AN5020

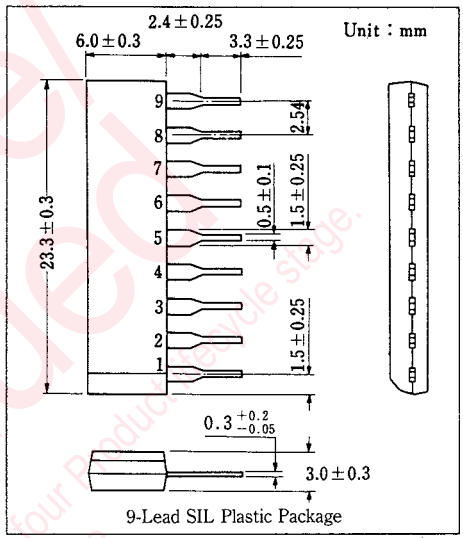
Pre-Amplifier Circuit for Remote Control Signal Receivers

■ Outline

The AN5020 is an integrated circuit for infrared remote control signal receivers. It has features of high sensitivity, high gain and low noise as well as is suitable to various types of remote control circuits.

■ Features

- High sensitivity, High gain, Low noise
- Waveform shaping circuit
- Voltage regulator circuit

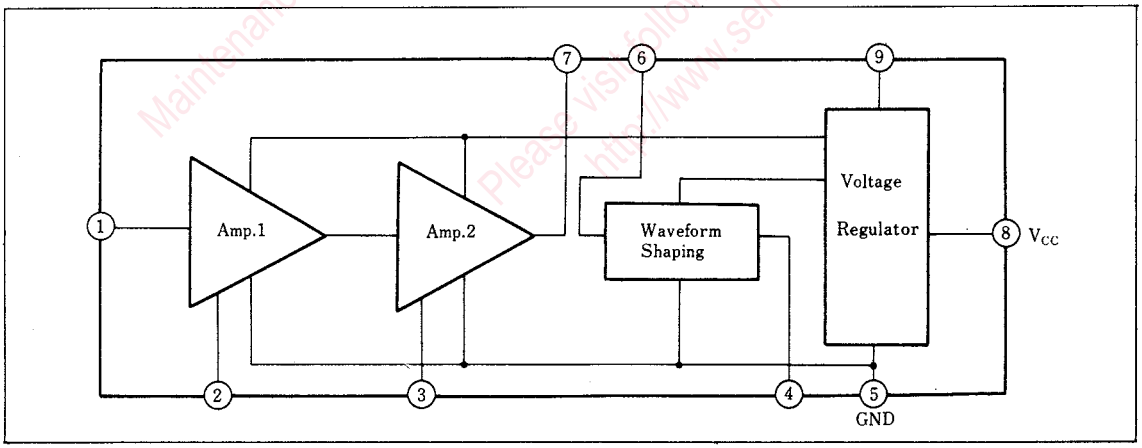


9-Lead SIL Plastic Package

■ Pin

Pin No.	Pin Name
1	Input
2	Gain Adj.1
3	Gain Adj.2
4	Pulse Output
5	GND
6	Pulse Input
7	Amp. Output
8	V_{CC}
9	V_{REF} Monitor

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

Item	Symbol	Rating	Unit
Supply voltage	V_{CC}	15.6	V
Supply Current	I_{CC}	25	mA
Power Dissipation	P_D	400	mW
Operating Ambient Temperature	T_{opr}	−20～+75	℃
Storage Temperature	T_{stg}	−55～+150	℃

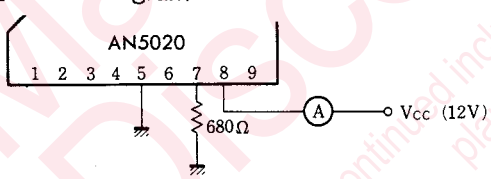
■ Electrical Characteristics (Ta=25℃)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Operating Supply Voltage Range	V_{CC}			9.6	12	14.4	V
Supply Current	I_{CC}	1	V_{CC}=12V, Input Open	5	8	10	mA
Bias Voltage	V_{3-5}	2	V_{CC}=12V, Input Open	1.65	2.4	3.3	V
Amp. Output Voltage (1)	$V_{7(1)}$	3	V_{il}=5V_{P-P}Sine Wave, f_{il}=42kHz, Att:0dB	2.5	3.2		V_{P-P}
Amp. Output Voltage (2)	$V_{7(2)}$	4	V_{il}=5V_{P-P}Sine Wave, f_{il}=42kHz, Att:80dB	0.8	2.3		V_{P-P}
Pulse Output High Level	$V_{4-5(H)}$	5	V_{CC}=12V, V_D=1.3V～4.0V	3.5	4.4	5.0	V
Pulse Output Low Level	$V_{4-5(L)}$	6	V_{CC}=12V, V_D=0V～0.5V		0.55	0.8	V

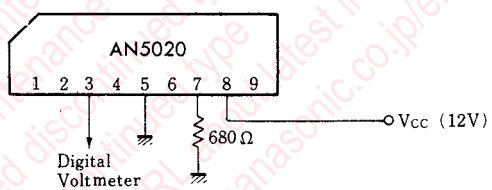
＊: In Test Circuit 7, input a pulse waveform of 100 Hz repetitive frequency to observe an output waveform.

Test Circuit 1 (I_{CC})

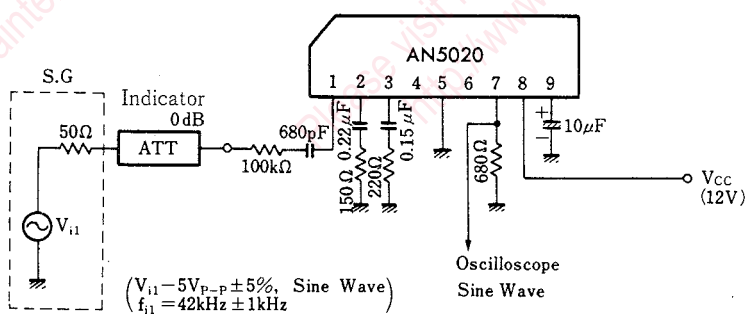
■ Block Diagram



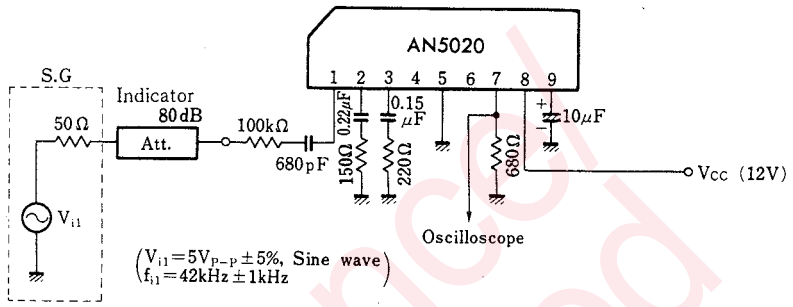
Test Circuit 2 (V_{3-5})



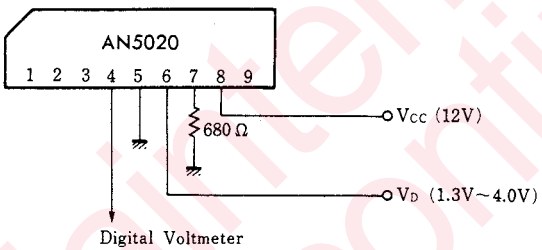
Test Circuit 3 ($V_{7(1)}$)



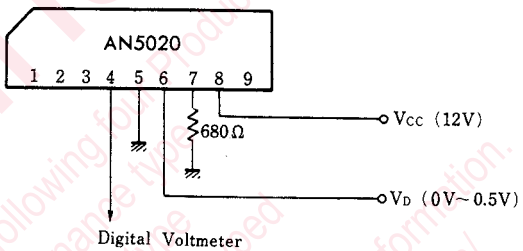
Test Circuit 4 ($V_{7(2)}$)



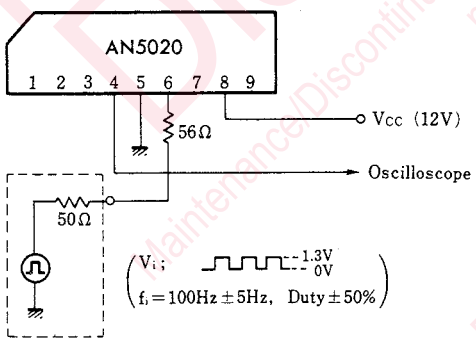
Test Circuit 5 ($V_{4-5(H)}$)



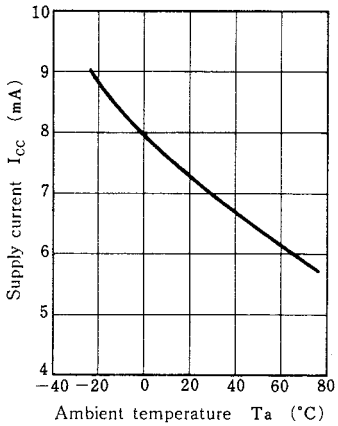
Test Circuit 6 ($V_{4-5(L)}$)



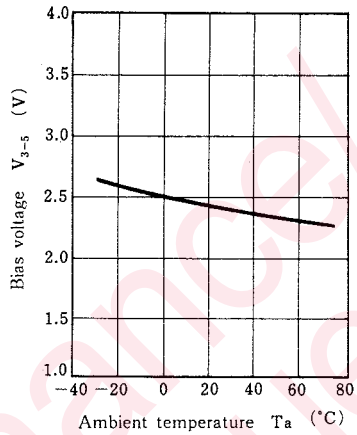
Test Circuit 7 ($V_{4-5(H)}$, $V_{4-5(L)}$)



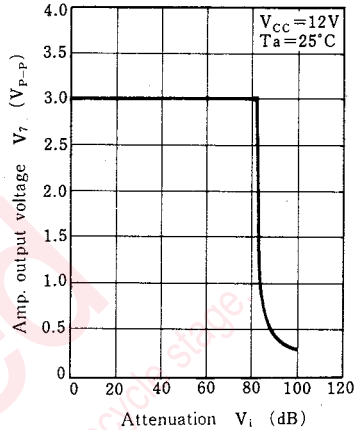
$I_{CC}-Ta$



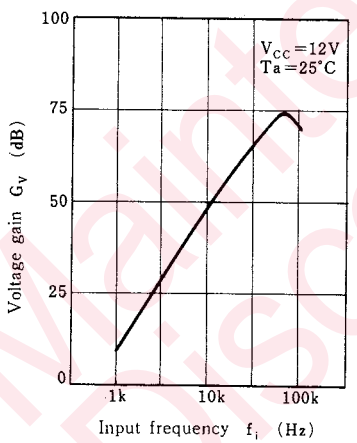
$V_{3\text{-}5}-Ta$



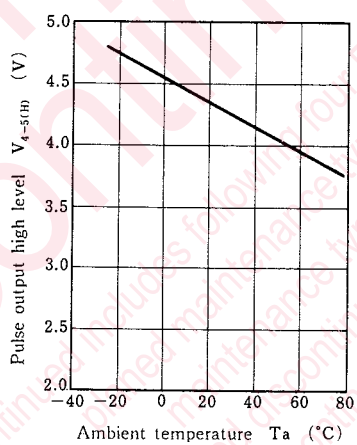
V_7-V_i



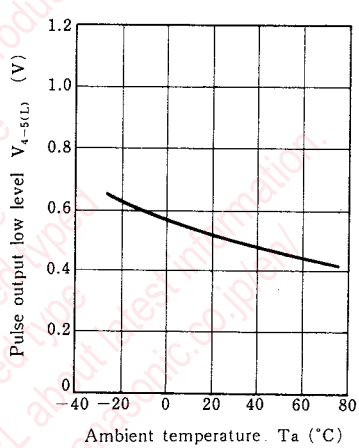
G_V-f_i



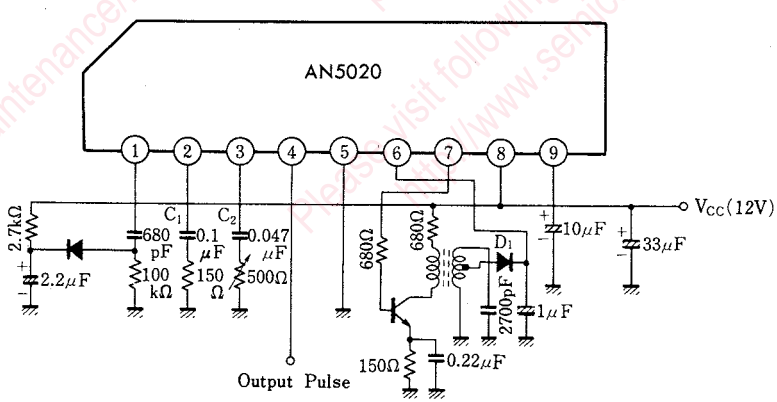
$V_{4.5(H)}-Ta$



$V_{4\text{-}5(L)}-Ta$



■ Application Circuit



Note 1: TLR69717 coil is used.
Note 2: C_1 and C_2 are examples.

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