

TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

**TD62501P, TD62501F, TD62502P, TD62502F, TD62503P, TD62503F, TD62504P
TD62504F, TD62505P, TD62505F, TD62506P, TD62506F, TD62507P, TD62507F**

7 SINGLE DRIVER

TD62501, 502, 503, 504P/F : COMMON EMITTER
 TD62505, 506P/F : COMMON COLLECTOR
 TD62507P/F : ISOLATED

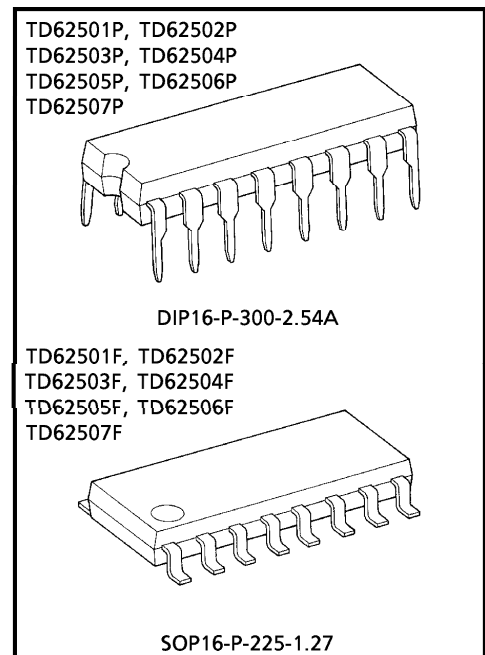
The TD62501P/F Series are comprised of seven or five NPN Transistor Arrays.

For proper operation, the substrate (SUB) must be connected to the most negative voltage.

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

FEATURES

- Output Current (Single Output) 200mA MAX.
- High Sustaining Voltage Output 35V MIN.
- Inputs Compatible with Various Types of Logic.
- TD62501P/F, TD62505P/F and TD62507P/F : Using external resistor...General Purpose
- TD62502P/F : $R_{IN} = 10.5k\Omega + 7V$ Zener Diode... 14~25V P-MOS
- TD62503P/F, TD62506P/F : $R_{IN} = 2.7k\Omega$...TTL, 5V C-MOS
- TD62504P/F, : $R_{IN} = 10.5k\Omega$... 6~15V P-MOS, C-MOS
- Package Type-p : DIP-16 pin
- Package Type-F : SOP-16 pin



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

961001EBA2

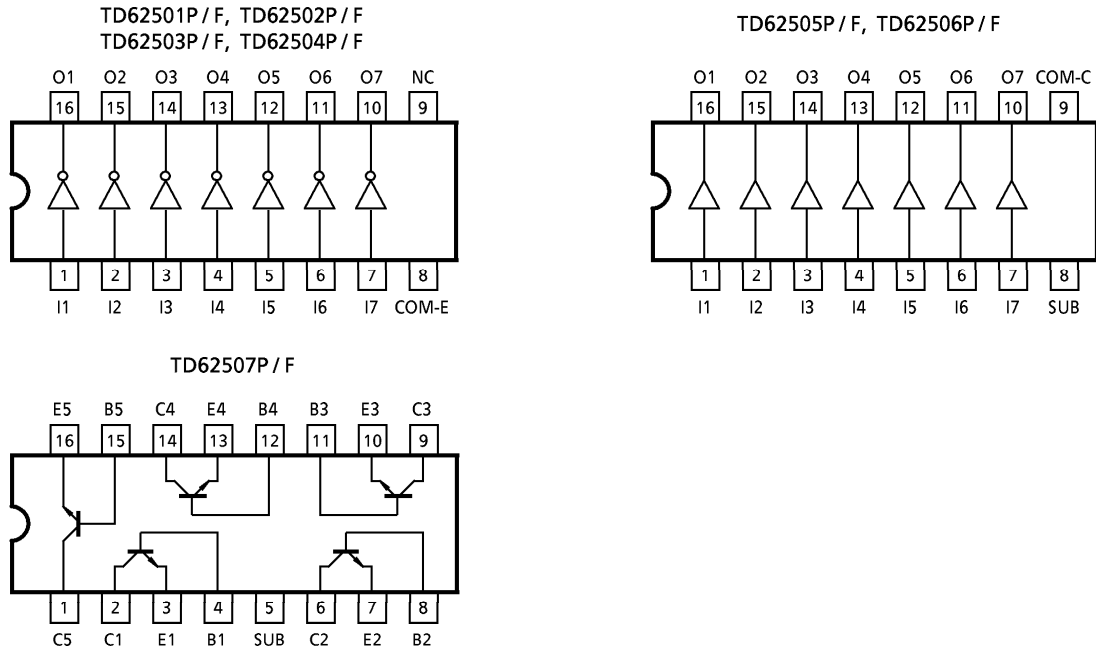
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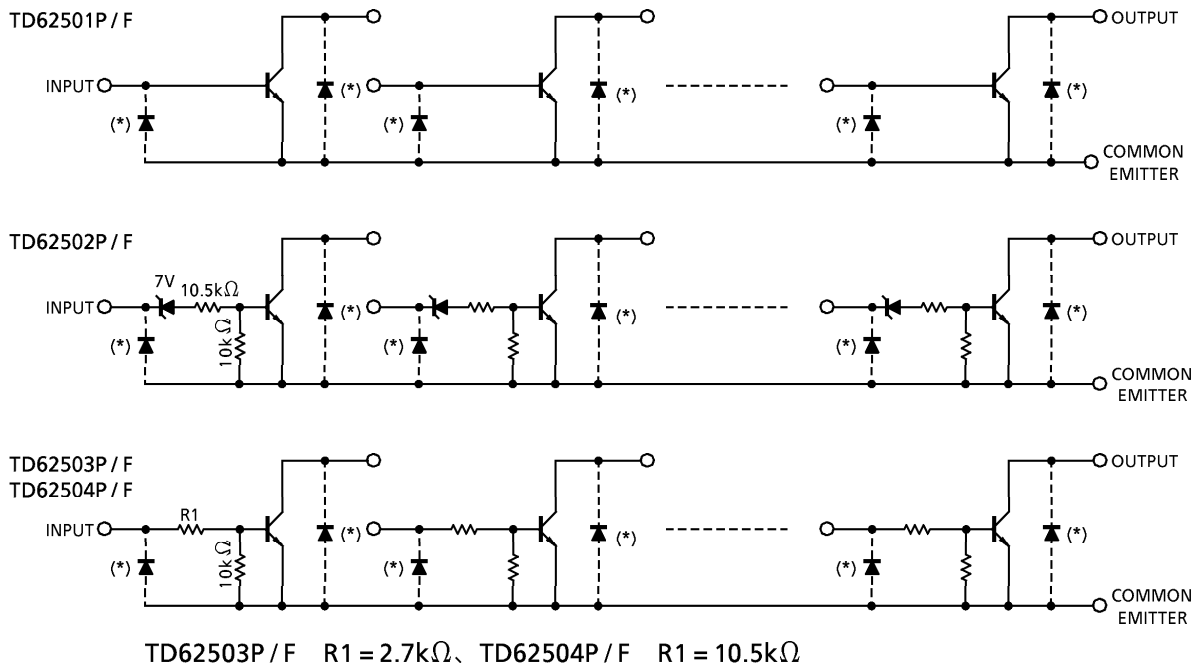
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PIN CONNECTION (Top view)

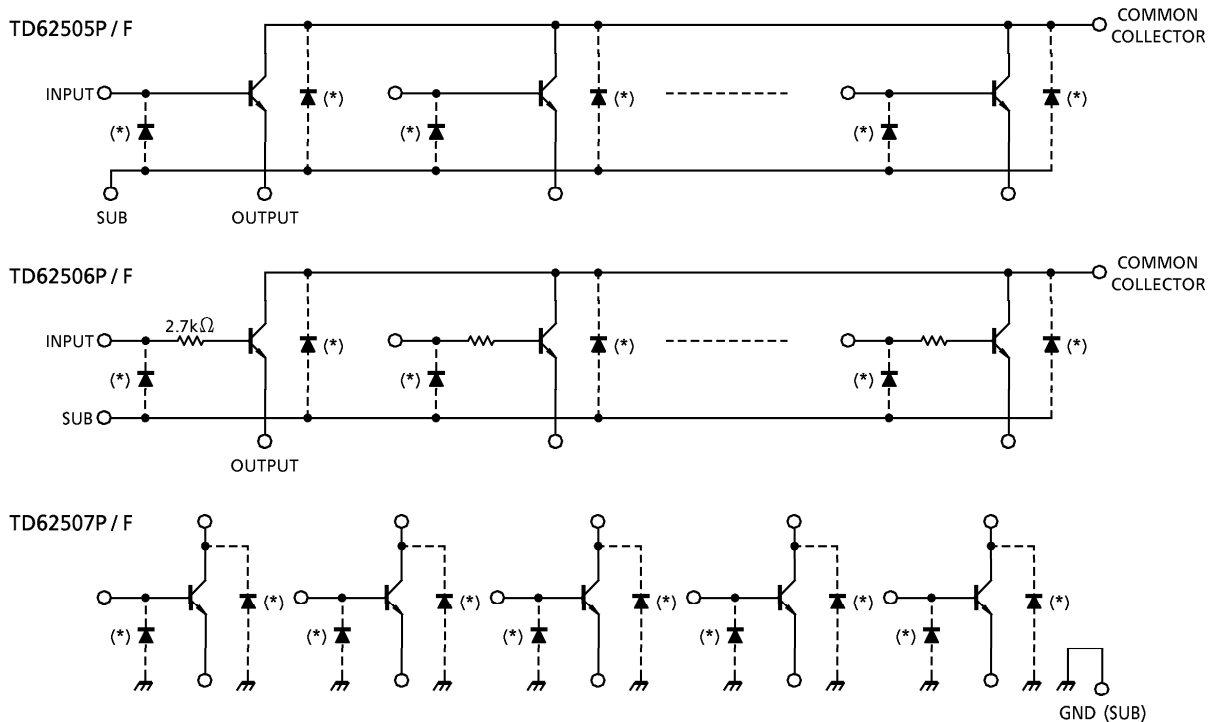


SCHEMATICS (Each driver)



(*) Parasitic Diodes

SCHEMATICS (Each driver)



(*) Parasitic Diodes

(Note) The input and output parasitic diodes cannot be used as clamp diodes.

MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---------------------------|--------------------------|----------------|---------|
| Collector-Emitter Voltage | V _{CEO} | 35 | V |
| Collector-Base Voltage | V _{CB0} | 50 | V |
| Collector Current | I _C | 200 | mA / ch |
| Input Voltage | V _{IN} (Note 1) | -0.5~45 | V |
| | V _{IN} (Note 2) | -0.5~30 | |
| Input Current | I _{IN} (Note 3) | 25 | mA |
| Isolation Voltage | V _{SUB} | 35 | V |
| Power Dissipation | P _D | 1.0 | W |
| | | 0.625 (Note 4) | |
| Operating Temperature | T _{opr} | -40~85 | °C |
| Storage Temperature | T _{stg} | -55~150 | °C |

(Note 1) TD62506P/F

(Note 2) TD62502P/F, TD62503P/F, TD62504P/F

(Note 3) TD62501P/F, TD62505P/F, TD62507P/F

(Note 4) On Glass Epoxy PCB (30 × 30 × 1.6mm, Cu 50%)

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

| CHARACTERISTIC | | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------|--------------|------------------|------------|------|------|-------|---------|
| Collector-Emitter Voltage | | V _{CEO} | | 0 | — | 35 | V |
| Collector-Base Voltage | | V _{CBO} | | 0 | — | 50 | V |
| Collector Current | | I _C | | 0 | — | 150 | mA / ch |
| Input Voltage | TD62506P / F | V _{IN} | | 0 | — | 35 | V |
| | TD62502P / F | | | | | | |
| | TD62503P / F | | | | | | |
| | TD62504P / F | | | | | | |
| Input Current | TD62501P / F | I _{IN} | | 0 | — | 10 | mA |
| | TD62505P / F | | | | | | |
| | TD62507P / F | | | | | | |
| Power Dissipation | P | P _D | On PCB (*) | — | — | 0.360 | W |
| | F | | | | | | |

(*) 30 × 30 × 1.6mm, Cu 50%

ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

| CHARACTERISTIC | | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|------------------|-----------------------|---------------|---|------|------|------|------|
| Output Leakage Current | | I _{CEX} | 1 | V _{CE} = 25V, V _{IN} = 0 | — | — | 10 | μA |
| Collector-Emitter Saturation Voltage | | V _{CE (sat)} | 2 | I _{IN} = 1mA, I _C = 10mA | — | — | 0.2 | V |
| | | | | I _{IN} = 3mA, I _C = 150mA (Note 1) | — | — | 0.8 | |
| DC Current Transfer Ratio | (Note 2) | h _{FE} | 2 | V _{CE} = 10V, I _C = 10mA | 70 | — | — | |
| | (Note 3) | | | | 50 | — | — | |
| Input Voltage | TD62502P / F | V _{IN (ON)} | 3 | I _{IN} = 1mA I _C = 10mA | 13 | 17 | 23 | V |
| | TD62503P / F | | | | 2.4 | 3.4 | 4.2 | |
| | TD62504P / F | | | | 7.5 | 11.5 | 15 | |
| Turn-On Delay | t _{ON} | 4 | | V _{OUT} = 35V, R _L = 3.3kΩ C _L = 15pF | — | 50 | — | ns |
| Turn-Off Delay | t _{OFF} | | | | — | 200 | — | |

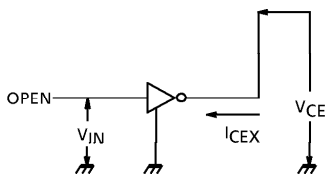
(Note 1) Except TD62502P / F Only

(Note 2) Only TD62501P / F, TD62505P / F, TD62506P / F, TD62507P / F

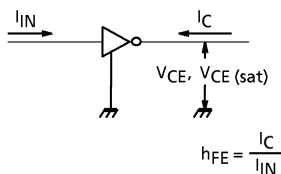
(Note 3) Only TD62502P / F, TD62503P / F, TD62504P / F

TEST CIRCUIT

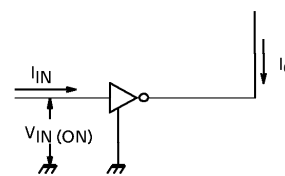
1. I_{CEX}



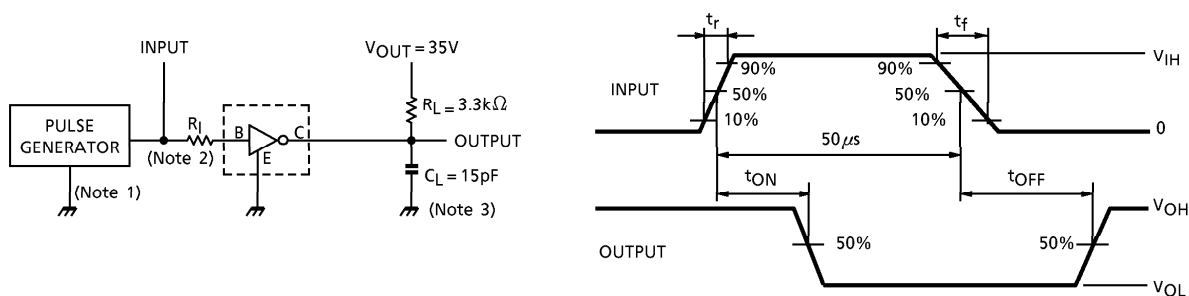
2. h_{FE} , $V_{CE(sat)}$



3. $V_{IN(ON)}$



4. t_{ON} , t_{OFF}



- (Note 1) Pulse Width $50\mu s$, Duty Cycle 10%
Output Impedance 50Ω , $t_r \leq 5ns$, $t_f \leq 10ns$
- (Note 2) See below

INPUT CONDITION

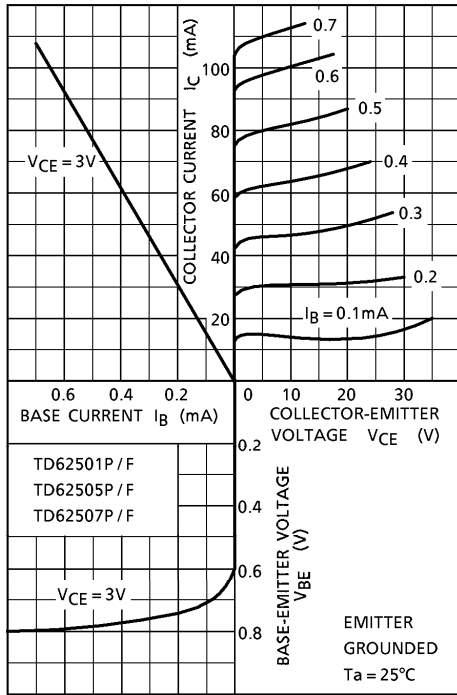
| TYPE NUMBER | R_I | V_{IH} |
|--------------|--------------|----------|
| TD62501P / F | $2.7k\Omega$ | 3V |
| TD62502P / F | 0Ω | 15V |
| TD62503P / F | 0Ω | 3V |
| TD62504P / F | 0Ω | 10V |
| TD62505P / F | $2.7k\Omega$ | 3V |
| TD62506P / F | 0Ω | 3V |
| TD62507P / F | $2.7k\Omega$ | 3V |

- (Note 3) C_L includes probe and jig capacitance

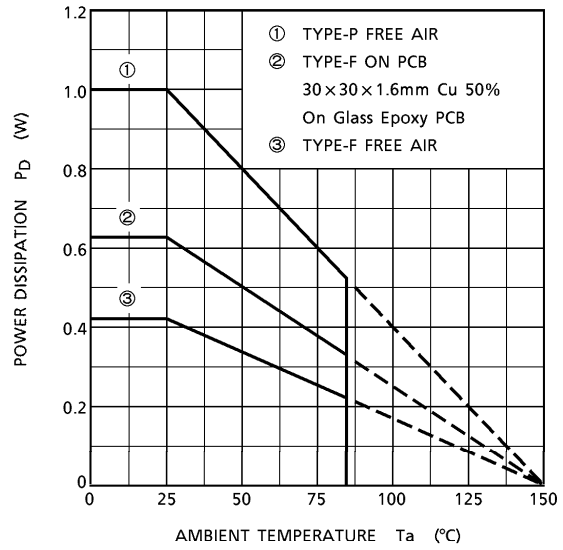
PRECAUTIONS for USING

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.

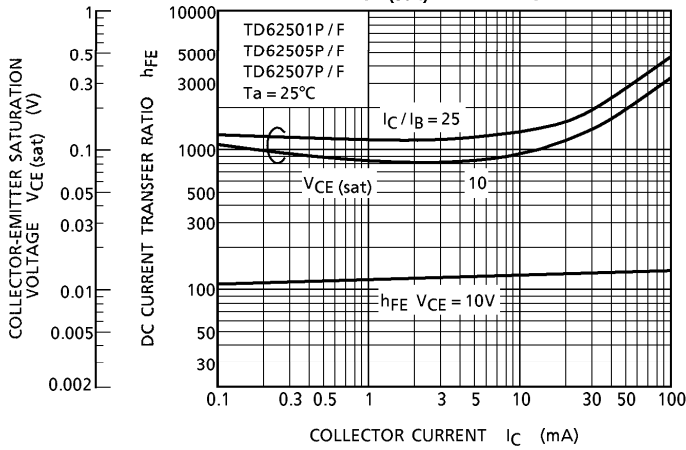
STATIC CHARACTERISTICS

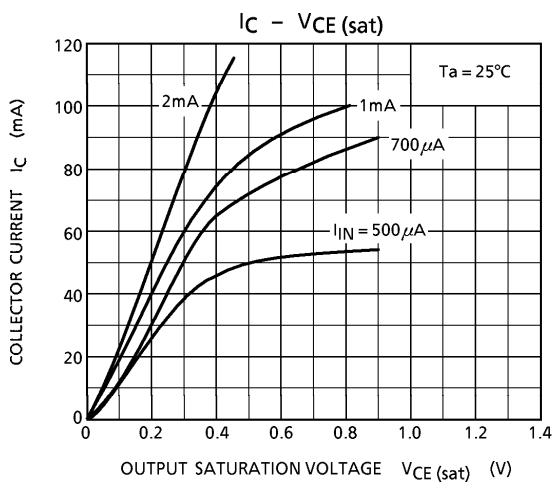
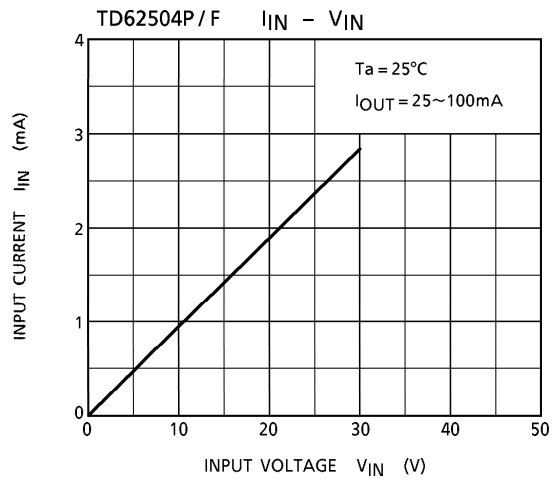
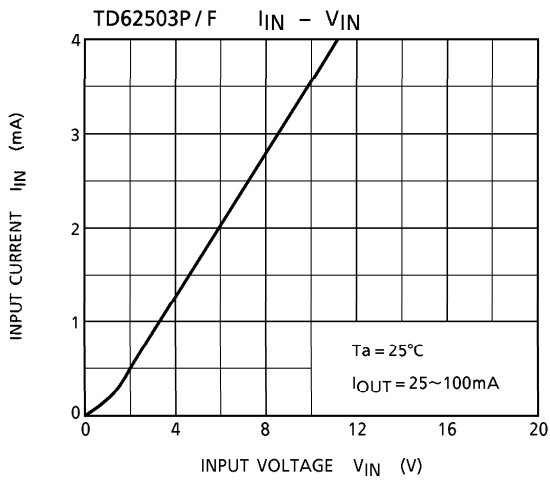
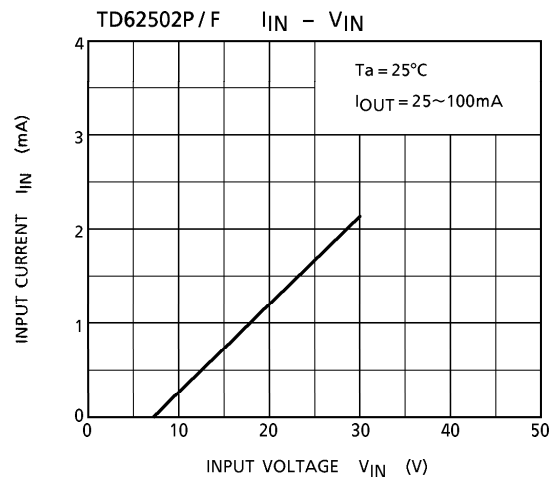
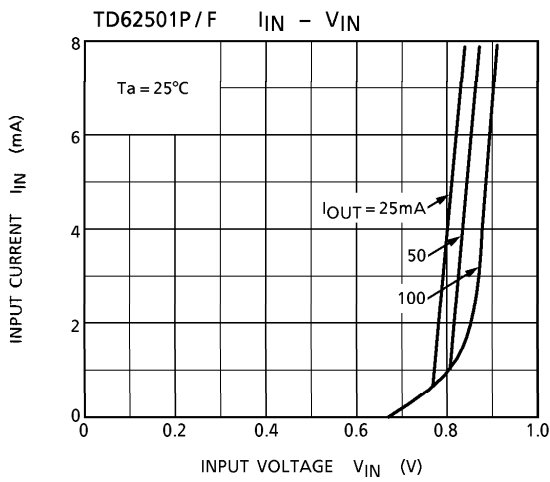


PD - Ta



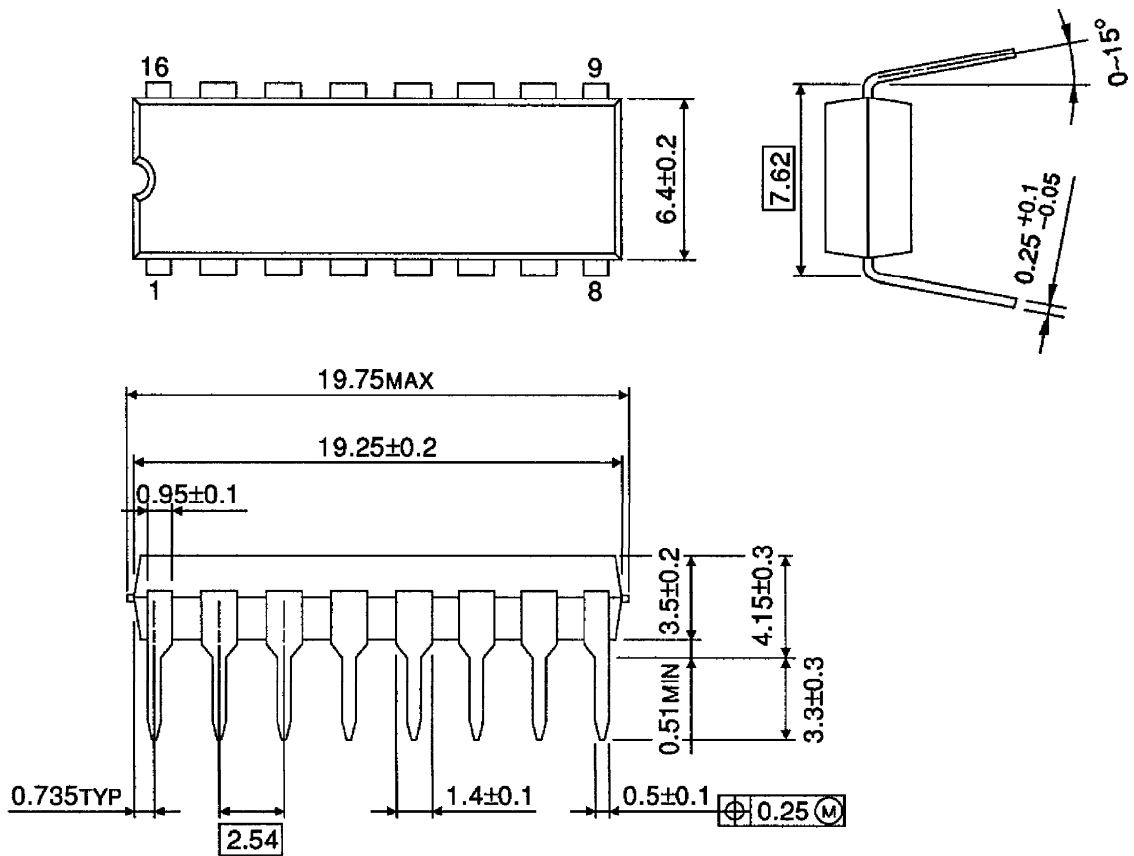
$V_{CE(sat)}, h_{FE} - I_C$





OUTLINE DRAWING
DIP16-P-300-2.54A

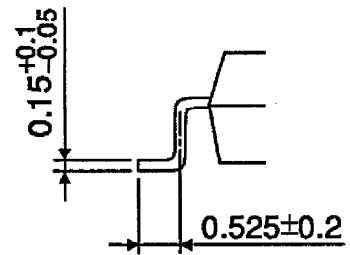
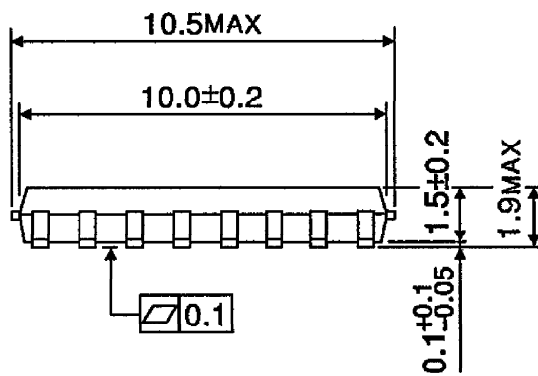
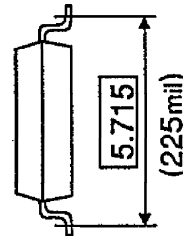
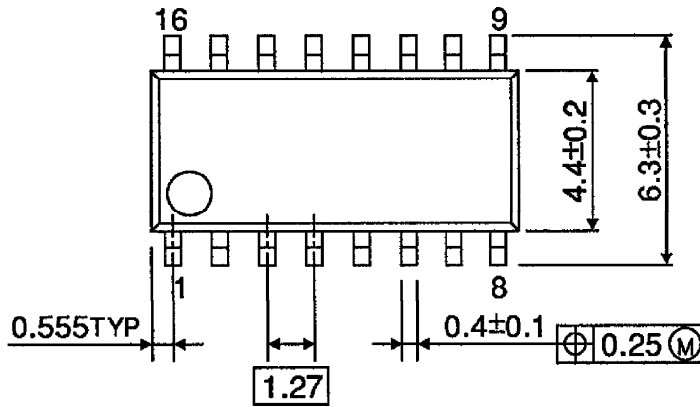
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING
SOP16-P-225-1.27

Unit : mm



Weight : 0.16g (Typ.)