TV VIDEO MODULATOR

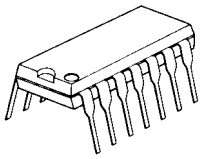
■ GENERAL DESCRIPTION

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

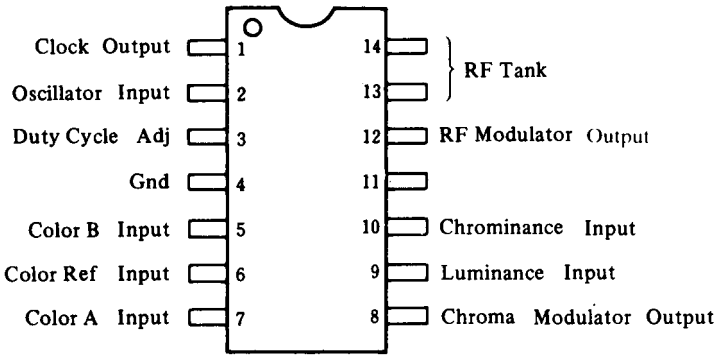


NJM1372AD

■ FEATURES

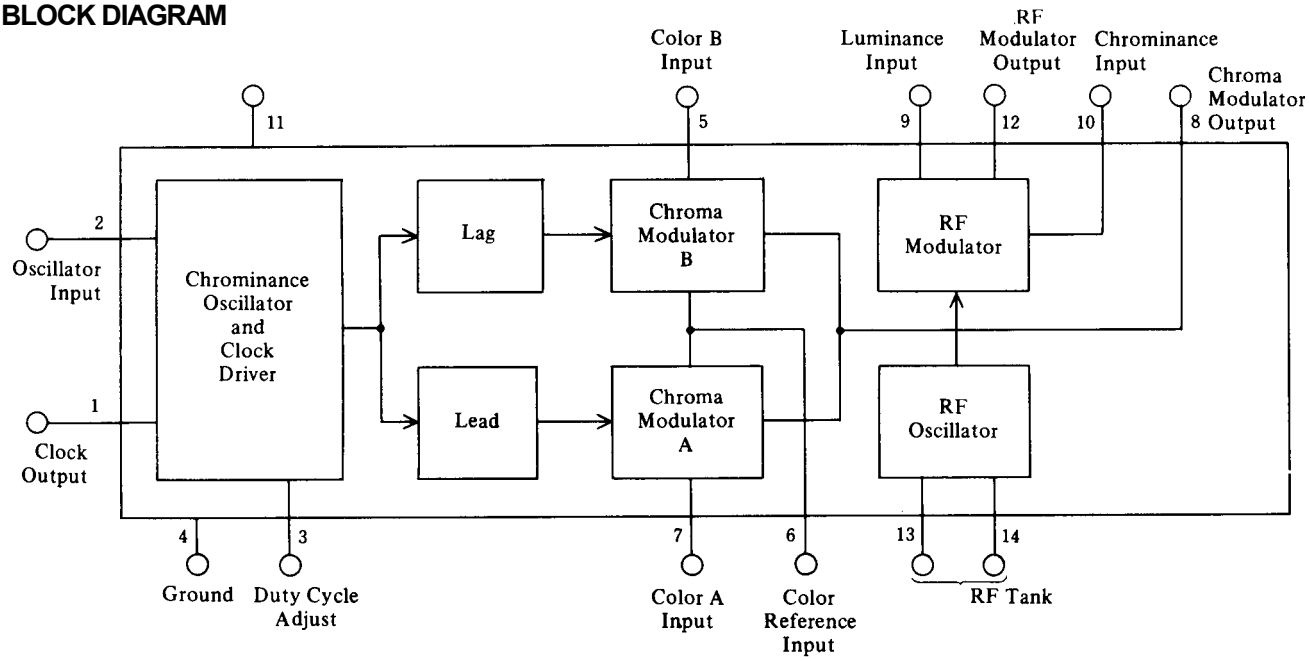
- Operating Voltage (+4.75 to +5.25V)
- Acts by Digital Control Signal
- Minimal External Components
- Composite Video Signal Generation Capability
- Low Power Dissipation
- Linear Chroma Modulators for High Versatility
- Ground-Referenced Video Prevents Over-modulation
- Package Outline DIP-14
- Bipolar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

■ PIN CONFIGURATION



NJM1372AD

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

(T_a=25°C)

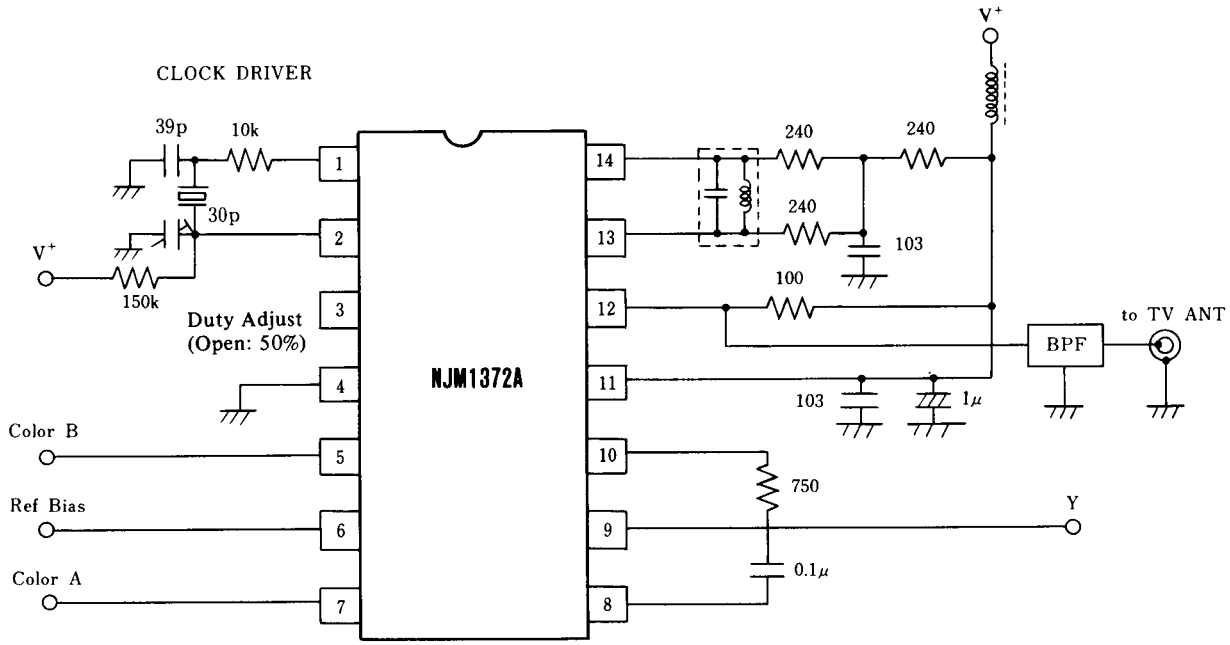
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	8	V
Power Dissipation	P_D	700	mW
Operating Temprature Range	T_{opr}	-20 to +75	°C
Storage Temprature Range	T_{stg}	-40 to +125	°C

■ ELECTRICAL CHARACTERISTICS

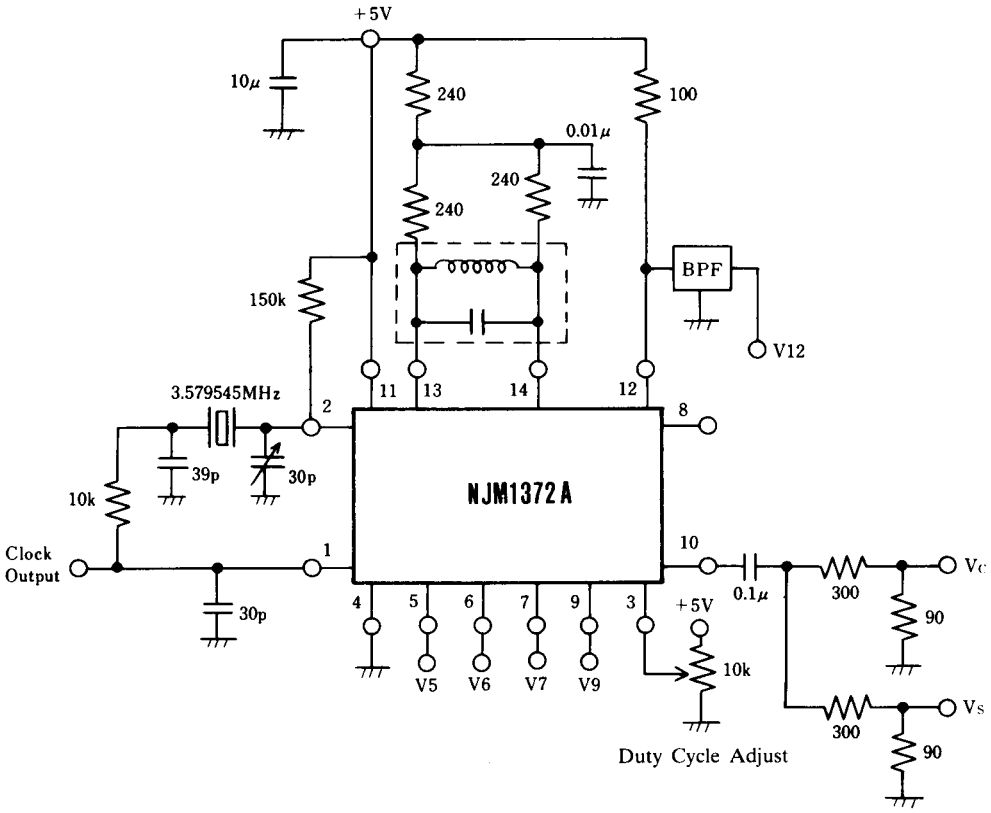
(T_a=25°C)

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_{aj}	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	Cθ	$\theta_8(V_7$=2.0V)- $\theta_8(V_5$=2.0V)		85	100	115	degree
Conversion Gain	G_{CC}	$V_8/(_7-V_6)$;$V_8/(V_5-V_6)$		-	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→2V: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	-	mVrams
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$V_{P-P}$, V_9=1.0V)	(TC2)	-	0.9	-	V/V
Chroma Linearity	L_C	Pin 12 V_{10}=1.5V_{P-P}	(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
Residual920kHz	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