

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62164BP, TD62164BF

4ch HIGH-CURRENT DARLINGTON SINK DRIVER

The TD62164BP and TD62164BF are high-voltage, high-current darlington drivers comprised of four NPN darlington pairs.

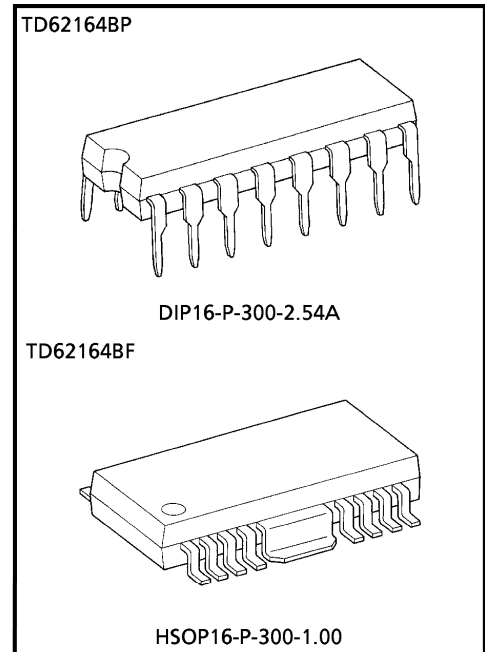
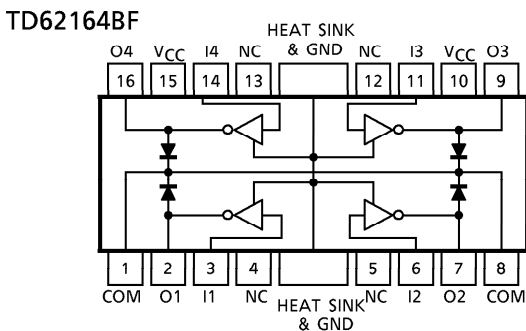
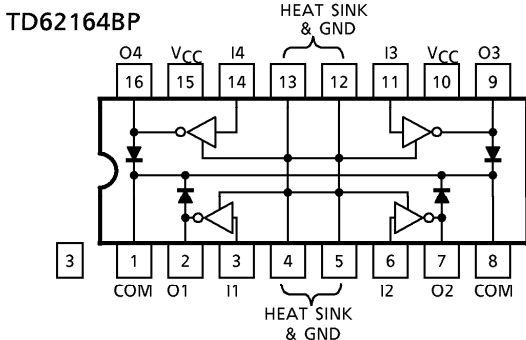
All units feature integral clamp diodes for switching inductive loads.

Applications include relay, hammer, lamp and stepping moter drivers.

FEATURES

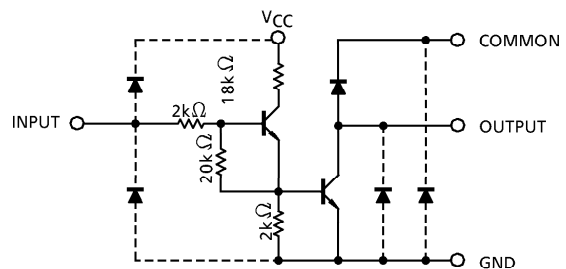
- Two V_{CC} Terminals (Separated)
- Package Type BP : DIP16 pin
BF : PFP16 pin
- High Sustaining Voltage output : V_{CE(SUS)} = 80V (Min.)
- Output Current (Single Output) : I_{OUT} = 700mA / ch (Max.)
- Output Clamp Diodes
- Input Compatible with TTL and 5V CMOS
- GND and SUB Terminal Heat Sink

PIN CONNECTION (TOP VIEW)



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

SCHEMATICS (EACH DRIVER)



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

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	-0.5~17	V
Output Sustaining Voltage	V _{CE (SUS)}	-0.5~80	V
Output Current	I _{OUT}	700	mA/ch
Input Current	I _{IN}	50	mA
Input Voltage	V _{IN}	17	V
Clamp Diode Reverse Voltage	V _R	80	V
Clamp Diode Forward Current	I _F	700	mA
Power Dissipation	BP	P _D	W
	BF		
		1.47 / 2.7 *1	
		0.9 / 1.4 *2	
Operating Temperature	T _{opr}	-40~85	°C
Storage Temperature	T _{stg}	-55~150	°C

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

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

RECOMMENDED OPERATING (Ta = -40~85°C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX	UNIT					
Supply Voltage	V _{CC}		4.5	—	5.5	V					
Output Sustaining Voltage	V _{CE (SUS)}		0	—	80	V					
Output Current	I _{OUT}	DC1 Circuit, Ta = 25°C Tp _w = 25ms 4 Circuits Ta = 85°C T _j = 120°C				mA/ch					
							BP *1	Duty = 10%	0	—	570
								Duty = 50%	0	—	520
							BF *2	Duty = 10%	0	—	570
Duty = 50%	0	—	270								
Input Voltage	V _{IN}		0	—	15	V					
	Output On	V _{IN (ON)}	I _{OUT} = 500mA	hFE = 150	10.0	—	15				
	Output Off	V _{IN (OFF)}		hFE = 2000	2.4	—	15				
			0	—	0.4	V					
Input Current	I _{IN}		0	—	20	mA					
Clamp Diode Reverse Voltage	V _R		—	—	80	V					
Clamp Diode Forward Voltage	I _F		—	—	700	mA					
Power Dissipation	BP	P _D				W					
	BF										
		Ta = 85°C *1	—	—	1.4						
		Ta = 85°C *2	—	—	0.7						

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

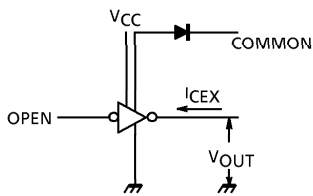
*2 On Glass Epoxy PCB (60×30×1.6mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

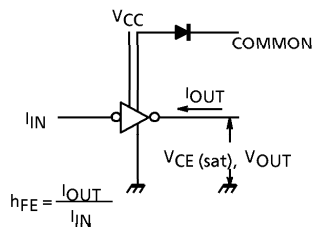
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current		I _{CEX}	1	V _{CE} = 80V, Ta = 25°C	—	—	50	μA
				V _{CE} = 80V, Ta = 85°C	—	—	100	
Output Saturation Voltage		V _{CE (sat)}	2	I _{OUT} = 500mA, V _{CC} = 5V	—	—	0.8	V
				I _{OUT} = 200mA, V _{CC} = 5V	—	—	0.45	
DC Current Transfer Ratio		h _{FE}	2	V _{CE} = 2V, I _{OUT} = 500mA	2000	—	—	
Input Voltage (Output On)		V _{IN (ON)}	3	I _{OUT} = 500mA, h _{FE} = 150	7.0	—	10.0	V
				I _{OUT} = 500mA, h _{FE} = 2000	1.8	—	2.4	
Clamp Diode Leakage Current		I _R	4	V _R = 80V, Ta = 25°C	—	—	50	μA
				V _R = 80V, Ta = 85°C	—	—	100	
Clamp Diode Forward Voltage		V _F	5	I _F = 500mA	—	—	2.0	V
Supply Current	Output On	I _{CC (ON)}	3	V _{CC} = 5.5V, V _{IN} = 2.4V	—	35	40	mA/ch
	Output Off	I _{CC (OFF)}		V _{CC} = 5.5V, V _{IN} = 0.4V	—	—	10	μA
Input Capacitance		C _{IN}	6	V _{IN} = 0, f = 1MHz	—	15	—	pF
Turn-On Delay		t _{ON}	7	V _{OUT} = 80V, R _L = 125Ω Ta = 60°C, V _{CC} = 5.0V, C _L = 15pF	—	0.2	0.4	μs
Turn-Off Delay		t _{OFF}			—	4.0	8.0	

TEST CIRCUIT

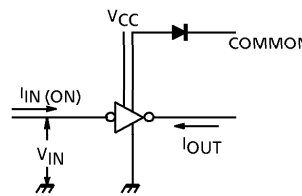
1. I_{CEX}



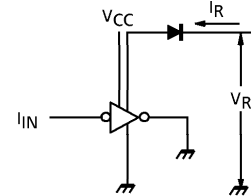
2. h_{FE} , $V_{CE(sat)}$



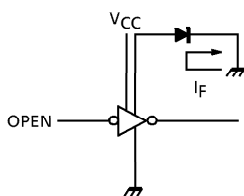
3. $I_{IN(ON)}$



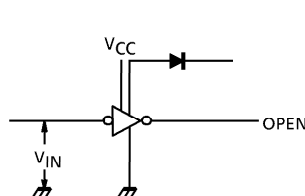
4. I_R



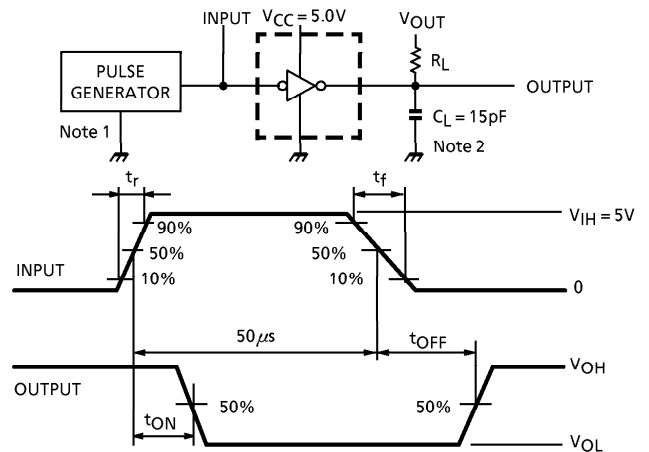
5. V_F



6. $I_{CC(ON)}$, $I_{CC(OFF)}$



7. t_{ON} , t_{OFF}

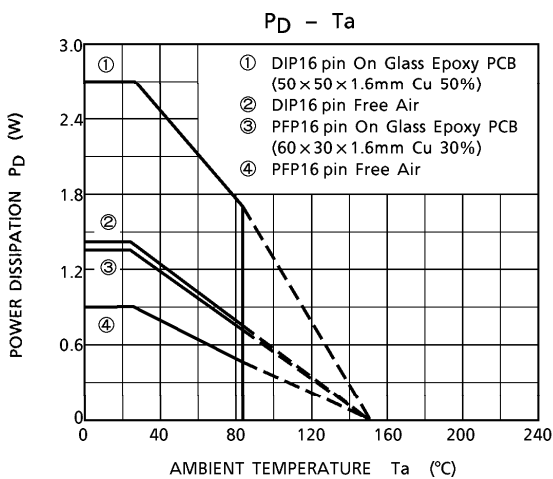
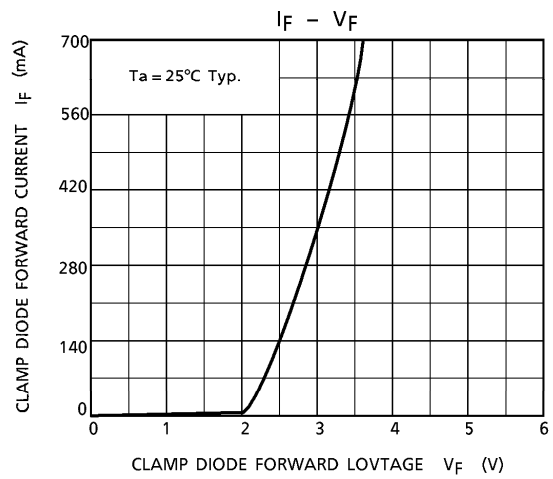
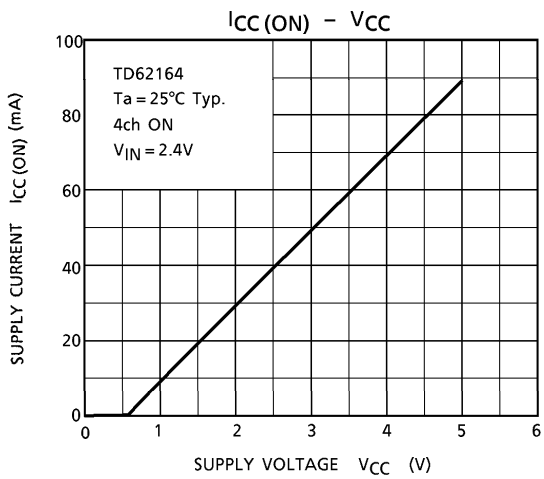
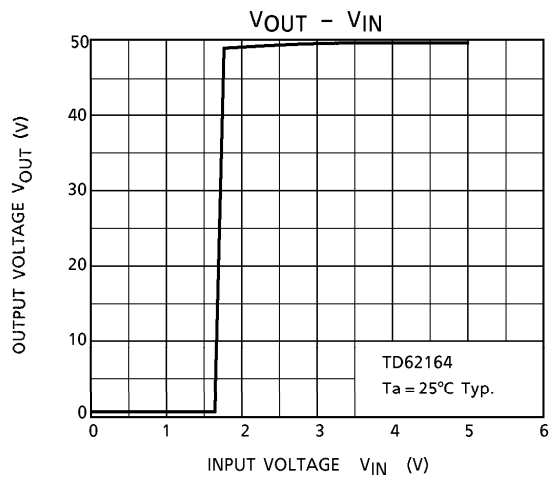
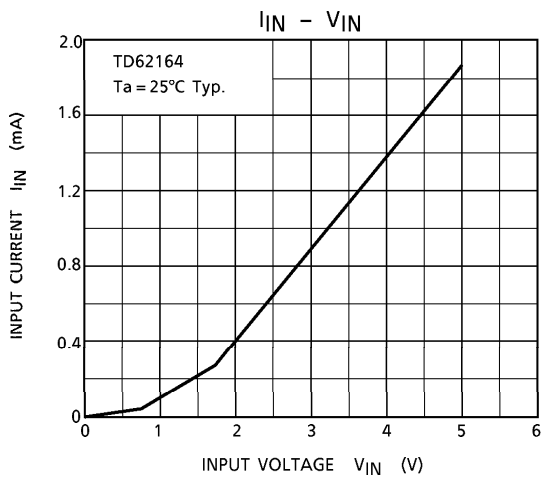


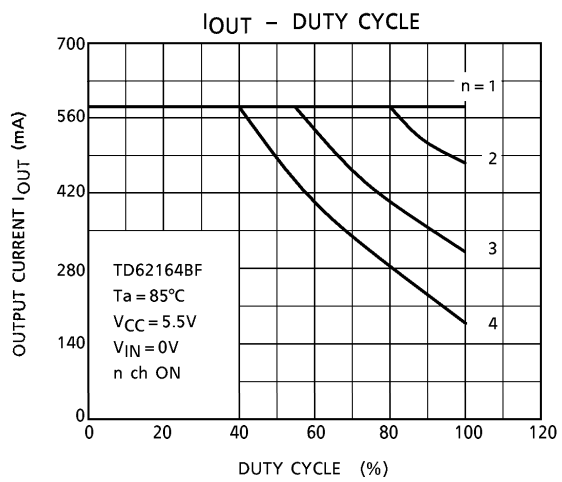
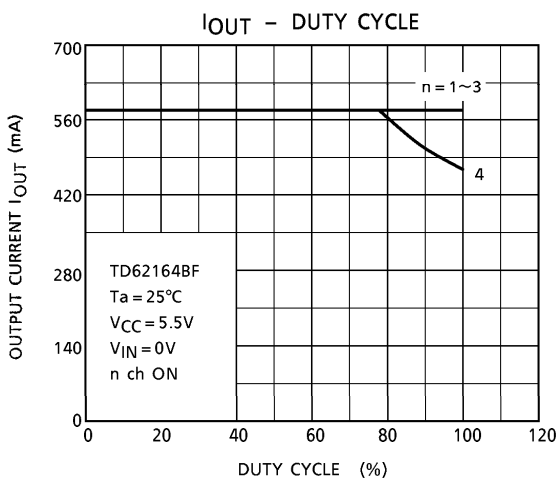
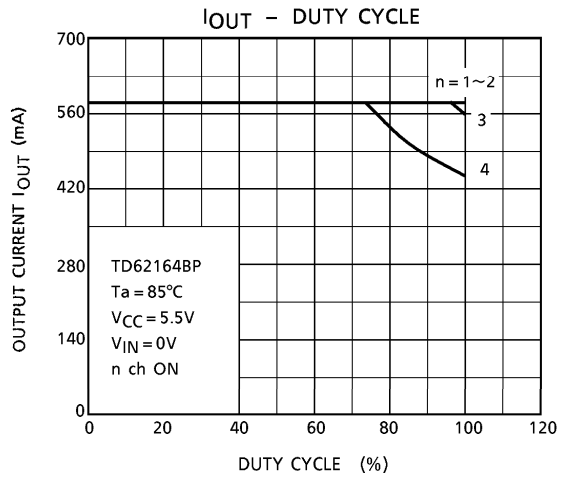
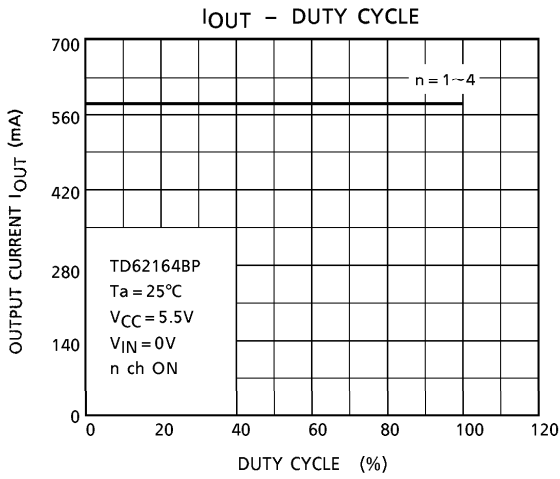
(Note 1) Pulse Width $50\mu s$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5ns$, $t_f \leq 10ns$

(Note 2) C_L includes probe and jig capacitance

PRECAUTIONS for USING

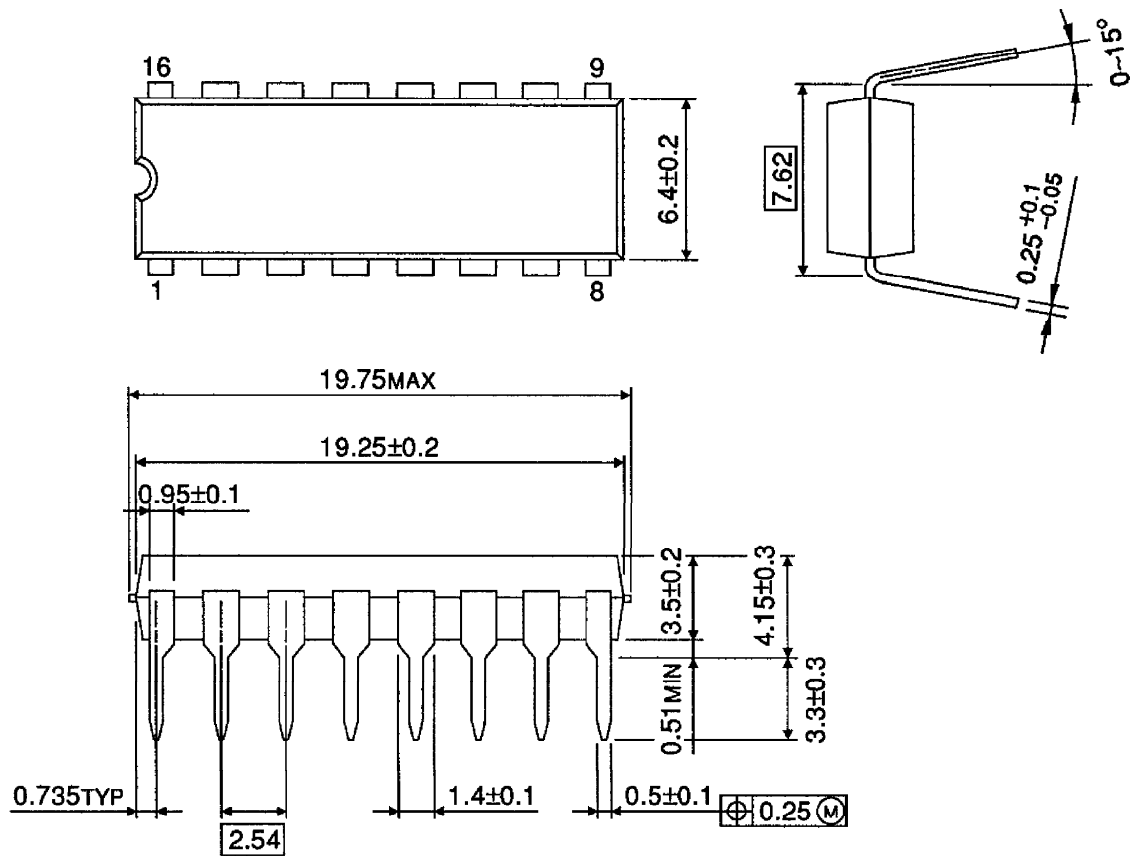
Utmost care is necessary in the design of the output line, V_{CC} , COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.





OUTLINE DRAWING
DIP16-P-300-2.54A

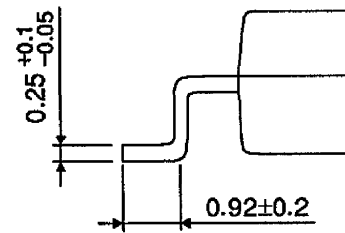
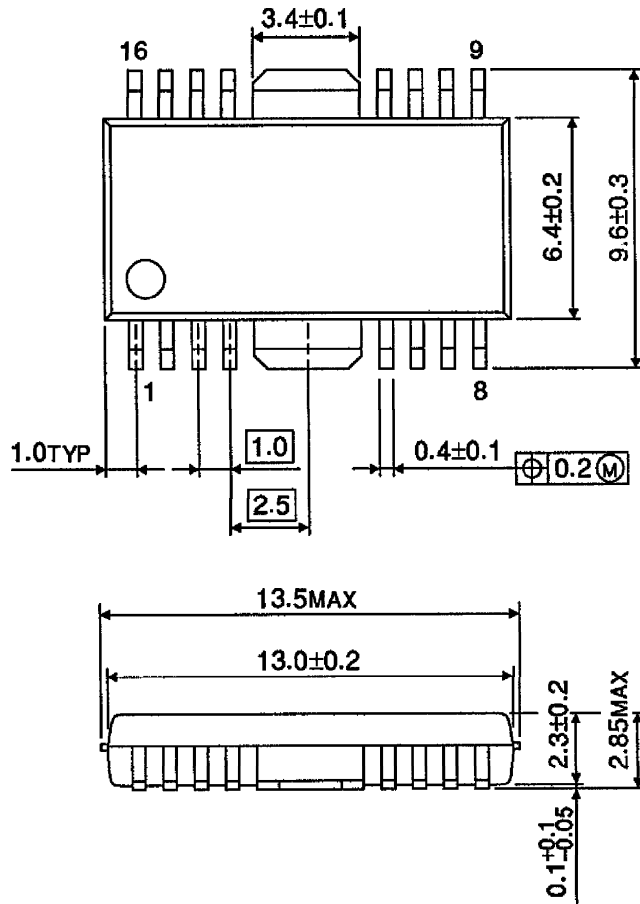
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING
HSOP16-P-300-1.00

Unit : mm



Weight : 0.50g (Typ.)