

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

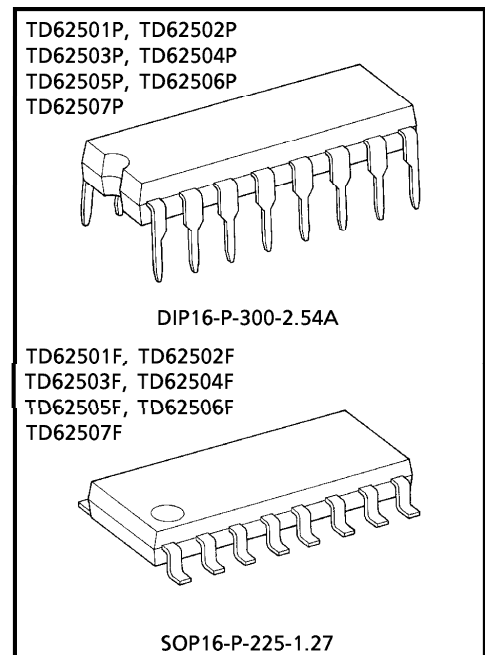
The TD62501P/F Series are comprised of seven or five NPN Transistor Arrays.

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

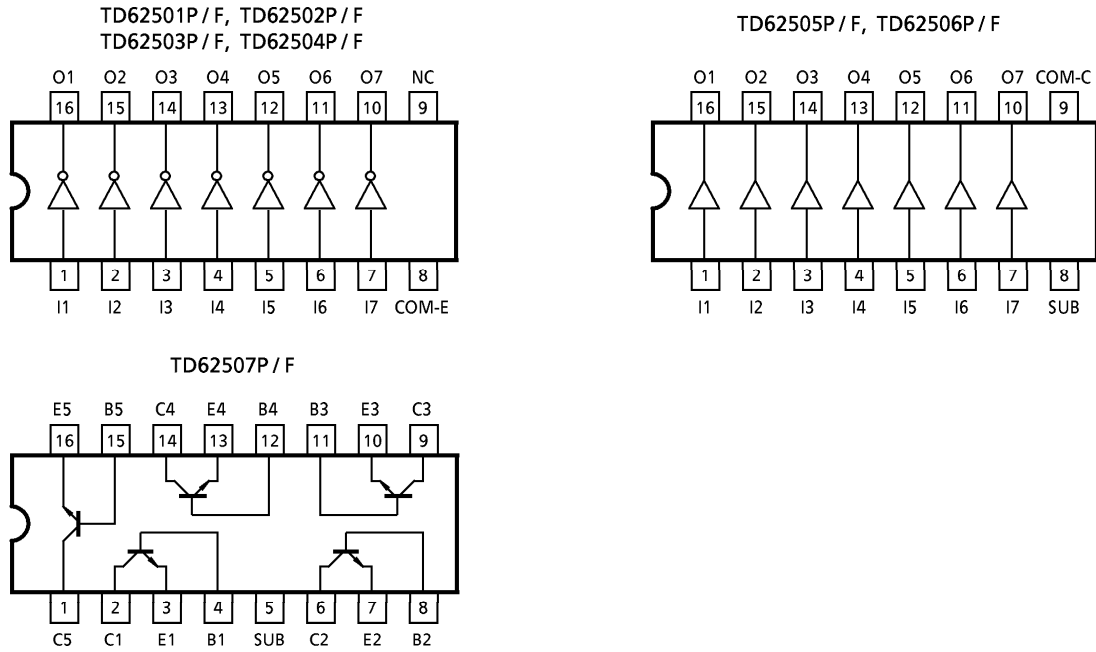
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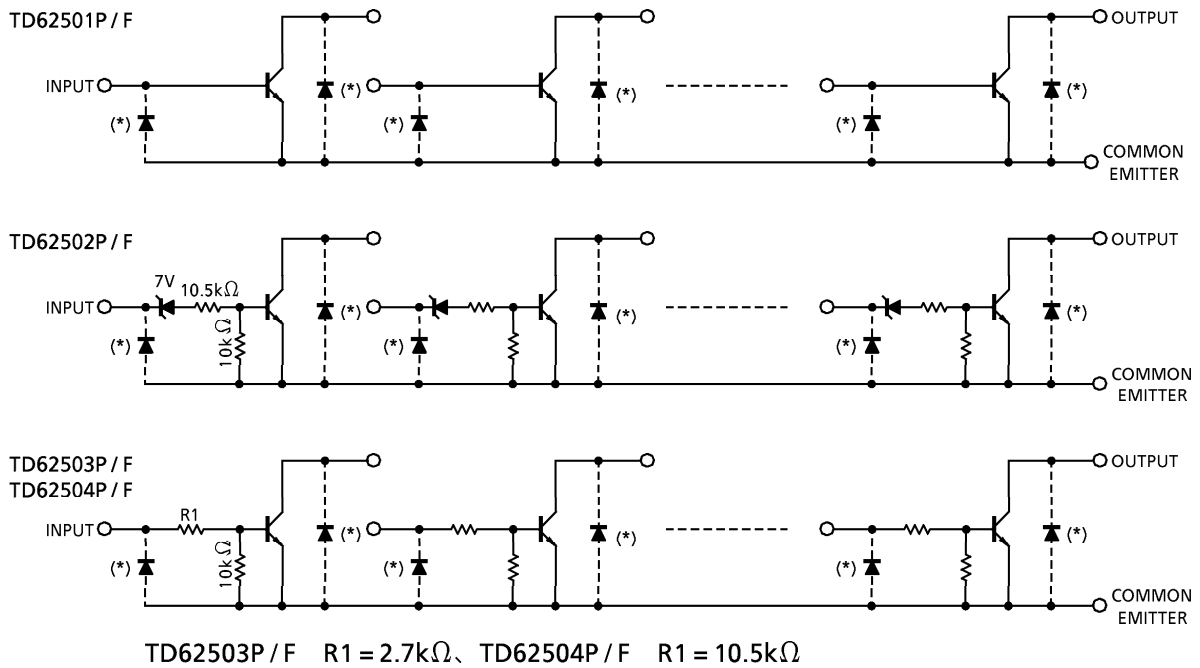
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**PIN CONNECTION (Top view)**

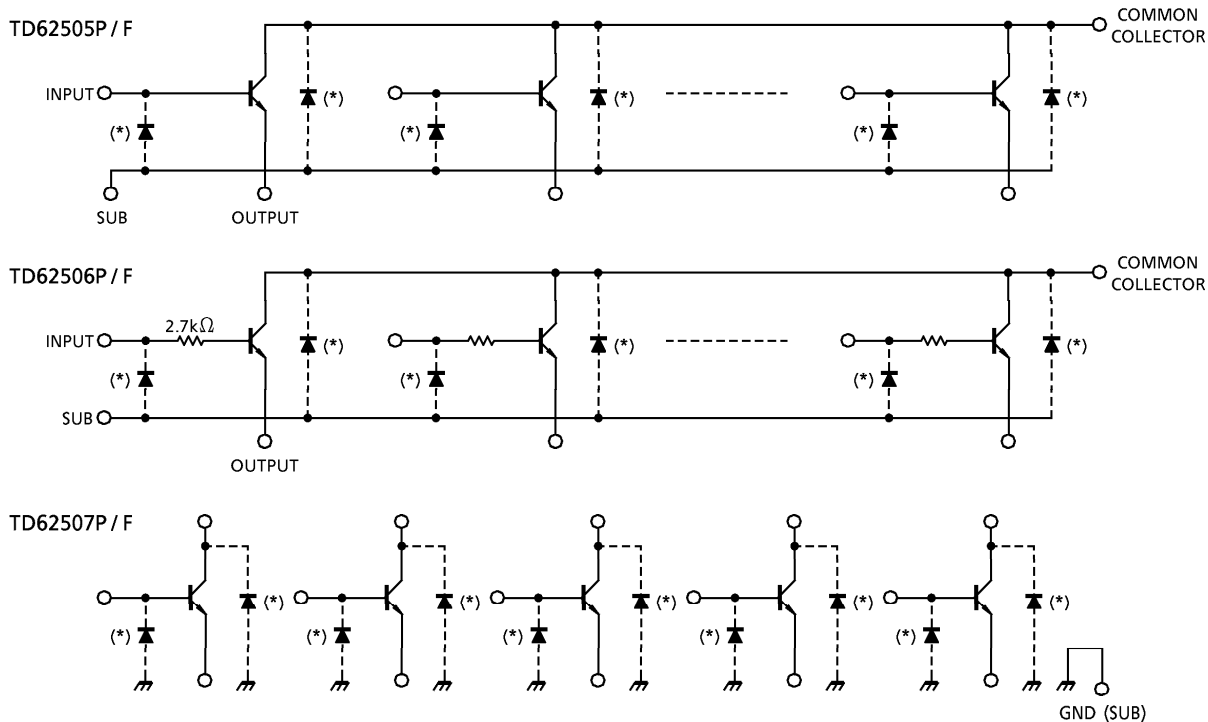


**SCHEMATICS (Each driver)**



(\*) Parasitic Diodes

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(\*) 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	$V_{CBO}$	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	1.0	W
		F	
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 <sub>CEO</sub>		0	—	35	V
Collector-Base Voltage		V <sub>CBO</sub>		0	—	50	V
Collector Current		I <sub>C</sub>		0	—	150	mA / ch
Input Voltage	TD62506P / F	V <sub>IN</sub>		0	—	35	V
	TD62502P / F						
	TD62503P / F						
	TD62504P / F						
Input Current	TD62501P / F	I <sub>IN</sub>		0	—	10	mA
	TD62505P / F						
	TD62507P / F						
Power Dissipation	P	P <sub>D</sub>	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 <sub>CEX</sub>	1	V <sub>CE</sub> = 25V, V <sub>IN</sub> = 0	—	—	10	μA
Collector-Emitter Saturation Voltage		V <sub>CE (sat)</sub>	2	I <sub>IN</sub> = 1mA, I <sub>C</sub> = 10mA	—	—	0.2	V
				I <sub>IN</sub> = 3mA, I <sub>C</sub> = 150mA (Note 1)	—	—	0.8	
DC Current Transfer Ratio	(Note 2)	h <sub>FE</sub>	2	V <sub>CE</sub> = 10V, I <sub>C</sub> = 10mA	70	—	—	
	(Note 3)				50	—	—	
Input Voltage	TD62502P / F	V <sub>IN (ON)</sub>	3	I <sub>IN</sub> = 1mA I <sub>C</sub> = 10mA	13	17	23	V
	TD62503P / F				2.4	3.4	4.2	
	TD62504P / F				7.5	11.5	15	
Turn-On Delay	t <sub>ON</sub>	4		V <sub>OUT</sub> = 35V, R <sub>L</sub> = 3.3kΩ C <sub>L</sub> = 15pF	—	50	—	ns
Turn-Off Delay	t <sub>OFF</sub>				—	200	—	

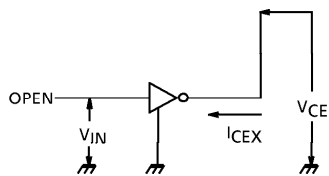
(Note 1) Except TD62502P / F Only

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

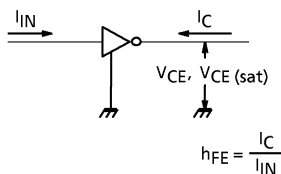
(Note 3) Only TD62502P / F, TD62503P / F, TD62504P / F

**TEST CIRCUIT**

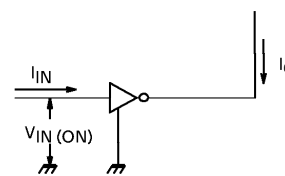
1.  $I_{CEX}$



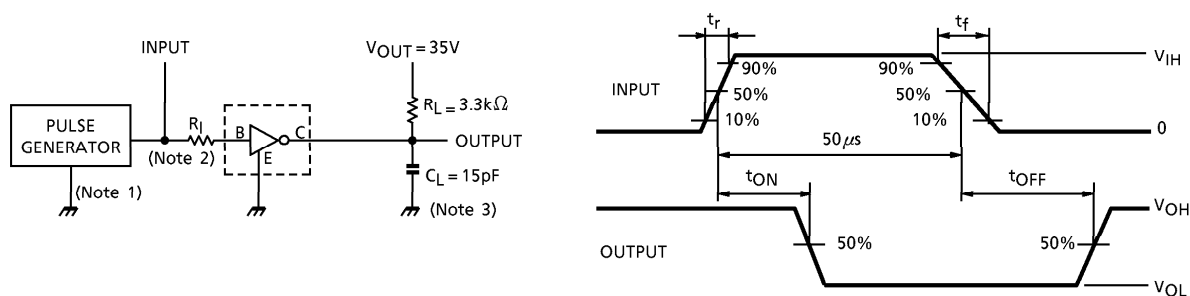
2.  $h_{FE}$ ,  $V_{CE} (sat)$



3.  $V_{IN} (ON)$



4.  $t_{ON}$ ,  $t_{OFF}$



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

**INPUT CONDITION**

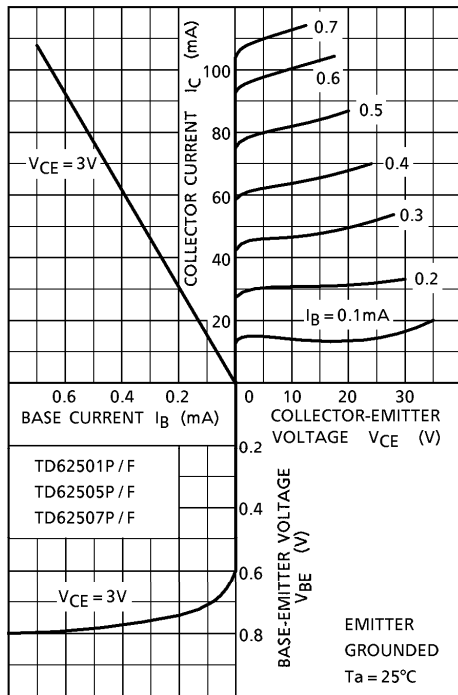
TYPE NUMBER	$R_I$	$V_{IH}$
TD62501P / F	$2.7k\Omega$	3V
TD62502P / F	$0\Omega$	15V
TD62503P / F	$0\Omega$	3V
TD62504P / F	$0\Omega$	10V
TD62505P / F	$2.7k\Omega$	3V
TD62506P / F	$0\Omega$	3V
TD62507P / F	$2.7k\Omega$	3V

(Note 3)  $C_L$  includes probe and jig capacitance

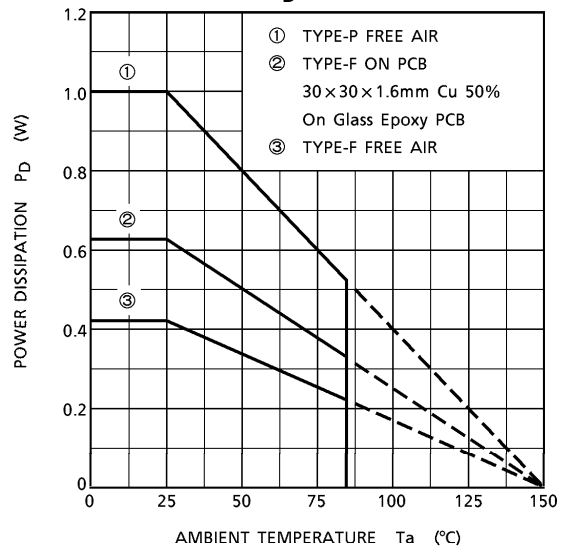
**PRECAUTIONS for USING**

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.

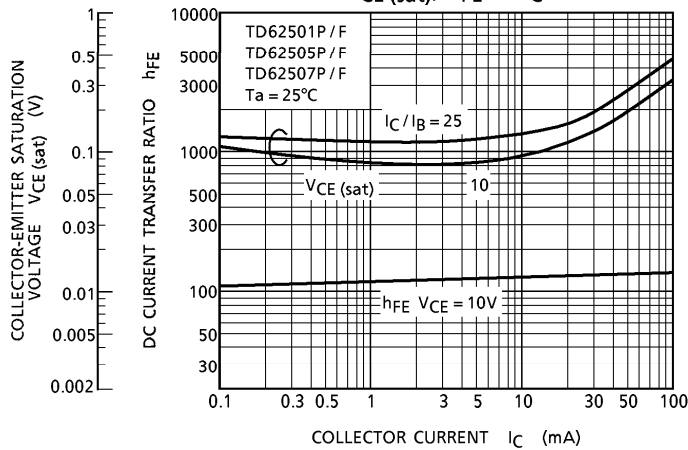
**STATIC CHARACTERISTICS**

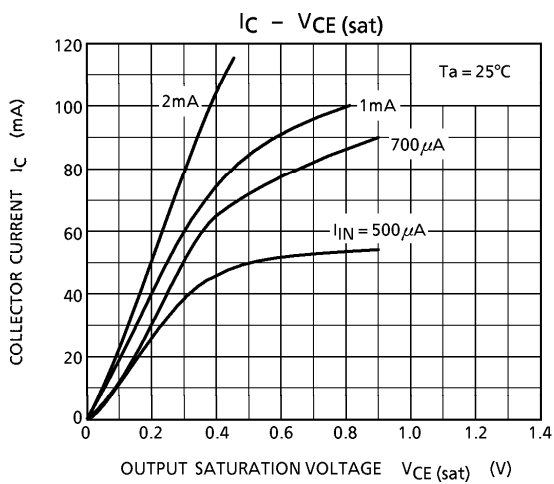
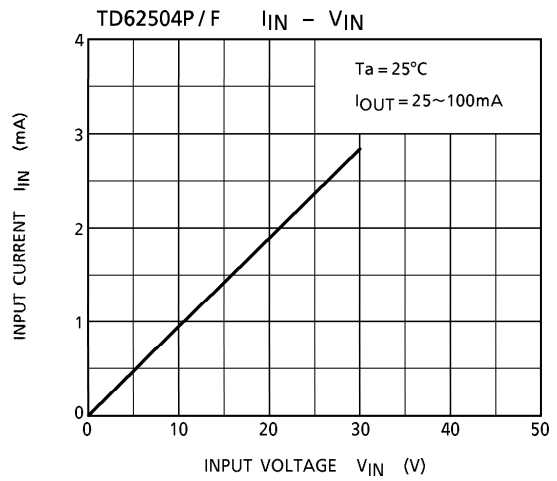
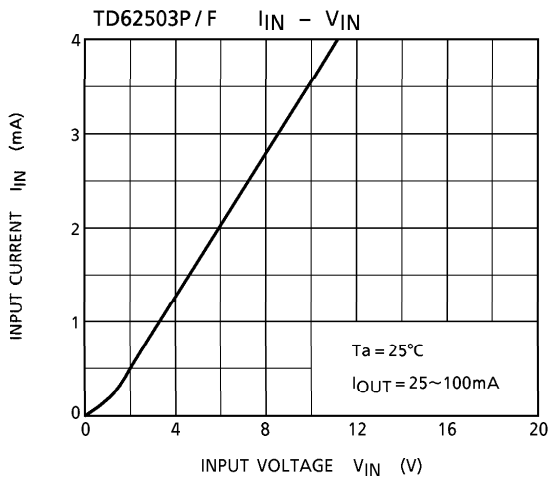
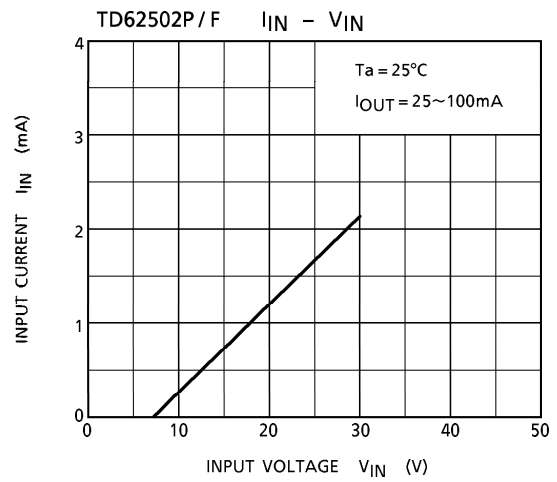
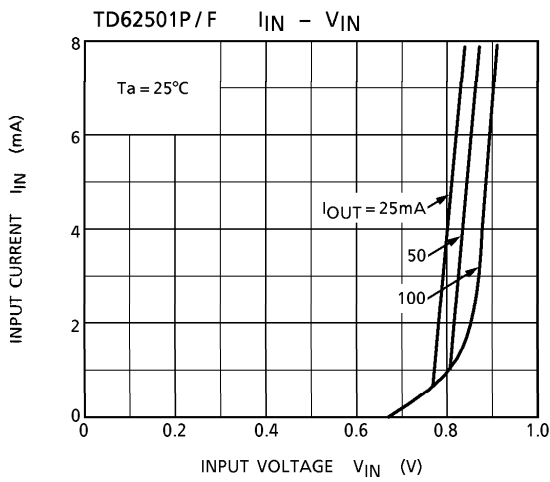


**PD - Ta**



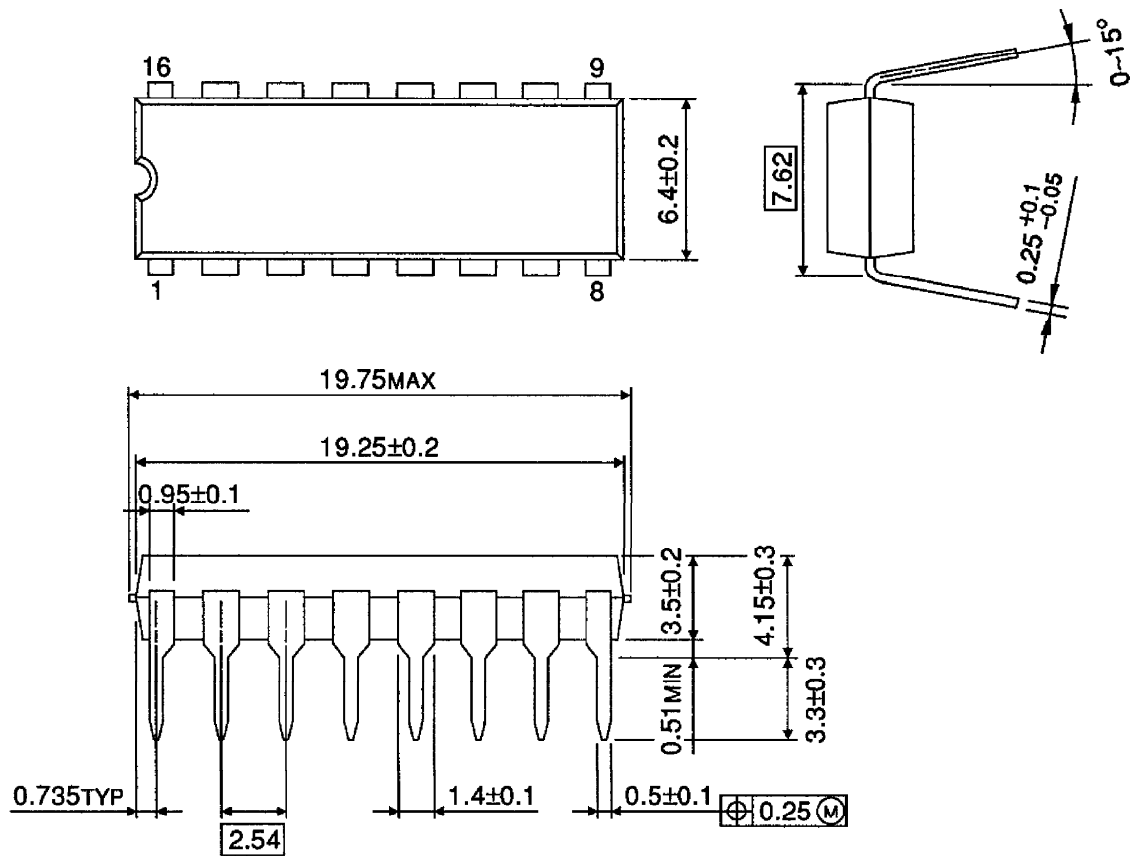
**$V_{CE(sat)}$ ,  $h_{FE}$  -  $I_C$**





**OUTLINE DRAWING**  
DIP16-P-300-2.54A

Unit : mm

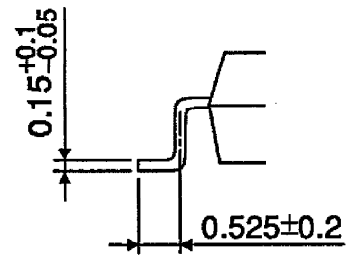
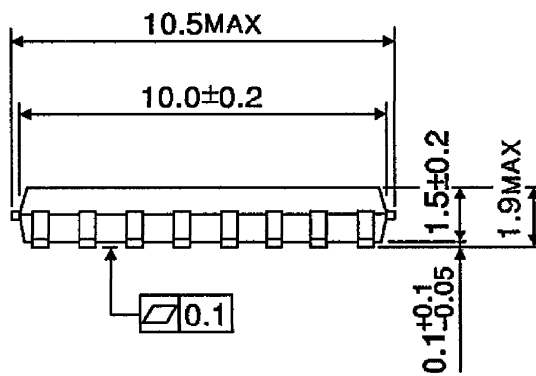
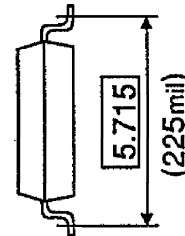
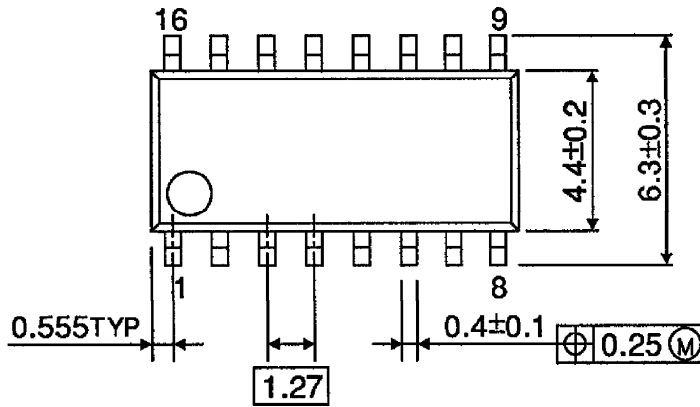


Weight : 1.11g (Typ.)



**OUTLINE DRAWING**  
SOP16-P-225-1.27

Unit : mm



Weight : 0.16g (Typ.)