

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62786AP,TD62786F,TD62786AF TD62787AP,TD62787F,TD62787AF

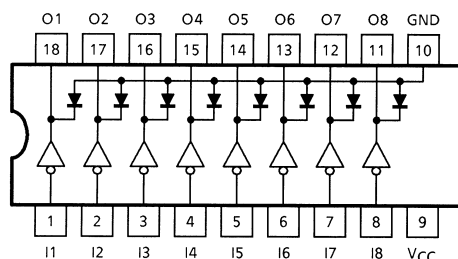
8CH HIGH-VOLTAGE SOURCE DRIVER

The TD62786AP / F / AF series are eight channel hux non-inverting source current transistor array. All units feature integral clamp diodes for switching inductive loads. Applications include relay, hammer and lamp drivers.

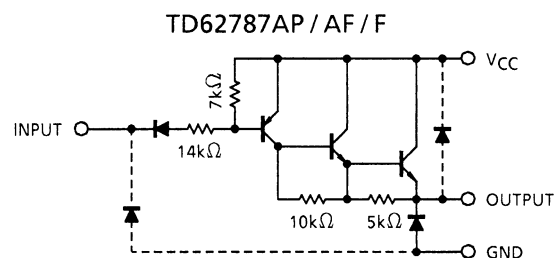
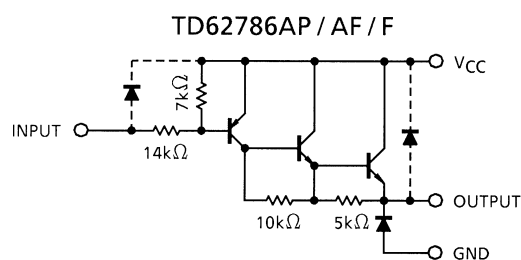
FEATURES

- High output voltage type-AP, AF : $V_{CE(SUS)} = 50\text{ V (Min)}$
type-F : $V_{CE(SUS)} = 35\text{ V (Min)}$
- Output current (single output) : $I_{OUT} = -500\text{ mA / ch (Max)}$
- Output clamp diodes
- Single supply voltage
- Input compatible with TTL, 5 V CMOS
- Low level active input
- Package type-AP : DIP-18 pin
- Package type-F, AF: SOP-18 pin

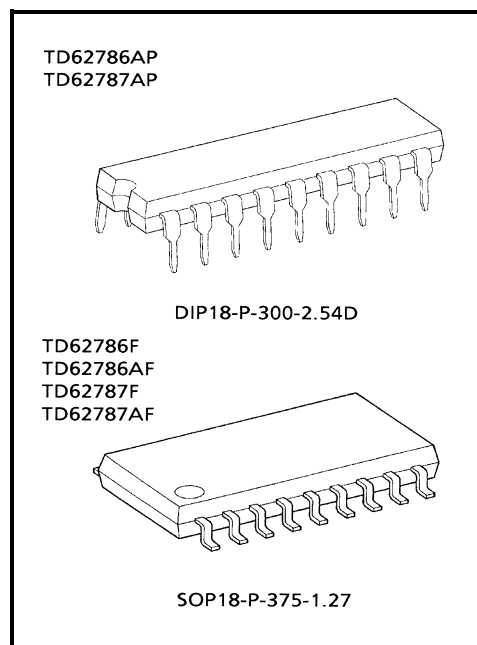
PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage	AP / AF	$V_{CC}-V_{GND}$	50	V
	F		35	
Output Sustaining Voltage	AP / AF	V_{OUT}	-50	V
	F		-35	
Output Current		I_{OUT}	-500	mA / ch
Input Voltage		V_{IN} (Note 1)	-30~0.5	V
Input Voltage		V_{IN} (Note 2)	$V_{GND}\sim 7$	V
Clamp Diode Forward Current	AP / AF	V_R	50	V
	F		35	
Clamp Diode Forward Current		I_F	500	mA
Power Dissipation	AP	P_D (Note 3)	1.47	W
	F / AF		0.96	
Operating Temperature		T_{opr}	-40~85	°C
Storage Temperature		T_{stg}	-55~150	°C

Note 1: Only TD62786AP / F / AF

Note 2: Only TD62787AP / F / AF

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

RECOMMENDED OPERATING CONDITIONS (Ta = -40~85°C, V_{CC} = 0 V)

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage	AP / AF	$V_{CC}-V_{GND}$	—	—	—	50	V
	F		—	—	—	35	
Output Voltage	AP / AF	V_{OUT}	—	—	—	-50	V
	F		—	—	—	-35	
Output Current		I_{OUT}	—	—	—	-350	mA / ch
Input Voltage	TD62786	V_{IN}	—	-30	—	0	V
	TD62787		—	V_{GND}	—	7	
Clamp Diode Reverse Voltage	AP / AF	V_R	—	—	—	50	V
	F		—	—	—	35	
Clamp Diode Forward Current		I_F	—	—	—	350	mA
Power Dissipation	AP	P_D	—	—	—	0.52	W
	AF / F		—	—	—	0.35	

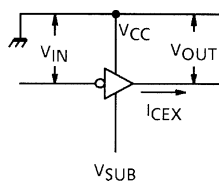
ELECTRICAL CHARACTERISTICS (Ta = 25°C, V_{CC} = 0 V)

CHARACTERISTIC			SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current			I _{CEX}	1	V _{OUT} = V _{GND} = -50 V Ta = 85°C	—	—	-100	μA
Output Saturation Voltage			V _{CE (sat)}	2	V _{IN} = V _{IL} MAX. I _{OUT} = -100 mA	—	—	-1.8	V
					V _{IN} = V _{IL} MAX. I _{OUT} = -350 mA	—	—	-2.0	
DC Current transfer Ratio			h _{FE}	2	V _{CC} = 0 V, V _{CE} = 3 V I _{OUT} = -350 mA	1000	—	—	—
Input Voltage	“H” Level	TD62786	V _{IN}	4	—	-1.2	—	0	V
		TD62787				-1.6	—	5.5	
	“L ” Level	TD62786				-30	—	-2.8	
		TD62787				V _{GND}	—	-3.7	
Input Current			I _{IL}	—	V _{CC} = 5.5 V, V _{IN} = 0.4 V	—	—	-0.4	mA
Clamp Diode Reverse Current			I _R	—	V _R = V _R MAX., Ta = 85°C	—	—	100	μA
						—	—		
Clamp Diode Forward Voltage			V _F	—	—	—	—	2.0	V
Turn-On Delay			t _{ON}	5	V _{OUT} = -50 V, R _L = 163 Ω C _L = 15 pF (Note)	—	0.2	—	μs
Turn Off Delay			t _{OFF}			—	1.0	—	

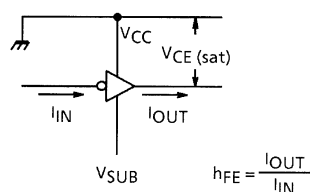
 Note: V_{OUT} = -35 V, R_L = 116 Ω for Type-F

TEST CIRCUIT

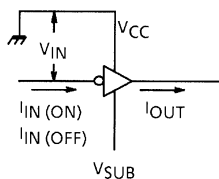
1. I_{CEX}



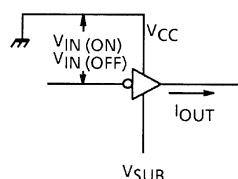
2. $V_{CE(sat)}$, h_{FE}



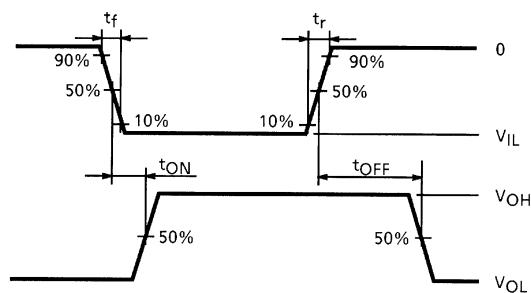
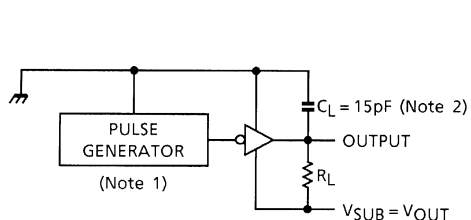
3. $I_{IN(ON)}$, $I_{IN(OFF)}$



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



5. t_{ON} , t_{OFF}



Note 1: Pulse Width 50 μ s, Duty Cycle 10%

Output Impedance 50 Ω , $t_r \leq 10$ ns, $t_f \leq 5$ ns

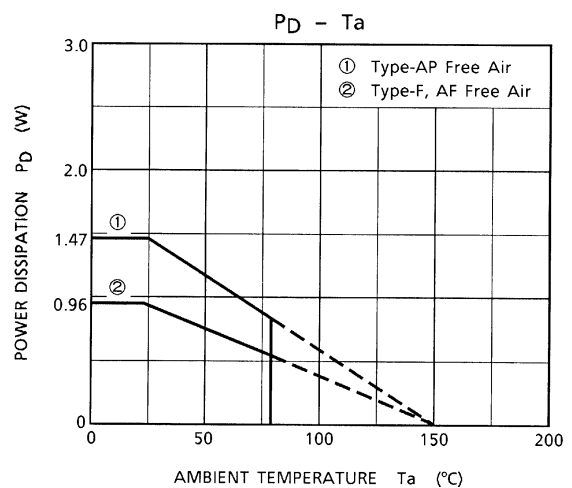
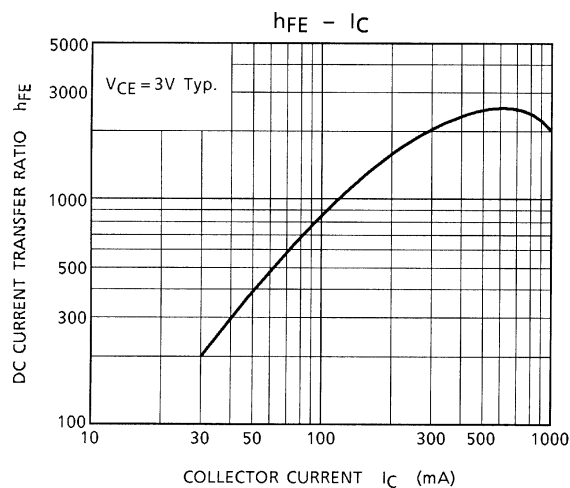
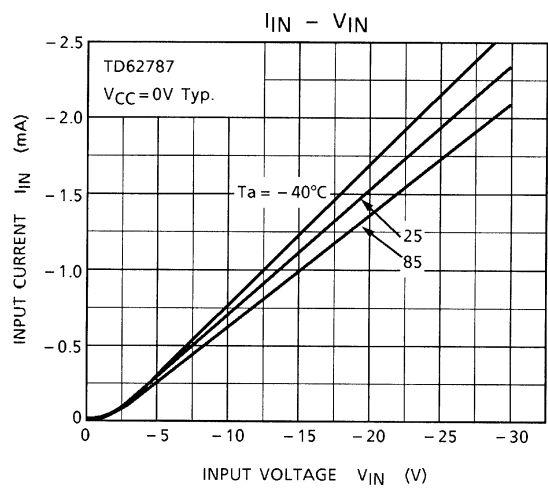
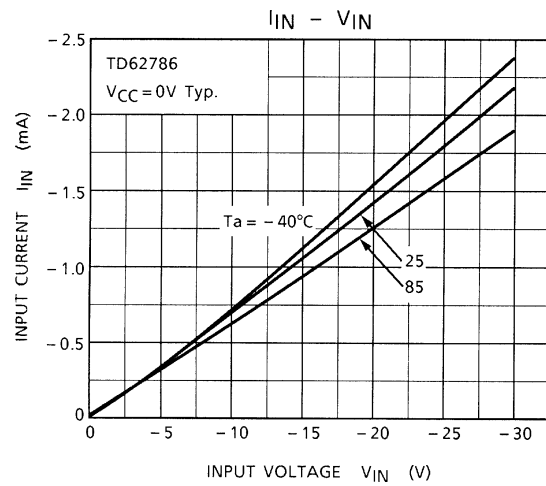
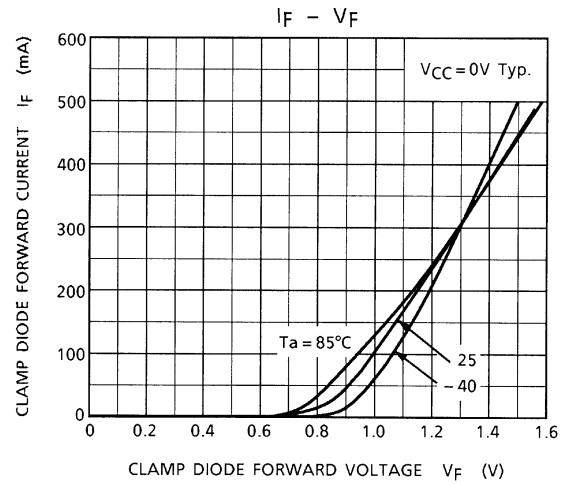
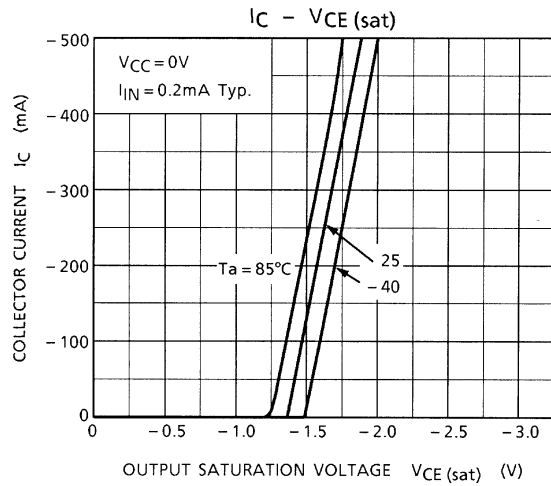
Note 2: C_L includes probe and jig capacitance.

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.

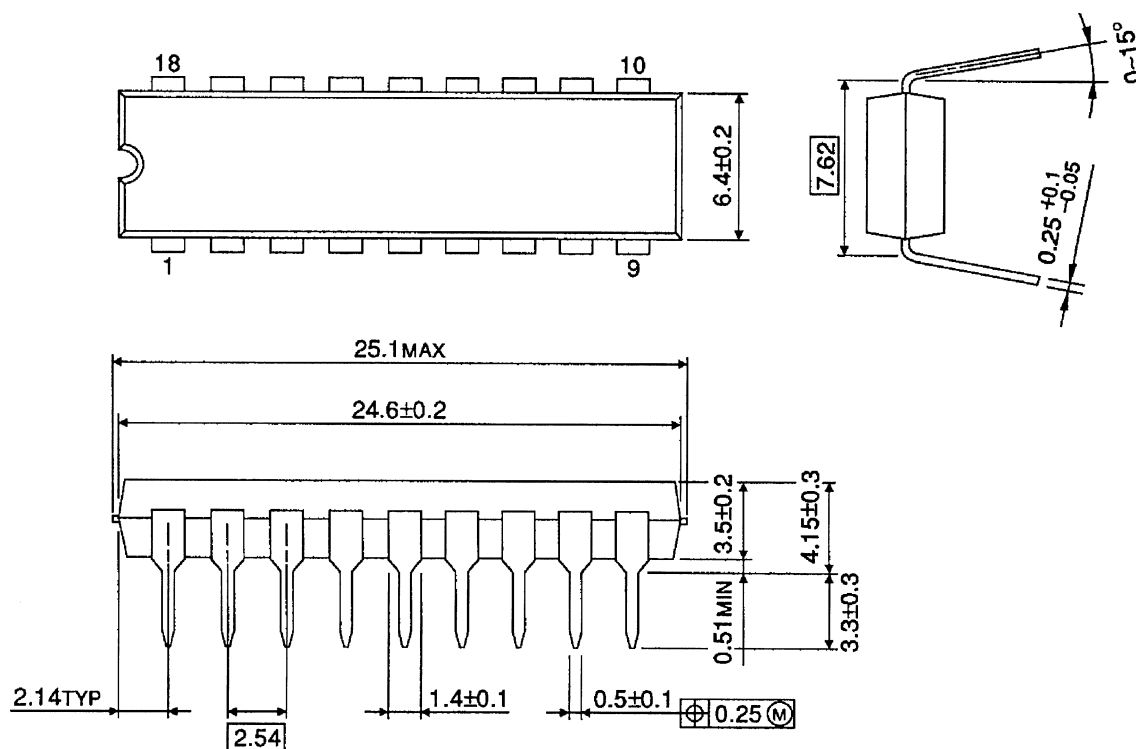
Utmost care is necessary in the design of the output line, V_{CC} and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



PACKAGE DIMENSIONS

DIP18-P-300-2.54D

Unit: mm

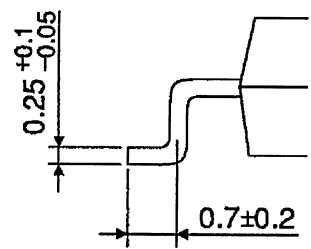
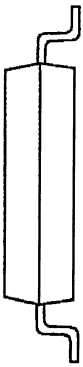
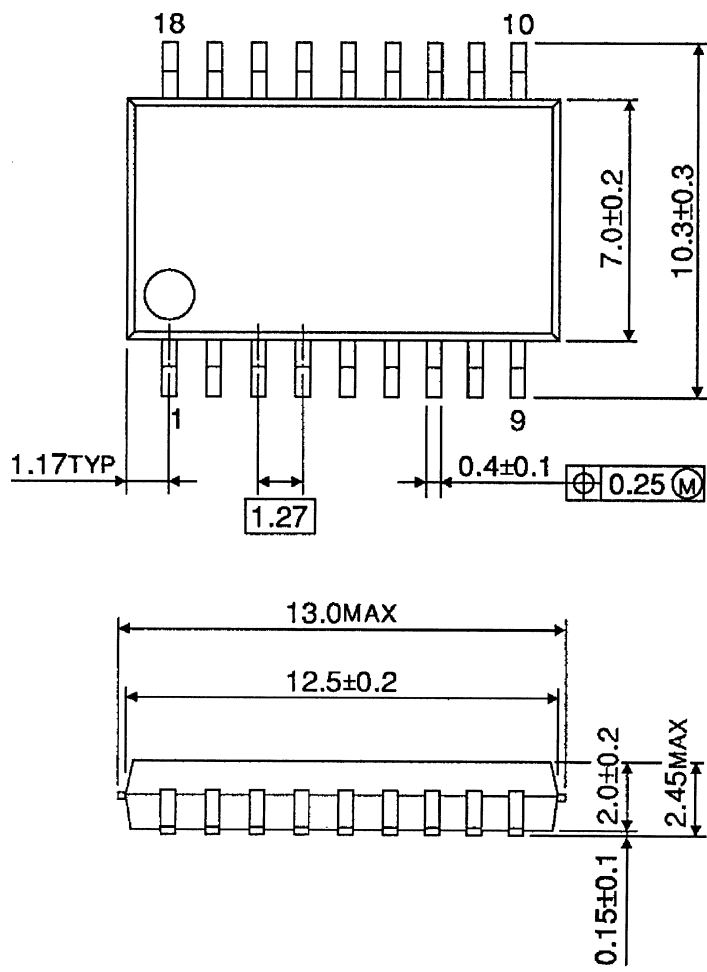


Weight: 1.47 g (Typ.)

PACKAGE DIMENSIONS

SOP18-P-375-1.27

Unit: mm



Weight: 0.41 g (Typ.)

RESTRICTIONS ON PRODUCT USE

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