

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

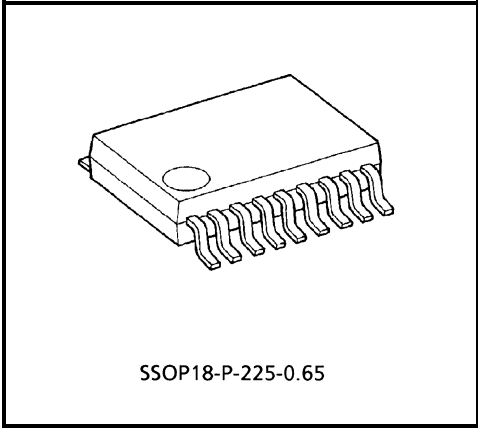
TD62786AFN

8CH HIGH-VOLTAGE SOURCE-CURRENT DRIVER

The TD62786AFN is eight Channel Non-Inverting Source current Transistor Array. All units feature integral clamp diodes for switching inductive loads. Applications include relay, hammer and lamp drivers.

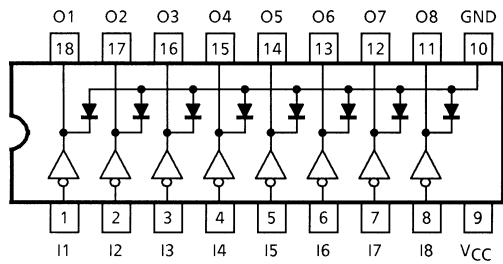
FEATURES

- Package Type : SSOP18 pin (0.65 mm pitch)
- High Output Voltage :  $V_{CE(SUS)} = 50\text{ V}$  (Min)
- Output Current (Single Output) :  $I_{OUT} = -500\text{ mA / ch}$  (Max)
- Low Level Active Input
- Output Clamp Diodes
- Input Compatible with TTL, 5 V CMOS
- Single Supply Voltage

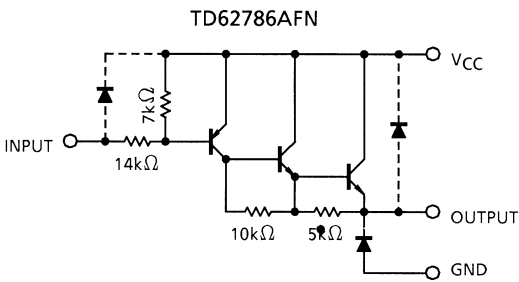


Weight: 0.09 g (Typ.)

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

MAXIMUM RATING ( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 0\text{ V}$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}-V_{GND}$	50	V
Output Sustaining Voltage	$V_{CE(SUS)}$	-50	V
Output Current	$I_{OUT}$	-500	mA / ch
Input Voltage	$V_{IN}$	-30 ~ 0.5	V
Clamp Diode Reverse Voltage	$V_R$	50	V
Clamp Diode Forward Current	$I_F$	500	mA
Power Dissipation	$P_D$ (Note)	0.96	W
Operating Temperature	$T_{opr}$	-40 ~ 85	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ\text{C}$

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

**RECOMMENDED OPERATING CONDITIONS ( $T_a = -40\sim 85^\circ\text{C}$ ,  $V_{CC} = 0\text{ V}$ )**

CHARACTERISTIC	SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage	$V_{CC}-V_{GND}$		—	—	50	V
Output Sustaining Voltage	$V_{CE}(\text{SUS})$		—	—	-50	V
Output Current	$I_{OUT}(\text{Note})$	DC 1 Circuit	—	—	-350	mA / ch
		$T_{pw} = 25\text{ ms}$ , $T_j = 120^\circ\text{C}$ , $T_a = 85^\circ\text{C}$ , 8 Circuits	0	—	-180	
		Duty = 50%	0	—	-38	
Input Voltage	$V_{IN}$		-30	—	0	V
Clamp Diode Reverse Voltage	$V_R$		—	—	50	V
Clamp Diode Forward Current	$I_F$		—	—	350	mA
Power Dissipation	$P_D(\text{Note})$		—	—	0.4	W

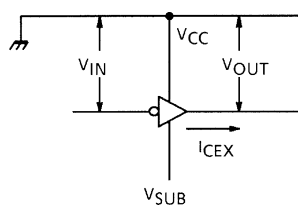
Note: On Class Epoxy PCB (50 × 50 × 1.6 mm Cu 40%)

**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 0\text{ V}$ )**

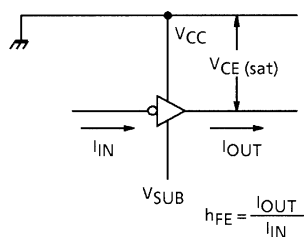
CHARACTERISTIC	SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current	$I_{CEX}$	1	$V_{OUT} = V_{GND} = -50\text{ V}$ $T_a = 85^\circ\text{C}$	—	—	-100	$\mu\text{A}$
Output Saturation Voltage	$V_{CE}(\text{sat})$	2	$V_{IN} = V_{IL}\text{ MAX.}$ $I_{OUT} = -100\text{ mA}$	—	—	-1.8	V
			$V_{IN} = V_{IL}\text{ MAX.}$ $I_{OUT} = -350\text{ mA}$	—	—	-2.0	
DC Current transfer Ratio	$h_{FE}$	2	$V_{CC} = 0\text{ V}$ , $V_{CE} = 3\text{ V}$ $I_{OUT} = -350\text{ mA}$	1000	—	—	
Input Voltage	"H" Level	$V_{IN}$		-1.2	—	0	V
	"L" Level			-30	—	-2.8	
Input Current	$I_{IN}(\text{ON})$	3	$V_{CC} = 5.5\text{ V}$ , $V_{IN} = 0.4\text{ V}$	—	—	-0.4	mA
Clamp Diode Reverse Current	$I_R$	—	$V_R = V_R\text{ MAX.}$ , $T_a = 85^\circ\text{C}$	—	—	100	$\mu\text{A}$
Clamp Diode Forward Voltage	$V_F$	—		—	—	2.0	V
Turn-On Delay	$t_{ON}$	5	$V_{OUT} = -50\text{ V}$ , $R_L = 125\ \Omega$ $C_L = 15\text{ pF}$	—	0.2	—	$\mu\text{s}$
Turn-Off Delay	$t_{OFF}$			—	1.0	—	

## TEST CIRCUIT

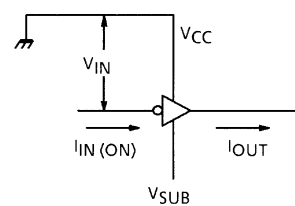
### 1. $I_{CEX}$



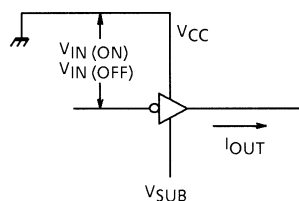
### 2. $V_{CE(sat)}$ , $h_{FE}$



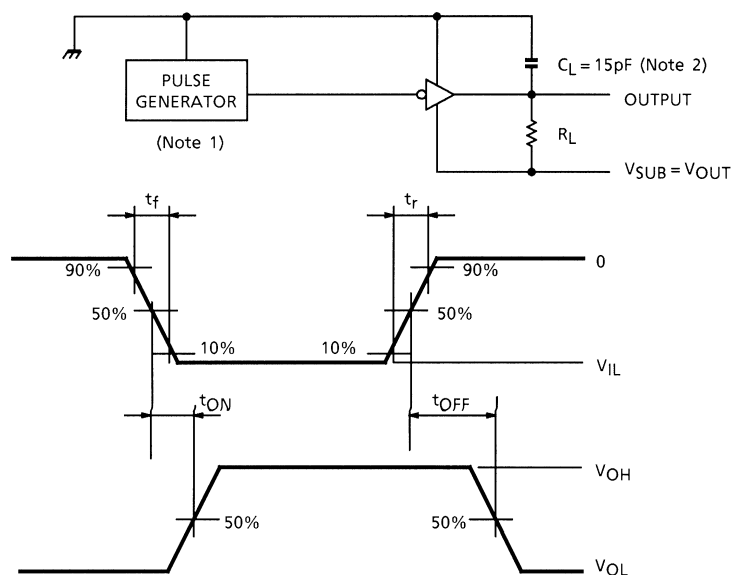
### 3. $I_{IN(ON)}$



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



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



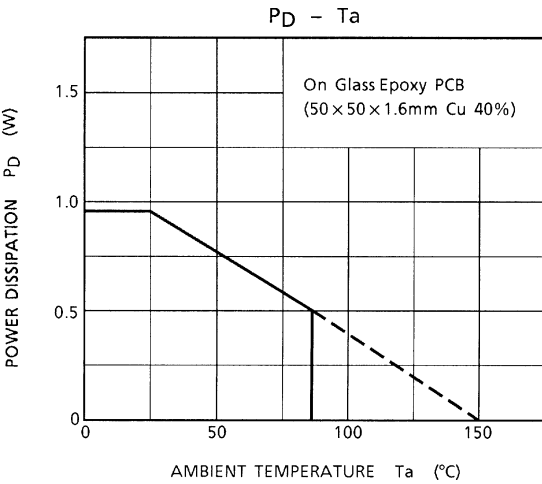
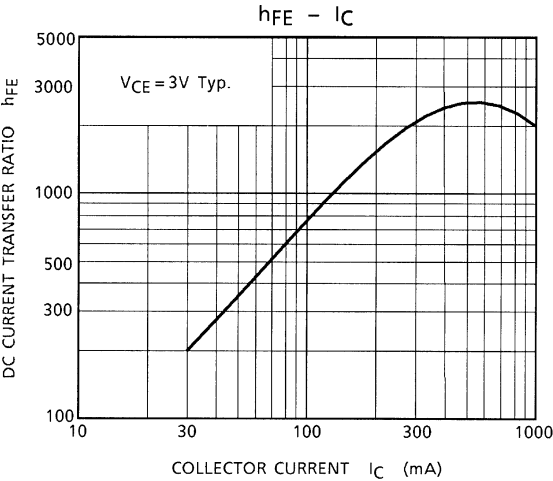
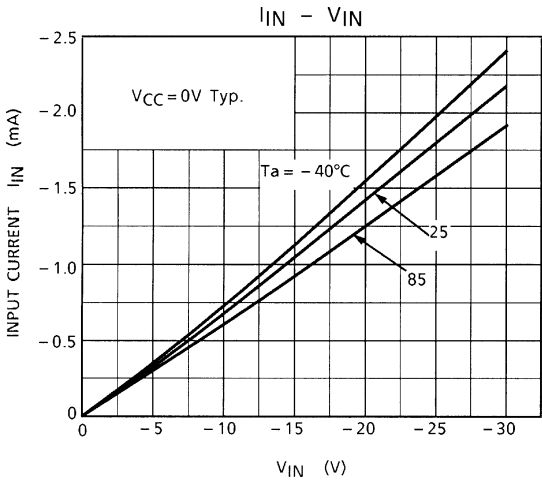
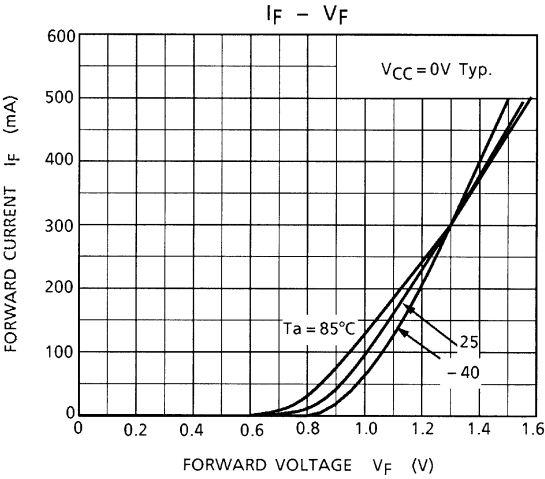
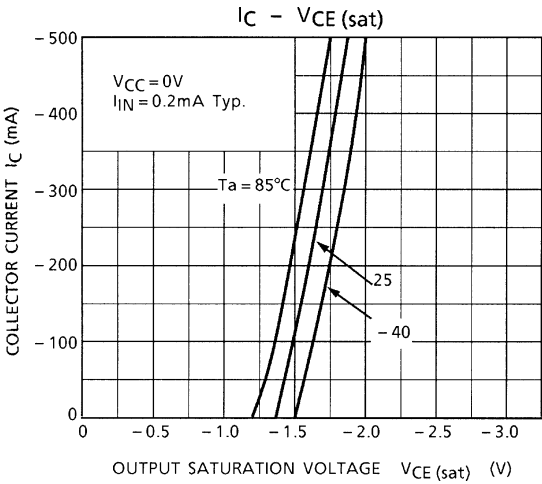
Note 1: Pulse Width 50  $\mu$ s, Duty Cycle 10%  
Output Impedance 50  $\Omega$ ,  $t_r \leq 10$  ns,  $t_f \leq 5$  ns  
Note 2:  $C_L$  includes probe and jig capacitance

## 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.

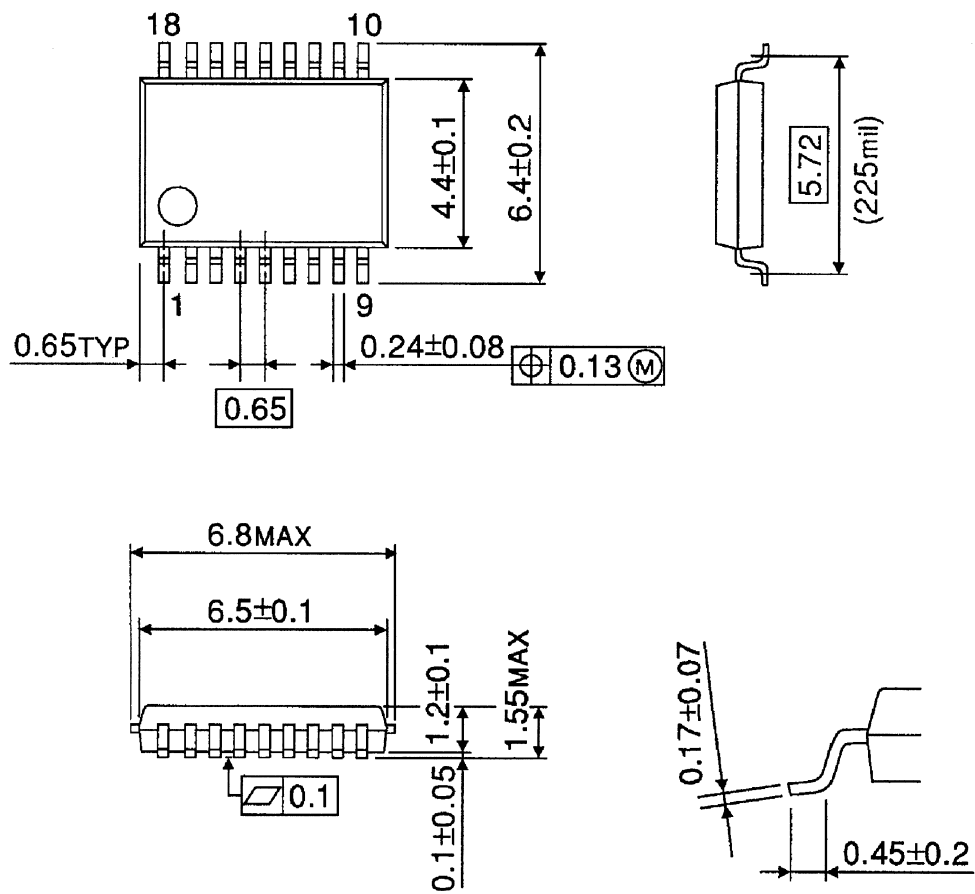
Utmost care is necessary in the design of the output line, VCC and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.



PACKAGE DIMENSIONS

SSOP18-P-225-0.65

Unit: mm



Weight: 0.09 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

000707EBA

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