

# TV VIDEO IF AMPLIFIER WITH AGC AND KEYER CIRCUIT



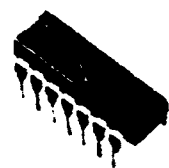
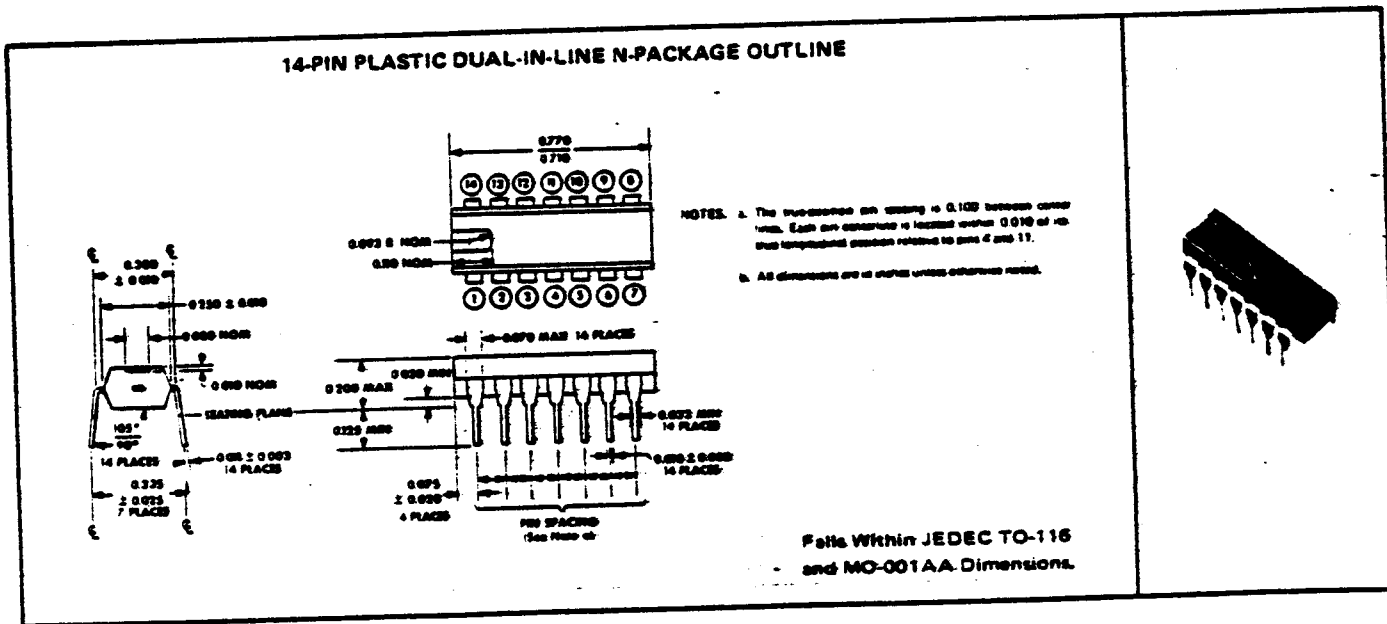
SN76650N

A monolithic IF amplifier with a complete gated wide-range AGC system for use as the 1st and 2nd IF stages and AGC keyer and amplifier in color or monochrome TV receivers.

## FEATURES:

- 0.3dB output change for 60dB IF Input Signal change.
- Power Gain at 45 MHz...53dB (Typ)
- AGC Range >65 dB (Min)
- Nearly Constant Input and Output Admittance over AGC Range.
- High Gain Gated AGC System for either Positive or Negative Going Video Signals.
- Control Signal Available for Delayed Forward AGC or Tuner.

04/30/75



96

002939

OR16

2939

11

TV VIDEO IF AMPLIFIER  
WITH AGC AND KEYSER CIRCUIT  
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MAXIMUM RATINGS (Voltage referenced to pin 4, ground;  $T_A = +25^\circ\text{C}$  unless otherwise noted)

RATING	SYMBOL	VALUE	UNIT
Power Supply (Pin 11)	$V^+$	+18	Vdc
Output Supply (Pins 7&8)	$V_7, V_8$	+18	Vdc
Signal Input Voltage (Pin 1 or 2, other pin ac grounded)	$V_1, V_2$	10	Vp-p
AGC Input Voltage (Pin 6 or 10, other pin ac grounded)	$V_6, V_{10}$	+6.0	Vdc
Gating Voltage, Pin 5	$V_5$	+10, -20	Vdc
Power Dissipation	PD	625	mW
Derate above $T_A = +25^\circ\text{C}$	$1/\theta_{JA}$	5.0	mW/ $^\circ\text{C}$
Operating Temperature Range	$T_A$	0 to +70	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ( $V^+ = 12$  Vdc, Voltages referenced to pin 4, ground;  $T_A = +25^\circ\text{C}$  unless otherwise noted)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
AGC Range, $f=45\text{MHz}$ , 5.0 Vdc to 7.0 Vdc		65	68	-	dB
Power Gain, $f=45$ MHz (see figure 2)	$A_p$	45	53	-	dB
Noise Figure $f=60$ MHz, $R_s$ 50 ohms $f=30$ MHz, $R_s$ 200 ohms	$N_f$	-	8.5 8.0	-	dB
Voltage Range for RF-AGC at Pin 12	$V_{12}$				Vdc
Maximum		6.5	8.3	-	
Minimum		-	0.1	0.50	
Output Change for 60 dB IF Signal Change		-	0.3	-	dB
IF Gain Change Over RF-AGC Range		-	10	-	dB
Output Stage Current ( $I_7+I_8$ )	$I_o$	-	6.0	-	mA dc
Total Supply Current ( $I_7+I_8+I_{11}$ )	$I_s$	15	25	35	mA dc
Total Power Dissipation	PD	180	310	420	mW

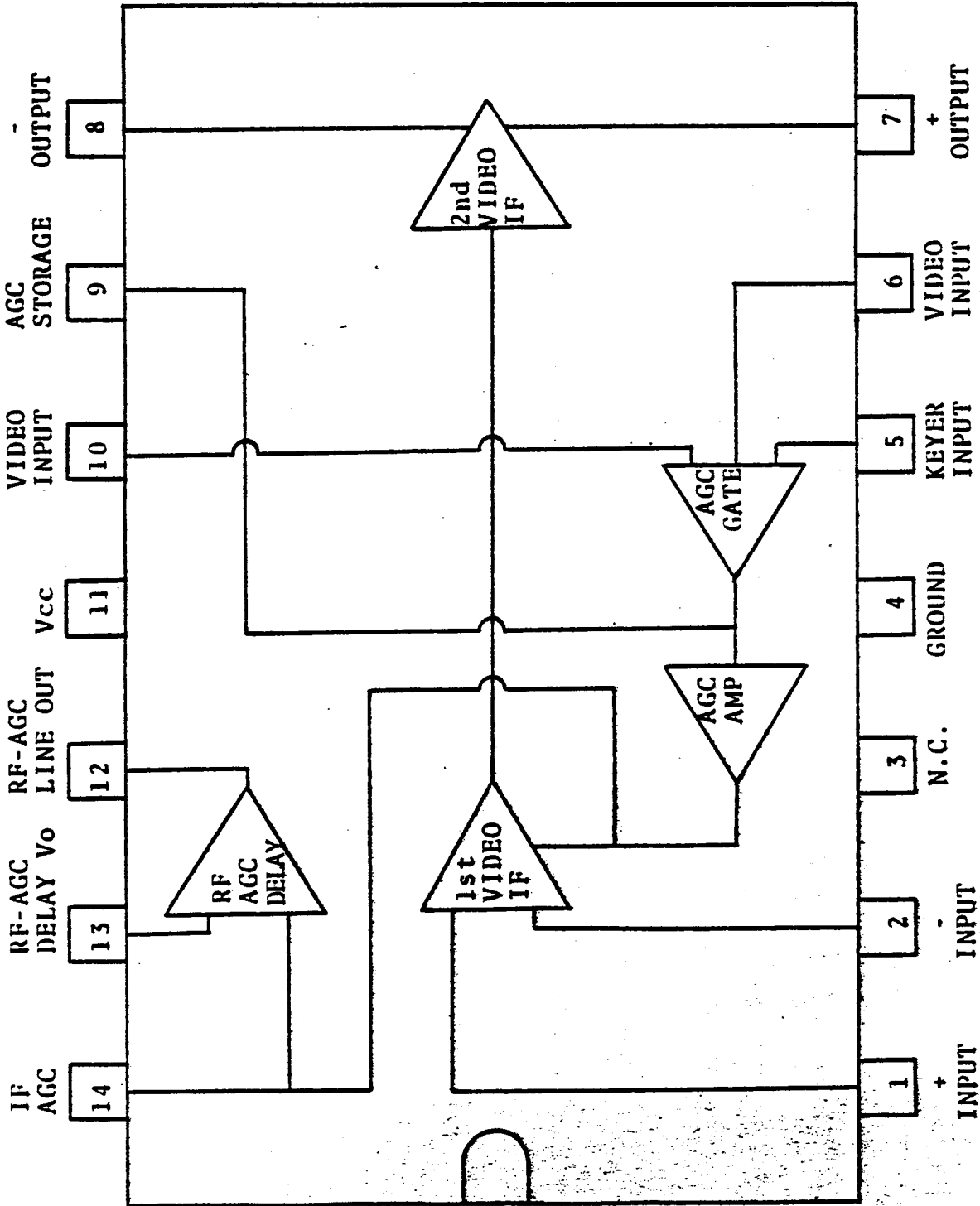
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MAXIMUM RATINGS (Voltages referenced to pin 4, ground;  $T_A = +25^\circ\text{C}$  unless otherwise noted)

RATING	SYMBOL	VALUE	UNIT
Power Supply (Pin 11)	V+	+18	Vdc
Output Supply (Pins 7&8)	V7, V8	+18	Vdc
Signal Input Voltage (Pin 1 or 2, other pin ac grounded)	V1, V2	10	Vp-p
AGC Input Voltage (Pin 6 or 10, other pin ac grounded)	V6, V10	+6.0	Vdc
Gating Voltage, Pin 5	V5	+10, -20	Vdc
Power Dissipation	PD	625	mW
Derate above $T_A = +25^\circ\text{C}$	1/θJA	5.0	mW/°C
Operating Temperature Range	T <sub>A</sub>	0 to +70	°C
Storage Temperature Range	T <sub>stg</sub>	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (V+ = 12 Vdc, Voltages referenced to pin 4, ground;  $T_A = +25^\circ\text{C}$  unless otherwise noted)

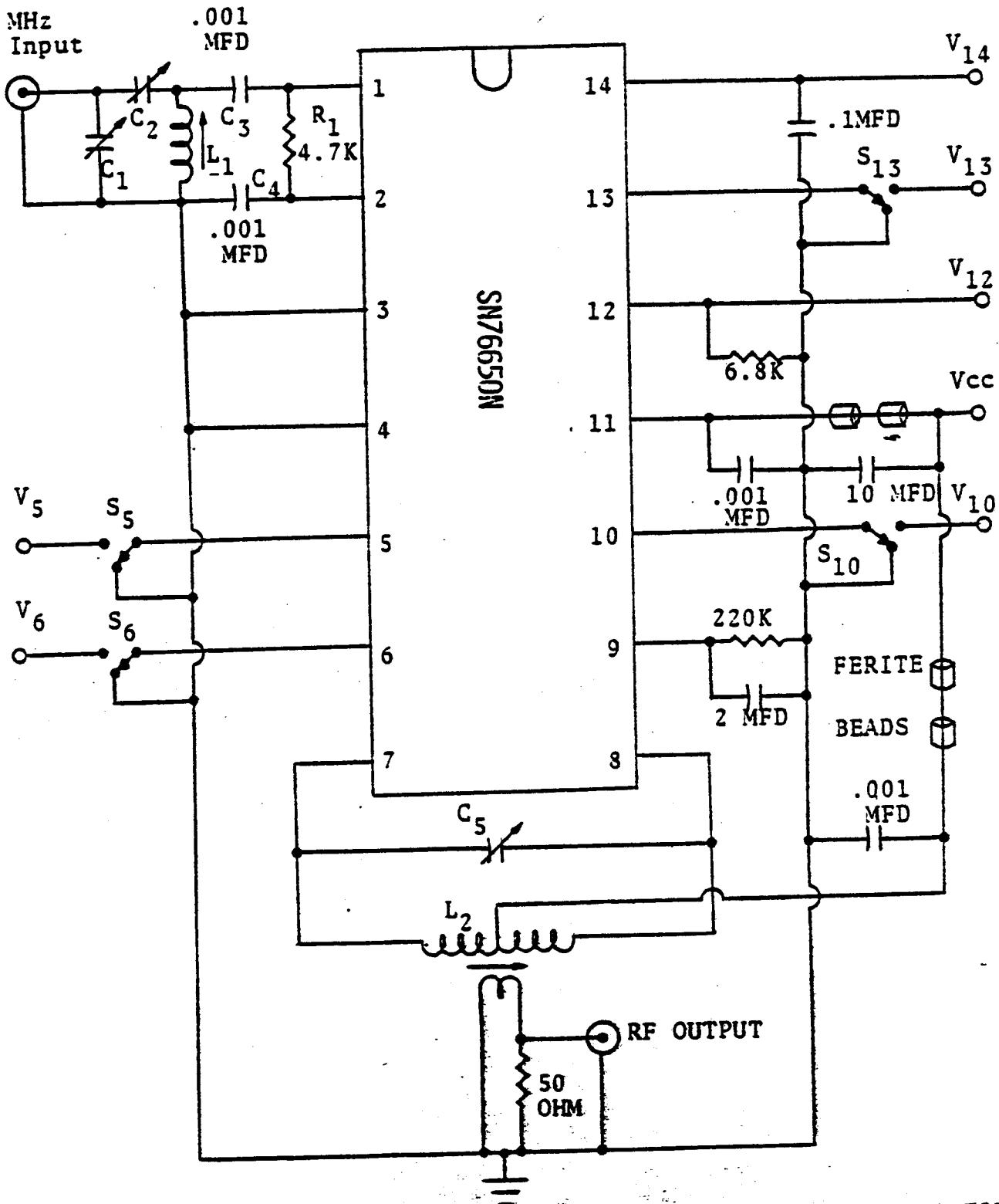
CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
AGC Range, f=45MHz, 5.0 Vdc to 7.0 Vdc		65	68	-	dB
Power Gain, f=45 MHz (see figure 2)	A <sub>p</sub>	45	53	-	dB
Noise Figure	N <sub>f</sub>	-	8.5	-	dB
f=60 MHz, R <sub>s</sub> 50 ohms		-	8.0	-	
f=30 MHz, R <sub>c</sub> 200 ohms		-		-	
Voltage Range for RF-AGC at Pin 12	V <sub>I2</sub>				Vdc
Maximum		6.5	8.5	-	
Minimum		-	0.1	0.50	
Output Change for 60 dB IF Signal Change		-	0.3	-	dB
IF Gain Change Over RF-AGC Range		-	10	-	dB
Output Stage Current (I <sub>7</sub> +I <sub>8</sub> )	I <sub>o</sub>	-	6.0	-	mA <sub>dc</sub>
Total Supply Current (I <sub>7</sub> +I <sub>8</sub> +I <sub>11</sub> )	I <sub>s</sub>	15	25	35	mA <sub>dc</sub>
Total Power Dissipation	PD	180	310	420	mW



14 PIN PLASTIC PACKAGE  
( TOP VIEW )

SN76650N

45 MHz  
RF Input



- C<sub>1</sub> = 48-100 PF
- C<sub>2</sub> = 8-60 PF
- C<sub>5</sub> = 1.5-20 PF

- L<sub>1</sub> = 7 1/4 TURNS - 1/4" COIL FORM  
- # 26 AWG
- L<sub>2</sub> = PRIMARY - 18 TURNS CENTER TAPED  
- 1/4" COIL FORM - #26 AWG  
SECONDARY - 2 TURNS WOUND EVENLY  
OVER PRIMARY - # 26 AWG.

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DESIGN PARAMETERS, TYPICAL VALUES ( $V_{+}=12$  Vdc,  $T_A = + 25^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	f=35MHz	f=45MHz	UNIT
Single-Ended Input Admittance	$g_{11}$ $b_{11}$	0.55 1.70	0.70 2.80	mmhos
Input Admittance Variations with AGC (0 to 60 dB)	$\Delta g_{11}$ $\Delta b_{11}$	50 0	60 0	$\mu\text{mhos}$
Differential Output Admittance	$g_{22}$ $b_{22}$	40 430	90 570	$\mu\text{mhos}$
Output Admittance Variations with AGC (0 to 60 dB)	$g_{22}$ $b_{22}$	3.0 80	4.0 100	$\mu\text{mhos}$
Reverse Transfer Admittance (Magnitude)	$ y_{12} $	$\ll 1.0$	$\ll 1.0$	$\mu\text{mhos}$
Forward Transfer Admittance Magnitude	$ y_{21} $	280	260	mmhos
Angle (0 dB AGC)	$\angle y_{21}$	-73	-100	degrees
Angle (-30 dB AGC)	$\angle y_{21}$	-52	-70	
Single-Ended Input Capacitance	$C_{in}$	9.5	10	PF
Differential Output Capacitance	$C_o$	2.0	2.0	PF