μA788

TV CHROMA DEMODULATOR AND DC TINT CONTROL

FAIRCHILD LINEAR INTEGRATED CIRCUIT

GENERAL DESCRIPTION – The μA788 is a monolithic chroma demodulator with a dc tint control. It is constructed using the Fairchild Planar* epitaxial process. The device adds the luminance and color difference signals and provides direct coupled color signals to the video output drivers. The tint control section of the IC has a constant amplitude output with dc phase control.

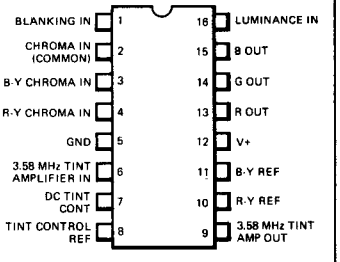
The μA788 will interface with several chroma processing systems, e.g., 3066 or μA780/μA781, but is intended to complement the μA787 chroma processing IC to form a 2-chip chroma system with optimum performance.

- **10 V PEAK-TO-PEAK BLUE OUTPUT**
- **INTERNAL SUBCARRIER FILTERING**
- **COLOR DIFFERENCE OR RGB SIGNALS AT THE OUTPUT**
- **LUMINANCE SIGNAL INPUT**
- **HORIZONTAL RETRACE BLANKING PULSE INPUT**
- **DC TINT CONTROL**
- **TINT RANGE ADJUSTABLE TO 150**

ABSOLUTE MAXIMUM RATINGS

Supply Voltage (V+)	28 V
Power Dissipation	730 mW
Operating Temperature Range	0°C to 70°C
Storage Temperature Range	−55°C to +125°C
Lead Temperature Molded DIP (soldering, 10 s)	260°C
Luminance Input Voltage	Supply Voltage (V+)
Minimum Tint Control Reference Load Resistance (Pin 8)	8.0 kΩ
Minimum Output Load Resistance (Pins 9, 13, 14, 15)	3.0 kΩ
Peak-to-Peak Reference Voltage (Pins 10, 11)	5.0 V
Peak-to-Peak Chroma Voltage (Pins 2, 3, 4)	5.0 V
Blanking Input Voltage	−3.0 V to +7.0 V

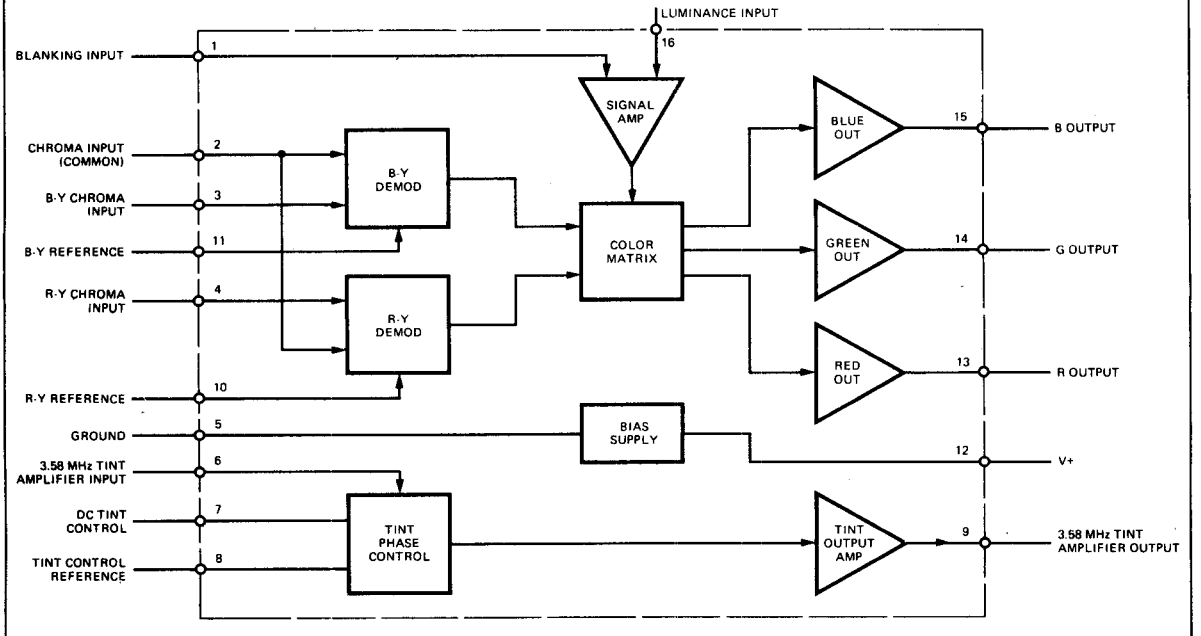
CONNECTION DIAGRAM
16-LEAD DIP
(TOP VIEW)
PACKAGE OUTLINE 9B
PACKAGE CODE P



ORDER INFORMATION

TYPE	PART NO.
788	μA788PC

BLOCK DIAGRAM



DC CHARACTERISTICS (T_A = 25°C, V+ = 24 V, Test Circuit 1, unless otherwise specified.)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
DC Bias Voltages					
Blanking Input (V1)	S1 Closed		1.2		V
Common Chroma Input (V2)			3.0		V
B-Y, R-Y Chroma Input (V3, V4)			3.0		V
3.58 MHz Tint Input (V6)			3.0		V
DC Tint Phase Control Input (V7)			5.6		V
Tint Phase Control Reference (V8)			11.2		V
3.58 MHz Tint Output (V9)			16		V
R-Y, B-Y Reference Input (V10, V11)			5.6		V
Demodulator Output (V13, V14, V15)		13	14.5	16	V
Luminance Input (V16)			23.8		V
Supply Current			25	33	mA
Blanking Input Current (I1)	V1 = 5.0 V		4.5		mA
Luminance Input Resistance (Pin 16)			100		kΩ
Chroma Input Resistance (Pins 2, 3, 4)			2.0		kΩ
Chroma Input Capacitance (Pins 2, 3, 4)			5.0		pF
Reference Input Resistance (Pins 10, 11)			2.0		kΩ
Reference Input Capacitance (Pins 10, 11)			6.0		pF
3.58 MHz Tint Amp Input Resistance (Pin 6)			2.0		kΩ
3.58 MHz Tint Amp Input Capacitance (Pin 6)			3.0		pF
3.58 MHz Tint Amp Output Resistance (Pin 9)			200		Ω
Demodulator Output Temperature Coefficient (V13, V14, V15)			−3.0		mV/°C

AC CHARACTERISTICS (T_A = 25°C, V+ = 24 V, Test Circuit 2, unless otherwise specified.)

Tint Amp Output Voltage (V9)		1.0	2.0		V_{p-p}
Maximum Available Tint Range			150		Degrees
Blue Output Voltage	Chroma Input V3 = V4 = 0.7 V_{p-p}	6.0	8.0		V_{p-p}
B-Y Demodulator Conversion Gain	Blue Output V15 = 5.0 V_{p-p}	10	16		V/V
Demodulator Output Gain Relative to B-Y Output (V15)	B-Y Output (V15) Normalized to 1.0				
R-Y Output (V13)		0.65	0.76	0.84	
G-Y Output (V14)		0.15	0.20	0.25	
Demodulator Output Phase Angle Relative to B-Y Output	B-Y Output Phase Normalized to 0°				
R-Y Output (V13)		101	106	111	Degrees
G-Y Output (V14)		248	256	264	Degrees
Differential Voltage Between Any Two Demodulator Outputs (V13, V14, V15)	Chroma Input = 0		0.3		V
Demodulator ac Unbalance Voltage (V13, V14, V15)	Chroma Input = 0		0.2		V_{p-p}
Gain From Luminance Input	S2 Closed				
(Lead 16) to Demodulator Outputs	f = 1.0 kHz		0.95		V/V
	f = 5.0 MHz		0.5		V/V

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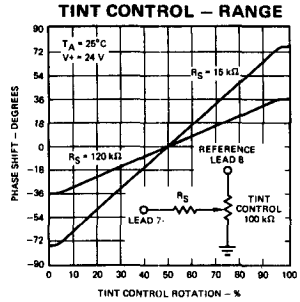
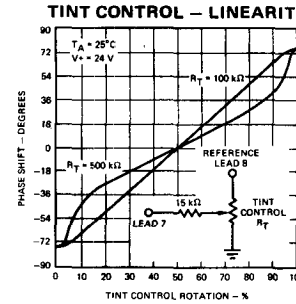
TYPICAL PERFORMANCE CURVES

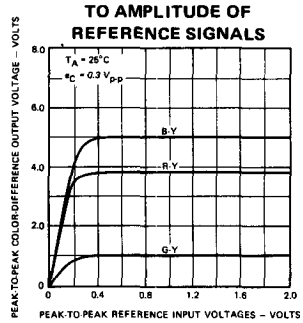
TINT CONTROL – RANGE



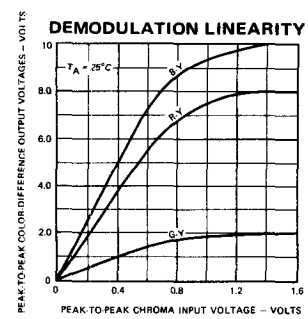
TINT CONTROL – LINEARITY



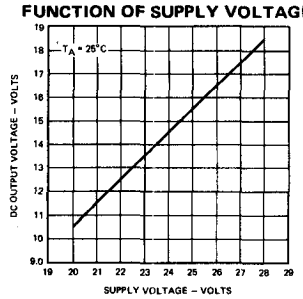
DEMODULATION SENSITIVITY TO AMPLITUDE OF REFERENCE SIGNALS



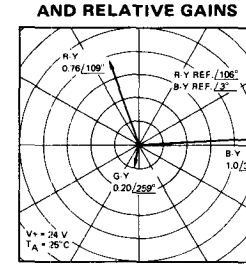
DEMODULATION LINEARITY



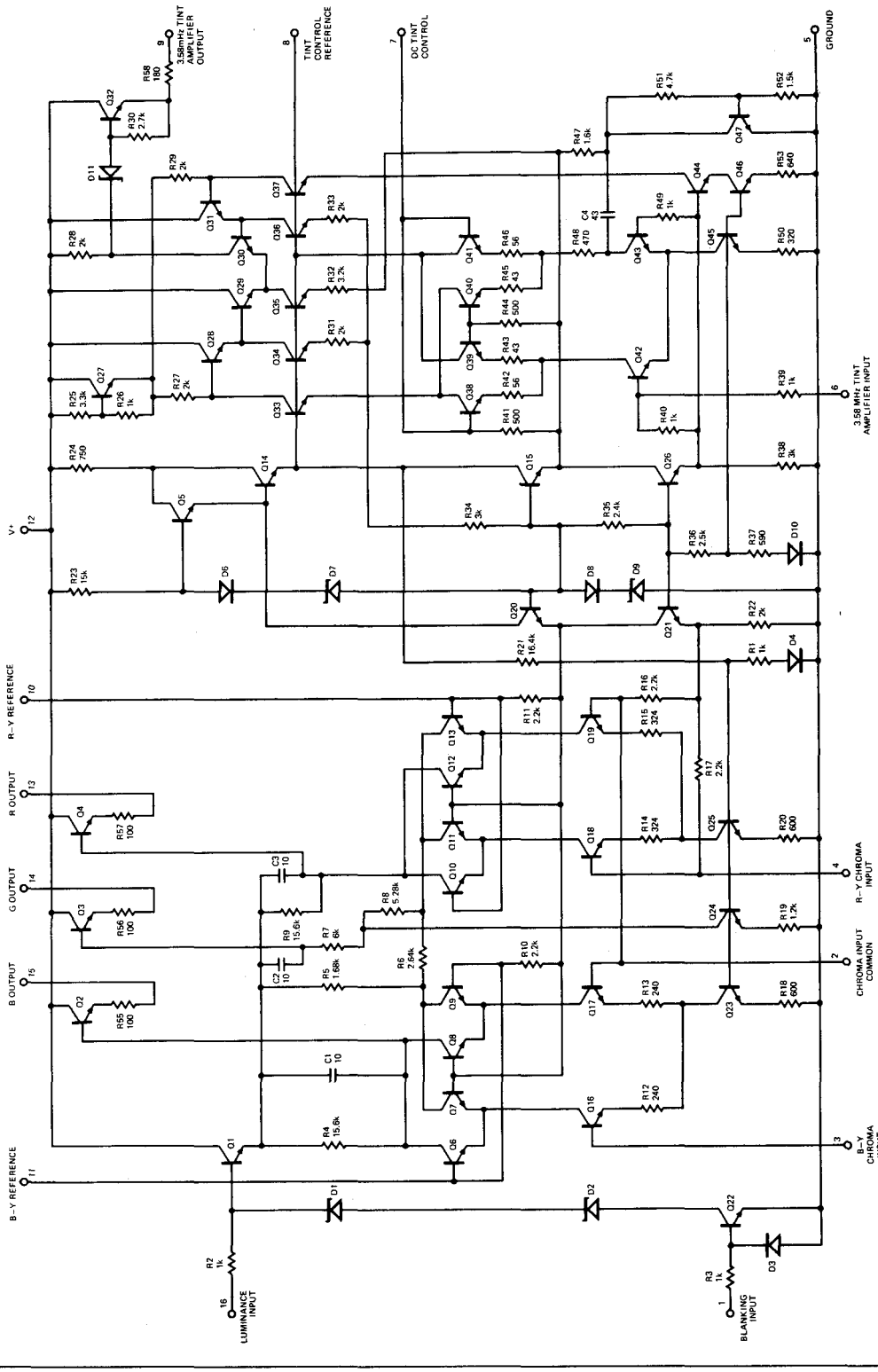
DC VOLTAGE AT ANY *DEMODULATOR OUTPUT* AS A FUNCTION OF SUPPLY VOLTAGE



DEMODULATION ANGLES AND RELATIVE GAINS



EQUIVALENT CIRCUIT



ALL RESISTOR VALUES ARE IN OHMS AND ALL CAPACITOR VALUES ARE IN PICO FARADS.

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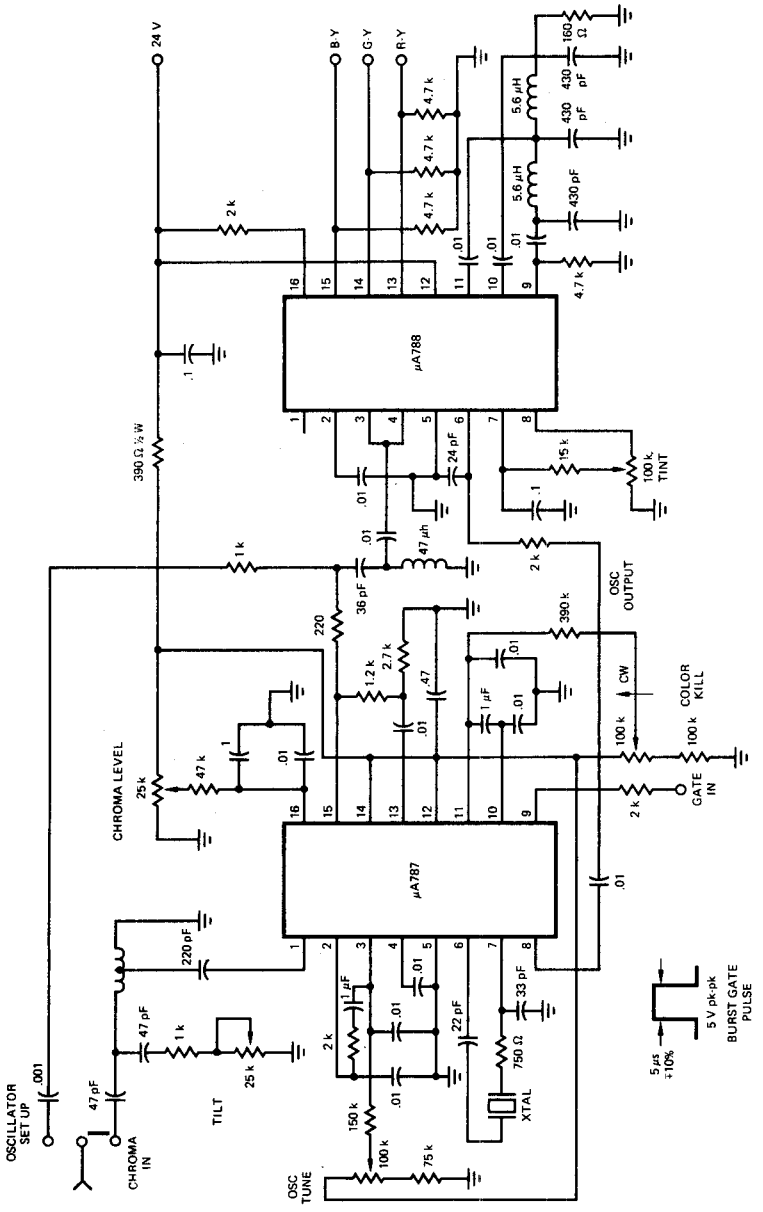
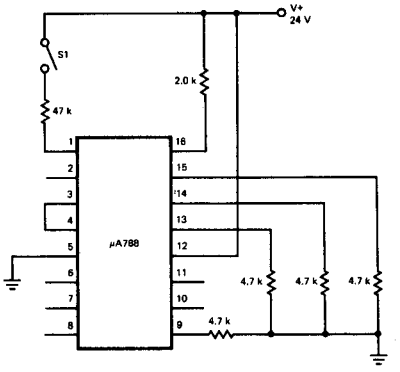
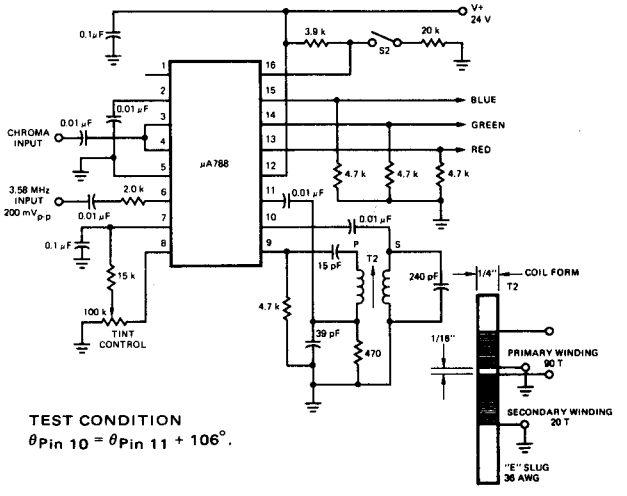
TYPICAL APPLICATION



TEST CIRCUIT 1



TEST CIRCUIT 2



TEST CONDITION
$\theta_{Pin\ 10} = \theta_{Pin\ 11} + 106°$.

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CONSUMER CIRCUIT SELECTION GUIDE BY FUNCTION

TV

Function	Circuits
AFT	μA3064
Sound IF Amp. Lim. Detector	μA3065
Video Amplifier	TBA970
Chroma Processing NTSC	μA746, μA780, μA781, μA787, μA788
Chroma Processing PAL	TAA630S, TBA510, TBA520, TBA540, TBA560C, TBA990
Chroma Matrix	TBA530
Sync Separator Hor. Oscillator	μA1391, μA1394, TBA920
Audio Output	TBA800, TBA810S
Video Tape Recorders	μA796

AUDIO

Function	Circuits
AM Radio	μA720
AM-FM IF	μA721
IF Amplifiers	μA703, μA753
IF Amp. Lim. Detectors	μA2136, μA3075, μA3089
Stereo Demodulators	μA732, μA758, μA767
Audio Preamplifiers	μA739, μA749, μA7305
Four-Channel Sound	μA1312, μA1314, μA1315
Dolby Noise Reduction	μA7300
Audio Amplifiers	μA706, TBA641, TBA800, TBA810S, TBA810DS
Tape Motor Speed Control	μA7391