

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62801P,TD62801F

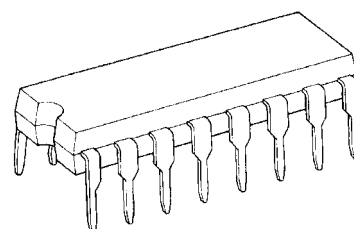
8BIT SHIFT REGISTER / LATCH / DRIVER

The TD62801P, TD62801F are specifically designed for thermal printing head drivers utilizing a new high speed, high voltage I²L process.

FEATURES

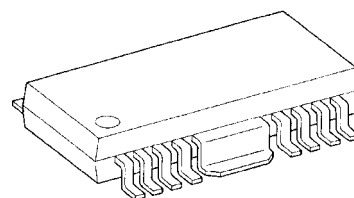
- 8bit serial-in parallel-out shift register / latch / 8bit driver transistors.
- Output current (Single Output) I_{OUT} = 70 mA MAX.
- High output voltage V_{OUT} = 24 V MIN.
- Input compatible with TTL
- Internal auto reset function
- Standard supply voltage
- Package type-P : DIP-16 pin
- Package type-F : HSOP-16 pin

TD62801P



DIP16-P-300-2.54A

TD62801F



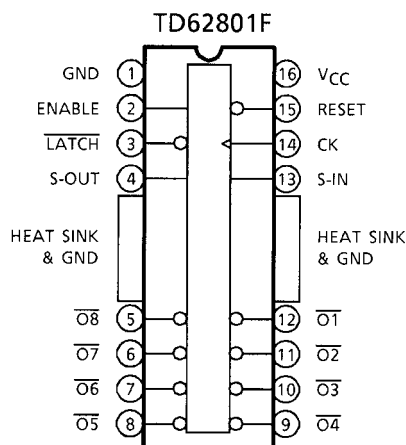
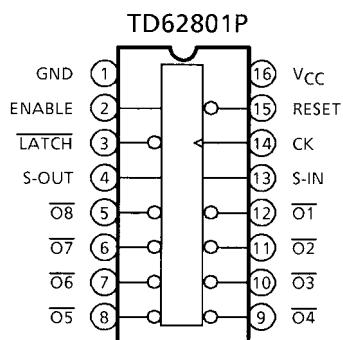
HSOP16-P-300-1.00

Weight

DIP16-P-300-2.54A : 1.11 g (Typ.)

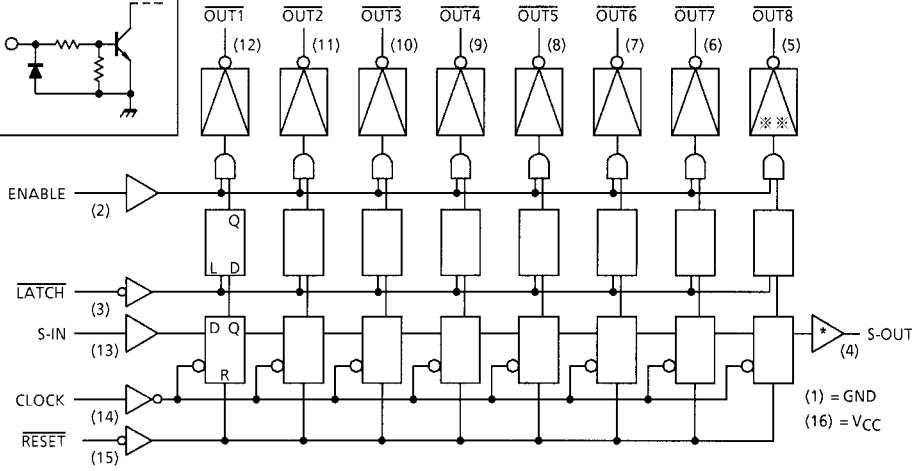
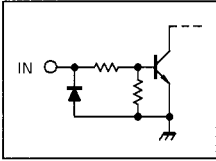
HSOP16-P-300-1.00 : 0.50 g (Typ.)

PIN CONNECTION (TOP VIEW)

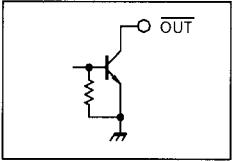


BLOCK DIAGRAM

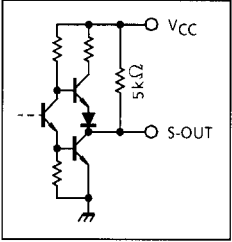
EQUIVALENT CIRCUIT OF INPUTS



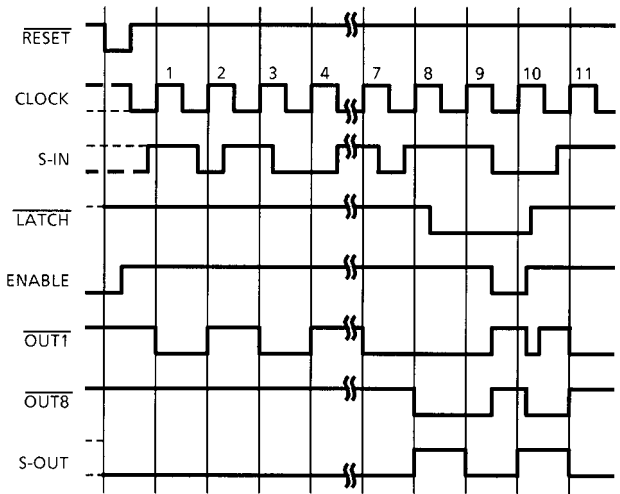
** EQUIVALENT CIRCUIT OF OUTPUTS



* EQUIVALENT CIRCUIT OF S-OUT TERNIMAL



TIMING DIAGRAM



TRUTH TABLE

CK	E	R	$\overline{\text{LATCH}}$	S-IN	OUT		S-OUT
					$\overline{\text{O1}}$	$\overline{\text{On}}$	
	H	H	H	L	OFF	$\overline{\text{On}} - 1$	Q_7
	H	H	H	H	ON	$\overline{\text{On}} - 1$	Q_7
	H	H	L	*	NC	NC	Q_7
	L	H	*	*	OFF	OFF	Q_7
	*	*	*	*	NC	NC	Q_7
*	*	L	H	*	OFF	OFF	L
*	H		L	*	NC	NC	L
CK = CLOCK E = ENABLE R = RESET LATCH = LATCH S-IN = SERIAL IN OUT = PARALLEL OUT S-OUT = SERIAL OUT * = DON'T CARE NC = NO CHANGE L = LOW LEVEL H = HIGH LEVEL							

MAXIMUM RATINGS (Ta = 0~75°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	-0.3~6.0	V
Input Voltage		V_{IN}	-0.3~ $V_{CC} + 0.3$	V
Output Voltage		V_{OUT} (Note 1)	-0.3~ $V_{CC} + 0.3$	V
Output Sustaining Voltage		$V_{CE(SUS)}$ (Note 2)	-0.3~26	V
Input Current		I_{IN}	± 1	mA
Output Current		I_{OUT2} (Note 2)	70	mA / ch
Power Dissipation	P	P_D (Note 4)	1.47	W
	F		1.4 (Note 3)	
Operating Temperature		T_{opr}	0~70	°C
Storage Temperature		T_{stg}	-55~150	°C

Note 1: S-OUT

Note 2: O1~O8

Note 3: On PCB (60 × 30 × 1.6 mm Cu 30%)

Note 4: Delated above 25°C in the proportion of 11.7 mW / °C (P-Type), 11.2 mW / °C (F-Type)

RECOMMENDED OPERATING CONDITIONS (Ta = 0~70°C)

CHARACTERISTIC			SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage			V _{CC}	—	4.5	5.0	5.5	V
Output Voltage	“H” Level	On	V _{OH}	—	0	—	24	V
Input Voltage			V _{IN}	—	0	—	V _{CC}	V
Output Current	“H” Level	S-OUT	I _{OH}	—	0	—	−0.4	mA
	“L ” Level	S-OUT	I _{OL}	—	0	—	8	
		On	I _{OL}	—	0	—	60	
Clock Frequency			f _{CLOCK}	—	0	—	500	kHz
Clock Pulse Width			f _w CLOCK	—	1	—	—	μs
Data Set Up Time			t _{setup}	—	100	—	—	μs
Data Hold Time			t _{hold}	—	100	—	—	μs

ELECTRICAL CHARACTERISTICS (Ta = 0~70°C)

CHARACTERISTIC			SYMBOL	TEST CIR- CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Input Voltage	"H" Level		V _{IH}	—	—	2.0	—	—	V
	"L" Level		V _{IL}	—	—	—	—	0.8	
Input Current	"H" Level		I _{IH}	—	V _{CC} = 5.5 V, V _{IN} = 2.4 V	—	0.14	0.3	mA
					V _{IN} = 5.5 V	—	0.37	0.7	
	"L" Level		I _{IL}	—	V _{CC} = 5.5 V, V _{IL} = 0.4 V	—	20	50	μA
Output Voltage	"H" Level	S-OUT	V _{OH}	—	V _{CC} = 5.0 V, V _{OH} = -10 μA	4.0	—	—	V
				—	V _{CC} = 4.5 V, I _{OH} = -400 μA	2.4	2.8	—	
	"L" Level	S-OUT	V _{OL}	—	V _{CC} = 4.5 V, I _{OL} = 8 mA	—	0.2	0.4	
		On		—	V _{CC} = 4.5 V, I _{OL} = 60 mA	—	0.2	0.6	
Output Current	"H" Level	On	I _{OH}	—	V _{CC} = 4.5 V, V _{OH} = 2.4 V	—	—	100	μA
Short-Circuit Output Current	"H" Level		I _{OS}	—	V _{CC} = 5.5 V	-5	-16	-50	mA
Supply Current			I _{CC}	—	V _{CC} = 5.5 V	—	55	80	mA

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Propagation Delay Time	“H” Level	CK-S-OUT	t _{pLH}	—	V _{CC} = 5.0 V V _{IH} = 3.0 V V _{IL} = 0 V Duty = 50% R _{L S-OUT} = 2 kΩ R _{L On} = 82 Ω C _L = 15 pF	—	0.6	1.5	μs
		CK-On				—	2.5	6.5	
		L-On				—	2.1	5.0	
		R-On				—	2.2	6.0	
		E-On				—	1.5	4.0	
	“L” Level	CK-S-OUT	t _{pHL}	—		—	0.35	1.0	
		CK-On				—	0.6	1.5	
		L-On				—	0.32	1.0	
		R-S-OUT				—	0.3	1.0	
		E-On				—	0.1	0.3	
Maximum Clock Frequency			f _{MAX}	—	—	1.6	—	MHz	
Minimum Pulse Width		CK	t _{wCK}	—	—	250	600	ns	
		CK	t _{wCK}	—	—	280	700		
		L	t _{wL}	—	—	230	600		
		R	t _{wR}	—	—	300	1000		
Data Set Up Time			t _{setup}	—	—	20	50	ns	
Data Hold Time			t _{hold}	—	—	20	50	ns	
Rise Time			t _r	—	—	70	—	ns	
Fall Time			t _f	—	—	70	—	ns	

PRECAUTIONS for USING

This IC does not integrate protection circuits such as overcurrent and overvoltage protectors.

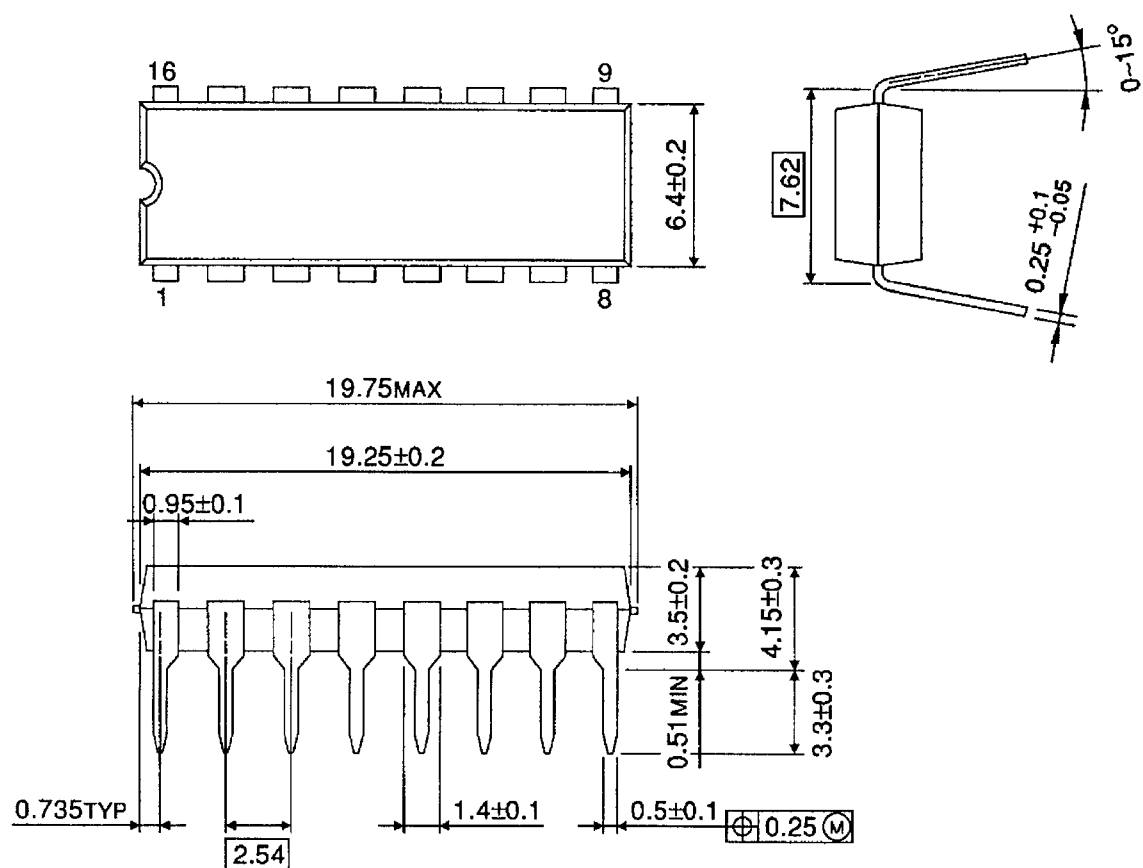
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

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

PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit: mm

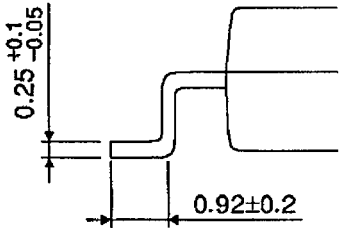
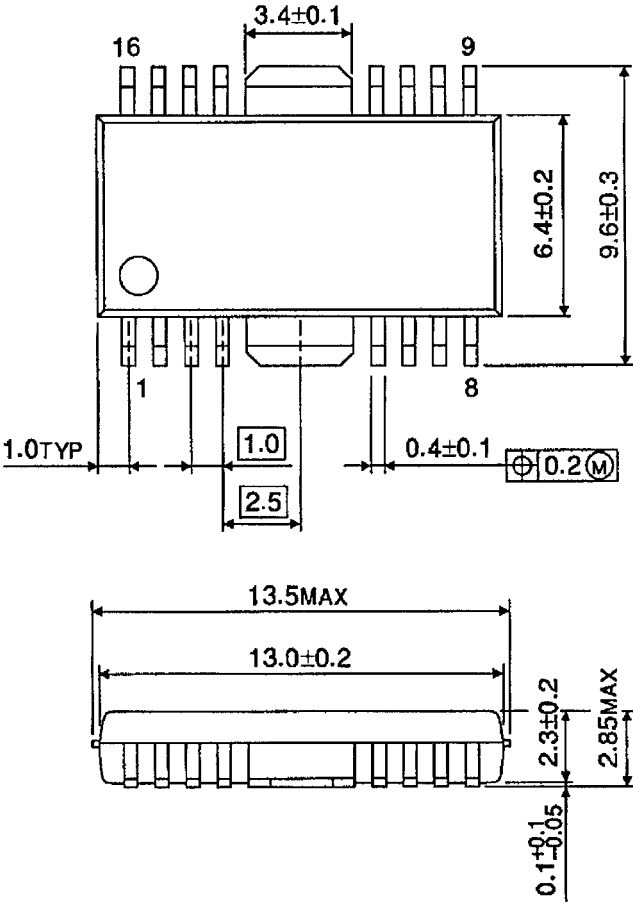


Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

HSOP16-P-300-1.00

Unit: mm



Weight: 0.50 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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