

#### 7 CIRCUIT DARLINGTON TRANSISTOR ARRAY

#### FEATURES

- Output Current : 500mA Max.
- High Sustaining Voltage Outputs : 40V Min.
- Output Clamp Diodes.
- Input Resistor : 2.7KΩ
- Inputs Compatible With TTL or 5V CMOS devices.
- PKG Type BP : DIP-16 Pin, BF : SOP-16 Pin

#### DESCRIPTION:

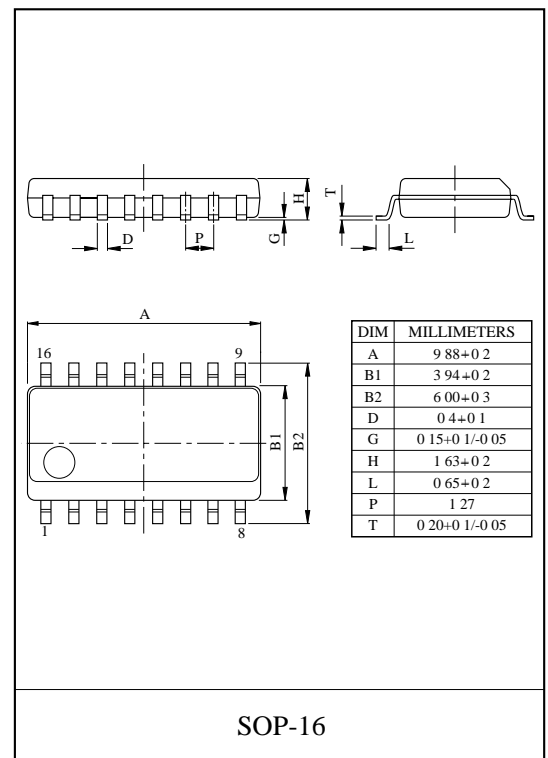
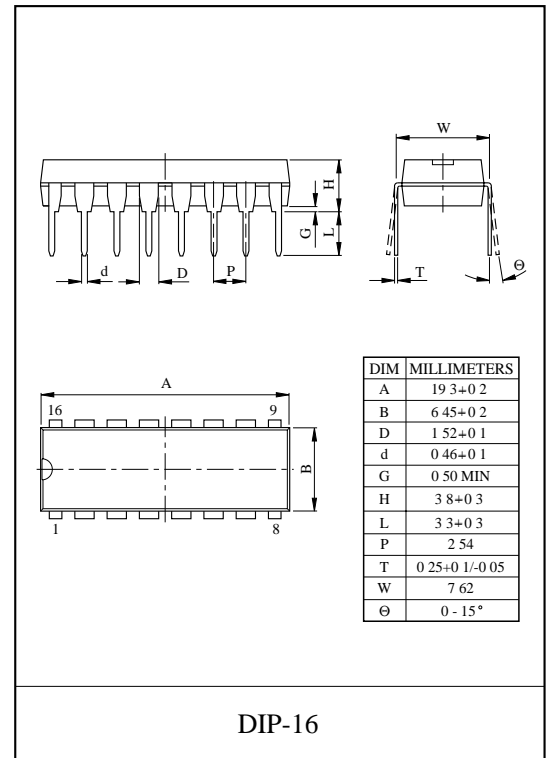
The FD62003AP/AF are high-voltage, high-current darlington transistor array comprised of seven NPN darlington pairs. All units feature internal clamp diodes for switching inductive loads.

#### APPLICATION :

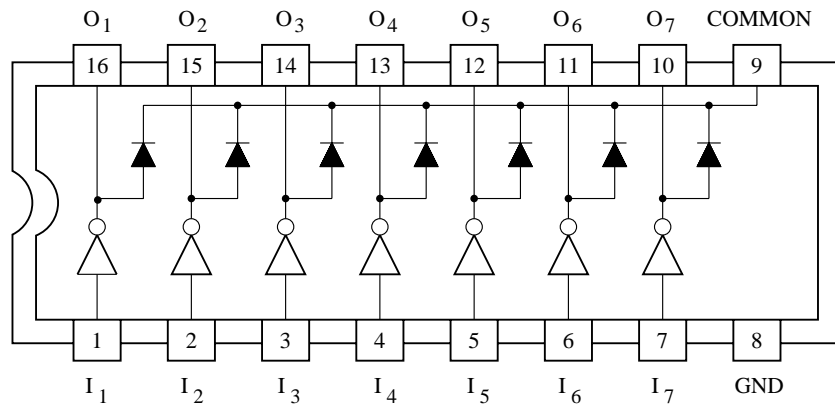
- Relay Driver.
- Hammer Driver.
- Lamp and LED Display Driver.
- Line driver and Logic buffer.

#### MAXIMUM RATINGS (Ta=25°C, unless otherwise noted)

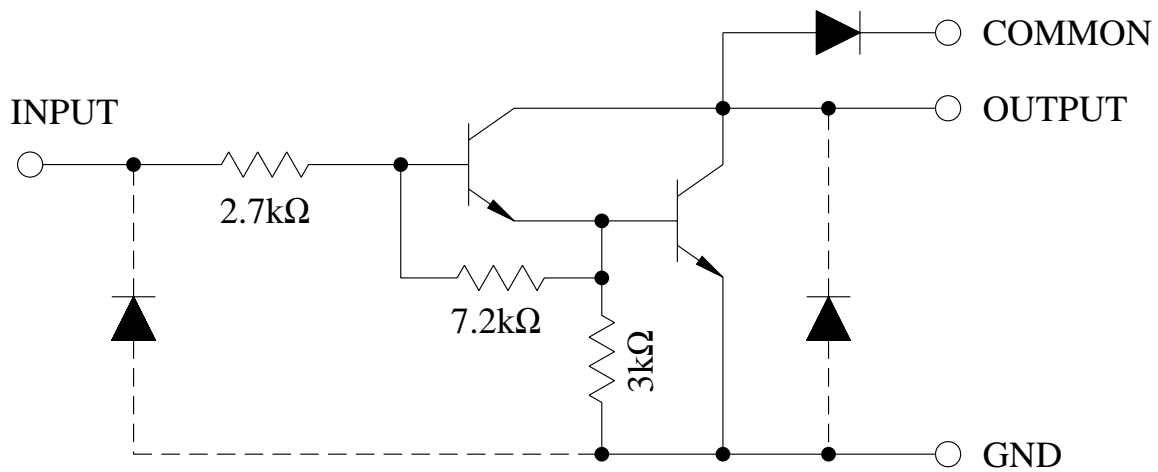
CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage		$V_{CE(SUS)}$	40	V
Output Current		$I_{OUT}$	500	mA
Input Voltage		$V_{IN}$	-0.5 ~ +30	V
Clamp Diode	Reverse Voltage	$V_R$	50	V
	Forward Current	$I_F$	500	mA
GND Terminal Current		$I_{GND}$	2.5	A
Power Dissipation	BP	$P_D$	1.47	W
	BF		0.54	W
Operating Temperature		$T_{opr}$	-20 ~ 85	°C
Storage Temperature		$T_{stg}$	-65 ~ 150	°C



## PIN CONNECTION (TOP VIEW)



## SCHEMATICS (EACH DRIVER)





# FD62003BP/BF

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

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage	$V_{CE(SUS)}$		0	-	40	V
Output Current	$I_{OUT}$	$T_{PW}=25ms, DF=10\%, 7$ Circuits	0	-	400	mA
		$T_{PW}=25ms, DF=30\%, 7$ Circuits	0	-	200	
Input Voltage	$V_{IN}$		0	-	30	V
Clamp Diode Reverse Voltage	$V_R$		-	-	40	V
Clamp Diode Forward Current	$I_F$		-	-	400	mA
Power Dissipation	AP	$P_D$			0.52	W
	AF					

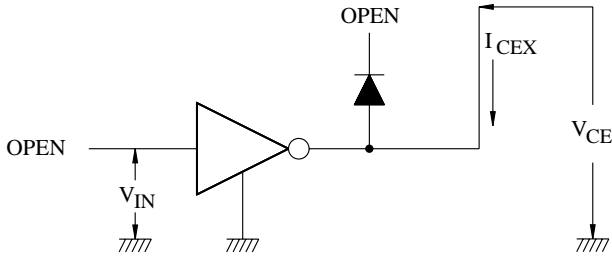
\* : on glass epoxy PCB (30 X 30 X 1.6mm Cu50%)

## ELECTRICAL CHARACTERISTICS (Ta=25 °C, unless otherwise noted)

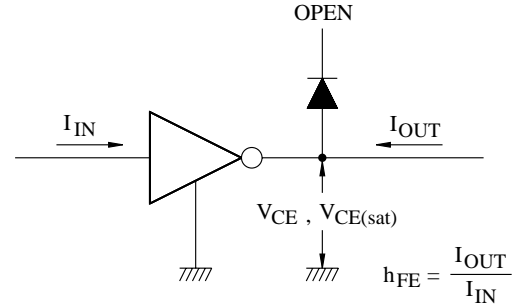
CHARACTERISTICS	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Leak Current	$I_{CEX}$	1	$V_{CE}=40V, T_a=25^\circ C$	-	-	50	$\mu A$
			$V_{CE}=40V, T_a=85^\circ C$	-	-	100	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	2	$I_{OUT}=350mA, I_{IN}=500\mu A$	-	1.2	1.6	V
			$I_{OUT}=200mA, I_{IN}=350\mu A$	-	1.0	1.3	
			$I_{OUT}=100mA, I_{IN}=250\mu A$	-	0.9	1.1	
Input Current	$I_{IN(ON)}$	3	$V_{IN}=3.85V$	-	0.93	1.35	mA
	$I_{IN(OFF)}$	4	$I_{OUT}=500mA, T_a=70^\circ C$	50	65	-	$\mu A$
Input Voltage	$V_{IN(ON)}$	5	$V_{CE}=2V, I_{OUT}=200mA$	-	-	2.4	V
			$V_{CE}=2V, I_{OUT}=250mA$	-	-	2.7	
			$V_{CE}=2V, I_{OUT}=300mA$	-	-	3.0	
DC Current Transfer Ratio	$h_{FE}$	2	$V_{CE}=2V, I_{OUT}=350mA$	1000	-	-	
Clamp Diode Reverse Current	$I_R$	6	$V_R=40V, T_a=25^\circ C$	-	-	50	$\mu A$
			$V_R=40V, T_a=70^\circ C$	-	-	100	
Clamp Diode Forward Voltage	$V_F$	7	$I_F=350mA$	-	1.7	2.0	V
Input Capacitance	$C_{IN}$		$V_{IN}=0, f=1MHZ$	-	15	25	pF
Turn-ON Delay	$t_{ON}$	8	$V_{OUT}=40V, R_L=163\Omega$ $C_L=15pF$	-	0.25	1	$\mu s$
Turn-OFF Delay	$t_{OFF}$			-	0.25	1	

## TEST CIRCUIT

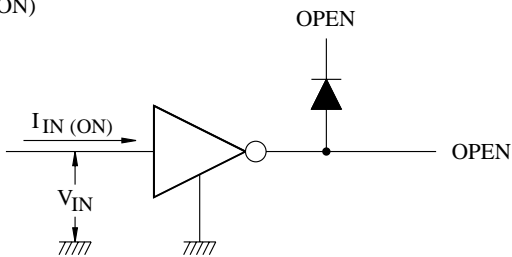
1.  $I_{CEX}$



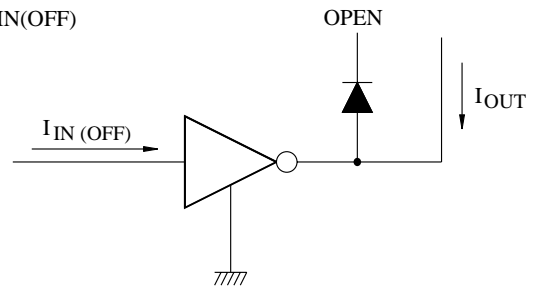
2.  $V_{CE(sat)}$ ,  $h_{FE}$



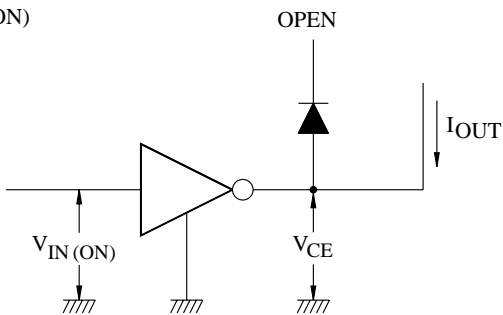
3.  $I_{IN(ON)}$



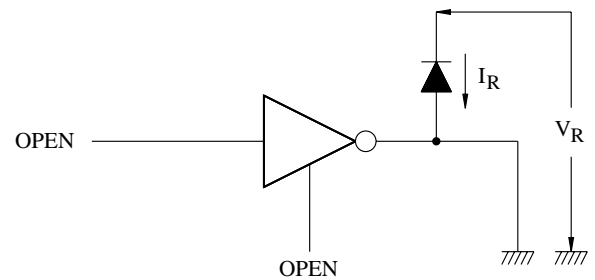
4.  $I_{IN(OFF)}$



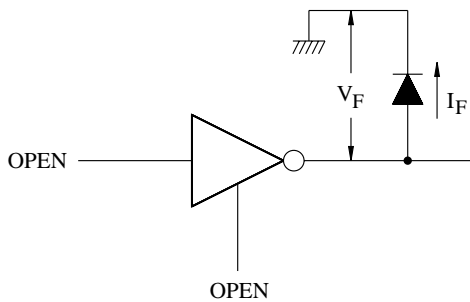
5.  $V_{IN(ON)}$



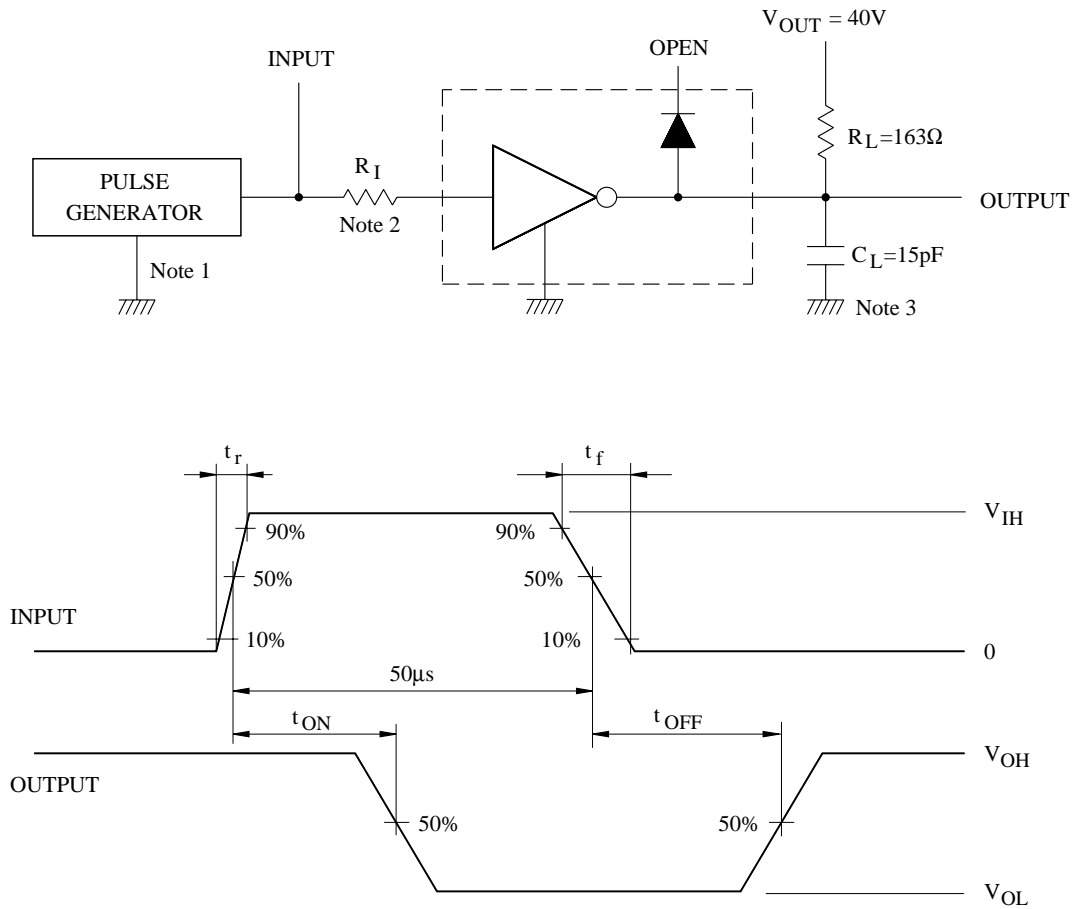
6.  $I_R$



7.  $V_F$



## 8. $t_{ON}$ , $t_{OFF}$



Notes : 1. Pulse Width  $50\mu s$ , Duty Cycle 10%  
Output Impedance  $50\Omega$ ,  $t_r \leq 5ns$ ,  $t_f \leq 10ns$

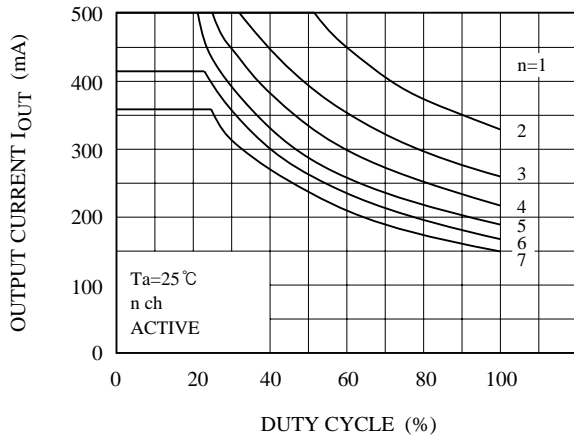
2. See below

Input Conditions

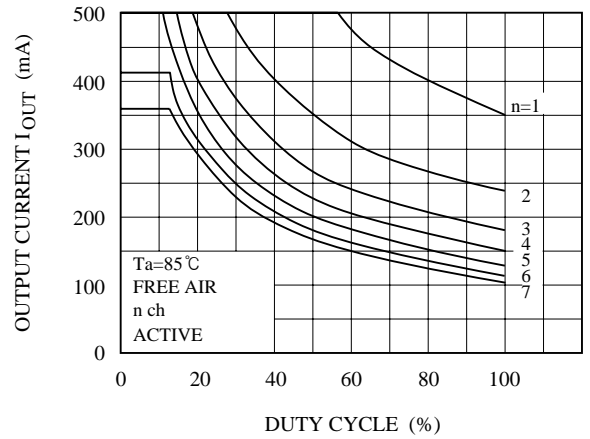
Type Number	$R_I$	$V_{IH}$
FD62003BP/BF	0	3V

3.  $C_L$  includes probe and Jig capacitance.

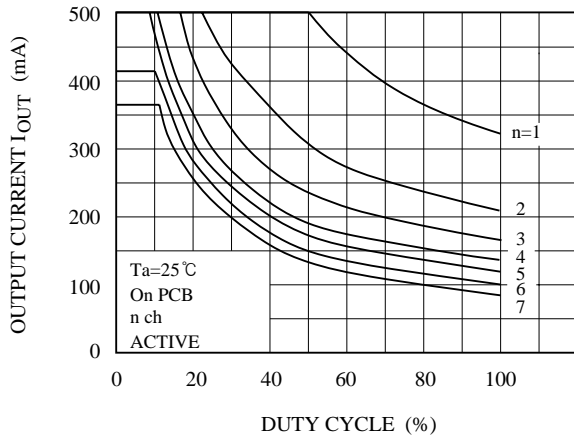
$I_{OUT}$  - DUTY CYCLE



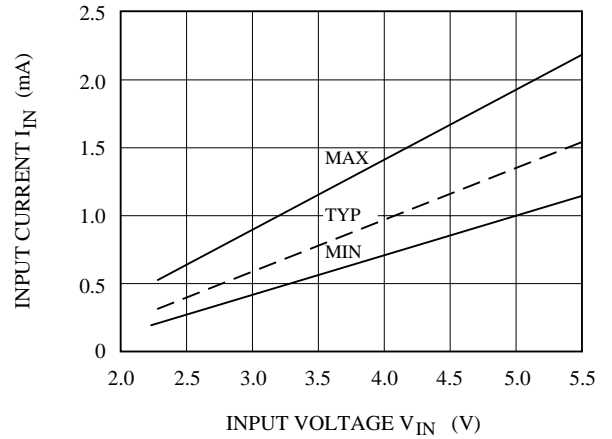
$I_{OUT}$  - DUTY CYCLE



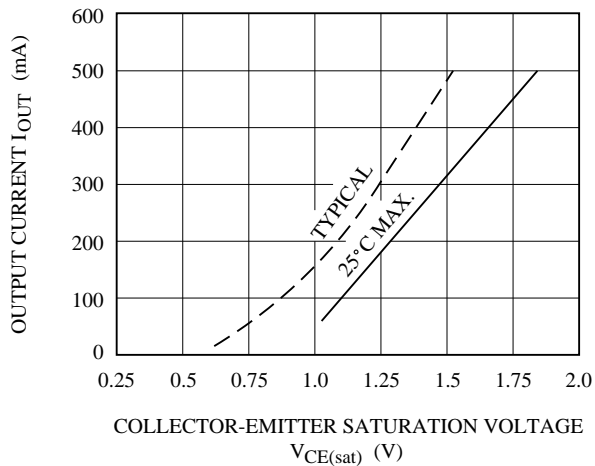
$I_{OUT}$  - DUTY CYCLE



$I_{IN}$  -  $V_{IN}$



$I_{OUT}$  -  $V_{CE(sat)}$



$P_D$  -  $T_a$

