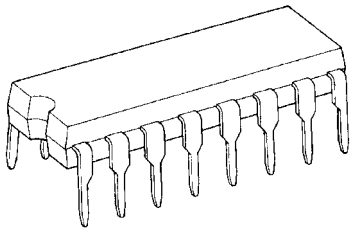
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62707AP

4CH HIGH−VOLTAGE SOURCE DRIVER WITH ENABLE

The TD62707AP is comprised of four source current output stages and enable inputs which can gate the outputs. All outputs feature integral clamp diodes for switching inductive loads.
Applications include relay, hammer and lamp drivers.



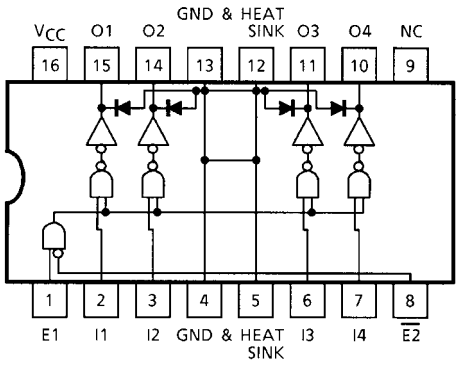
DIP16-P-300-2.54A

Weight: 1.11 g (Typ.)

FEATURES

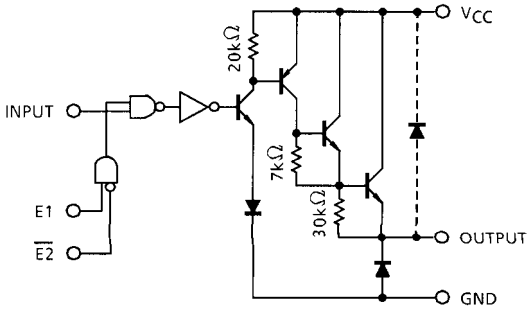
- High output voltage $V_{CC}-V_{OUT}$ = 50 V MIN.
- Output current (single output) I_{OUT} = −750 mA MIN.
- Input compatible with TTL, 5 V CMOS
- Output clamp diodes
- Enable inputs E1
- GND terminal = HEAT SINK
- Package type : DIP−16 pin

PIN CONNECTION (TOP VIEW)



Note: Hold the $\overline{E2}$ input at logic low state.

SCHEMATICS (EACH DRIVER)



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

TRUTH TABLE

E1	IN1~4	OUT1~4
H	H	ON
L	H	OFF
L	L	OFF
H	L	OFF

Note: Hold the $\overline{E2}$ input at logic low state.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	50	V
Output Voltage	V_{OUT}	−50	V
Output Current	I_{OUT}	−0.75	A / ch
Input Voltage	V_{IN1}	−0.5~15	V
	V_{IN2} (Note 1)	−0.5~V_{CC}	
Clamp Diode Reverse Voltage	V_R	50	V
Clamp Diode Forward Current	I_F	−0.75	A
Power Dissipation	P_D	1.47 / 2.7 (Note 2)	W
Operating Temperature	T_{opr}	−40~85	°C
Storage Temperature	T_{stg}	−55~150	°C

Note 1: $V_{CC} \leq 15$ V
Note 2: On PCB (50 × 50 × 1.6 mm Cu 50%)

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

CHARACTERISTIC		SYMBOL	CONDITION		MIN	TYP.	MAX	UNIT
Supply Voltage		V_{CC}	—		—	—	50	V
Output Voltage		V_{OUT}	—		0	—	−50	V
Output Current		I_{OUT} (Note)	DC 1 Circuits, Ta = 25°C		0	—	−600	mA / ch
			T_{pw} = 25 ms, 4 Circuits Ta = 85°C, T_j = 120°C	Duty = 10 %	0	—	−600	
				Duty = 50 %	0	—	−160	
Input Voltage		V_{IN}	—		0	—	15	V
	"H" level	V_{IH1}	V_{CC} > 15 V		2.0	—	15	
		V_{IH2}	$V_{CC} \leq 15$ V		2.0	—	V_{CC}	
	"L" level	V_{IL}	—		0	—	0.8	
Clamp Diode Reverse Voltage		V_R	—		—	—	50	V
Clamp Diode Forward Current		I_F	—		—	—	600	mA
Power Dissipation		P_D	Ta = 85°C (Note)		—	—	1.2	W

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

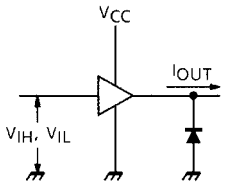
ELECTRICAL CHARACTERISTICS

(Ta = 25°C unless otherwise noted V_{CC} = 50 V, "H" = V_{IH}, "L" = V_{IL})

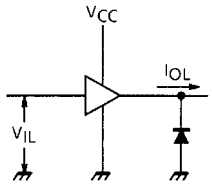
CHARACTERISTIC			SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Input Voltage	"H" level		V_{IH}	1	—	2.0	—	—	V
	"L" level		V_{IL}			—	—	0.8	
Input Current	"H" level	IN	I_{IH}	4	V_{IN} = H	—	70	100	μA
		E1			V_{E1} = H	—	0	10	
		$\overline{E2}$			V_{E2} = H	—	66	100	
Input Current	"L" level	IN	I_{IL}	5	V_{IN} = L	—	−40	−100	μA
		E1			V_{E1} = L	—	−20	−50	
		$\overline{E2}$			V_{E2} = H	—	−40	−100	
Output Leakage Current			I_{OL}	2	V_{CC} = 50 V, OUTPUT OFF	—	—	100	μA
Supply Current			I_{CCH}	4	V_{IN} = H, V_{E1} = H V_{E2} = L, OUTPUT OPEN	—	5.5	7.0	mA
			I_{CCL}	5	V_{IN} = L, V_{E1} = H V_{E2} = L, OUTPUT OFF	—	5.5	7.0	
Output Voltage	"H" level		V_{OH}	3	V_{IN} = H, V_{E1} = "H" V_{E2} = L, I_{OUT} = −500 mA	V_{CC} −2.5	V_{CC} −2.0	—	V
Clamp Diode Reverse Current			I_R	6	V_R = 50 V	—	—	100	μA
Clamp Diode Forward Voltage			V_F	7	I_F = 500 mA	—	1.5	2.0	V
Turn−On Delay			t_{ON}	8	V_{CE} = 50 V, R_L = 83 Ω	—	0.5	—	μs
Turn−Off Delay			t_{OFF}			—	6.0	—	

TEST CIRCUIT

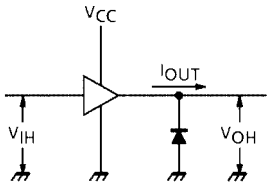
1. V_{IH}, V_{IL}



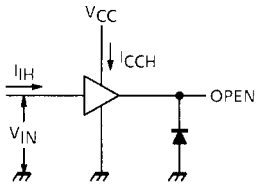
2. I_{OL}



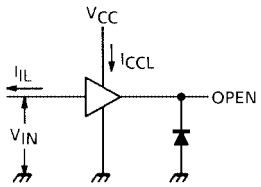
3. V_{OH}



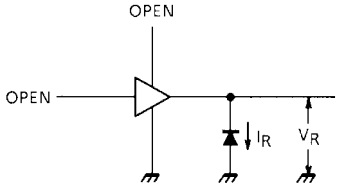
4. I_{IH}, I_{CCH}



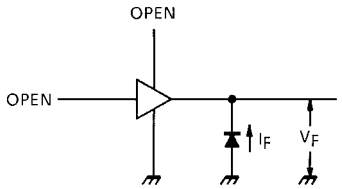
5. I_{IL}, I_{CCL}



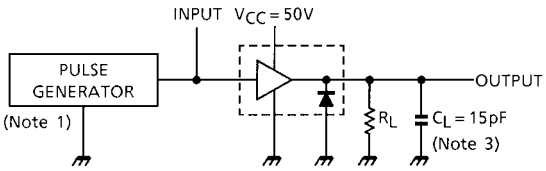
6. I_R

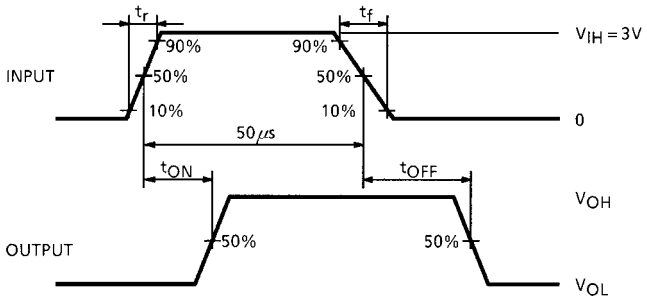


7. V_F



8. t_{ON}, t_{OFF}



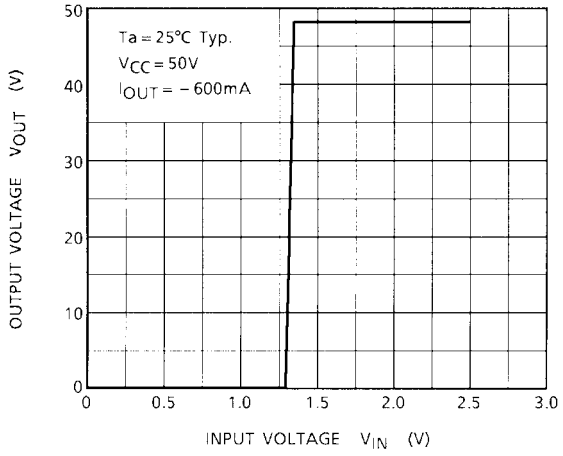


Note 1: Pulse Width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 5$ ns, $t_f \leq 10$ ns
Note 2: V_{IH} = 3 V, E1 = V_{IH}, $\overline{E2}$ = GND, V_{CC} = 50 V
Note 3: C_L includes probe and jig capacitance

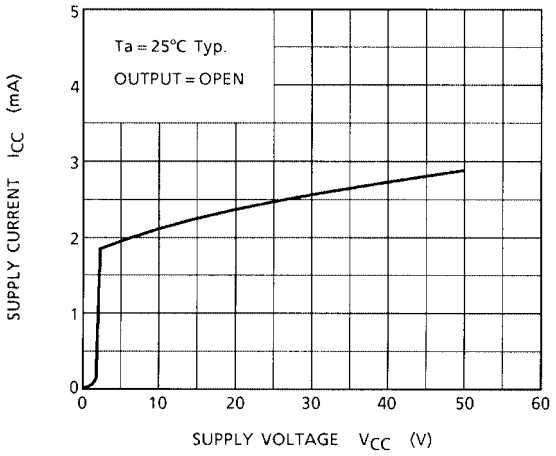
PRECAUTIONS for USING

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.

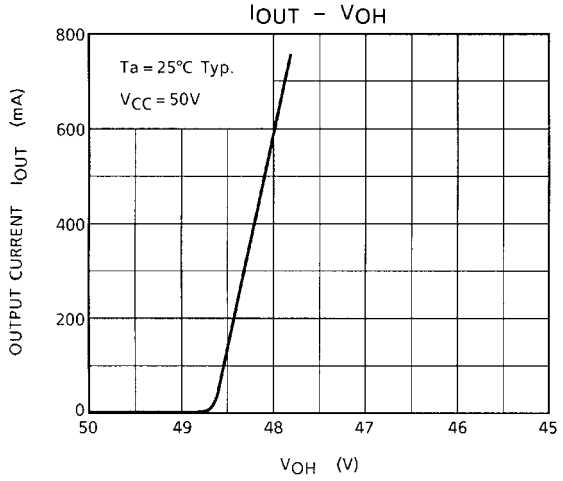
V_{OUT} – V_{IN}



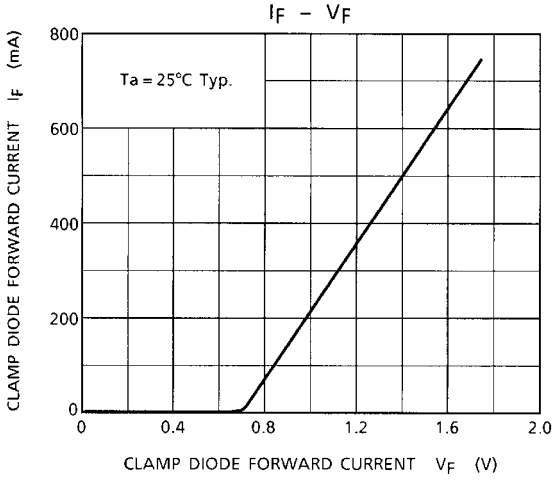
I_{CC} – V_{CC}



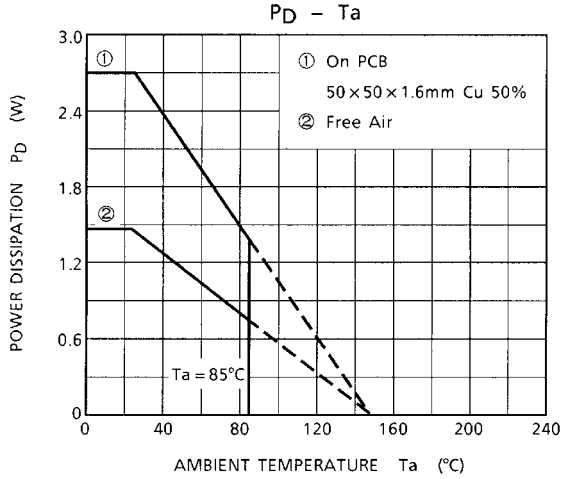
I_{OUT} – V_{OH}



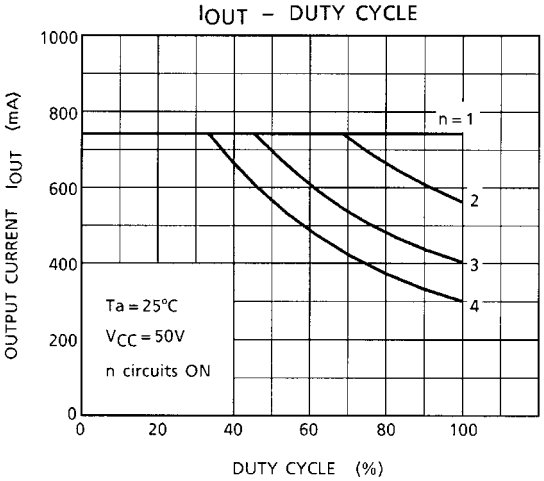
I_F – V_F

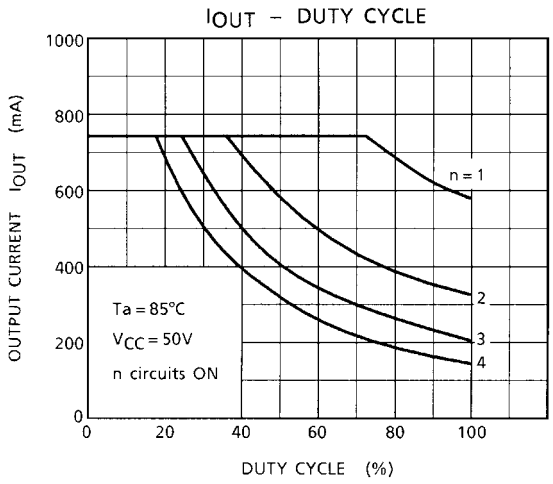


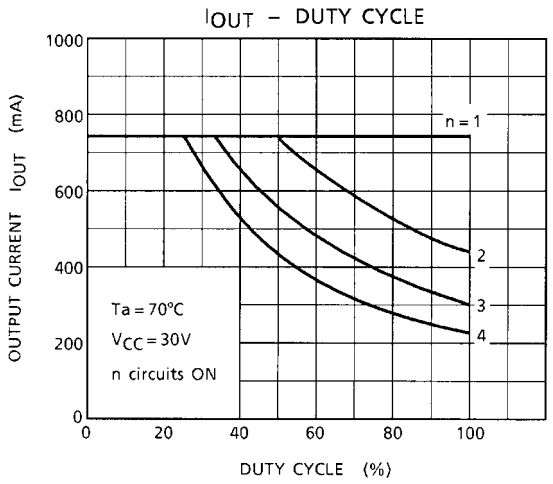
P_D – Ta



I_{OUT} – DUTY CYCLE

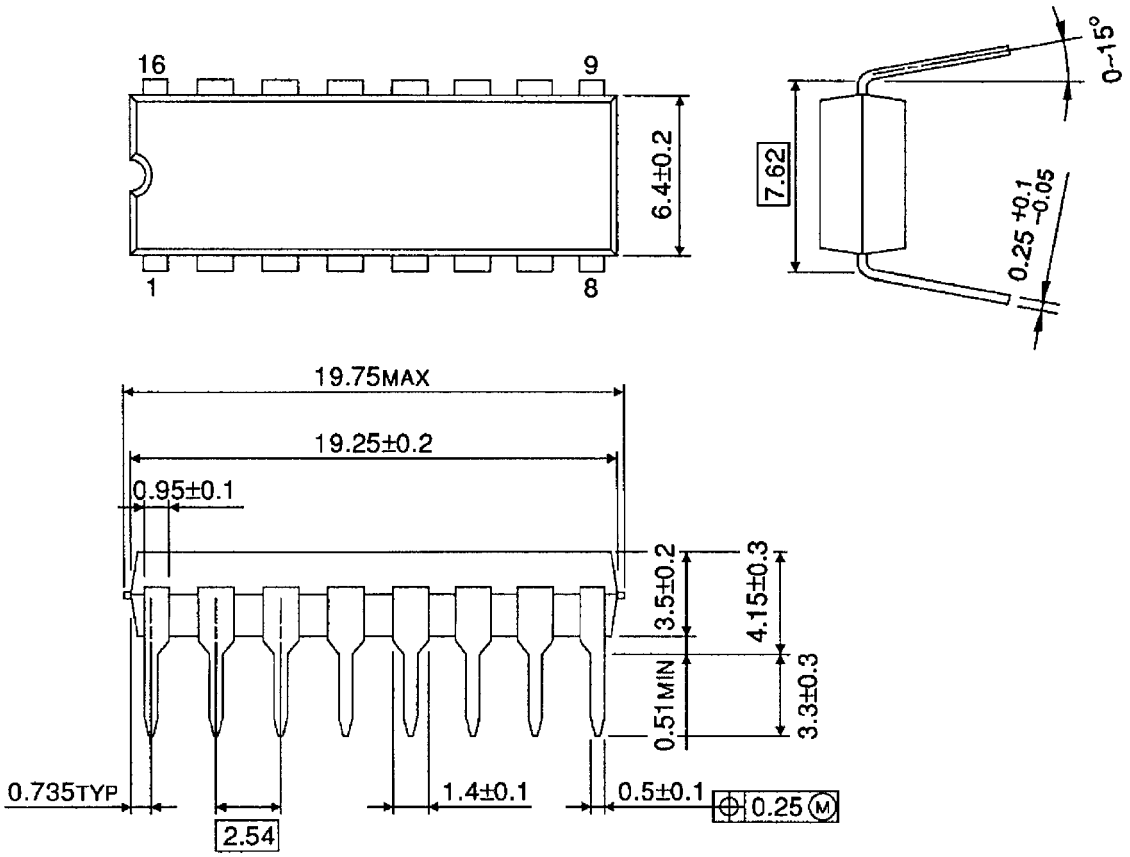



IOUT – DUTY CYCLE
OUTPUT CURRENT IOUT (mA)
1000
800
600
400
200
0
0
20
40
60
80
100
DUTY CYCLE (%)
n = 1
2
3
4
Ta = 85°C
VCC = 50V
n circuits ON


IOUT – DUTY CYCLE
OUTPUT CURRENT IOUT (mA)
1000
800
600
400
200
0
0
20
40
60
80
100
DUTY CYCLE (%)
n = 1
2
3
4
Ta = 70°C
VCC = 30V
n circuits ON

PACKAGE DIMENSIONS

DIP16−P−300−2.54A Unit: mm



Weight: 1.11 g (Typ.)

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000707EBA

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