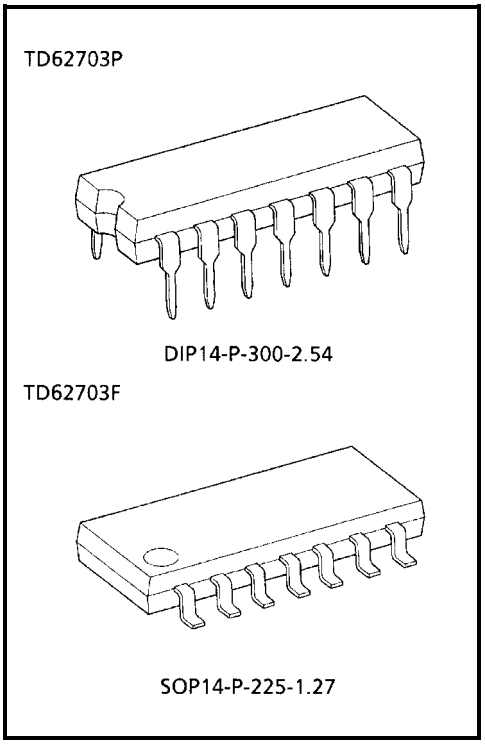
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62703P,TD62703F

6CH HIGH VOLTAGE SOURCE DRIVER

The TD62703P, TD62703F is 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.

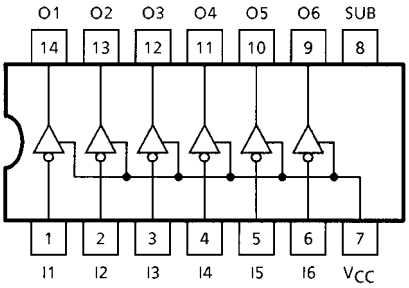


Weight
DIP14−P−300−2.54 : 1.11 g (Typ.)
SOP14−P−225−1.27 : 0.16 g (Typ.)

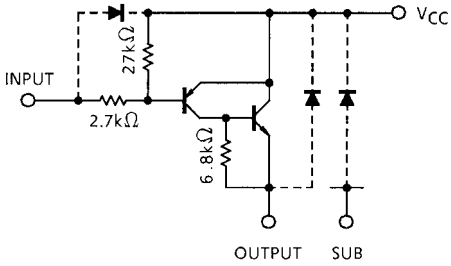
FEATURES

- High output voltage : V_{CC}, V_{OUT} = 60 V (Min)
- Output current (single output) : I_{OUT} = −50 mA (Max)
- Input resistor : R_{IN} = 2.7 kΩ
- Package type−P : DIP−14 pin
- Package type−F : SOP−14 pin

PIN CONNECTION (TOP VIEW)



SCHEMATICS (EACH DRIVER)



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

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{SUB}	V_{CC} − 60	V
Output Sustaining Voltage		V_{OUT}	V_{CC} − 60	V
Input Voltage		V_{IN}	−30~0.5	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 (50 × 50 ×1.6 mm Cu 50%)
Note 2: Delated above 25°C in the proportion 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		V_{SUB}	V_{CC} = 0 V	V_{OUT}	—	−55	V
Output Sustaining Voltage		V_{OUT}		0	—	V_{SUB}	V
Output Current		I_{OUT}		0	—	−40	mA / ch
Input Voltage		V_{IN}		0	—	−7.0	V
Power Dissipation	P	P_D	—	—	—	0.36	W
	F		On PCB (Note)	—	—	0.325	

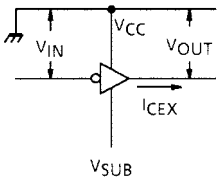
Note: On Glass Epoxy PCB (50 × 50 ×1.6 mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

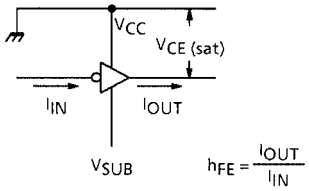
CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN	TYP.	MAX	UNIT
Output Leakage Current		I_{CEX}	1	V_{CC} = 0 V, V_{IN} = 0 V V_{OUT} = −55 V	—	—	−100	μA
Collector−Emitter Saturation Voltage		$V_{CE\ (sat)}$	2	I_{IN} = −1 mA, I_{OUT} = −40 mA	—	—	−2.5	V
DC Current Transfer Ratio		h_{FE}	2	V_{CE} = −5.0 V, I_{OUT} = −40 mA	100	—	—	—
Input Current	Output On	$V_{IN\ (ON)}$	3	V_{CC} = 0 V, V_{IN} = −5.1 V	—	−1.7	−2.4	mA
	Output Off	$V_{IN\ (OFF)}$		—	—	—	10	μA
Input Voltage	Output On	$V_{IN\ (ON)}$	4	V_{CC} = 0 V	−3.0	—	—	V
	Output Off	$V_{IN\ (OFF)}$			—	—	−0.44	
Turn−On Delay	P	t_{ON}	5	V_{CC} = 0 V, V_{SUB} = V_{OUT} = −55 V R_L = 1.4 kΩ, C_L= 15 pF	—	1	—	μs
	F				—	0.5	—	
Turn−Off Delay	P	t_{ON}			—	2	—	μs
	F				—	1	—	

TEST CIRCUIT

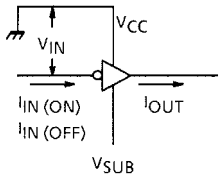
1. I_{CEX}



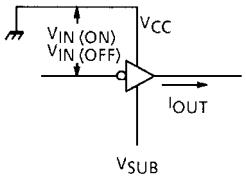
2. $V_{CE\ (sat)}$, h_{FE}



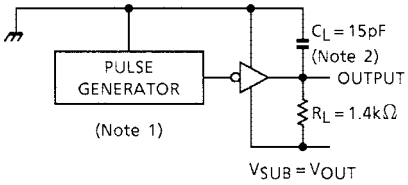
3. $I_{IN\ (ON)}$, $I_{IN\ (OFF)}$

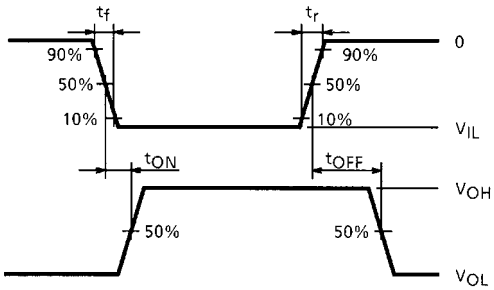


4. $V_{IN\ (ON)}$, $I_{IN\ (OFF)}$



5. t_{ON}, t_{OFF}

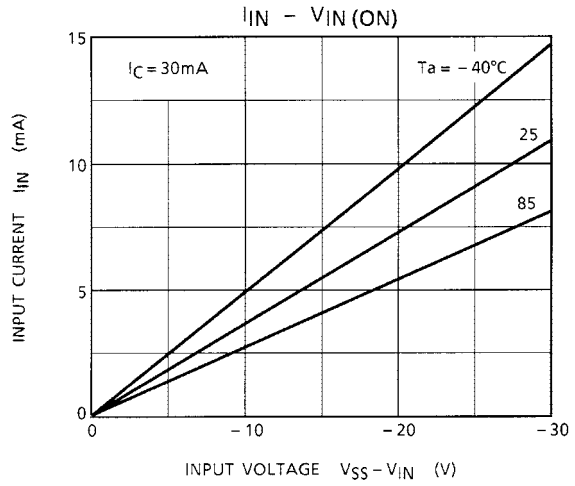


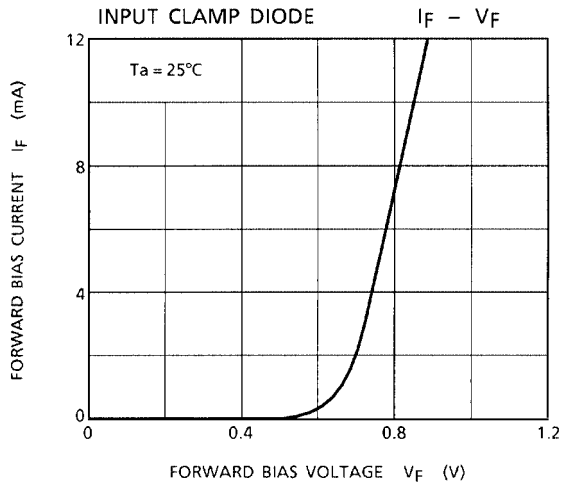


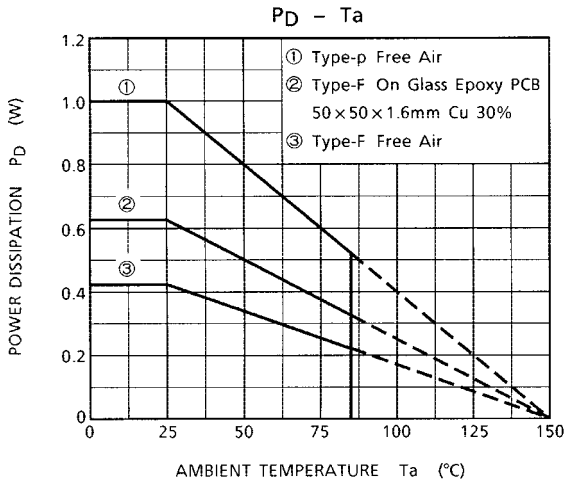
Note 1: Pulse width 50 μs, Duty Cycle 10%
Output Impedance 50 Ω, $t_r \leq 10$ ns, $t_f \leq 5$ ns
Note 2: C_L includes probe and jig capacitance.

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, V_{CC} and GND (SUB) line since IC may be destroyed due to short−circuit between outputs, air contamination fault, or fault by improper grounding.

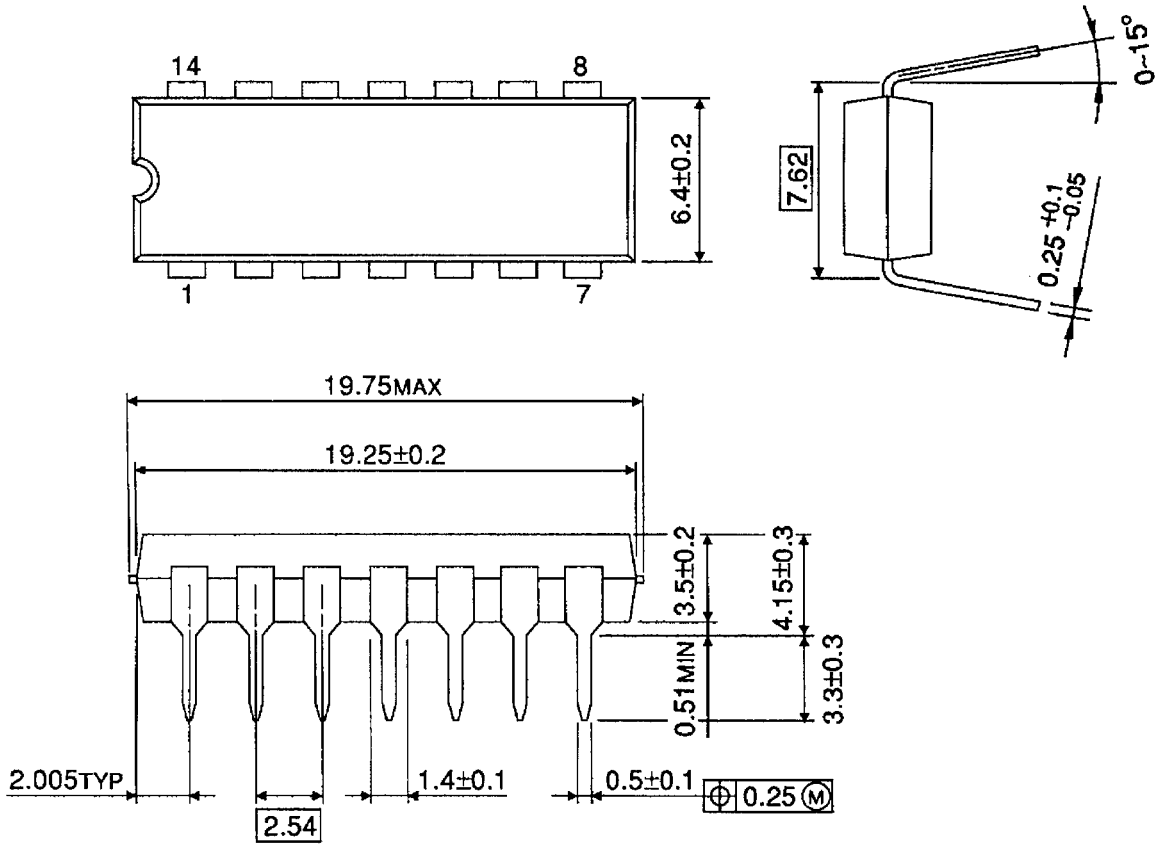

IIN – VIN (ON)
IC = 30mA
Ta = – 40°C
25
85
INPUT CURRENT IIN (mA)
INPUT VOLTAGE VSS – VIN (V)
15
10
5
0
0
– 10
– 20
– 30


INPUT CLAMP DIODE
IF – VF
Ta = 25°C
FORWARD BIAS CURRENT IF (mA)
FORWARD BIAS VOLTAGE VF (V)
12
8
4
0
0
0.4
0.8
1.2


PD – Ta
① Type-p Free Air
② Type-F On Glass Epoxy PCB
50×50×1.6mm Cu 30%
③ Type-F Free Air
POWER DISSIPATION PD (W)
AMBIENT TEMPERATURE Ta (°C)
1.2
1.0
0.8
0.6
0.4
0.2
0
0
25
50
75
100
125
150

PACKAGE DIMENSIONS

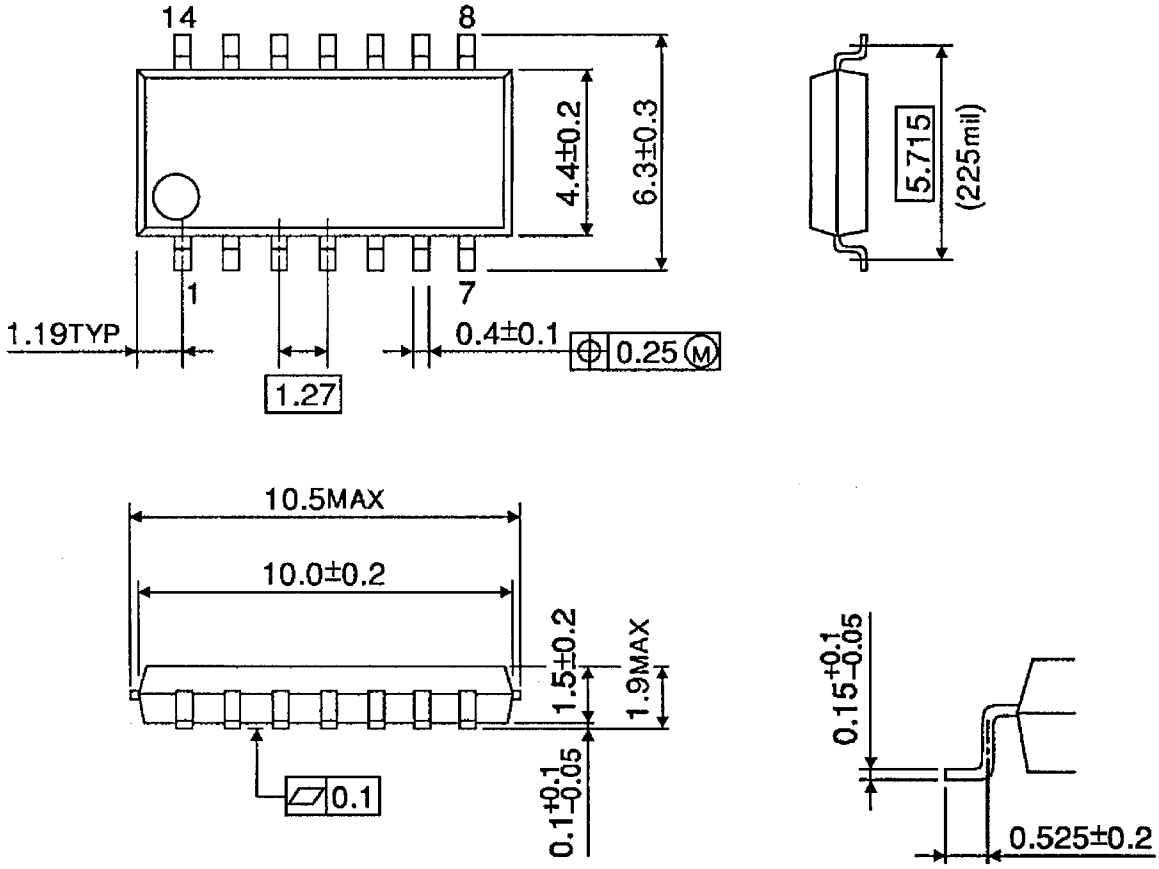
DIP14−P−300−2.54 Unit: mm



Weight: 1.11 g (Typ.)

PACKAGE DIMENSIONS

SOP14−P−225−1.27 Unit: mm



Weight: 0.16 g (Typ.)

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000707EBA

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