

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62107P, TD62107BP, TD62107F

4CH HIGH-CURRENT DARLINGTON SINK DRIVER

The TD62107P/BP/F are high-voltage, high-current darlington drivers and enable inputs which can gate the outputs. All units feature integral clamp diodes for switching inductive loads.

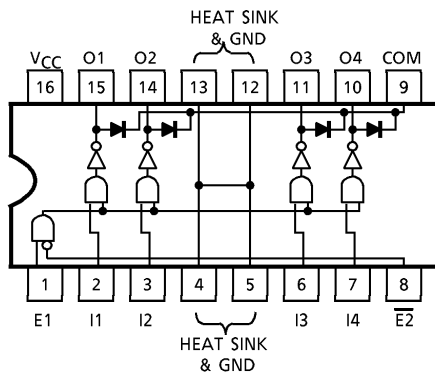
The TD62107P/BP/F have a wide supply voltage range and all input are compatible with TTL and 5V CMOS. Application include relay, hammer, lamp and stepping moter drivers.

FEATURES

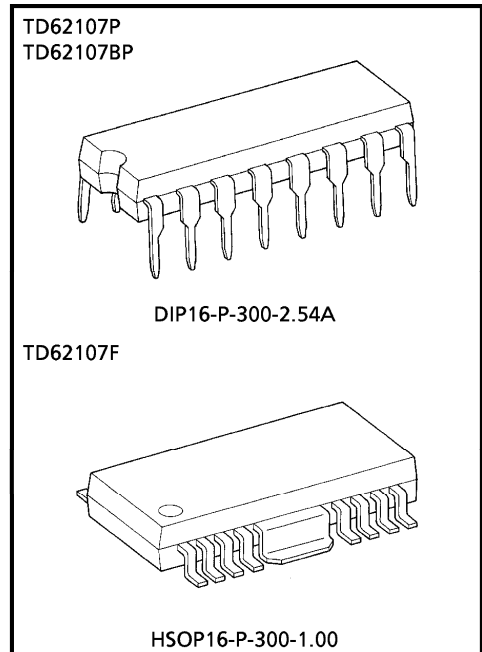
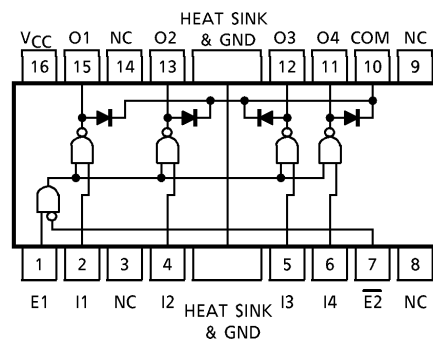
- Output current (single output) 750mA MAX.
- High sustaining voltage output 80V MIN. (TD62107BP)
45V MIN. (TD62107P)
35V MIN. (TD62107F)
- Output clamp diodes
- Enable inputs E1, E2
- Wide supply voltage range $V_{CC} = 4.75 \sim 17V$
- Input compatible with TTL and 5V CMOS
- GND terminal = heat sink
- Package type-P, BP : DIP-16pin
- Package type-F : PFP-16pin

PIN CONNECTION (TOP VIEW)

TD62107P / TD62107BP



TD62107F

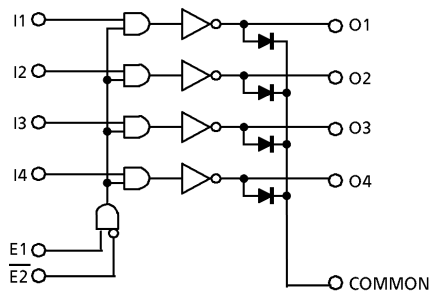


Weight
 DIP16-P-300-2.54A : 1.11g (Typ.)
 HSOP16-P-300-1.00 : 0.50g (Typ.)

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SCHEMATICS (EACH DRIVER)

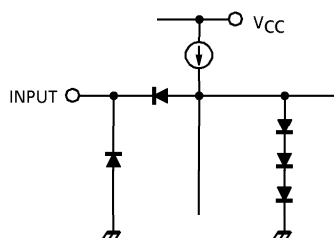


TRUTH TABLE

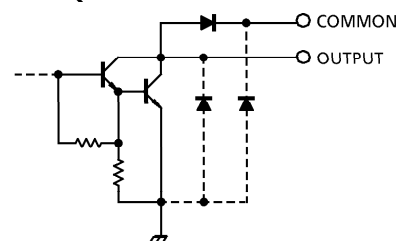
E1	E2	I1 ~ I4	O1~O4
L	L	L or H	Disable OFF
L	H	L or H	Disable OFF
H	L	L or H	Enable In
H	H	L or H	Disable OFF

In = I1 ~ I4

INPUT EQUIVALENT CIRCUIT



OUTPUT EQUIVALENT CIRCUIT



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V _{CC}	-0.5~17	V
Output Sustaining Voltage	P	V _{CE (SUS)}	-0.5~45	V
	BP		-0.5~80	
	F		-0.5~35	
Output Current		I _{OUT}	750	mA
Input Voltage		V _{IN}	-0.5~V _{CC} +0.5	V
Clamp Diode Reverse Voltage	P	V _R	45	V
	BP		80	
	F		35	
Clamp Diode Forward Current	P, F	I _F	500	mA
	BP		750	
Power Dissipation	P, BP	P _D	2.7 (Note 1)	W
	F		1.4 (Note 2)	
Operating Temperature		T _{opr}	-40~85	°C
Storage Temperature		T _{stg}	-55~150	°C

(Note 1) On Glass Epoxy (50×50×1.6mm Cu 50%)

(Note 2) On Glass Epoxy (60×30×1.6mm Cu 30%)

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Voltage		V _{CC}		4.75	—	15	V	
Output Sustaining Voltage	P	V _{CE (SUS)}		0	—	45	V	
	BP			0	—	80		
	F			0	—	35		
Output Current	P, F	I _{OUT}	T _{pw} = 25ms, Duty = 75%, 1 Circuit	0	—	500	mA	
	BP		T _{pw} = 25ms, Duty = 10%, 4 Circuits	0	—	750		
	P, BP		T _{pw} = 25ms, 4 Circuits	Duty = 30%	0	—		400
				Duty = 40%	—	—		300
Input Voltage		V _{IN}		0	—	V _{CC}	V	
Clamp Diode Reverse Voltage	P	V _R		—	—	45	V	
	BP			—	—	80		
	F			—	—	35		
Clamp Diode Forward Current	P, F	I _F		—	—	500	mA	
	BP			—	—	750		
Power Dissipation	P, BP	P _D	(Note)	—	—	1.0	W	
	F			—	—	0.7		

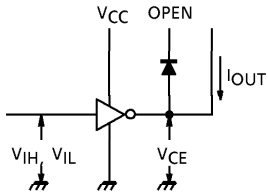
(Note) On Glass Epoxy PCB (60×30×1.6mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

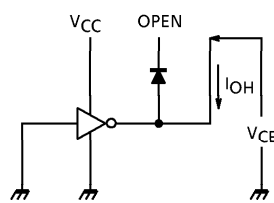
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Input Voltage	"H" Level	V_{IH}	1		2.0	—	V_{CC}	V	
	"L" Level	V_{IL}			—	—	0.8		
Output Current	"H" Level	P	2		$V_{CE} = 45V, T_a = 75^\circ C$	—	—	100	μA
		BP			$V_{CE} = 80V, T_a = 85^\circ C$	—	—	100	
		F			$V_{CE} = 35V, T_a = 85^\circ C$	—	—	100	
Output Voltage	"L" Level	P, F	3		$I_{OUT} = 50mA$	—	—	1.3	V
		BP			$I_{OUT} = 750mA$	—	—	1.6	
Input Current	"H" Level	I_{IH}	4	$V_{IN} = 13V$	—	—	100	μA	
	"L" Level	I_{IL}	5	$V_{IN} = 0.4V$	—	—	-0.3	mA	
Clamp Diode Reverse Current		P	6		$V_R = 45V$	—	—	100	μA
		BP			$V_R = 80V$	—	—	100	
		F			$V_R = 35V$	—	—	100	
Clamp Diode Forward Voltage		P, F	7		$I_F = 500mA$	—	—	2.0	V
		BP			$I_F = 750mA$	—	—	2.0	
Supply Current	Output "H"	I_{CC}	4	$V_{CC} = 13V, V_{IN} = 0V, OUTPUT OPEN$	—	—	13	mA	
	Output "L"		5	$V_{CC} = 13V, V_{IN} = 5V, OUTPUT OPEN$	—	—	17		
Turn-On Delay		P	8		$V_{CC} = 5V, R_L = 90\Omega$ $C_L = 15pF, V_{OUT} = 45V$	—	5	—	μs
		BP			$V_{CC} = 5V, V_{OUT} = 80V$ $R_L = 160\Omega$	—	0.4	—	
		F			$V_{CC} = 5V, R_L = 70\Omega$ $C_L = 15pF, V_{OUT} = 35V$	—	5	—	
Turn-Off Delay		P	8		$V_{CC} = 5V, R_L = 90\Omega$ $C_L = 15pF, V_{OUT} = 45V$	—	5	—	μs
		BP			$V_{CC} = 5V, V_{OUT} = 80V$ $R_L = 160\Omega$	—	1.7	—	
		F			$V_{CC} = 5V, R_L = 70\Omega$ $C_L = 15pF, V_{OUT} = 35V$	—	5	—	

TEST CIRCUIT

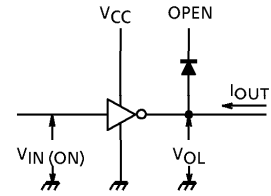
1. V_{IH} , V_{IL}



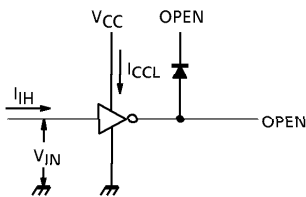
2. I_{OH}



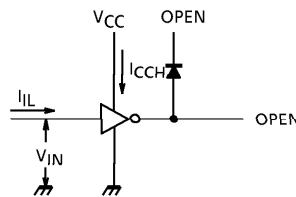
3. V_{OL}



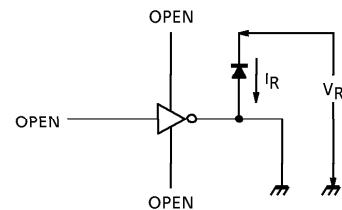
4. I_{IH} , I_{CCL}



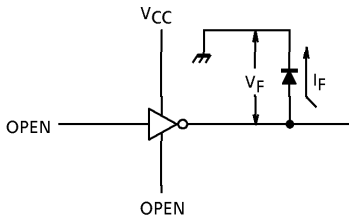
5. I_{IL} , I_{CCH}



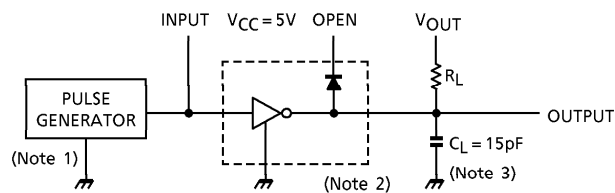
6. I_R



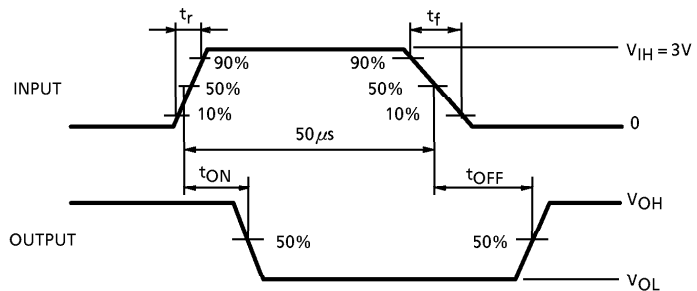
7. V_F



8. t_{ON} , t_{OFF}



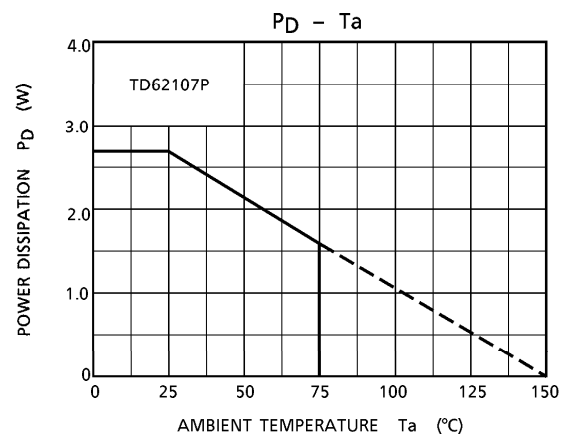
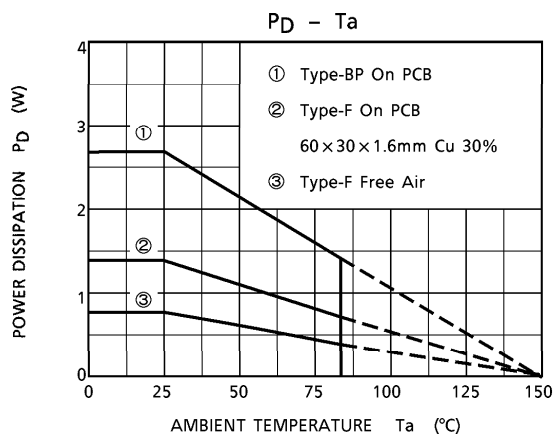
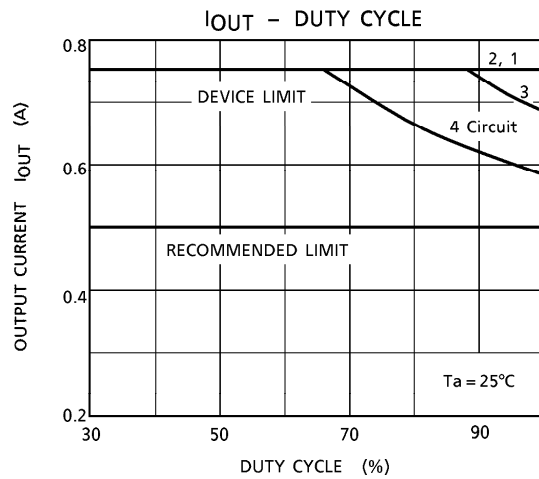
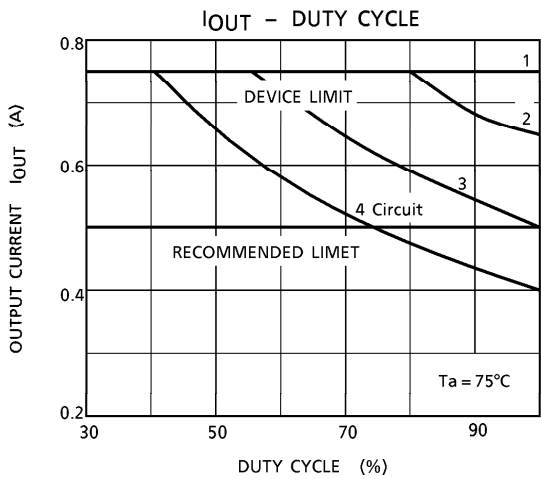
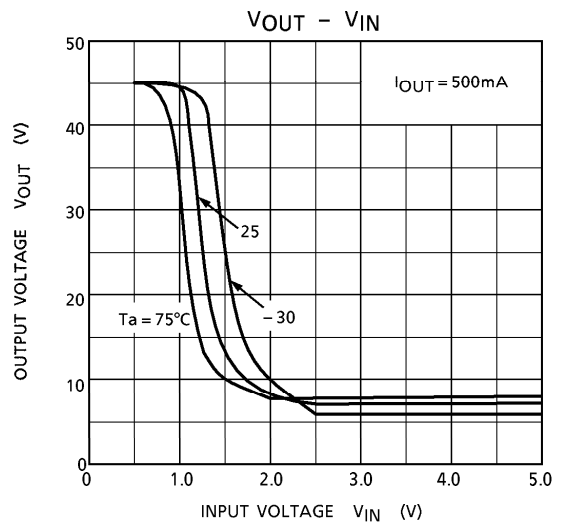
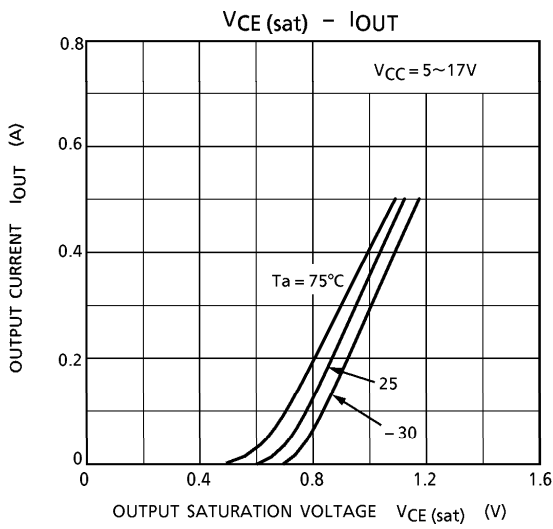
Input condition



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

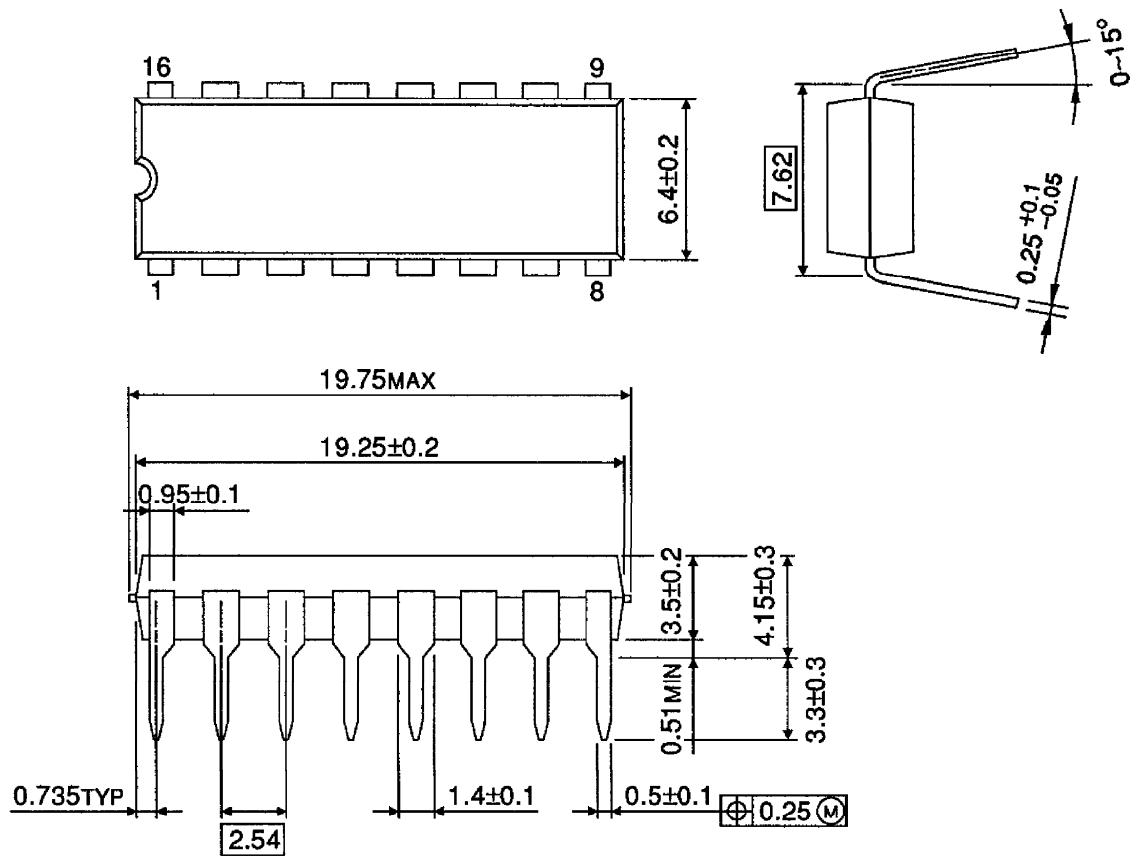
PRECAUTIONS for USING

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



OUTLINE DRAWING
DIP16-P-300-2.54A

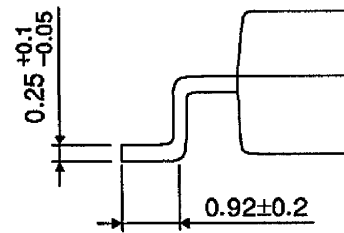
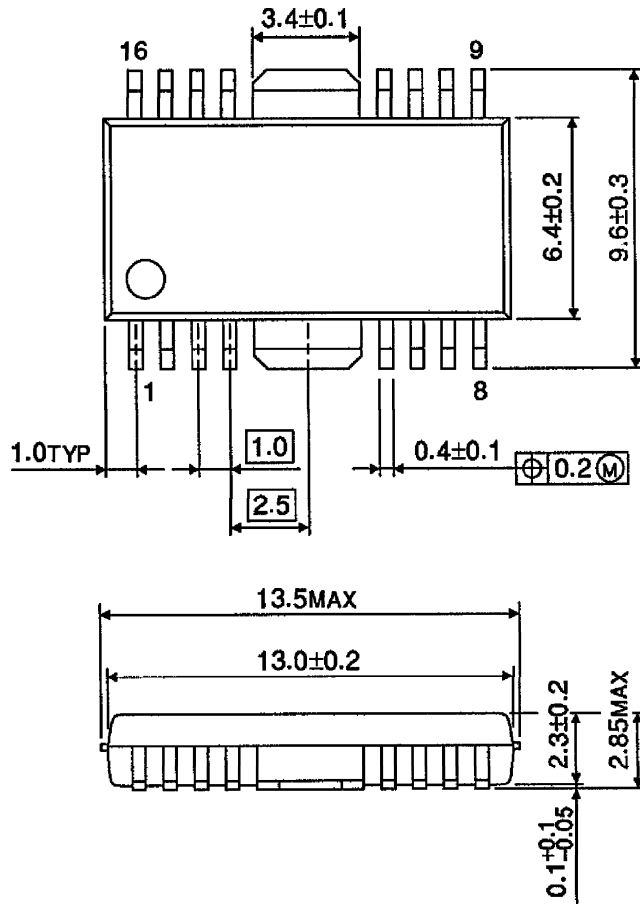
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING
HSOP16-P-300-1.00

Unit : mm



Weight : 0.50g (Typ.)