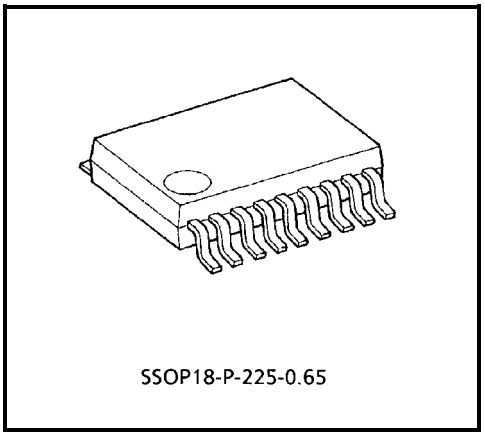
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

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.

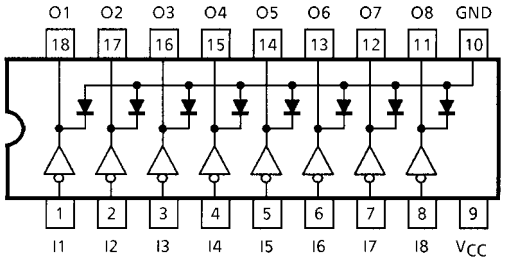


Weight: 0.09 g (Typ.)

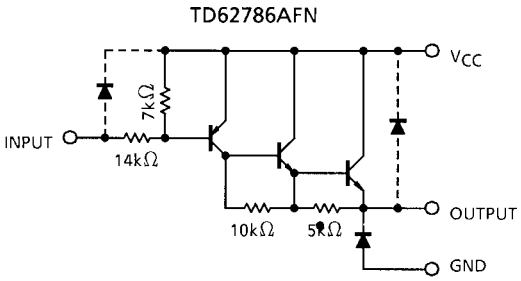
FEATURES

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

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

MAXIMUM RATING (Ta = 25°C, V_{CC} = 0 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	°C
Storage Temperature	T_{stg}	−55 ~ 150	°C

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

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

CHARACTERISTIC	SYMBOL	CONDITION		MIN	TYP.	MAX	UNIT
Supply Voltage	V_{CC}−V_{GND}			—	—	50	V
Output Sustaining Voltage	$V_{CE\ (SUS)}$			—	—	−50	V
Output Current	I_{OUT} (Note)	DC 1 Circuit		—	—	−350	mA / ch
		T_{pw} = 25 ms, T_j = 120°C, Ta = 85°C, 8 Circuits	Duty = 10%	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 (Note)			—	—	0.4	W

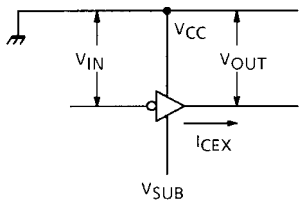
Note: On Class Epoxy PCB (50 × 50 × 1.6 mm Cu 40%)

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

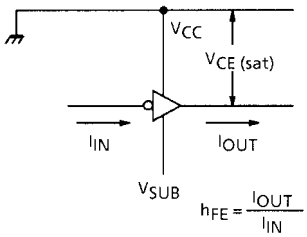
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{OUT} = V_{GND} = −50 V, Ta = 85°C	—	—	−100	μA
Output Saturation Voltage		$V_{CE\ (sat)}$	2	V_{IN} = V_{IL} MAX., I_{OUT} = −100 mA	—	—	−1.8	V
				V_{IN} = V_{IL} MAX., I_{OUT} = −350 mA	—	—	−2.0	
DC Current transfer Ratio		h_{FE}	2	V_{CC} = 0 V, V_{CE} = 3 V, I_{OUT} = −350 mA	1000	—	—	
Input Voltage	“H” Level	V_{IN}	4		−1.2	—	0	V
	“L” Level				−30	—	−2.8	
Input Current		$I_{IN\ (ON)}$	3	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 = 125 Ω, C_L = 15 pF	—	0.2	—	μs
Turn−Off Delay		t_{OFF}			—	1.0	—	

TEST CIRCUIT

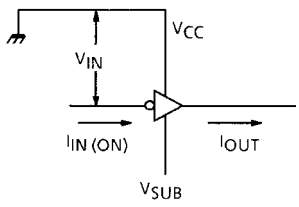
1. I_{CEX}



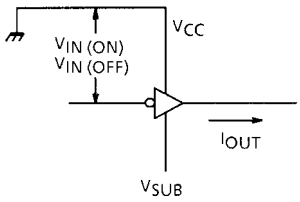
2. $V_{CE\ (sat)}$, h_{FE}



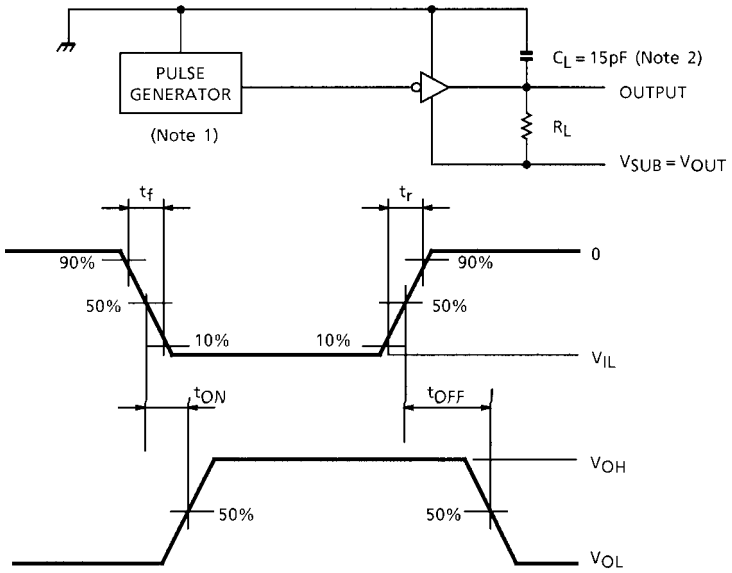
3. $I_{IN\ (ON)}$



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



5. t_{ON}, t_{OFF}

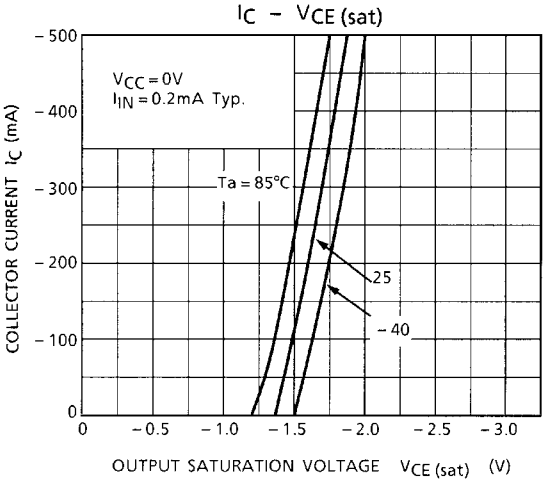


Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 10$ ns, $t_f \leq 5$ ns
Note 2: C_L includes probe and jig capacitance

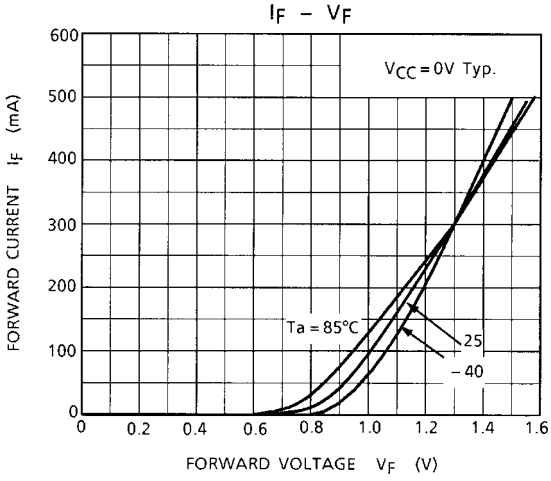
PRECAUTIONS for USING

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.

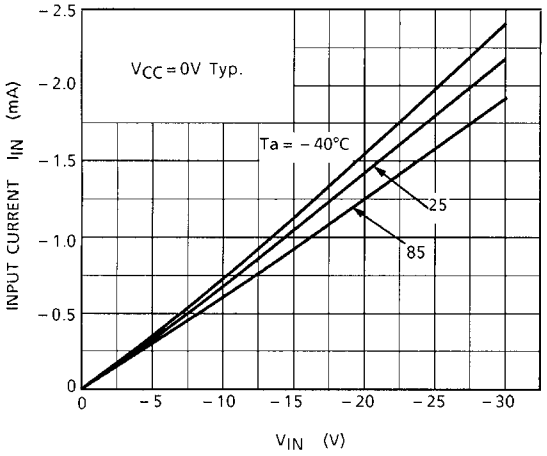
$I_C - V_{CE\,(sat)}$



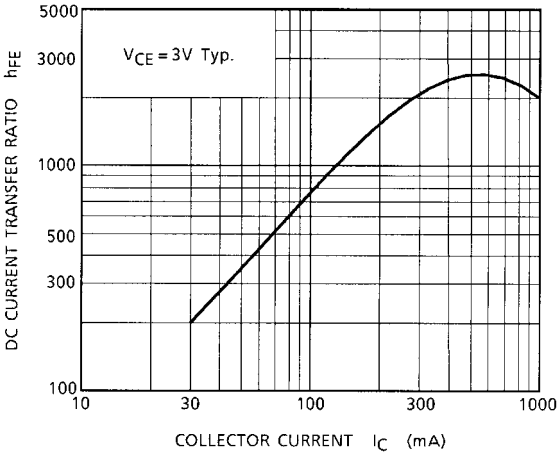
$I_F - V_F$



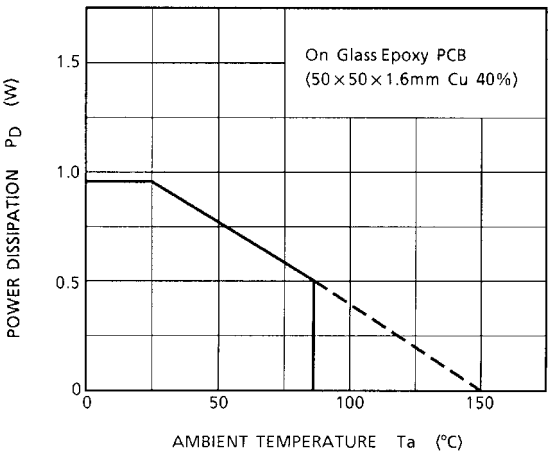
$I_{IN} - V_{IN}$



$h_{FE} - I_C$

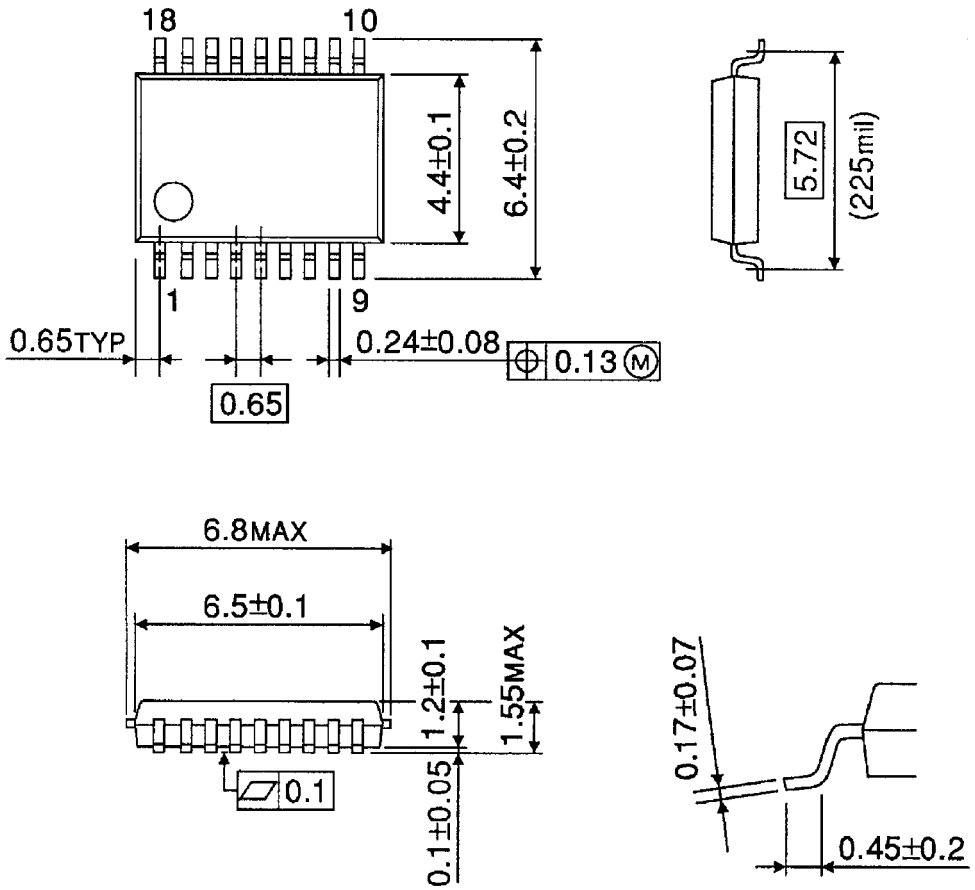


$P_D - Ta$



PACKAGE DIMENSIONS

SSOP18−P−225−0.65 Unit: mm



Weight: 0.09 g (Typ.)

RESTRICTIONS ON PRODUCT USE

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