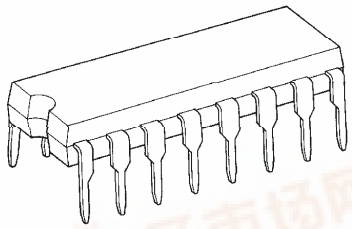
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62801P, TD62801F

8BIT SHIFT REGISTER / LATCH / DRIVER

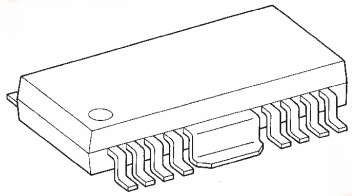
The TD62801P, TD62801F are specifically designed for thermal printing head drivers utilizing a new high speed, high voltage I^2L process.

TD62801P



DIP16-P-300-2.54A

TD62801F



HSOP16-P-300-1.00

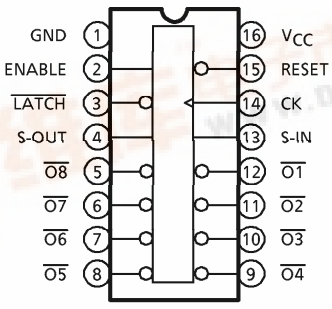
Weight
DIP16-P-300-2.54A : 1.11g (Typ.)
HSOP16-P-300-1.00 : 0.50g (Typ.)

FEATURES

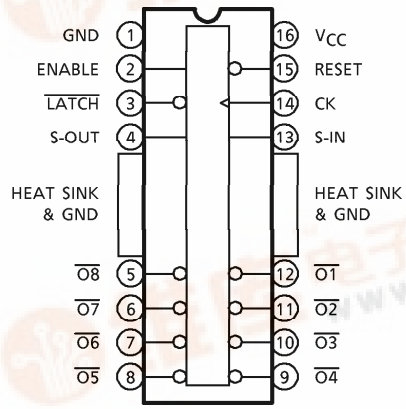
- 8bit serial-in parallel-out shift register / latch / 8bit driver transistors.
- Output current (Single Output) I_{OUT} = 70mA MAX.
- High output voltage V_{OUT} = 24V MIN.
- Input compatible with TTL
- Internal auto reset function
- Standard supply voltage
- Package type-P : DIP-16pin
- Package type-F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

PIN CONNECTION (TOP VIEW)

TD62801P

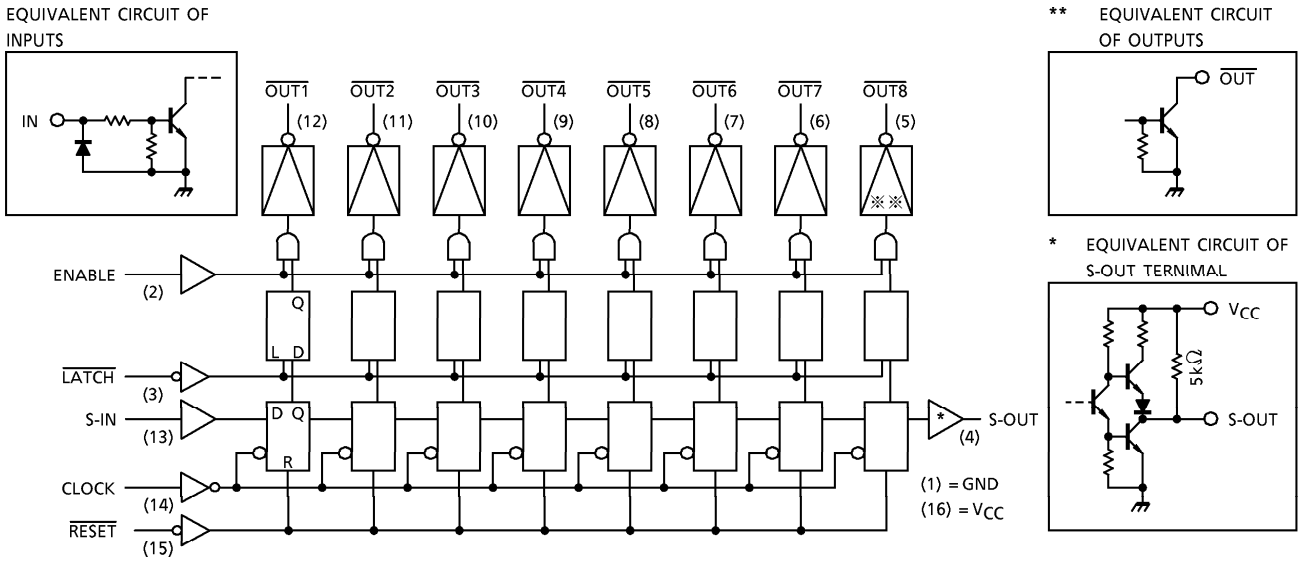


TD62801F

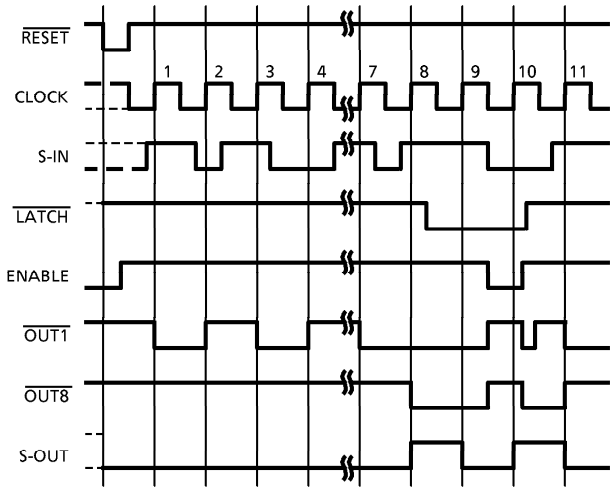


961001EBA2

BLOCK DIAGRAM



TIMING DIAGRAM



TRUTH TABLE

CK	E	R	$\overline{\text{LATCH}}$	S-IN	OUT		S-OUT
					$\overline{O1}$	$\overline{On}$	
↑	H	H	H	L	OFF	$\overline{On-1}$	Q_7
↑	H	H	H	H	ON	$\overline{On-1}$	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
$\overline{\text{LATCH}}$ = 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 × 1.6mm Cu 30%)
(Note 4) Delated above 25°C in the proportion of 11.7mW / °C (P-Type), 11.2mW / °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} = 5.5V	V_{IN} = 2.4V	—	0.14	0.3	mA
						V_{IN} = 5.5V	—	0.37	0.7	
	"L" Level		I_{IL}	—	V_{CC} = 5.5V, V_{IL} = 0.4V		—	20	50	μA
Output Voltage	"H" Level	S-OUT	V_{OH}	—	V_{CC} = 5.0V, V_{OH} = −10μA		4.0	—	—	V
				—	V_{CC} = 4.5V, I_{OH} = −400μA		2.4	2.8	—	
	"L" Level	S-OUT	V_{OL}	—	V_{CC} = 4.5V, I_{OL} = 8mA		—	0.2	0.4	
		On		—	V_{CC} = 4.5V, I_{OL} = 60mA		—	0.2	0.6	
Output Current	"H" Level	On	I_{OH}	—	V_{CC} = 4.5V, V_{OH} = 2.4V		—	—	100	μA
Short-Circuit Output Current	"H" Level		I_{OS}	—	V_{CC} = 5.5V		−5	−16	−50	mA
Supply Current			I_{CC}	—	V_{CC} = 5.5V		—	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} = 5.0V V_{IH} = 3.0V V_{IL} = 0V Duty = 50% R_L S-OUT = 2kΩ R_L On = 82Ω C_L = 15pF	—	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

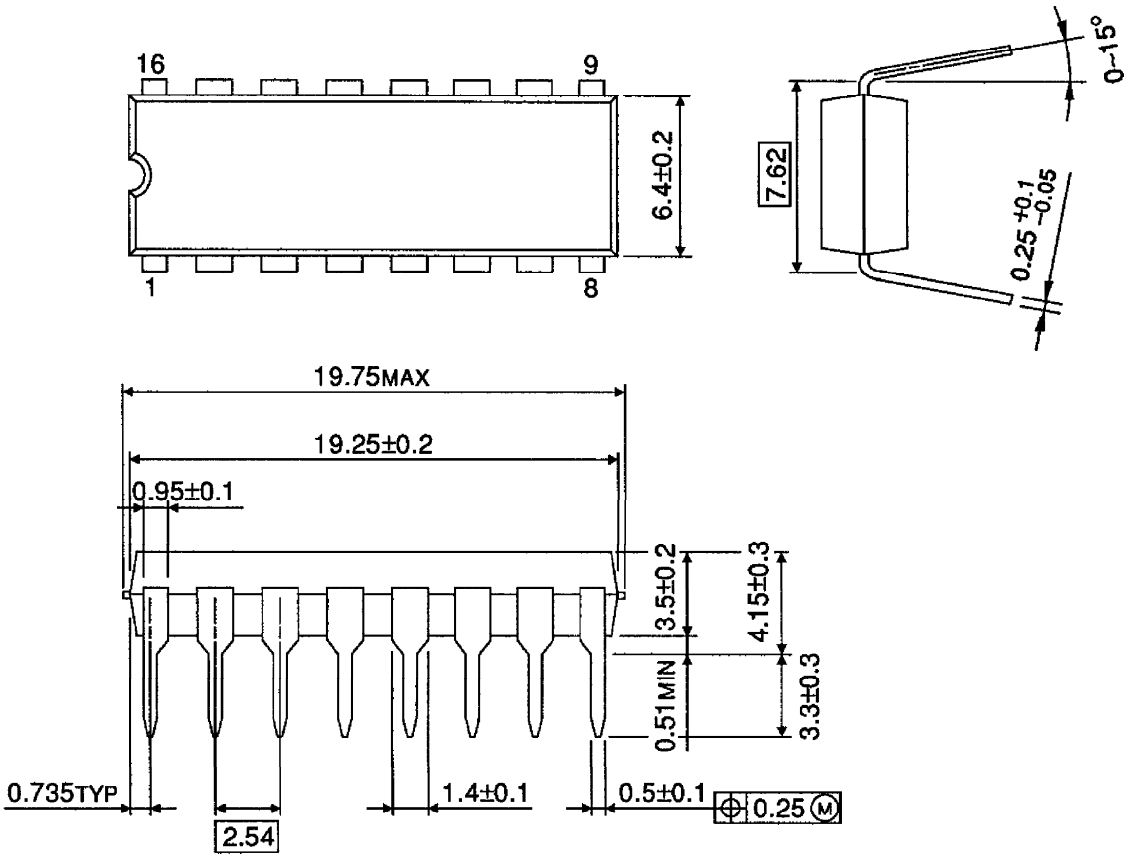
PRECAUTIONS for USING

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.

OUTLINE DRAWING

DIP16-P-300-2.54A

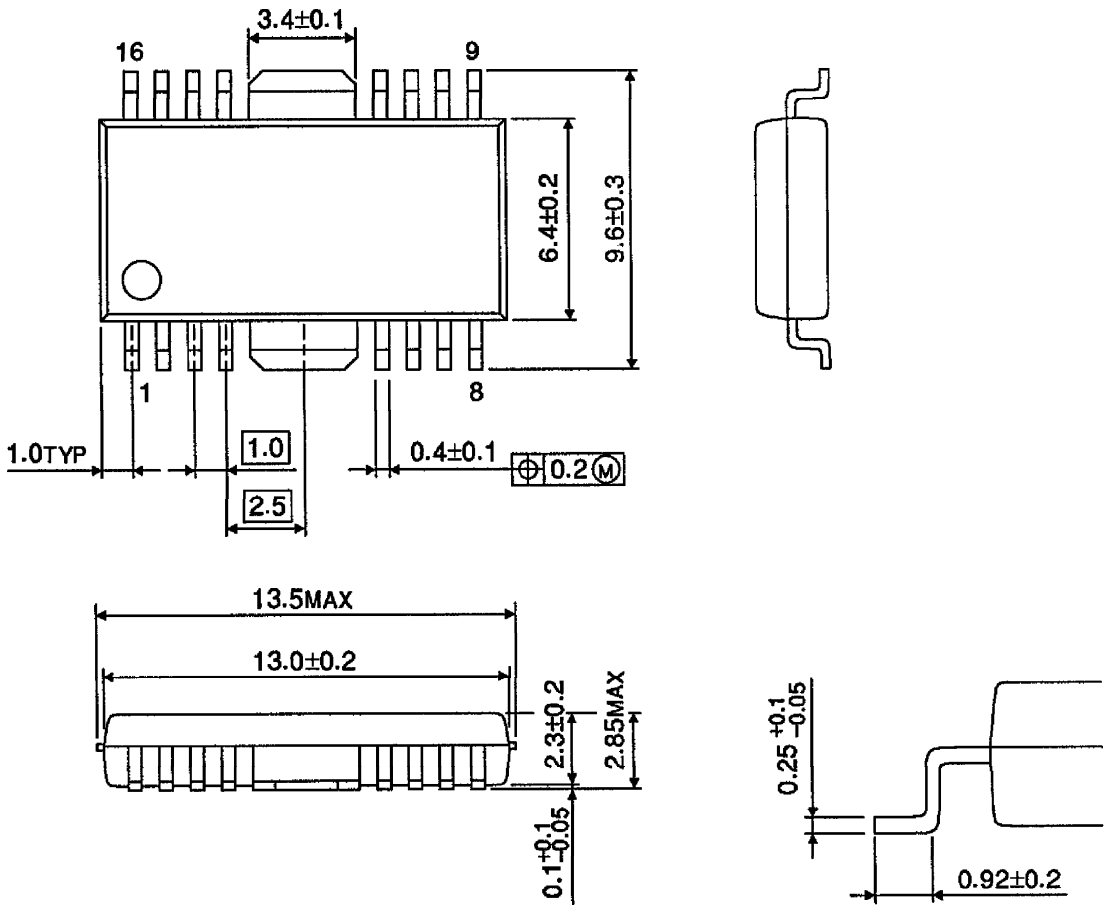
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING

HSOP16-P-300-1.00 Unit : mm



Weight : 0.50g (Typ.)