

TOSHIBA Bi-CMOS INTEGRATED CIRCUIT SILICON MONOLITHIC

TB62003P, TB62003F, TB62003FW, TB62004P, TB62004F, TB62004FW, TB62006P
TB62006F, TB62006FW, TB62007P, TB62007F, TB62007FW, TB62008P, TB62008F
TB62008FW, TB62009P, TB62009F, TB62009FW

8CH DMOS TRANSISTOR ARRAY WITH GATE

TB62003P, TB62003F, TB62003FW
INVERTER & DMOS DRIVER

TB62004P, TB62004F, TB62004FW
THROUGH & DMOS DRIVER

TB62006P, TB62006F, TB62006FW
NAND & DMOS DRIVER

TB62007P, TB62007F, TB62007FW
AND & DMOS DRIVER

TB62008P, TB62008F, TB62008FW
NOR & DMOS DRIVER

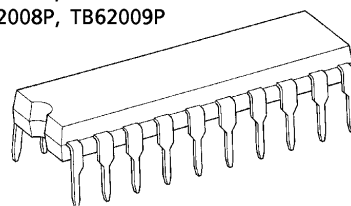
TB62009P, TB62009F, TB62009FW
OR & DMOS DRIVER

The TB62003 Series are high-voltage, high-current arrays comprised of eight N-ch DMOS pairs.

FEATURES

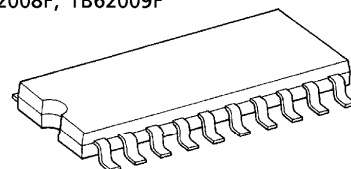
- Package : Type-P DIP-20pin
Type-F SOP-20pin (200mil)
Type-FW SOL-20pin (300mil)
- Output rating : 35V (Min.) / 200mA (Max.)
- Low power

TB62003P, TB62004P
TB62006P, TB62007P
TB62008P, TB62009P



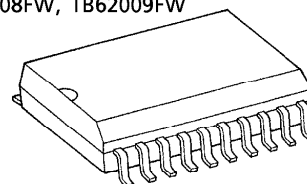
DIP20-P-300-2.54A

TB62003F, TB62004F
TB62006F, TB62007F
TB62008F, TB62009F



SOP20-P-300-1.27

TB62003FW, TB62004FW
TB62006FW, TB62007FW
TB62008FW, TB62009FW



SOL20-P-300-1.27

Weight

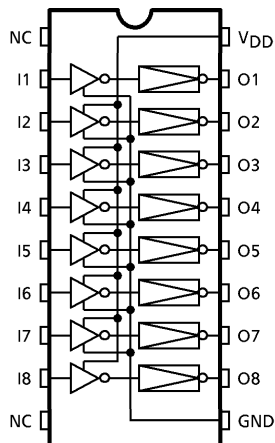
DIP20-P-300-2.54A : 2.25g (Typ.)
SOP20-P-300-1.27 : 0.25g (Typ.)
SOL20-P-300-1.27 : 0.48g (Typ.)

961001EBA2

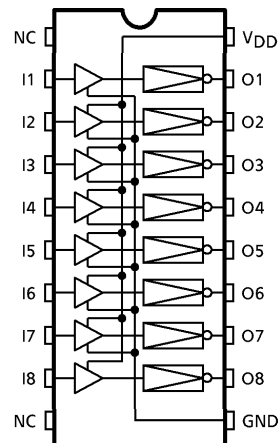
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PIN CONNECTION (TOP VIEW)

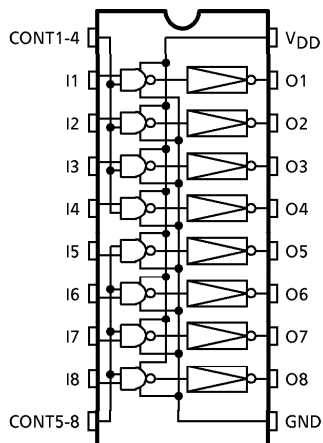
TB62003P / F / FW



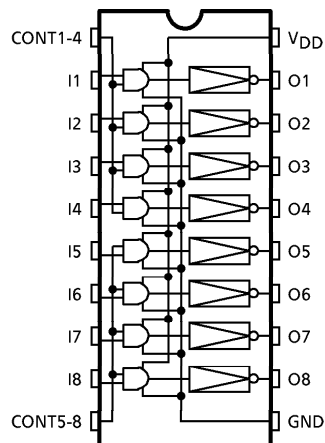
TB62004P / F / FW



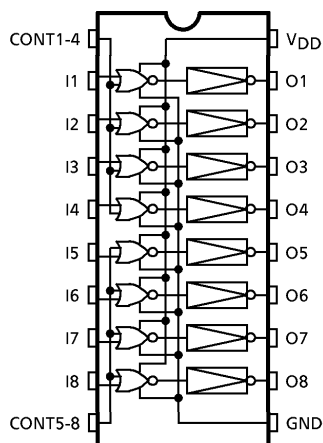
TB62006P / F / FW



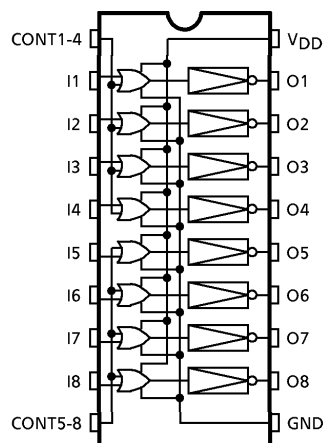
TB62007P / F / FW



TB62008P / F / FW



TB62009P / F / FW



TRUTH TABLE
 TB62006P/F/FW

| INPUT | | | | OUTPUT | |
|-------|------|---------|---------|---------|---------|
| I1~4 | I5~8 | CONT1~4 | CONT5~8 | O3~4 | O5~8 |
| H | X | H | X | OFF | NOT FIX |
| H | X | L | X | ON | NOT FIX |
| L | X | H | X | ON | NOT FIX |
| L | X | L | X | ON | NOT FIX |
| X | H | X | H | NOT FIX | OFF |
| X | H | X | L | NOT FIX | ON |
| X | L | X | H | NOT FIX | ON |
| X | L | X | L | NOT FIX | ON |

X : Don't Care

TB62007P/F/FW

| INPUT | | | | OUTPUT | |
|-------|------|---------|---------|---------|---------|
| I1~4 | I5~8 | CONT1~4 | CONT5~8 | O3~4 | O5~8 |
| H | X | H | X | ON | NOT FIX |
| H | X | L | X | OFF | NOT FIX |
| L | X | H | X | OFF | NOT FIX |
| L | X | L | X | OFF | NOT FIX |
| X | H | X | H | NOT FIX | ON |
| X | H | X | L | NOT FIX | OFF |
| X | L | X | H | NOT FIX | OFF |
| X | L | X | L | NOT FIX | OFF |

X : Don't Care

TB62008P/F/FW

| INPUT | | | | OUTPUT | |
|-------|------|---------|---------|---------|---------|
| I1~4 | I5~8 | CONT1~4 | CONT5~8 | O3~4 | O5~8 |
| H | X | H | X | OFF | NOT FIX |
| H | X | L | X | OFF | NOT FIX |
| L | X | H | X | OFF | NOT FIX |
| L | X | L | X | ON | NOT FIX |
| X | H | X | H | NOT FIX | OFF |
| X | H | X | L | NOT FIX | OFF |
| X | L | X | H | NOT FIX | OFF |
| X | L | X | L | NOT FIX | ON |

X : Don't Care

TB62009P/F/FW

| INPUT | | | | OUTPUT | |
|-------|------|---------|---------|---------|---------|
| I1~4 | I5~8 | CONT1~4 | CONT5~8 | O3~4 | O5~8 |
| H | X | H | X | ON | NOT FIX |
| H | X | L | X | ON | NOT FIX |
| L | X | H | X | ON | NOT FIX |
| L | X | L | X | OFF | NOT FIX |
| X | H | X | H | NOT FIX | ON |
| X | H | X | L | NOT FIX | ON |
| X | L | X | H | NOT FIX | ON |
| X | L | X | L | NOT FIX | OFF |

X : Don't Care

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|-----------------------|------------------|------------------------------|---------|
| Supply Voltage | V _{DD} | 7 | V |
| DC Output Voltage | V _{DS} | -0.5~35 | V |
| DC Output Current | I _{DS} | 200 | mA / ch |
| DC Input Voltage | V _{IN} | -0.4 + V _{DD} + 0.4 | V |
| DC Input Current | I _{IN} | ± 5 | mA |
| Input Diode Current | I _{ID} | ± 5 | mA |
| Output Diode Current | I _{OK} | 5 | mA |
| Power Dissipation | P | 1.47 | W |
| | F | 0.96 (Note 1) | |
| | FW | 1.00 (Note 2) | |
| Operating Temperature | T _{opr} | -40~85 | °C |
| Storage Temperature | T _{stg} | -55~150 | °C |

(Note 1) On Glass Epoxy PCB (50×50×1.6mm Cu 40%)

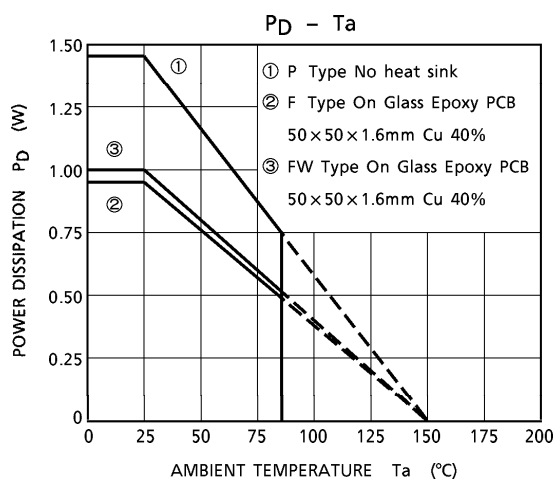
(Note 2) Delated above 25°C in the proportion of 7.7mW/°C (F Type), 8.0mW/°C (FW Type).

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

| CHARACTERISTIC | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------|-----------------|-----------|------|------|-----------------|---------|
| Supply Voltage Range | V _{DD} | — | 4.5 | — | 5.5 | V |
| DC Output Voltage | V _{DS} | — | — | — | 30 | V |
| DC Output Current | P | Duty 80% | — | — | 170 | mA / ch |
| | F | | | | 90 | |
| | FW | | | | 140 | |
| | P | Duty 100% | — | — | 150 | |
| | F | | | | 80 | |
| | FW | | | | 120 | |
| DC Input Voltage | V _{IN} | — | GND | — | V _{DD} | V |

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{DD} = 5.0\text{V}$)

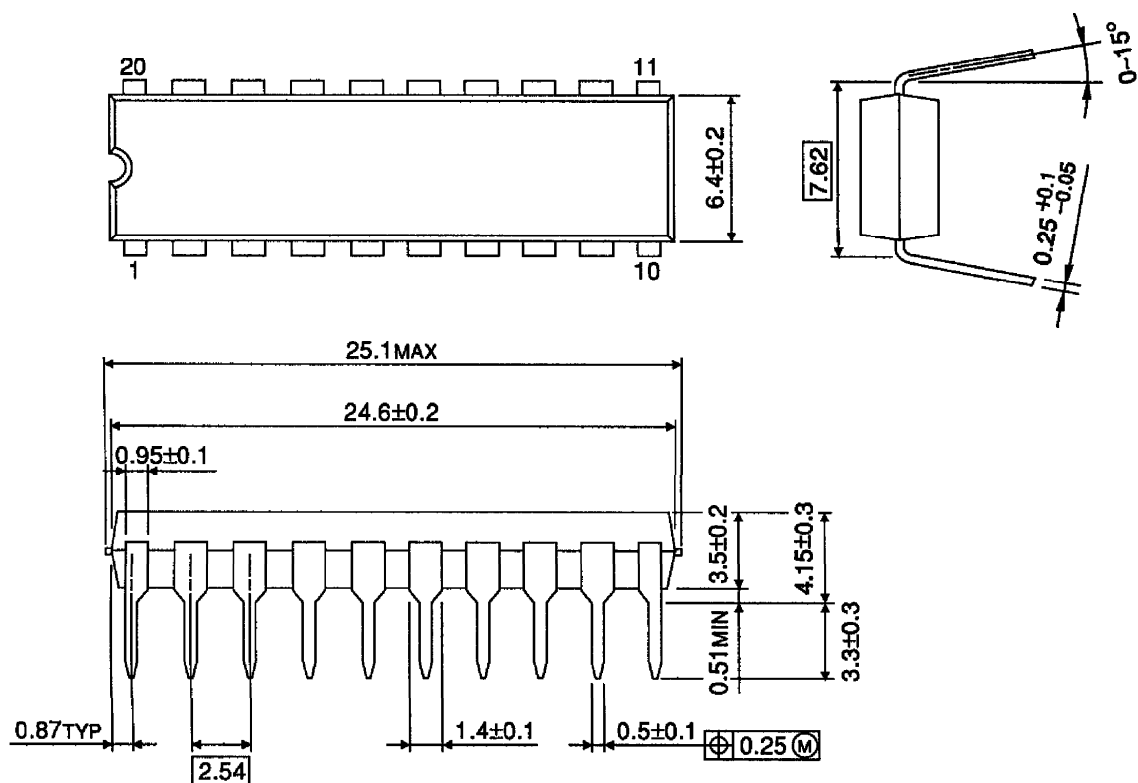
| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|------------------------------|--------------------|---------------|---|------|------|----------------|---------------|
| Output Leakage Current | I_{OZ} | — | $V_{DS} = 35\text{V}$ | — | — | 50 | μA |
| Low-Level Output Voltage | V_{DS} | — | $I_{DS} = 150\text{mA}$ | — | 0.70 | 0.8 | V |
| | | — | $I_{DS} = 200\text{mA}$ | — | 0.94 | 1.2 | |
| Output Resistance | R_{ON} | — | $I_{DS} = 200\text{mA}$ | — | 4.7 | 6.0 | Ω |
| DC Input Current | I_{IN} | — | $V_{IN} = \text{GND}$, $V_{IN} = V_{DD}$ | — | — | ± 1.0 | μA |
| High-Level Input Voltage | $V_{IN}(\text{H})$ | — | — | 3.5 | — | $V_{DD} + 0.4$ | V |
| | $V_{IN}(\text{L})$ | — | — | -0.4 | — | 1.5 | |
| Operating Supply Current | I_{DDopr} | — | 8ch On, Output open $f_{IN} = 1\text{MHz}$ | — | 2 | — | μA |
| Output Diode Forward Voltage | V_{FK} | — | $I_{OK} = 5\text{mA}$ | — | 0.6 | — | V |
| Turn-On Delay | t_{ON} | — | $I_{OUT} = 170\text{mA}$ | — | 300 | — | ns |
| Turn-Off Delay | t_{OFF} | — | — | — | 300 | — | |
| Supply Current | I_{DD} | — | — | — | — | 10 | μA |
| Input Capacitance | C_{IN} | — | — | — | 15 | — | pF |


PRECAUTIONS for USING

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

OUTLINE DRAWING
DIP20-P-300-2.54A

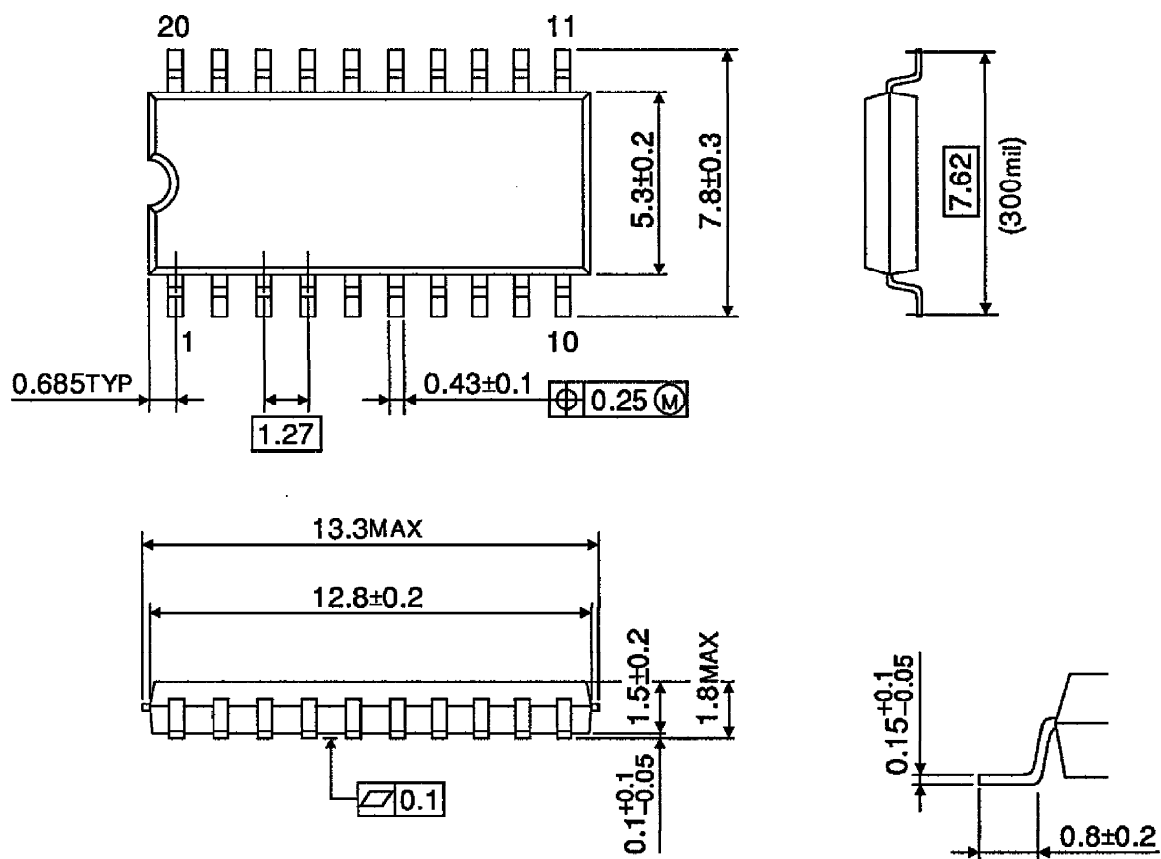
Unit : mm



Weight : 2.25g (Typ.)

OUTLINE DRAWING
SOP20-P-300-1.27

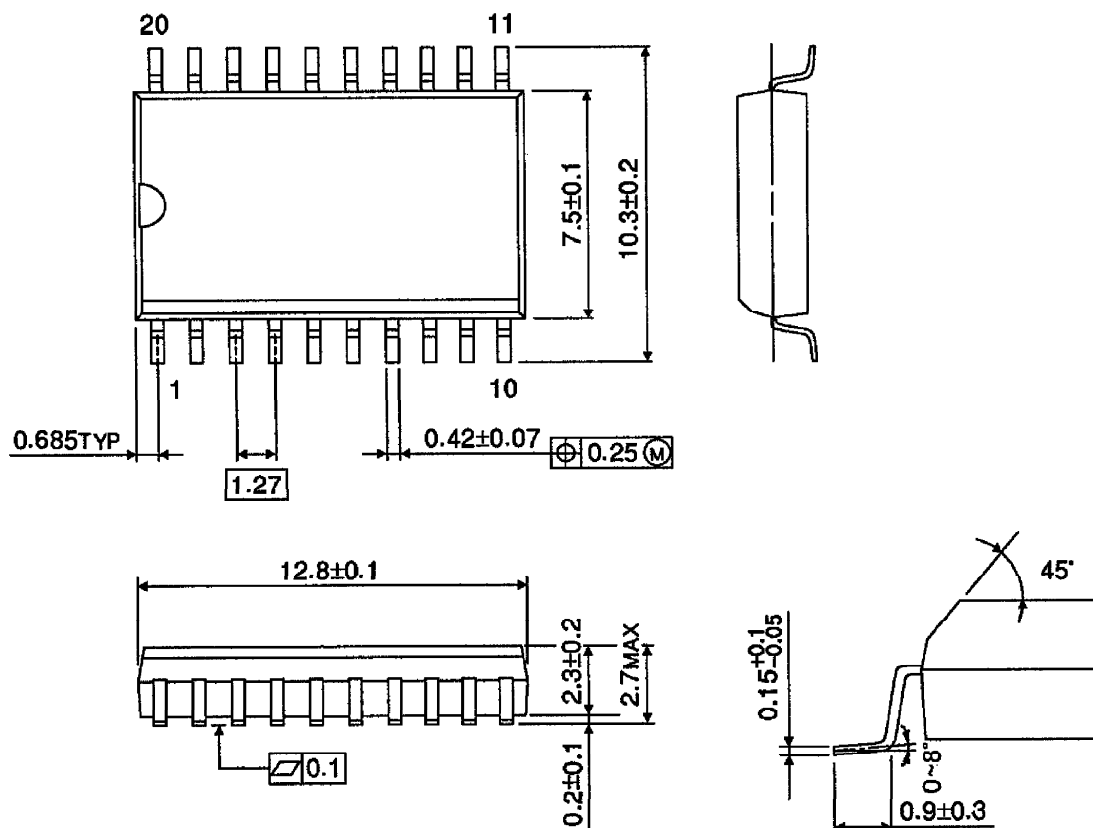
Unit : mm



Weight : 0.25g (Typ.)

OUTLINE DRAWING
SOL20-P-300-1.27

Unit : mm



Weight : 0.48g (Typ.)