

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62164AP, TD62164AF

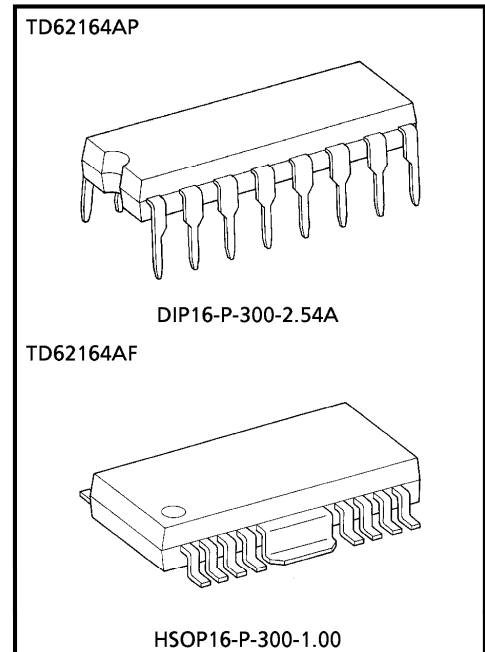
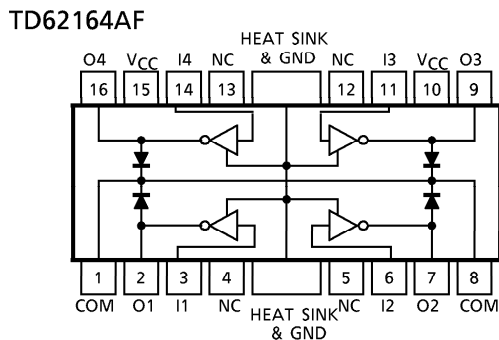
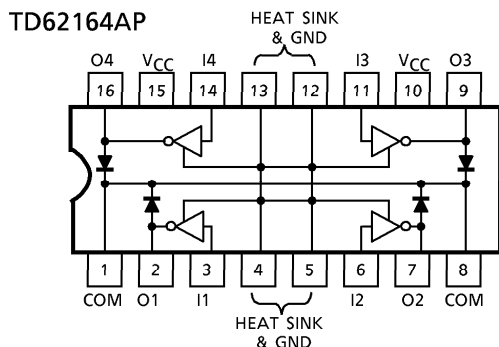
4CH HIGH-CURRENT DARLINGTON SINK DRIVER

The TD62164AP and TD62164AF 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

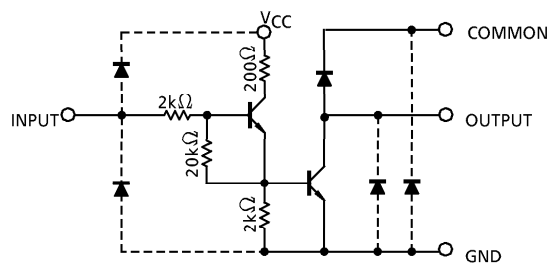
- Output current (single output) 700mA (Max.)
- High sustaining voltage output 50V (Min.)
- Output clamp diodes
- Input compatible with TTL and 5V CMOS
- GND and SUB terminal heat sink
- Package type-AP : DIP-16pin
- Package type-AF : PFP-16pin

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)}	- 0.5~50	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	50	V
Clamp Diode Forward Current	I _F	700	mA
Power Dissipation	AP	1.47 / 2.7 (Note 1)	W
	AF	0.9 / 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 (60×60×1.6mm Cu 30%)

RECOMMENDED OPERATING CONDITIONS (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	—	50	V		
Output Current	I _{OUT}	DC 1 Circuit, Ta = 25°C	0	—	570	mA / ch		
		T _{pw} = 25ms 4 Circuit	Duty = 10%	0	—		570	
			Duty = 50%	0	—		570	
		Ta = 85°C T _j = 120°C	Duty = 10%	0	—		570	
			Duty = 50%	0	—		480	
Input Voltage	V _{IN}		0	—	15	V		
	Output On	V _{IN(ON)}	I _{OUT} = 500mA	h _{FE} = 150	10.0	—	15	V
				h _{FE} = 2000	2.4	—	15	
Output Off	V _{IN(OFF)}		0	—	0.4			
Input Current	I _{IN}		0	—	20	mA		
Clamp Diode Reverse Voltage	V _R		—	—	50	V		
Clamp Diode Forward Current	I _F		—	—	500	mA		
Power Dissipation	AP	Ta = 85°C (Note 1)	—	—	1.4	W		
	AF	Ta = 85°C (Note 2)	—	—	0.7			

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

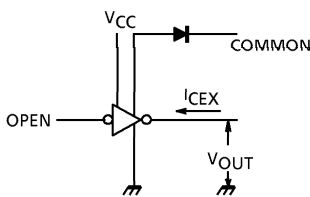
(Note 2) On Glass Epoxy (60×30×1.6mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

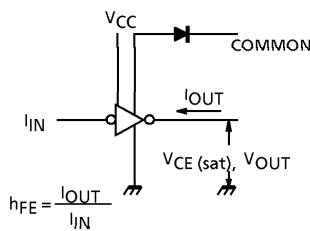
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leakage Current	I _{CEX}	1	V _{CE} = 50V, Ta = 25°C	—	—	50	μA
			V _{CE} = 50V, Ta = 85°C	—	—	100	
Collector-Emitter Saturation Voltage	V _{CE (sat)}	2	I _{OUT} = 500mA, V _{CC} = 5V	—	—	0.8	V
			I _{OUT} = 200mA, V _{CC} = 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 Reverse Current	I _R	4	V _R = 50V, Ta = 25°C	—	—	50	μA
			V _R = 50V, Ta = 85°C	—	—	100	
Clamp Diode Forward Voltage	V _F	5	I _F = 500mA	—	—	2.0	V
Supply Current	Output On	6	V _{CC} = 5.5V, V _{IN} = 2.4V	—	35	40	mA / ch
	Output Off		V _{CC} = 5.5V, V _{IN} = 0.4V	—	—	10	
Input Capacitance	C _{IN}	—	V _{IN} = 0, f = 1MHz	—	15	—	pF
Turn-On Delay	t _{ON}	7	V _{OUT} = 50V, R _L = 72Ω V _{CC} = 5.0V, C _L = 15pF	—	0.2	0.4	μs
Turn-Off Delay	t _{OFF}			—	4.0	8.0	

TEST CIRCUIT

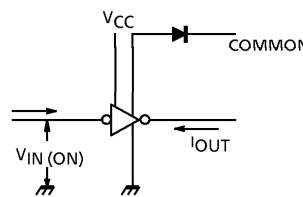
1. I_{CEX}



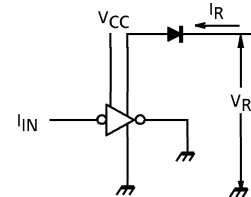
2. h_{FE}, V_{CE (sat)}



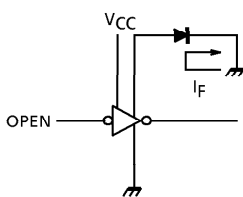
3. V_{IN (ON)}



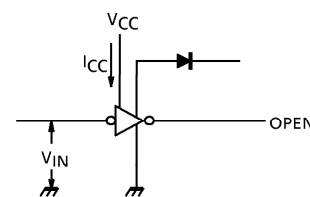
4. I_R



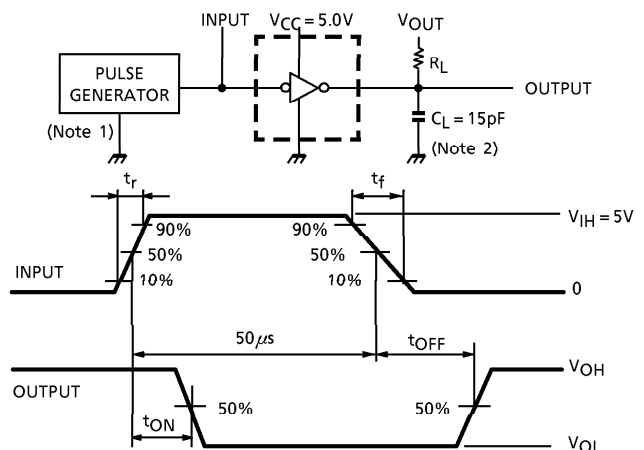
5. V_F



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



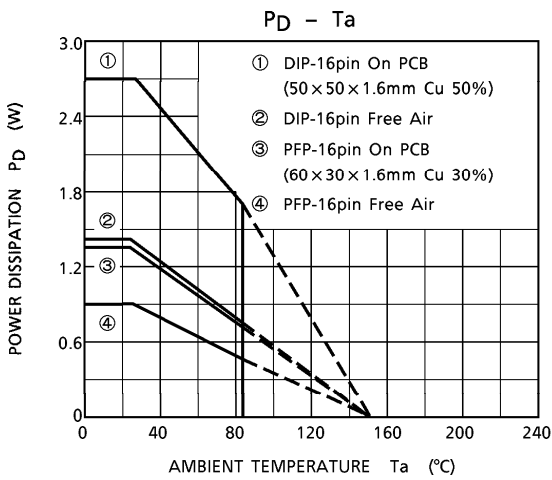
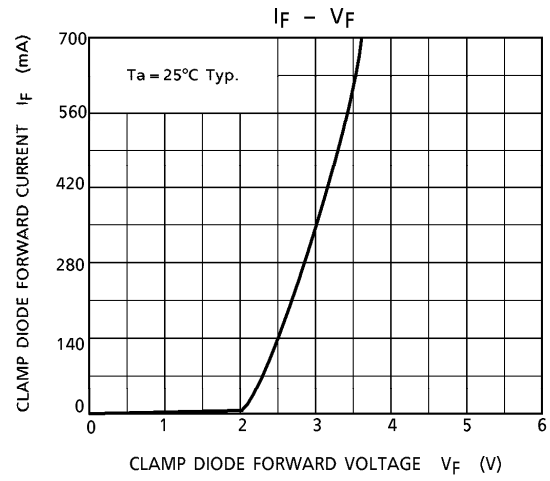
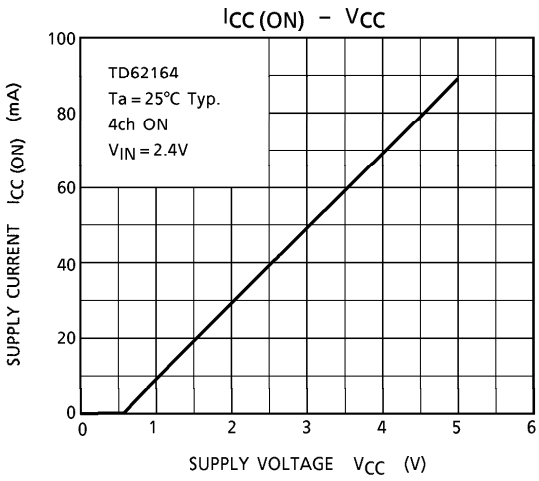
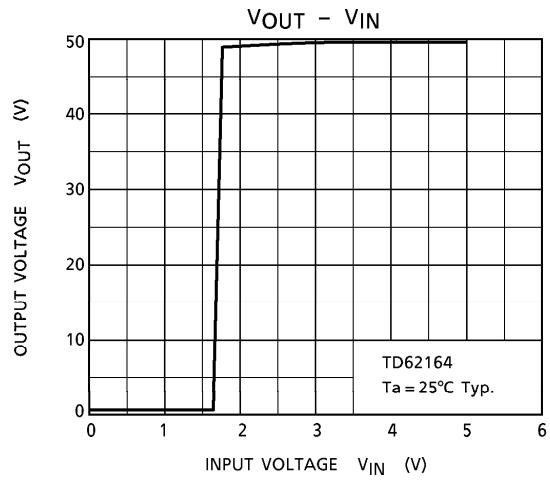
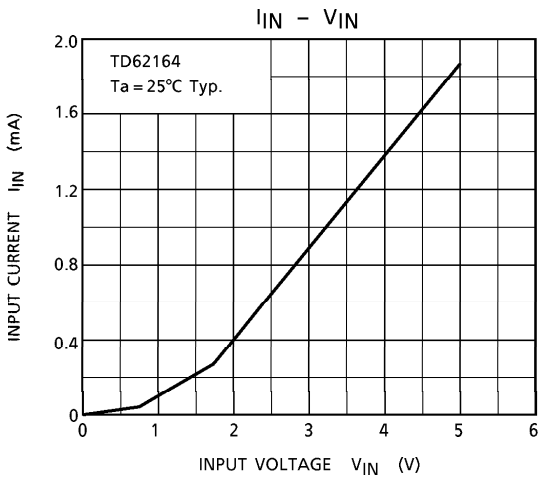
7. t_{ON}, t_{OFF}

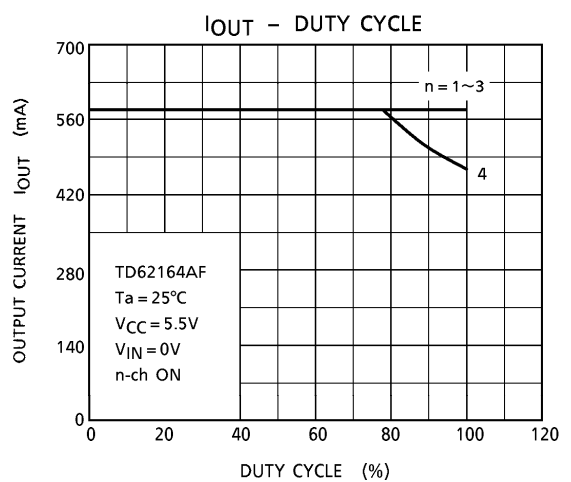
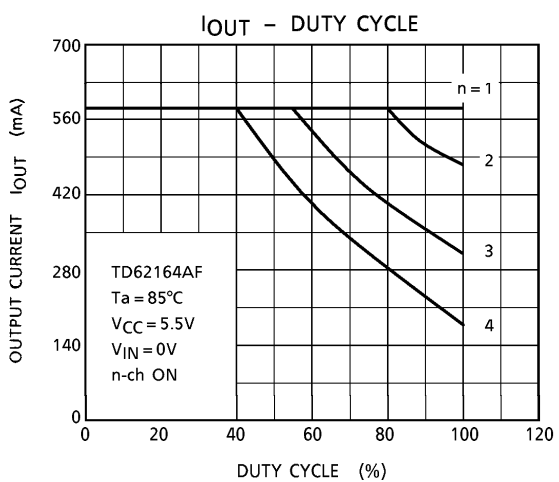
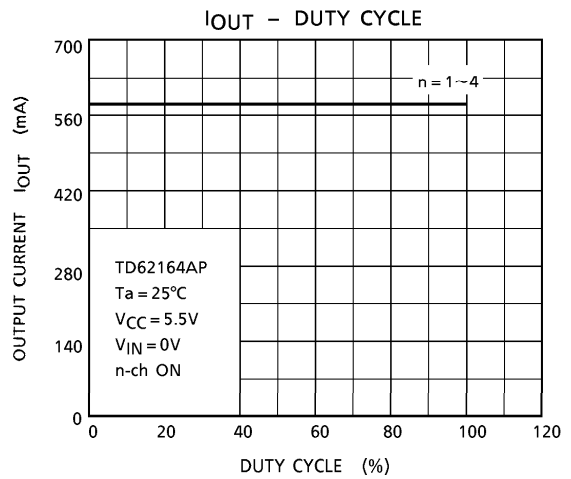
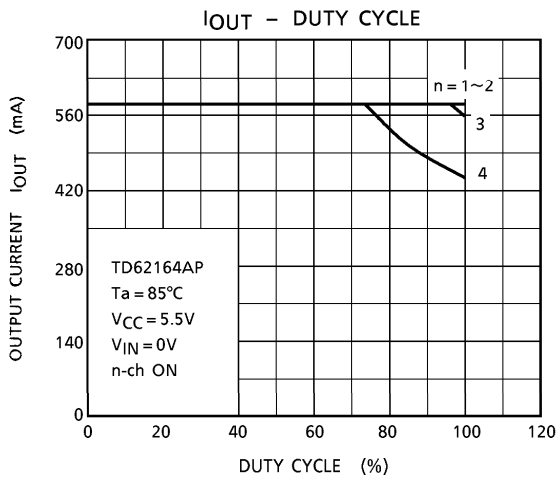


(Note 1) Pulse Width 50μs, Duty Cycle 10%
Output Impedance 50Ω, t_r ≤ 5ns, t_f ≤ 10ns
(Note 2) C_L includes probe and jig capacitance.

PRECAUTIONS for USING

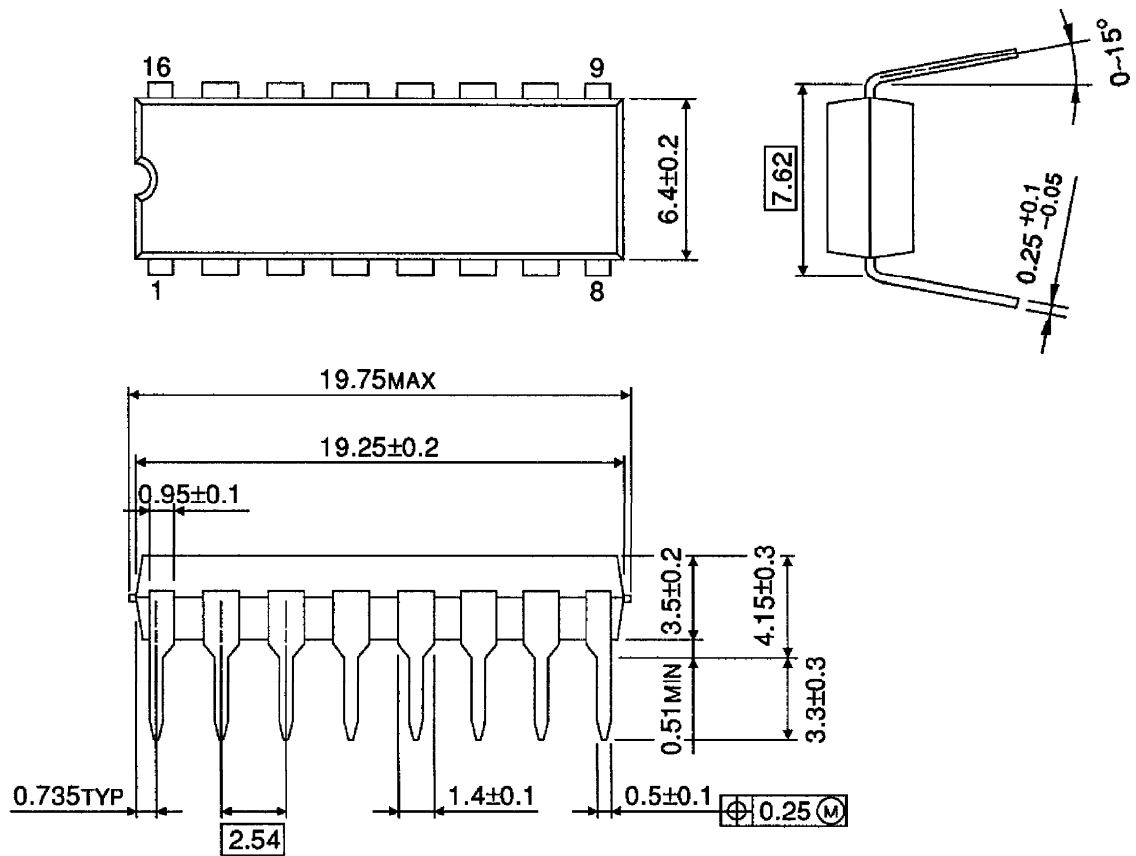
Utmost care is necessary in the design of the output line, V_{CC}, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.





OUTLINE DRAWING
DIP16-P-300-2.54A

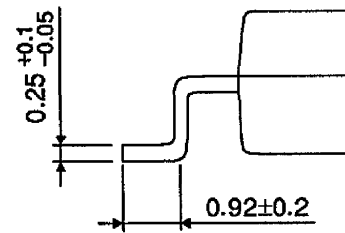
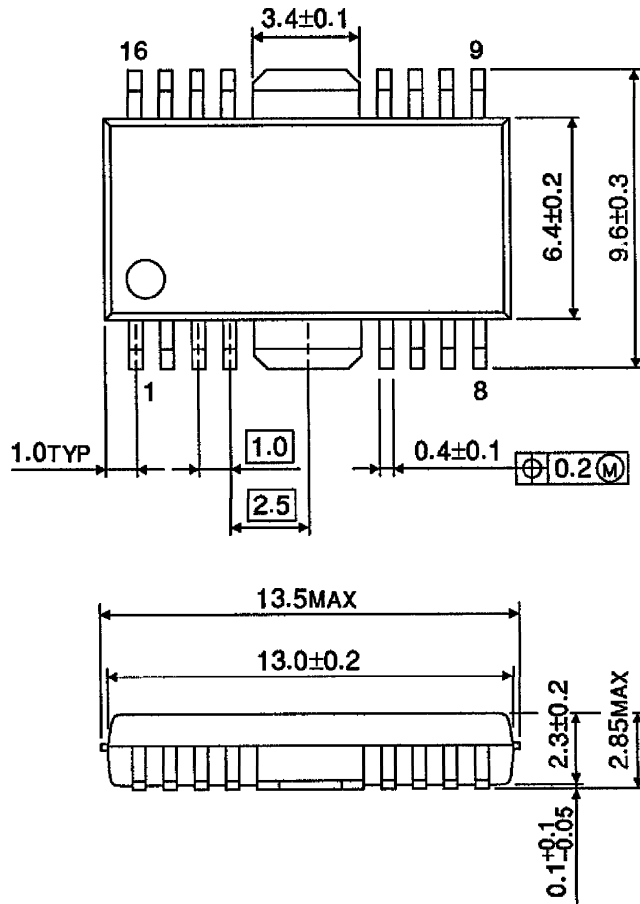
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING
HSOP16-P-300-1.00

Unit : mm



Weight : 0.50g (Typ.)