

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.

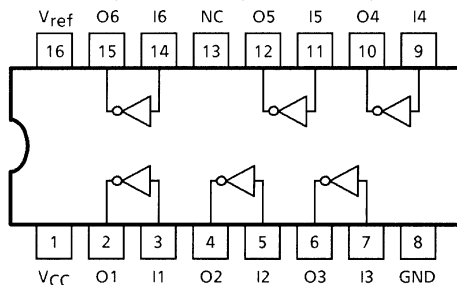
Applications include relay, hammer, lamp and display (LED) drivers.

FEATURES

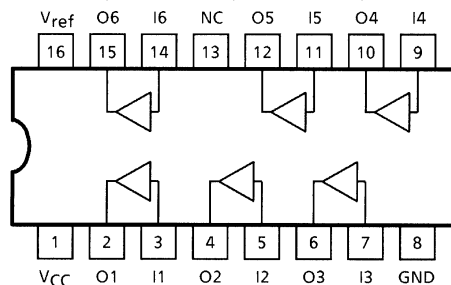
- Wide supply voltage range $V_{CC} = 4\sim 18\text{ V}$
- $V_{ref} = 1/2 V_{CC}$ @16 pin is non-connected
- Pin compatible with CMOS logic 4049B, 4050B type
TD62601P, TD62601F (4049B type)
TD62602P, TD62602F (4049B type open-collector)
TD62603P, TD62603F (4050B type)
TD62604P, TD62604F (4050B type open-collector)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

PIN CONNECTION (TOP VIEW)

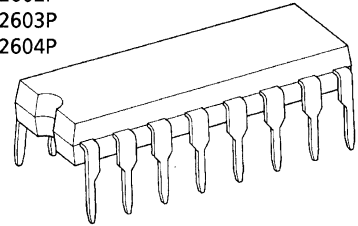
TD62601P, TD62601F, TD62602P, TD62602F



TD62603P, TD62603F, TD62604P, TD62604F

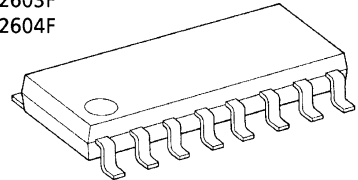


TD62601P
TD62602P
TD62603P
TD62604P



DIP16-P-300-2.54A

TD62601F
TD62602F
TD62603F
TD62604F



SOP16-P-225-1.27

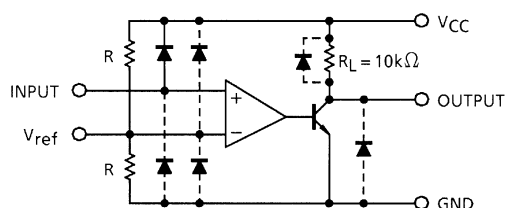
Weight

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

SOP16-P-225-1.27 : 0.16 g (Typ.)

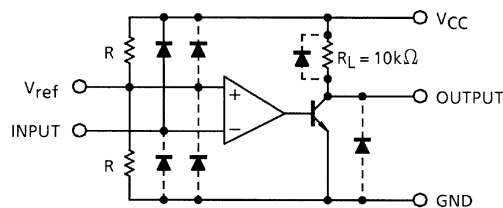
SCHEMATICS (EACH DRIVER)

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 ($T_a = 25^\circ\text{C}$)

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	W
	F		0.625 (Note 1)	
Operating Temperature		T_{opr}	-40~85	$^\circ\text{C}$
Storage Temperature		T_{stg}	-55~150	$^\circ\text{C}$

Note 1: On PCB ($30 \times 30 \times 1.6$ mm Cu 50%)

Note 2: Delated above 25°C in the proportion of 8.0 mW / $^\circ\text{C}$ (P Type), 5.0 mW / $^\circ\text{C}$ (F Type).

RECOMMENDED OPERATING CONDITIONS ($T_a = -40\sim 85^\circ\text{C}$, $V_{CC} = 0$ V)

CHARACTERISTIC		SYMBOL	CONDITION	MIN	TYP.	MAX	UNIT
Supply Voltage		V_{CC}	—	4.0	—	18	V
Output Sustaining Voltage	62602P, 62602F	V_{OUT}	—	0	—	18	V
	62604P, 62604F						
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}	$T_a = 25^\circ\text{C}$	0.4	—	$V_{CC} - 1.6$	V
Power Dissipation	P	P_D	—	—	—	0.36	W
	F		On PCB	—	—	0.325	

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		$V_{ref(OUT)}$	—	—	$1/2 V_{CC} - 0.1$	—	$1/2 V_{CC} + 0.1$	V
Vref Resistor		R_{ref}	—	—	3.5	5	6.5	k Ω
Supply Current		I_{CC}	—	—	—	—	12	mA
	TD62601P TD62601F TD62603P TD62603F	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.

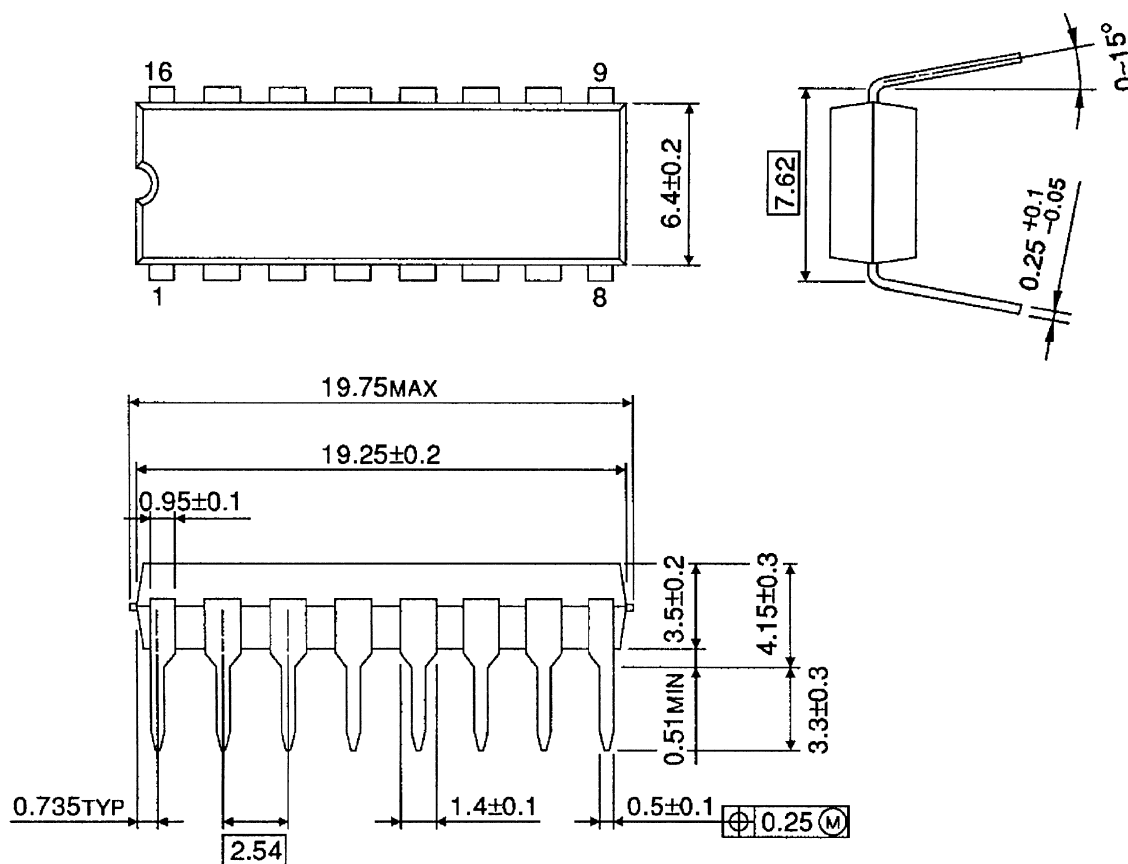
Thus, if excess current or voltage is applied to the IC, the IC may be damaged. Please design the IC so that excess current or voltage will not be applied to the IC.

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

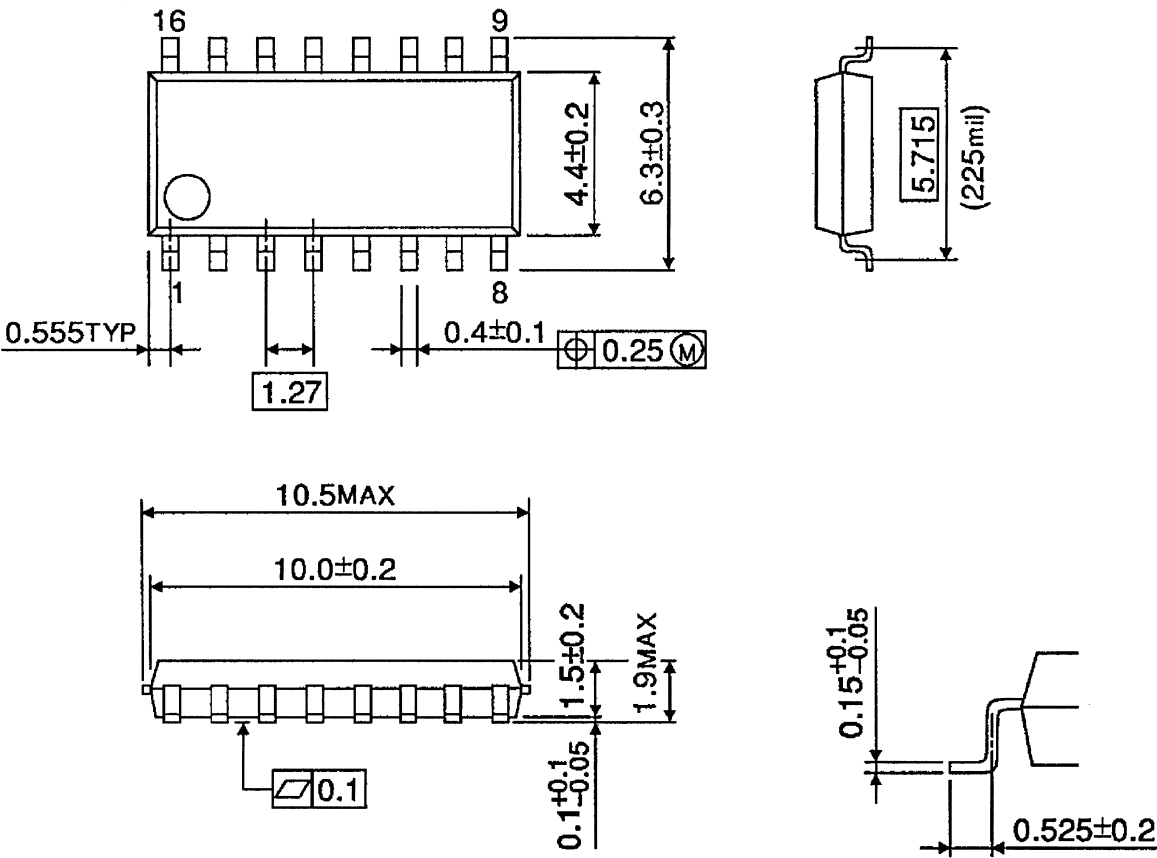


Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

SOP16-P-225-1.27

Unit: mm



Weight: 0.16 g (Typ.)

RESTRICTIONS ON PRODUCT USE

000707EBA

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