

AN90B00/AN90B00S Series

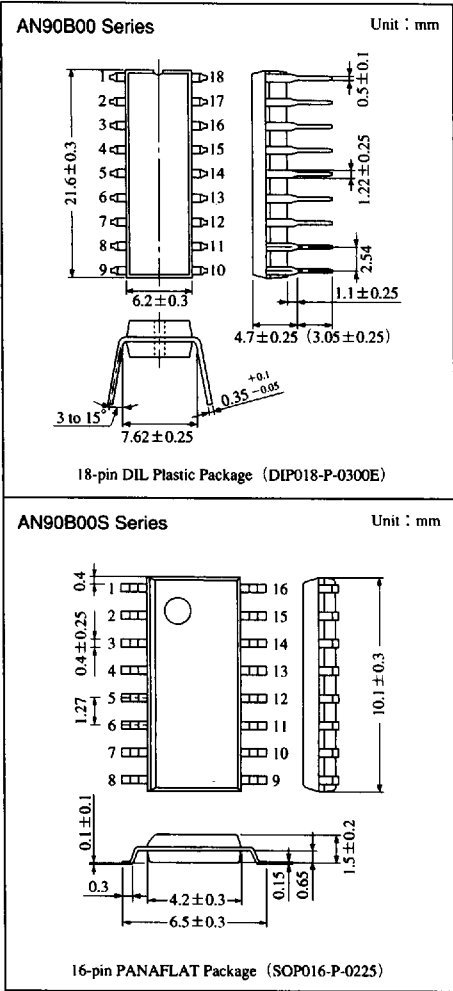
Transistor Arrays

Overview

The transistor array, the AN90B00 and the AN90B00S series, includes the circuits with eight transistors connected in emitter-common style (seven transistors in AN90B00S series) and also the ones with five independent transistors integrated on a single chip. The 18-DIL and PANAFLAT (SO-16D) packages are used in the AN90B00 series and the AN90B00S series respectively.

Features

- Output current : $I_O = 25\text{mA}$
- Breakdown voltage : $V_{CEO} = 24\text{V}$
- Base current limiting resistor built-in.
- Output breakdown voltage protection diode built-in



Block Diagram

Type No.	Basic circuit			
AN90B01S	●			
AN90B10	●			
AN90B20, AN90B20S		●		
AN90B21, AN90B21S			●	
AN90B22, AN90B22S			●	
AN90B60, AN90B60S	●			
AN90B70, AN90B70S		●		
AN90B81, AN90B81S				●
AN90B82S				●

Note) A type No. ending with S stands for PANAFLAT package. (SO package)

Others

■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Collector-base voltage	V _{CBO}	50	V
Collector-substrate voltage	V _{CIO}	50	V
Collector-emitter voltage	V _{CEO}	24	V
	V _{CER} *1	50	
Emitter-base voltage	V _{EBO} *2	5	V
Collector current	I _C	25	mA
Collector power dissipation	P _C *3	200	mW
Power dissipation	P _D	1000 *4	mW
		380 *5	
Operating ambient temperature	T _{opr}	−30 to +75	℃
Storage temperature	T _{stg}	−55 to +150 *4	℃
		−55 to +125 *5	

*1 AN90B21/21S *2 AN90B10/20/20S/21/21S/22/22S are excluded. *3 Allowable value per transistor

*4 Allowable value per 18-DIL package *5 Allowable value per SO-16D package

■ Electrical Characteristics (Ta=25℃)

● Common specification

Parameter	Symbol	Condition	min	typ	max	Unit
Collector-emitter voltage	V _{CEO}	I _C =1mA, I _B =0	24	—	—	V
Collector-base voltage	V _{CBO}	I _C =10μA, I _E =0	50	—	—	V
Emitter-base voltage	V _{EBO}	I _E =10μA, I _C =0	0.5	—	—	V
Collector cutoff current	I _{CEO}	V _{CE} =10V, R _{BE} =∞	—	—	1	μA

● AN90B01S/10/60/60S (No base current limit resistor)

Parameter	Symbol	Condition	min	typ	max	Unit
Collector-emitter saturation voltage	V _{CE(sat)1}	I _C =1mA, I _B =0.1mA	—	0.1	0.2	V
	V _{CE(sat)2}	I _C =10mA, I _B =1mA	—	0.25	0.4	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C =10mA, I _B =1mA	—	0.88	1	V
DC current amplification factor	h _{FE1}	V _{CE} =3V, I _C =1mA	50	120	—	—
	h _{FE2}	V _{CE} =3V, I _C =10mA	50	100	—	—
Output voltage	AN90B60/60S V _O	V _I =V _C =5V, I _O =1mA	4	4.3	—	V

● AN90B20/20S/70/70S (With base current limit resistor)

Parameter	Symbol	Condition	min	typ	max	Unit
Collector-emitter saturation voltage	V _{CE(sat)1}	I _C =1mA, I _B =0.1mA	—	0.1	0.2	V
	V _{CE(sat)2}	I _C =10mA, I _B =1mA	—	0.25	0.4	V
Input voltage	V _{I1}	V _{CE} =0.2V, I _C =1mA	—	0.85	1.2	V
	V _{I2}	V _{CE} =0.4V, I _C =10mA	—	2.3	3.5	V
DC current amplification factor	h _{FE1}	V _{CE} =3V, I _C =1mA	50	120	—	—
	h _{FE2}	V _{CE} =3V, I _C =10mA	50	100	—	—
Output voltage	AN90B70/70S V _O	V _I =V _C =5V, I _O =1mA	3.8	4.3	—	V

■ Electrical Characteristics (cont.) (Ta=25℃)

● AN90B21/21S

Parameter		Symbol	Condition	min	typ	max	Unit
Collector-emitter saturation voltage		$V_{CE(sat)1}$	$I_C=1mA, I_I=0.4mA$	—	0.1	0.2	V
		$V_{CE(sat)2}$	$I_C=10mA, I_I=1.4mA$	—	0.25	0.4	V
Input voltage		V_{I1}	$V_{CE}=0.2V, I_C=1mA$	—	3.1	4.1	V
		V_{I2}	$V_{CE}=0.4V, I_C=10mA$	—	4.2	5.8	V
Input current		I_{I1}	$I_C=10mA, V_I=5V$	—	0.55	1.1	mA
		I_{I2}	$I_C=10mA, V_I=10V$	—	1.2	2.0	mA

● AN90B22/22S

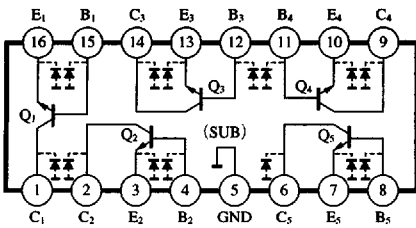
Parameter		Symbol	Condition	min	typ	max	Unit
Collector-emitter saturation voltage		$V_{CE(sat)1}$	$I_C=1mA, I_I=0.3mA$	—	0.1	0.2	V
		$V_{CE(sat)2}$	$I_C=10mA, I_I=1.2mA$	—	0.3	0.4	V
Input voltage		V_{I1}	$V_{CE}=0.2V, I_C=1mA$	—	1.4	2.0	V
		V_{I2}	$V_{CE}=0.4V, I_C=10mA$	—	1.9	3.0	V
Input current		I_{I1}	$I_C=1mA, V_I=5V$	—	0.9	1.1	mA
		I_{I2}	$I_C=10mA, V_I=10V$	—	1.9	2.3	mA

● AN90B81/81S/82S (With output breakdown protect diode)

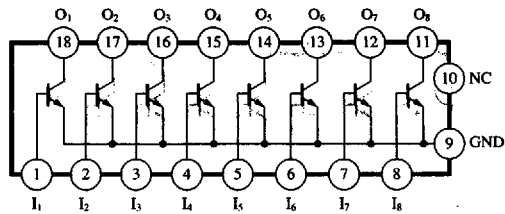
Parameter		Symbol	Condition	min	typ	max	Unit
Collector-emitter saturation voltage		$V_{CE(sat)1}$	$I_C=1mA, I_B=0.1mA$	—	0.85	1.1	V
		$V_{CE(sat)2}$	$I_C=10mA, I_B=1mA$	—	1.15	1.4	V
Input voltage	AN90B81/81S	V_{I1}	$V_{CE}=1.1V, I_C=1mA$	—	1.6	2.2	V
	AN90B82S	V_{I2}	$V_{CE}=1.4V, I_C=10mA$	—	3.0	4.5	V
DC current amplification factor		h_{FE1}	$V_{CE}=3V, I_O=1mA$	25	60	—	—
		h_{FE2}	$V_{CE}=3V, I_O=10mA$	20	50	—	—
Output voltage	AN90B81/81S AN90B82S	V_O	$V_I=V_C=5V, I_O=1mA$	2.9	3.3	—	V
Diode reverse voltage		V_R	$I_R=10\mu A, I_C=0$	50	—	—	V
Diode leakage current		I_R	$V_{EB}=10V, I_C=0$	—	—	1	μA

Schematic Diagram

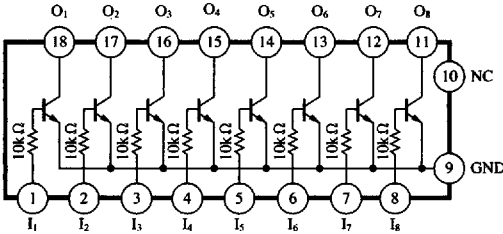
AN90B01S



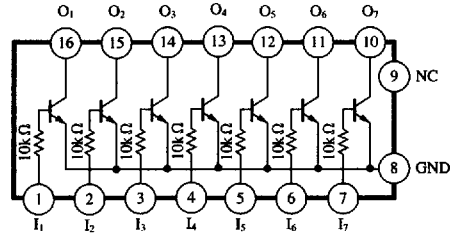
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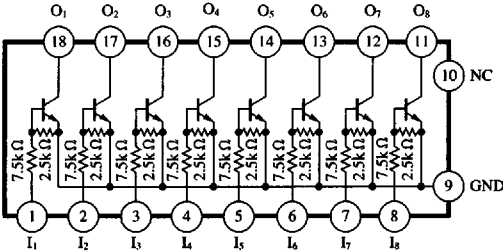
AN90B20



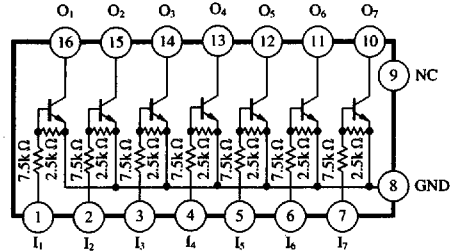
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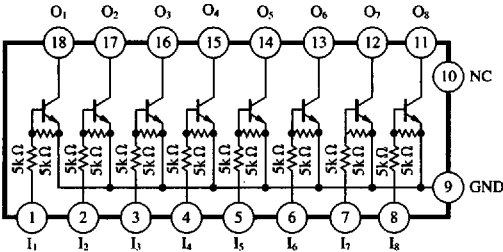
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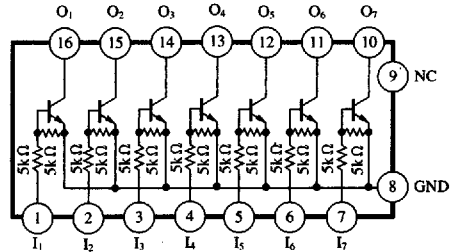
AN90B21S



AN90B22



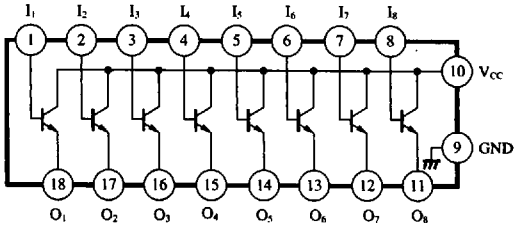
AN90B22S



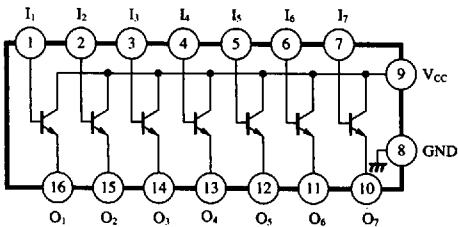
Note) I ...Input O ...Output

■ Schematic Diagram (cont.)

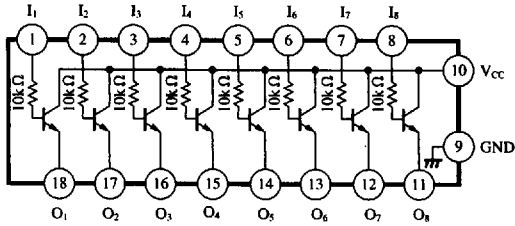
AN90B60



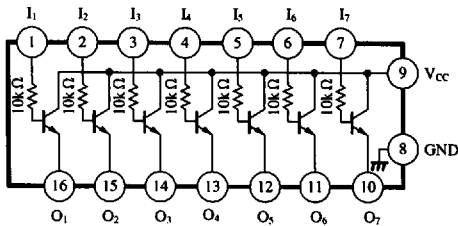
AN90B60S



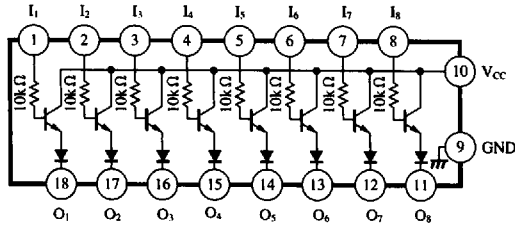
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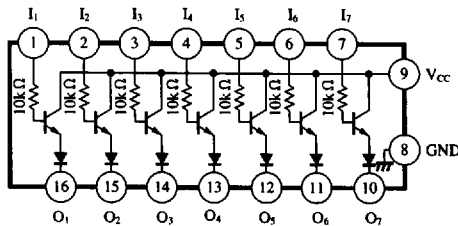
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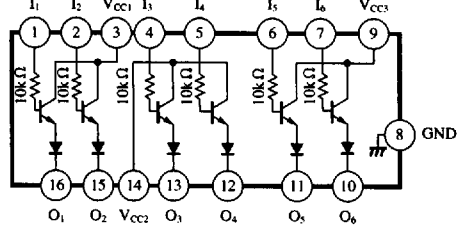
AN90B81



AN90B81S



AN90B82S



Note) I ...Input O ...Output

Others

■ Characteristics Curve

