TV VIDEO MODULATOR

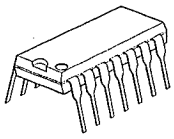
■ GENERAL DESCRIPTION

The NJM1372A is an integrated circuit to be used to generate an RF TV signal from baseband color-difference and luminance signals.

The NJM1372A contains a chroma subcarrier oscillator, lead and lag network, a quasi-quadrature suppressed carrier DSB chroma modulator, an RF oscillator and modulator, and a TTL compaible clock driver with adjustable duty cycle.

This device may also be used as a general-purpose modulator with a variety of video signal generating devices such as video games, test equipment, video type recorders, etc.

■ PACKAGE OUTLINE

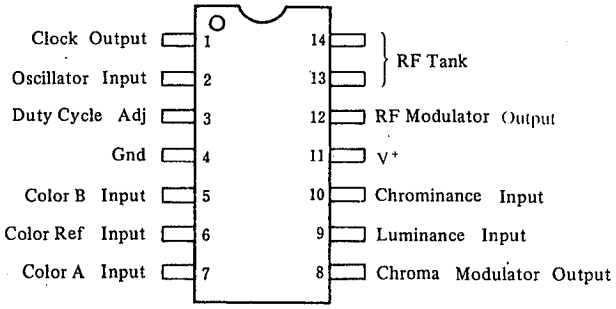


NJM1372AD

■ FEATURES

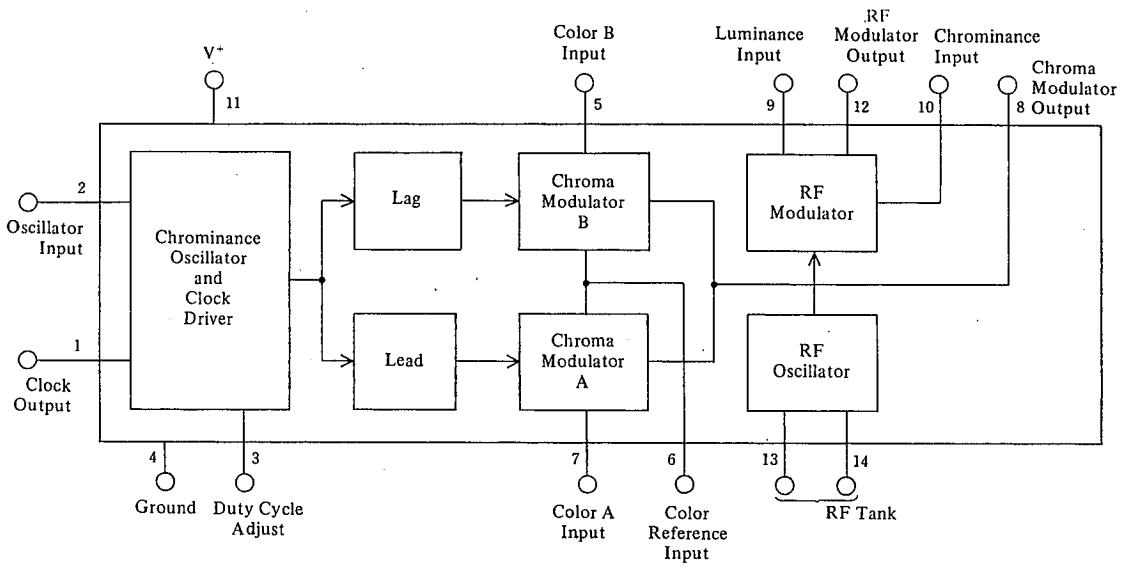
- Operating Voltage (+4.75V~+5.25V)
- Acts by Digital Control Signal
- Minimal External Components
- Composite Video Signal Generation Capability
- Low Power Dissipation
- Linear Chroma Modulators for High Versatility
- Ground-Referenced Video Prevents Over-modulation
- Package Outline DIP-14
- Bipolar Technology

■ PIN CONFIGURATION



NJM1372AD

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

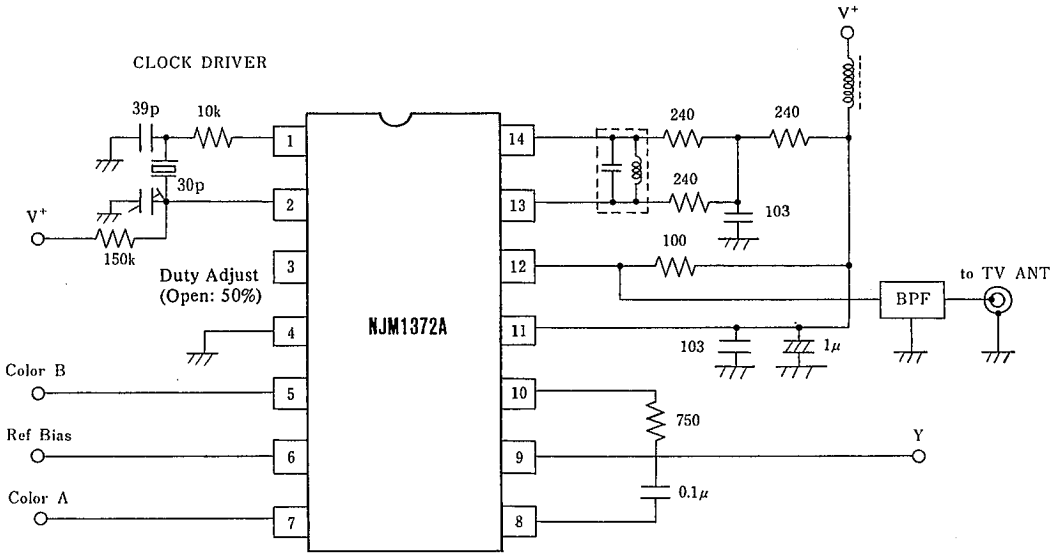
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	8	V
Power Dissipation	P_D	700	mW
Operating Temperature Range	T_{opr}	−20～+75	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

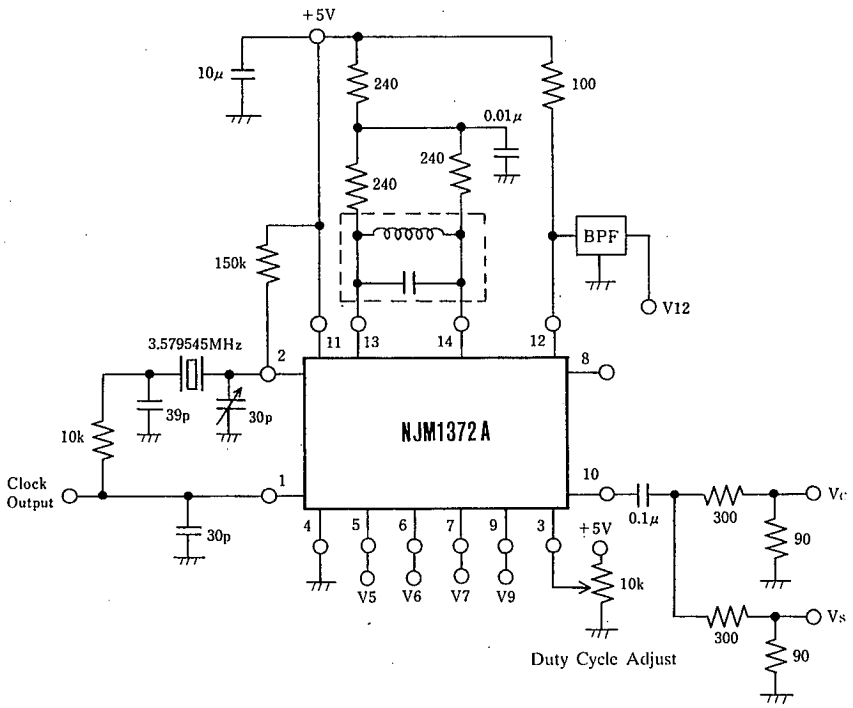
(Ta=25℃)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+		4.75	5.0	5.25	V
Operating Current	I_{CC}		—	25	—	mA
Chroma Oscillator/Clock Driver (TC1)						
Output Voltage	V_{OL}		—	—	0.4	V
Output Voltage	V_{OH}		2.4	—	—	V
Rise Time	tr	V_1=0.4 → 2.4V	—	—	50	ns
Fall Time	tf	V_1=2.4 → 0.4V	—	—	50	ns
Duty Cycle Adjustment Range	V_{adj}	THreshold Voltage V_1=1.4V	40	—	60	%
Inherent Duty Cycle	V_{OD}		—	50	—	%
Chroma Modulator (TC1)						
Input Common Voltage Range		Pin 5, 6, 7	0.8	—	2.3	V
Oscillator Feedthrough	CL	Pin 8	—	15	31	mV
Modulation Angle	$C\theta$	$\theta_8(V_7=2.0V)-\theta_8(V_5=2.0V)$	85	100	115	degree
Conversion Gain	G_{CC}	$V_8/(V_7-V_6)$;$V_8/(V_5-V_6)$	—	0.8	—	V_{p-p}/V
Input Current	I_i	Pin 5, 6, 7	—	—	−20	μA
Input Resistance	R_i	Pin 5, 6, 7	100	—	—	kΩ
Input Capacitance	C_i	Pin 5, 6, 7	—	—	5	pF
Chroma Modulator Linearity	L_{cm}	Pin 8; V_5=1 → 2 V:V_7=1 → 2V	—	4.0	—	%
RF Modulator (Test Circuit 2)						
Luma, Input Dynamic Range		Pin 9 (TC2)	0	—	1.5	V
RF Output Voltage	V_{RF}	f=67.25MHz, V_9=1.0V (TC1)	—	30	—	mVrms
Luma Conversion Gain	G_{LV}	($\Delta V_{12}/\Delta V_9$;V_9=0.1 → 1.0V) (TC2)	—	0.7	—	V/V
Chroma Conversion Gain	G_{CV}	($\Delta V_{12}/\Delta V_{10}$;$V_{10}$=1.5$V_{PP}$, V_9=1.0V) (TC2)	—	0.9	—	V/V
Chroma Linearity	L_C	Pin 12 V_{10}=1.5V_{PP} (TC2)	—	1.0	—	%
Luma Linearity	L_L	Pin 12 V_9=0 → 1.5V (TC2)	—	2.0	—	%
Input Current	I_i	Pin 9	—	—	−20	μA
Input Resistance	R_i	Pin 10	—	800	—	Ω
Input Resistance	R_i	Pin 9	100	—	—	kΩ
Input Capacitance	C_i	Pin 9, 10	—	—	5	pF
Output Current	I_o	Pin 12 (TC2)	—	0.9	—	mA
Residual 920kHz	B	Pin 12 V_9=1V (TC1)	—	50	—	dB
		V_C=300mV/3.58MHz; V_S=250mV/4.5MHz				

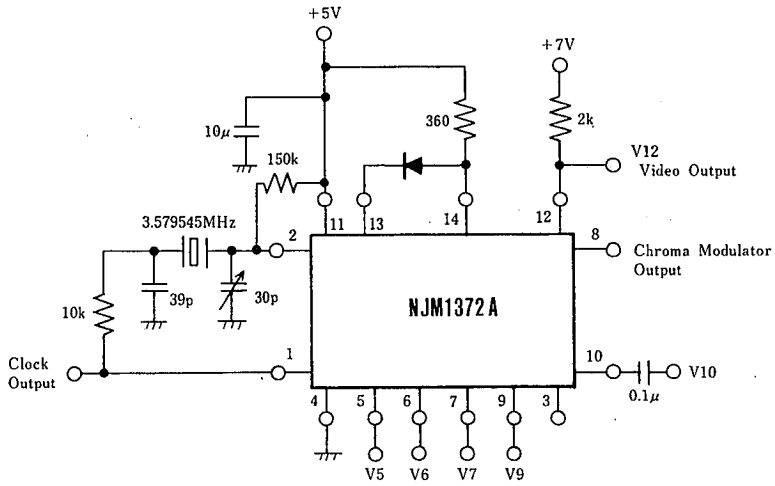
■ TYPICAL APPLICATION CIRCUIT



TEST CIRCUIT 1



TEST CIRCUIT 2



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