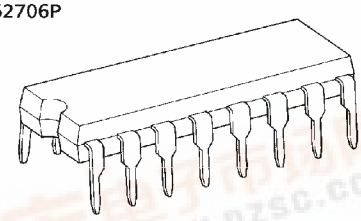
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62705P, TD62705F, TD62706P, TD62706F

6CH HIGH-VOLTAGE SOURCE DRIVER

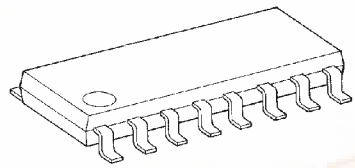
The TD62705P, TD62705F and TD62706P, TD62706F are comprised of six source current transistor array. These drivers are specifically designed for fluorescent display applications.
For proper operation, the substrate (SUB) must be connected to the most negative voltage.

TD62705P
TD62706P



DIP16-P-300-2.54A

TD62705F
TD62706F



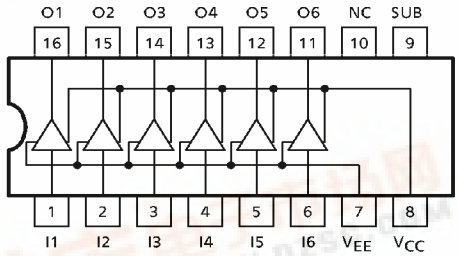
SOP16-P-225-1.27

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

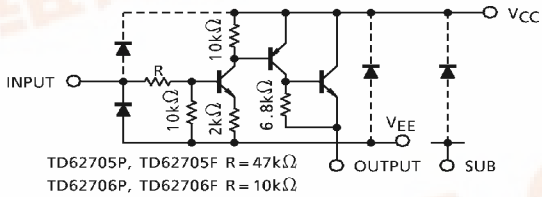
FEATURES

- High output voltage : $V_{CC} - V_{OUT} = 60V$ (Min.)
- Output current (single output) : $I_{OUT} = -50mA$ (Max.)
- Input compatible with various types of logic
  TD62705P, TD62705F $R_{IN} = 47k\Omega$: 6~25V PMOS, CMOS
  TD62706P, TD62706F $R_{IN} = 10k\Omega$: TTL, 5V CMOS
- Package type-P : DIP-16 pin
- Package type-F : SOP-16 pin

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

961001EBA2

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}-V_{EE}	30	V
		V_{CC}-V_{SUB}	60	
Output Voltage		V_{CC}-V_{OUT}	− 60	V
Input Voltage		V_{IN}-V_{EE}	V_{CC} − V_{EE}	V
Output Current		I_{OUT}	− 50	mA / ch
Input Current		I_{IN}	± 10	mA
Power Dissipation	P	P_D (Note 2)	1.0	W
	F		0.625 (Note 1)	
Operating Temperature		T_{opr}	− 40~85	°C
Storage Temperature		T_{stg}	− 55~150	°C

(Note 1) On Glass Epoxy PCB (30 × 30 × 1.6mm Cu 50%)
(Note 2) Delated above 25°C in the proportion of 8.0mw / °C (P Type), 5.0mw / °C (F Type).

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

CHARACTERISTIC		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	TD62705P TD62705F	V_{CC}	V_{EE} = 0V	6.0	—	25	V
	TD62706P TD62706F			4.5	—	25	
		V_{SUB}	V_{CC} = 0V	V_{OUT}	—	− 55	V
Output Voltage		V_{OUT}	V_{CC} = 0V	0	—	− 55	V
Output Current		I_{OUT}	—	0	—	− 40	mA / ch
Input Voltage	TD62705P TD62705F	V_{IN}	V_{EE} = 0V, V_{CC} = 25V	0	—	25	V
	TD62706P TD62706F			0	—	7	
Power Dissipation	P	P_D	—	—	—	0.36	W
	F		On PCB (Note)	—	—	0.325	

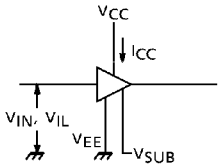
(Note) On Glass Epoxy PCB (30 × 30 × 1.6mm, Cu 50%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

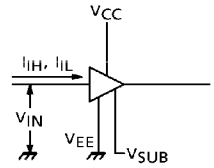
CHARACTERISTIC			SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Voltage	"H" Level	TD62705P TD62705F	V_{IH}	1	V_{EE} = 0V	6.0	—	—	V
		TD62706P TD62706F			V_{EE} = 0V	2.2	—	—	
	"L" Level	TD62705P TD62705F	V_{IL}	1	V_{EE} = 0V	—	—	2.2	
		TD62706P TD62706F			V_{EE} = 0V	—	—	0.8	
Input Current	"H" Level	TD62705P TD62705F	I_{IH}	2	V_{EE} = 0V, V_{IN} = 6.0V	—	0.11	0.16	mA
		TD62706P TD62706F			V_{EE} = 0V, V_{IN} = 2.4V	—	0.12	0.18	
	"L" Level		I_{IL}	2	V_{EE} = V_{IN} = 0V, V_{CC} = 25V	—	—	±1	μA
Output Leakage Current			I_{CEX}	3	V_{EE} = 0V, V_{CC} = 25V V_{IN} = V_{IL} MAX. I_{OUT} = −30V	—	—	−100	μA
Collector-Emitter Saturation Voltage			$V_{CE\ (sat)}$	4	V_{EE} = 0V, V_{CC} = V_{CC} MIN. V_{IN} = V_{IH} MIN. I_{OUT} = −40mA	—	—	V_{CC} −2.5	V
Supply Current (Output On)		TD62705P TD62705F	I_{CC}	1	V_{EE} = 0V, V_{CC} = 25V V_{IN} = V_{IN} MAX. I_{OUT} = 0mA	—	—	32	mA
		TD62706P TD62706F				—	—	25	
Turn-On Delay			t_{ON}	5	R_L = 1.4kΩ, C_L = 15pF	—	0.2	—	μs
Turn-Off Delay			t_{OFF}			—	1.5	—	μs

TEST CIRCUIT

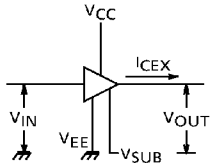
1. V_{IH}, V_{IL}, I_{CC}



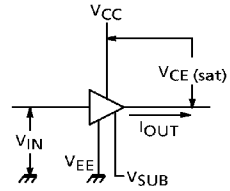
2. I_{IH}, I_{IL}



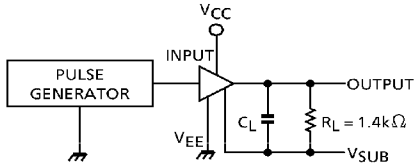
3. I_{CEX}



4. $V_{CE\ (sat)}$



5. t_{ON}, t_{OFF}



C_L = 15pF
(Includes probe and jig capacitance)

INPUT CONDITION

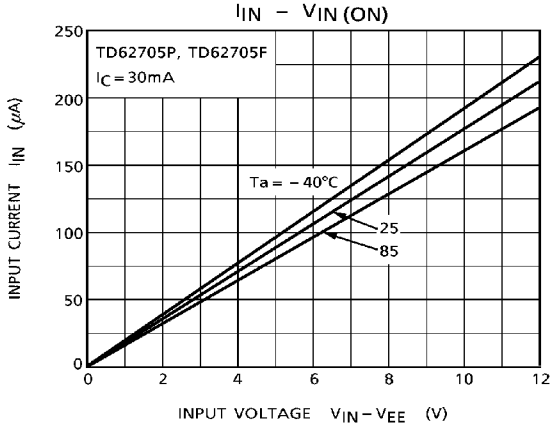
TYPE NAME	V_{IN}	V_{CC}	V_{SUB}
TD62705P, TD62705F	0-9V	25V	− 30
TD62706P, TD62706F	0-3V	25V	− 30

V_{IN} : Pulse Width 50μs
Duty Cycle 50%
$t_r \leqq$ 5ns
$t_f \leqq$ 10ns

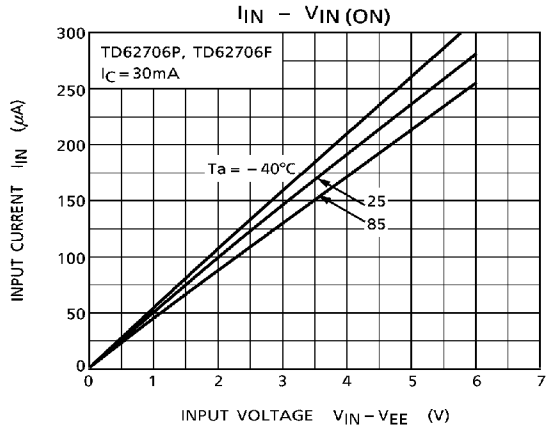
PRECAUTIONS for USING

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

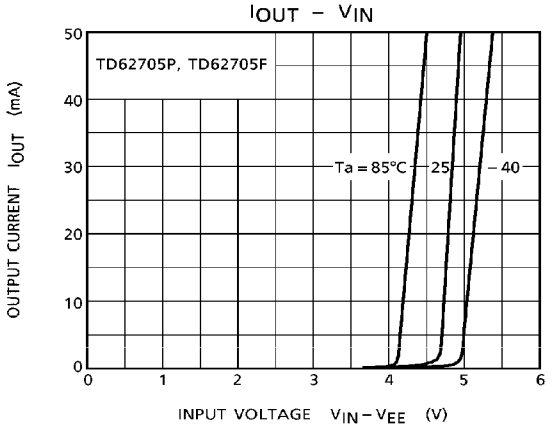
I_{IN} – $V_{IN\,(ON)}$



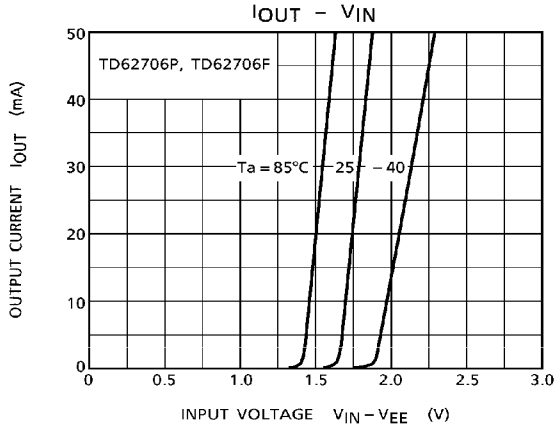
I_{IN} – $V_{IN\,(ON)}$



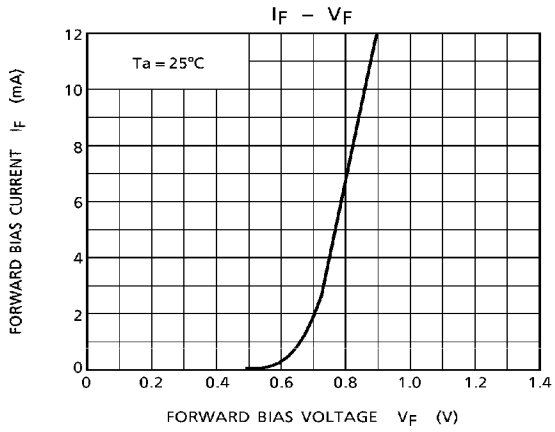
I_{OUT} – V_{IN}



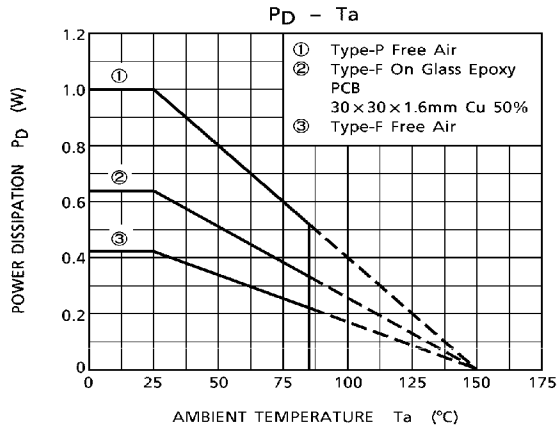
I_{OUT} – V_{IN}



I_F – V_F



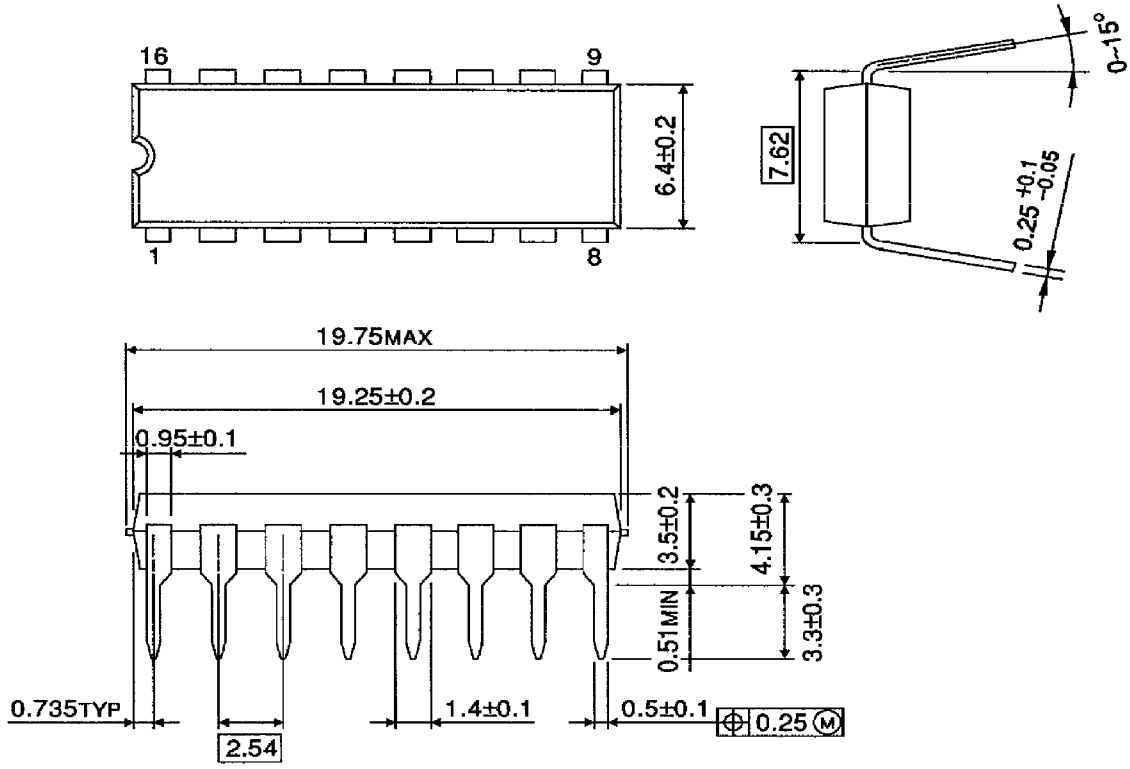
P_D – Ta



OUTLINE DRAWING

DIP16-P-300-2.54A

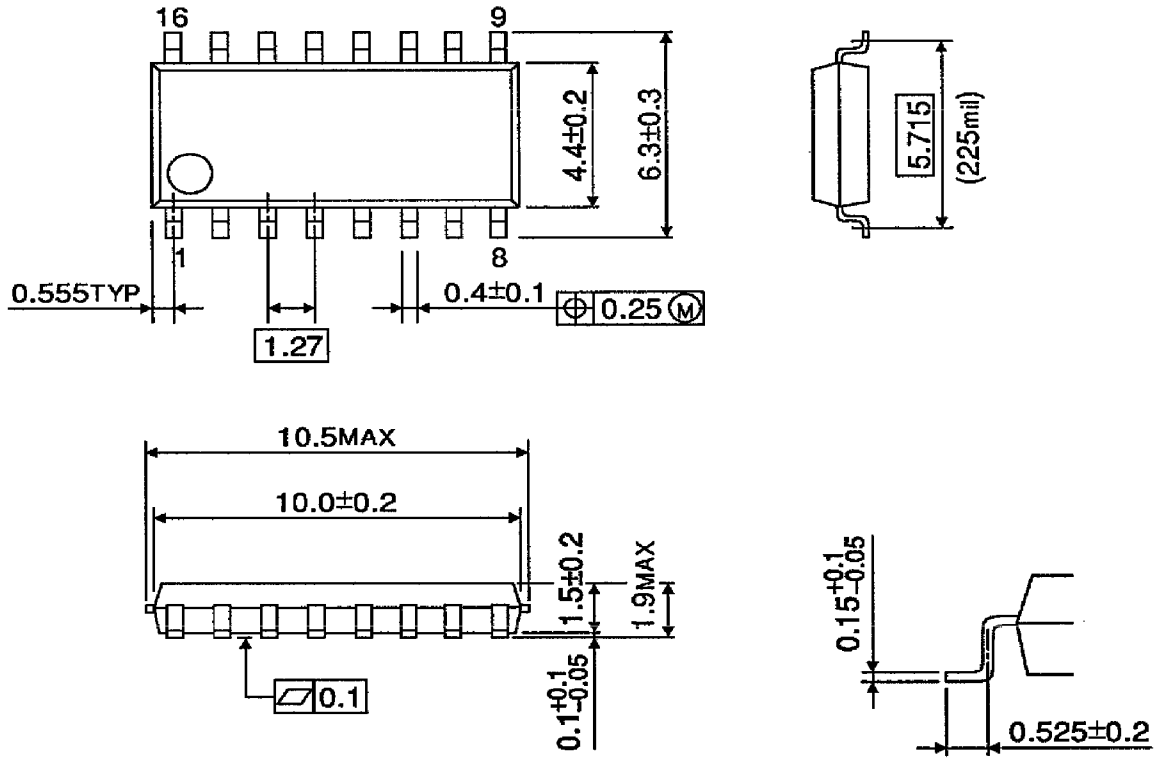
Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING

SOP16-P-225-1.27 Unit : mm



Weight : 0.16g (Typ.)