

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62601P, TD62601F, TD62602P, TD62602F TD62603P, TD62603F, TD62604P, TD62604F

6CH THRESHOLD FREE DRIVER

TD62601P, TD62601F INVERTER

TD62602P, TD62602F INVERTER / OPEN COLLECTOR

TD62603P, TD62603F NON-INVERTER

TD62604P, TD62604F NON-INVERTER / OPEN COLLECTOR

The TD62601P, TD62601F series are threshold free drivers which are comprised of six NPN transistor output stages and comparator input stages.

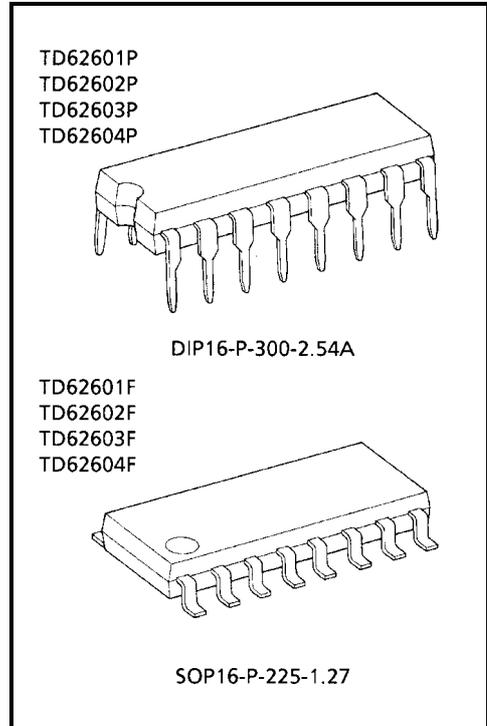
The TD62601P, TD62601F series are pin compatible with CMOS 4049B and 4050B type except V_{ref} terminal.

V_{ref} is set at $1/2 V_{CC}$ with internal resistors and it is changeable using external resistors.

Applications include relay, hammer, lamp and display (LED) drivers.

FEATURES

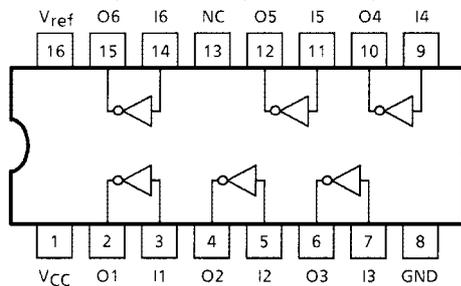
- Wide supply voltage range $V_{CC} = 4\sim 18\text{ V}$
- $V_{ref} = 1/2 V_{CC}$ @16 pin is non-connected
- Pin compatible with CMOS logic 4049B, 4050B type
 TD62601P, TD62601F (4049B type)
 TD62602P, TD62602F (4049B type open-collector)
 TD62603P, TD62603F (4050B type)
 TD62604P, TD62604F (4050B type open-collector)
- Package type-P : DIP-16 pin
- Package type-F : SOP-16 pin



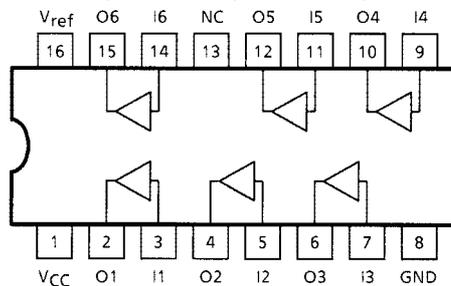
Weight
 DIP16-P-300-2.54A : 1.11 g (Typ.)
 SOP16-P-225-1.27 : 0.16 g (Typ.)

PIN CONNECTION (TOP VIEW)

TD62601P, TD62601F, TD62602P, TD62602F

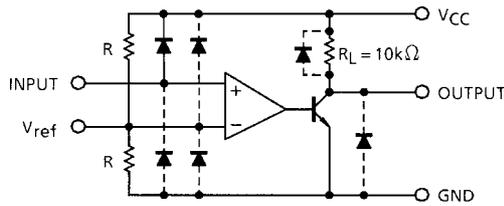


TD62603P, TD62603F, TD62604P, TD62604F



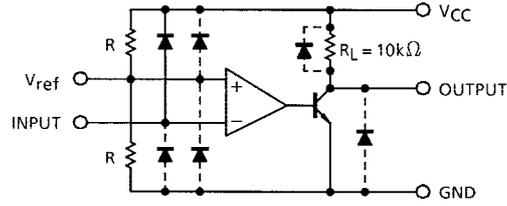
SCHEMATICS (EACH DRIVER)

TD62601P, TD62601F, TD62602P, TD62602F



TD62601P, TD62601F : With R_L
 TD62602P, TD62602F : Without R_L

TD62603P, TD62603F, TD62604P, TD62604F



TD62603P, TD62603F : With R_L
 TD62604P, TD62604F : Without R_L

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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	20	V
Output Sustaining Voltage	V_{OUT}	-0.5~20	V
Output Current	I_{OUT}	10	mA / ch
Input Voltage	V_{IN}	-0.5~ $V_{CC} + 0.5$	V
Power Dissipation	P	P_D (Note 2)	1.0
	F		0.625 (Note 1)
Operating Temperature	T_{opr}	-40~85	°C
Storage Temperature	T_{stg}	-55~150	°C

Note 1: On PCB (30 × 30 × 1.6 mm Cu 50%)

Note 2: Delated above 25°C in the proportion of 8.0 mW / °C (P Type), 5.0 mW / °C (F Type).

RECOMMENDED OPERATING CONDITIONS (Ta = -40~85°C, VCC = 0 V)

CHARACTERISTIC	SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage	V_{CC}	—	4.0	—	18	V
Output Sustaining Voltage	V_{OUT}	—	0	—	18	V
Output Current	I_{OUT}	$V_{CC} = 5 V$	0	—	8	mA / ch
Input Voltage	V_{IN}	—	0	—	V_{CC}	V
REF, Input Voltage	V_{ref}	$T_a = 25^\circ C$	0.4	—	$V_{CC} - 1.6$	V
Power Dissipation	P	P_D	—	—	0.36	W
	F		On PCB	—	—	

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Input Voltage	"H" Level	V_{IH}	—	—	$V_{ref} + 0.1$	—	—	V
	"L" Level	V_{IL}	—	—	—	—	$V_{ref} - 0.1$	
Output Current	"H" Level	I_{OH}	—	$V_{CC} = 4.5V, V_O = 18V$	—	—	10	μA
Output Voltage	"H" Level	V_{OH}	—	$V_{CC} = 4.5V, I_O = -10 \mu A$	4.0	—	—	V
	"L" Level	V_{OL}	—	$V_{CC} = 4.5V, I_O = 8 mA$	—	0.1	0.4	
Input Current	"H" Level	I_{IH}	—	—	—	—	2	μA
	"L" Level	I_{IL}	—	—	—	-0.2	-1.5	
Vref Terminal Voltage		$V_{ref} (OUT)$	—	—	$\frac{1}{2} V_{CC} - 0.1$	—	$\frac{1}{2} V_{CC} + 0.1$	V
Vref Resistor		R_{ref}	—	—	3.5	5	6.5	k Ω
Supply Current		I_{CC}	—	—	—	—	12	mA
Supply Current		I_{CCL}	—	—	—	—	27	mA
Turn-On Delay		t_{ON}	—	$V_{CC} = 5V, V_{OUT} = 18V$ $R_L = 2 k\Omega$	—	0.5	—	μs
Turn-Off Delay		t_{OFF}	—		—	0.2	—	

PRECAUTIONS for USING

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

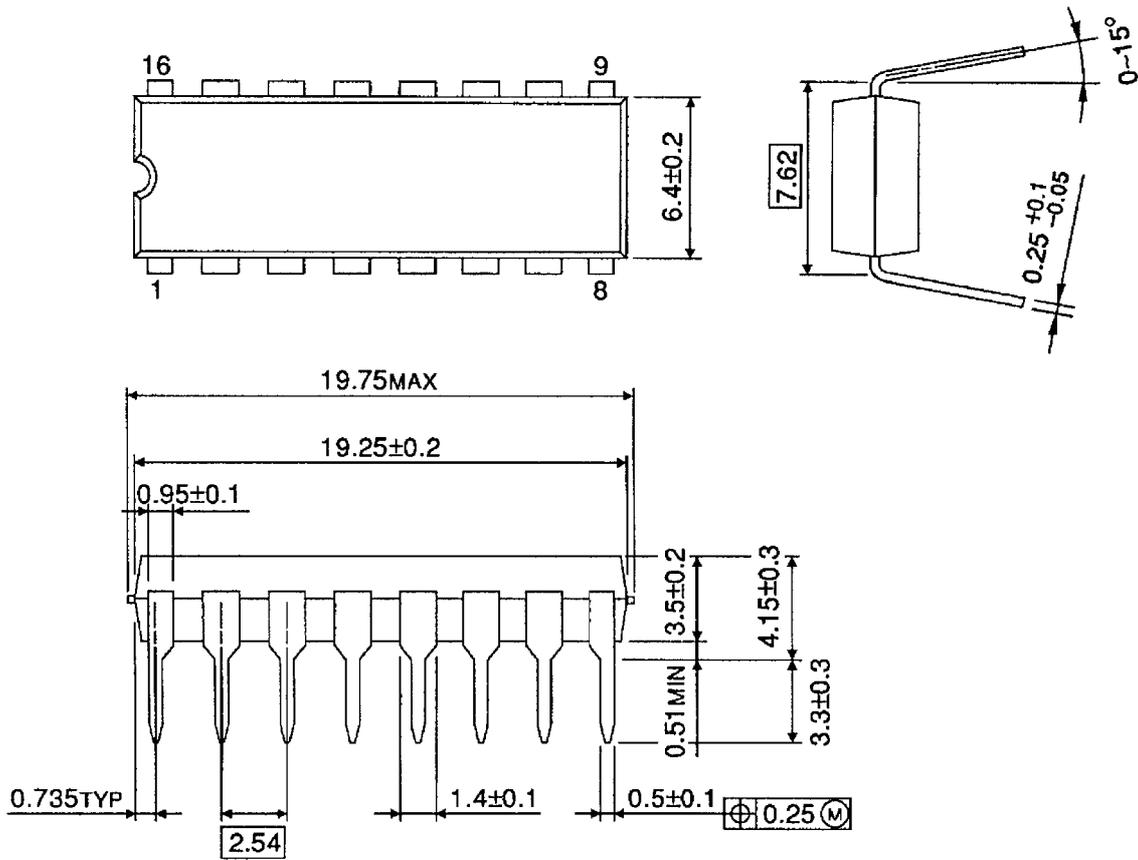
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

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

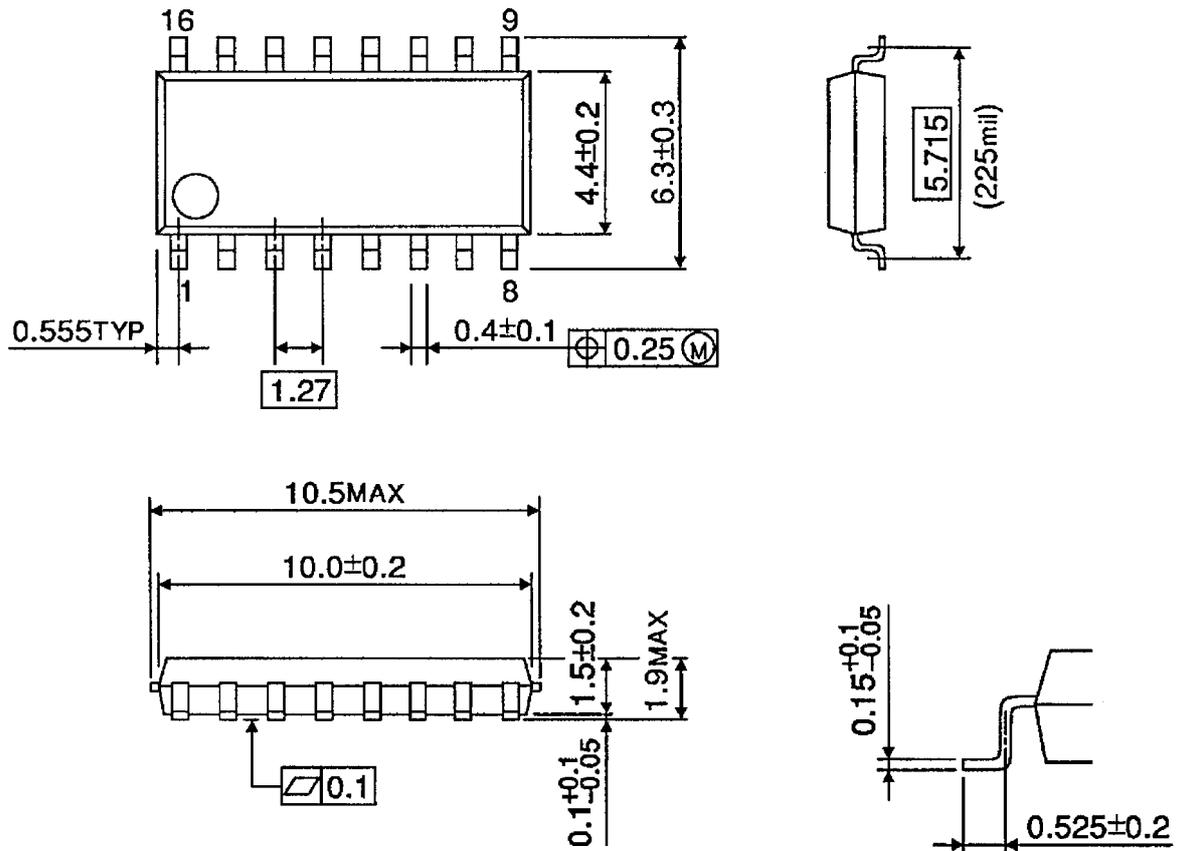


Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

SOP16-P-225-1.27

Unit: mm



Weight: 0.16 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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