

TD62309P, TD62309F

6CH LOW SATURATION HIGH-CURRENT SINK DRIVER

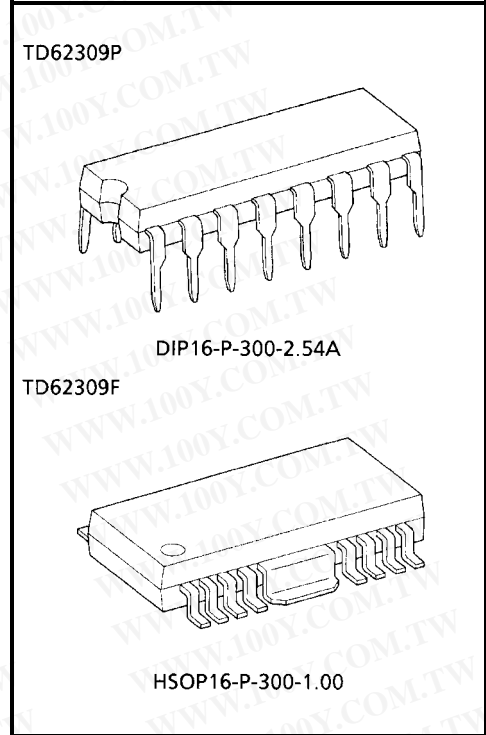
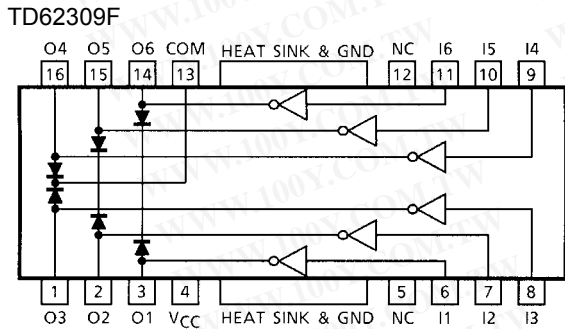
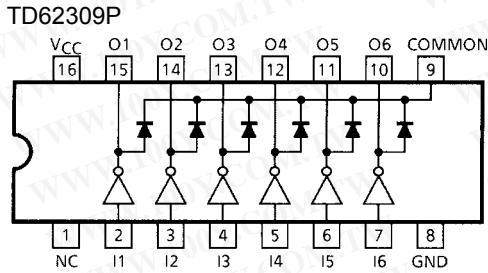
The TD62309P, TD62309F are comprised of six NPN low saturation drivers.

All units feature integral clamp diodes for switching inductive loads. These devices are specifically designed for relay, lamp and LED drive in low voltage systems.

FEATURES

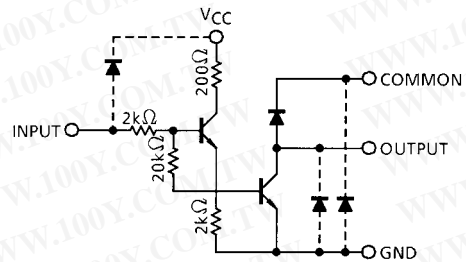
- Low saturation output : $V_{CE(sat)} = 0.8 \text{ V (Max.)}$
@ $I_{OUT} = 450 \text{ mA}$
- Output rating (single output) 20 V (Min.) / 700 mA (Max.)
Output clamp diodes
- Inputs compatible with TTL and 3~6 V CMOS
- Package type-P: DIP-16 pin
- Package type-F: PFP-16 pin

PIN CONNECTION (TOP VIEW)



Weight
 DIP16-P-300-2.54A : 1.11 g (Typ.)
 HSOP16-P-300-1.00 : 0.50 g (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}	10	V
Output Sustaining Voltage		V _{CE (SUS)}	20	V
Output Current		I _{OUT}	700	mA / ch
Input Voltage		V _{IN}	10	V
Input Current		I _{IN}	10	mA
Clamp Diode Reverse Voltage		V _R	20	V
Clamp Diode Forward Current		I _F	700	mA
Power Dissipation	P	P _D	1.47	W
	F		1.4 (Note)	
Operating Temperature		T _{opr}	-40~85	°C
Storage Temperature		T _{stg}	-55~150	°C

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

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage		V _{CC}	—	3	5	7	V
Output Sustaining Voltage		V _{CE (SUS)}	—	—	—	20	V
Output Current	I _{OUT}	DC 1 circuit	—	0	—	700	mA
		T _{pw} = 25 ms, 6 circuits	—	0	—	200	
Input Voltage		V _{IN}	—	0	—	V _{CC}	V
Clamp Diode Reverse Voltage		V _R	—	—	—	20	V
Clamp Diode Forward Current		I _F	—	—	—	700	mA
Power Dissipation	P	P _D	—	—	—	0.52	W
	F		(Note)	—	—	0.5	

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

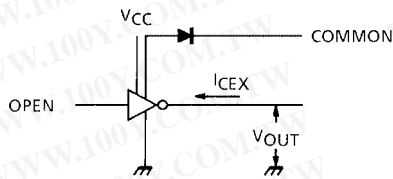
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

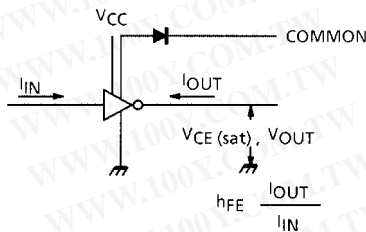
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	$V_{OUT} = 20\text{ V}$, $T_a = 85^\circ\text{C}$	—	—	100	μA
Output Saturation Voltage		$V_{CE(sat)}$	2	$V_{CC} = 5\text{ V}$, $I_{OUT} = 450\text{ mA}$	—	—	0.8	V
				$V_{CC} = 5\text{ V}$, $I_{OUT} = 200\text{ mA}$	—	—	0.45	
Input Current (Output On)		$I_{IN(ON)}$	3	$V_{IN} = 3.2\text{ V}$	—	0.84	1.4	mA
D.C Forward Current Transfer Ratio		h_{FE}	2	$V_{CE} = 4\text{ V}$, $V_{CC} = 6\text{ V}$ $I_{OUT} = 300\text{ mA}$	3000	—	—	
Supply Current	Output On	$I_{CC(ON)}$	6	$V_{CC} = 7\text{ V}$, $V_{IN} = 3.2\text{ V}$ 6 circuits	—	120	300	mA
	Output Off	$I_{CC(OFF)}$	6	$V_{CC} = 7\text{ V}$	—	—	10	μA
Clamp Diode Reverse Current		I_R	4	$V_R = 20\text{ V}$	—	—	100	μA
Clamp Diode Forward Voltage		V_F	5	$I_F = 350\text{ mA}$	—	—	2.7	V
Turn-On Delay		t_{ON}	7	$V_{CC} = 5.0\text{ V}$, $R_L = 36\ \Omega$ $C_L = 15\text{ pF}$, $V_{OUT} = 20\text{ V}$	—	0.1	—	μs
Turn-Off Delay		t_{OFF}			—	0.2	—	

TEST CIRCUIT

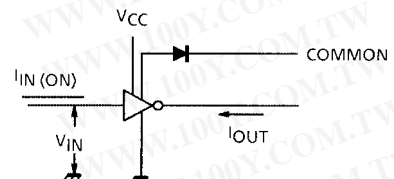
1. I_{CEX}



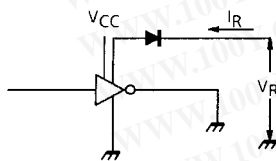
2. h_{FE} , $V_{CE(sat)}$



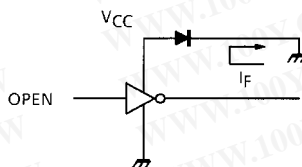
3. $I_{IN(ON)}$



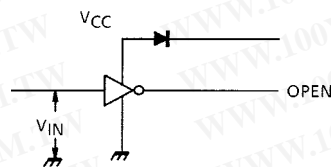
4. I_R



5. V_F

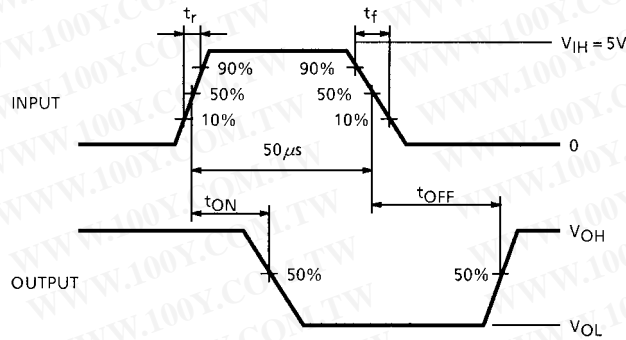
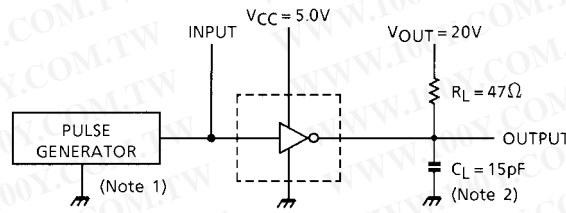


6. $I_{CC(ON)}$, $I_{CC(OFF)}$



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7. t_{ON} , t_{OFF}



Note 1: Pulse Width 50 μ s, duty cycle 10%

Output impedance 50 Ω , $t_r \leq 5$ ns, $t_f \leq 10$ ns

Note 2: C_L includes probe and jig capacitance.

PRECAUTIONS for USING

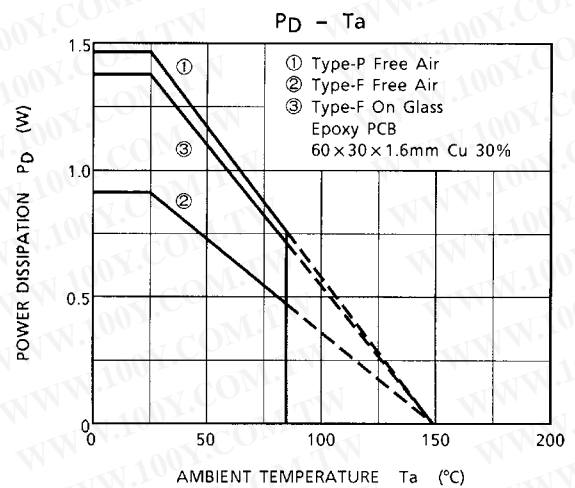
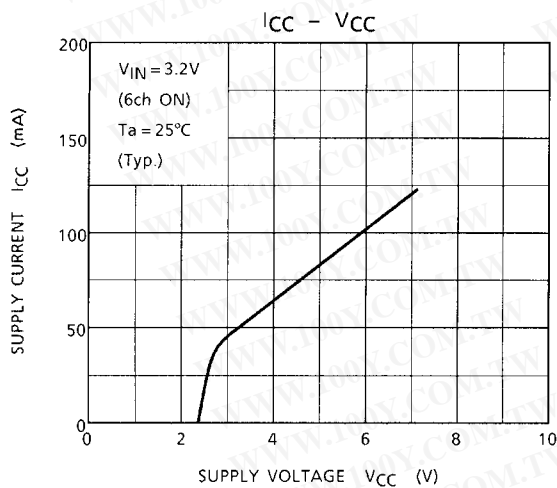
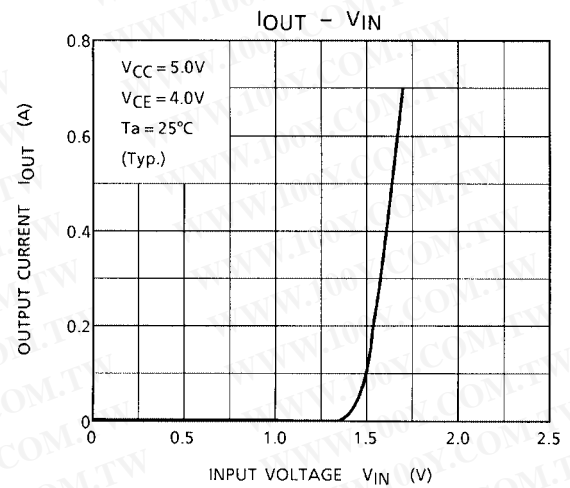
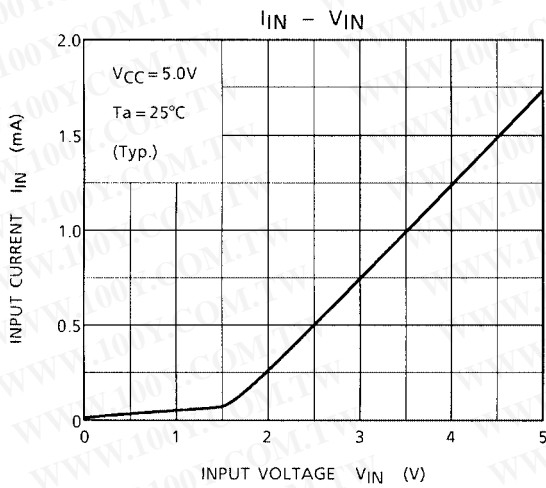
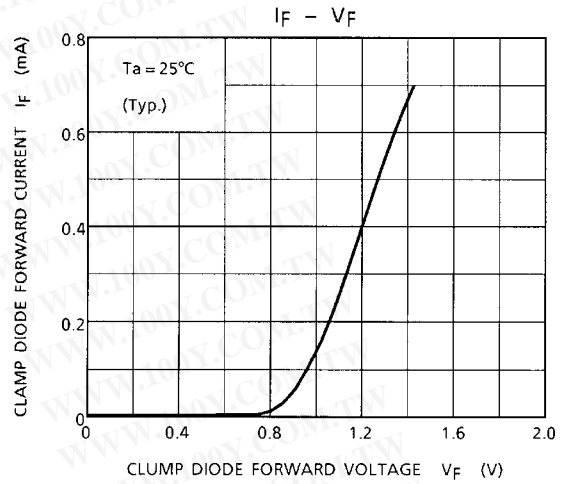
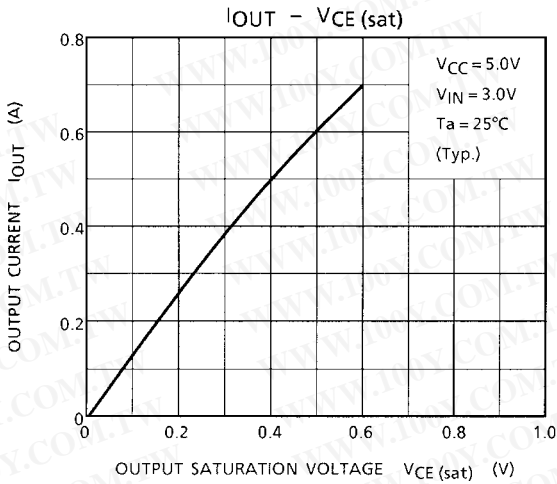
This IC does not include built-in protection circuits for excess current or overvoltage.

If this IC is subjected to excess current or overvoltage, it may be destroyed.

Hence, the utmost care must be taken when systems which incorporate this IC are designed.

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

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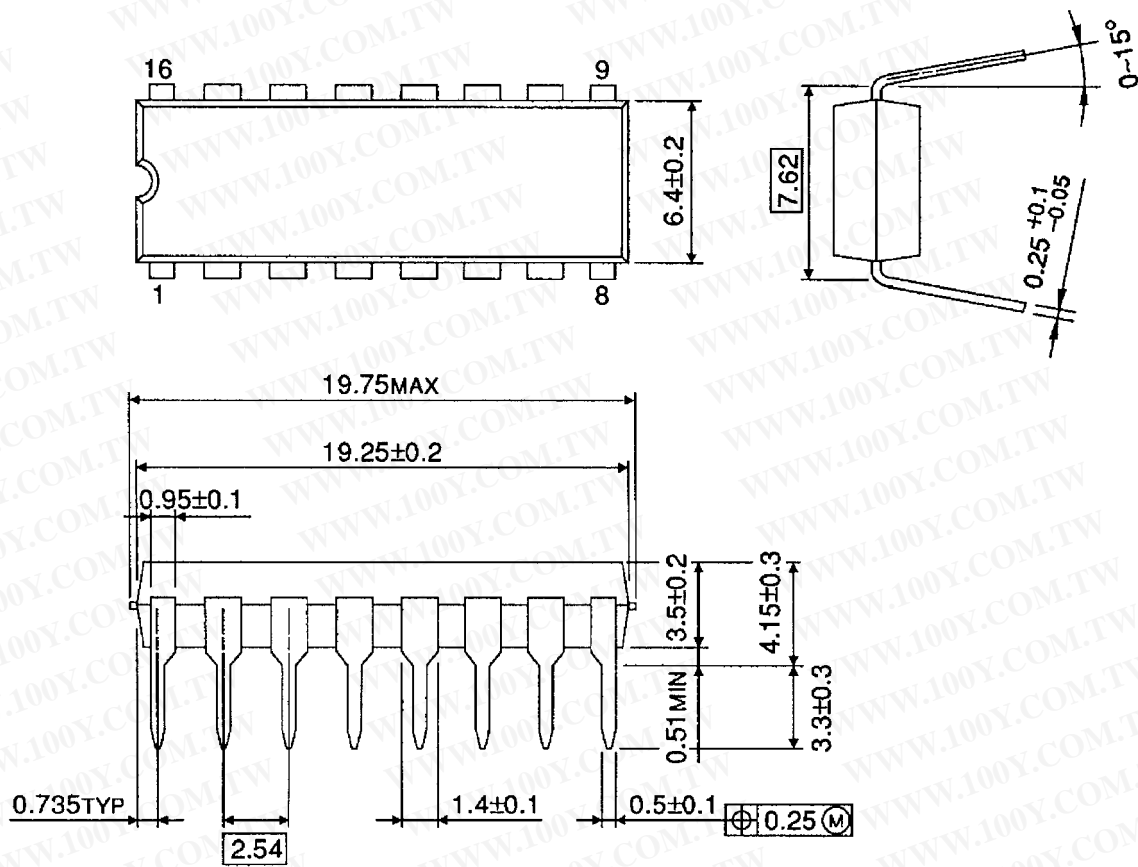


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PACKAGE DIMENSIONS

DIP16-P-300-2.54A

Unit: mm



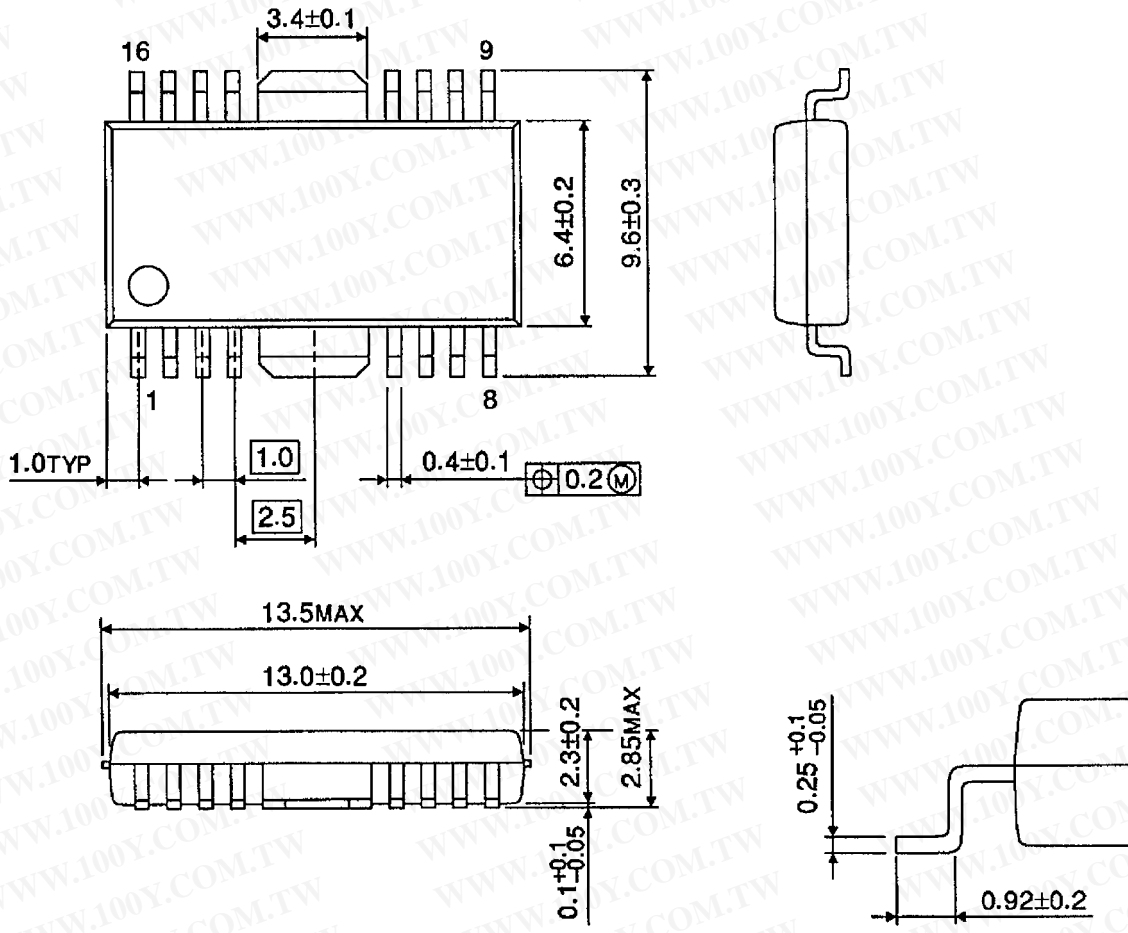
Weight: 1.11 g (Typ.)

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PACKAGE DIMENSIONS

HOSP16-P-300-1.00

Unit: mm



Weight: 0.50 g (Typ.)

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