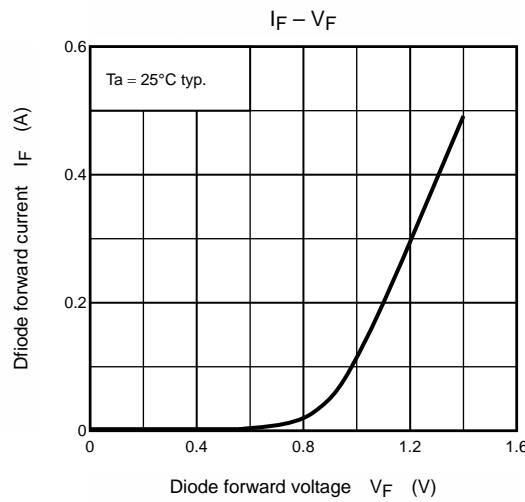
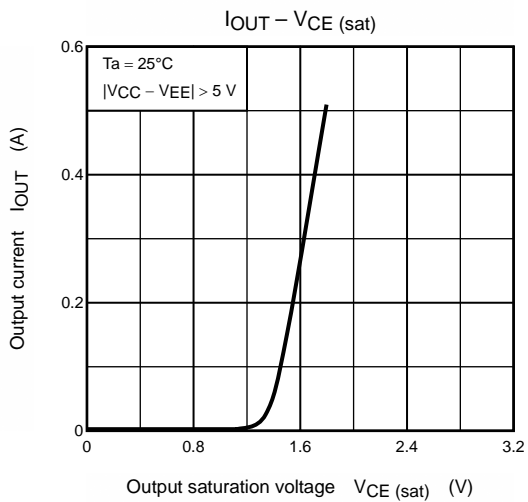
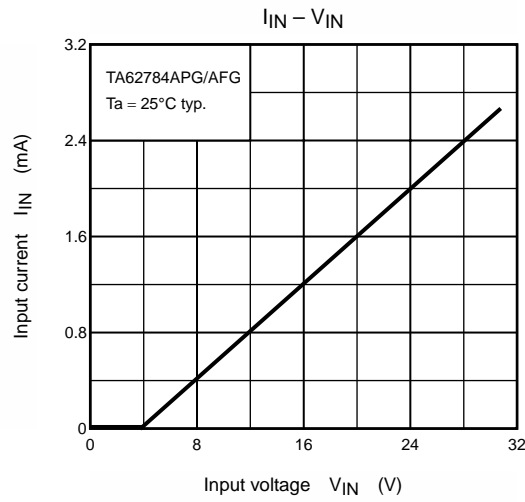
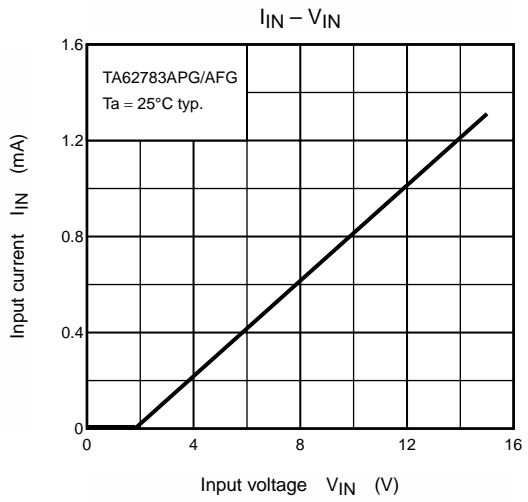
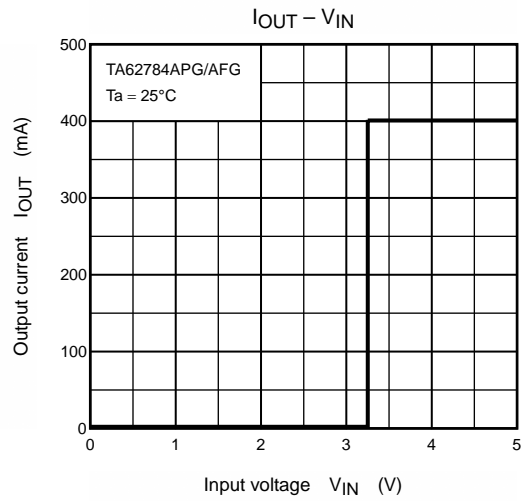
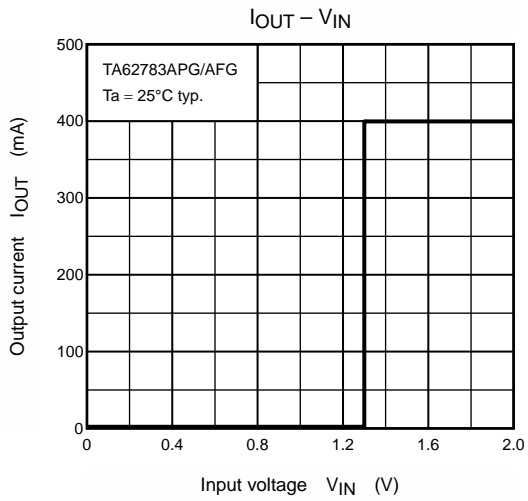
Note 2: C_L includes probe and jig capacitance.

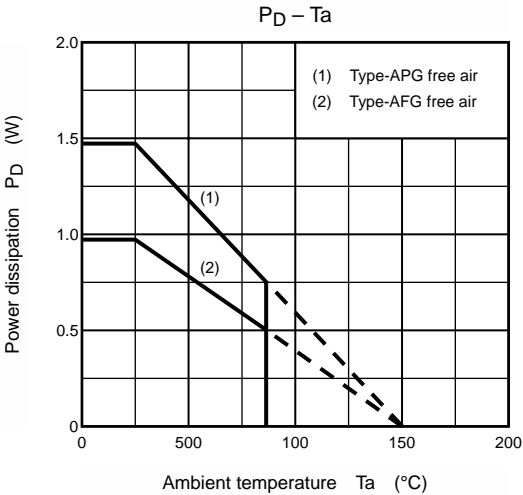
Precautions for Using

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, V_{CC} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

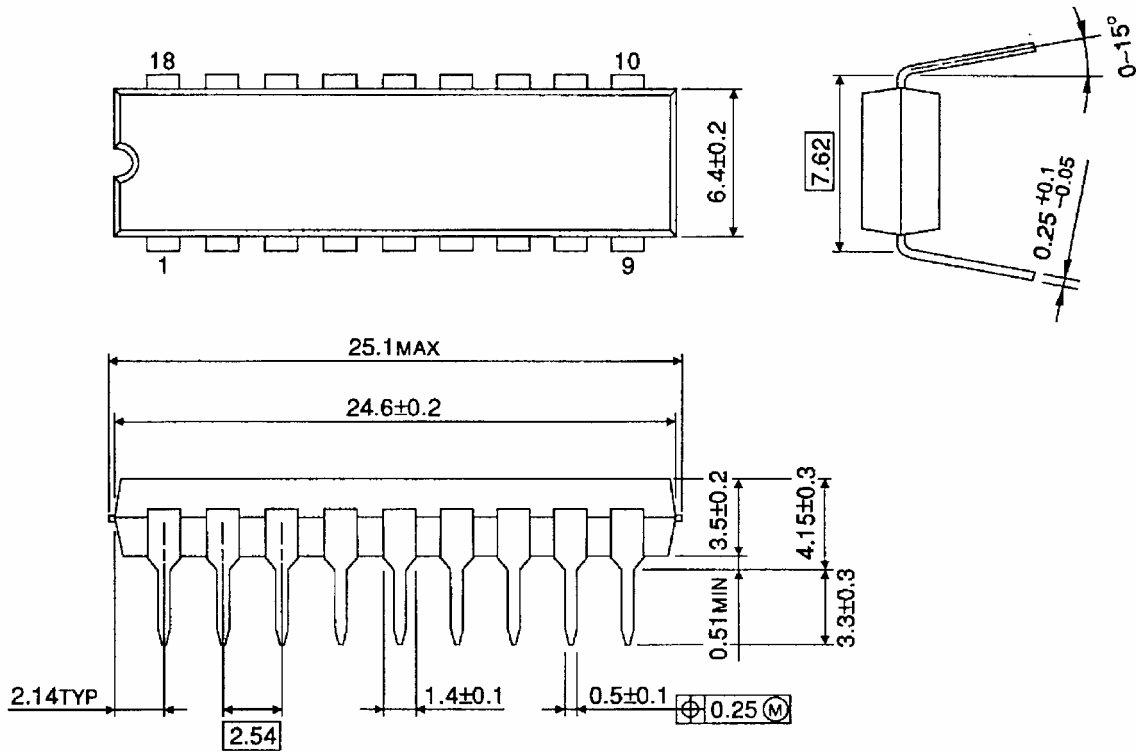




Package Dimensions

DIP18-P-300-2.54D

Unit : mm

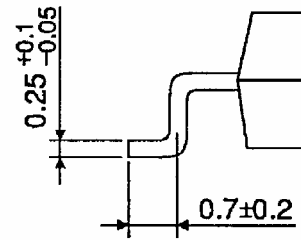
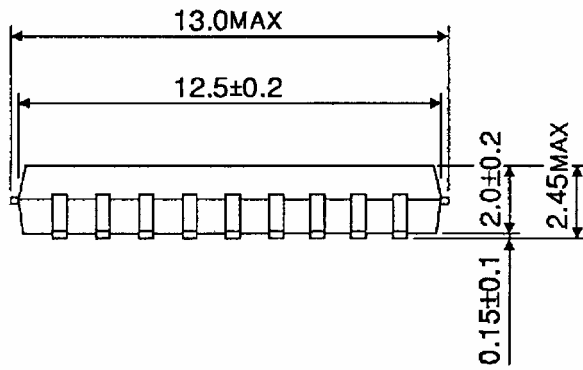
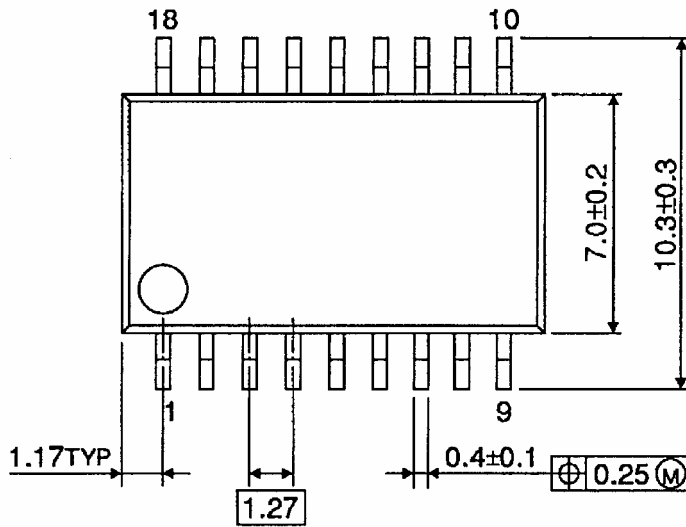


Weight: 1.47 g (typ.)

Package Dimensions

SOP18-P-375-1.27

Unit : mm



Weight: 0.41 g (typ.)

About solderability, following conditions were confirmed

- Solderability

- (1) Use of Sn-63Pb solder Bath

- solder bath temperature = 230°C
 - dipping time = 5 seconds
 - the number of times = once
 - use of R-type flux

- (2) Use of Sn-3.0Ag-0.5Cu solder Bath

- solder bath temperature = 245°C
 - dipping time = 5 seconds
 - the number of times = once
 - use of R-type flux

RESTRICTIONS ON PRODUCT USE

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