

## ORDERING INFORMATION

Device	Temperature Range	Package
MC1327P	-20°C to +75°C	Plastic DIP

# MC1327

## Advance Information

### DUAL DOUBLY BALANCED CHROMA DEMODULATOR WITH RGB MATRIX, PAL SWITCH, AND CHROMA DRIVER STAGES

... a monolithic device designed for use in solid-state color television receivers.

- Good Chroma Sensitivity — 0.28 Vp-p Input Typical for 5.0 Vp-p Output
- Low Differential Output DC Offset Voltage — 0.6 V Maximum
- Differential DC Temperature Stability — 0.7 mV/°C
- High Blue Output Voltage Swing — 10 Vp-p Typical
- Blanking Input Provided
- Luminance Bandwidth Greater than 5.0 MHz

### DUAL DOUBLY BALANCED CHROMA DEMODULATOR for PAL or NTSC

SILICON MONOLITHIC INTEGRATED CIRCUIT

**P SUFFIX**  
PLASTIC PACKAGE  
CASE 646-05

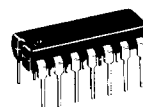
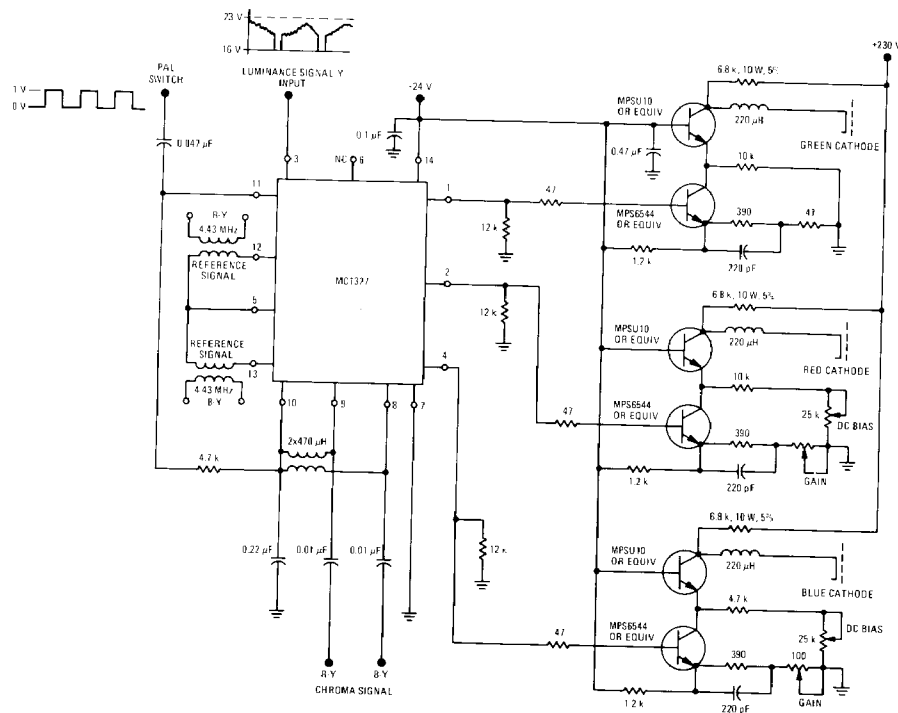


FIGURE 1 — TYPICAL APPLICATION CIRCUIT



This document contains information on a new product. Specifications and information herein are subject to change without notice.

MOTOROLA LINEAR/INTERFACE DEVICES

**MAXIMUM RATINGS** ( $T_A = +25^\circ\text{C}$  unless otherwise noted)

Rating	Value	Unit
Power Supply Voltage	30	Vdc
Chroma Signal Input Voltage	5.0	Vpk
Reference Signal Input Voltage	5.0	Vpk
Minimum Load Resistance	3.0	k ohms
Luminance Input Voltage	12	Vp-p
Blanking Input Voltage	7.0	Vp-p
Power Dissipation (Package Limitation)		
Plastic Packages	625	mW
Derate above $T_A = +25^\circ\text{C}$	5.0	mW/ $^\circ\text{C}$
Operating Temperature Range (Ambient)	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	-65 to +150	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS** ( $V_{CC} = 24\text{ Vdc}$ ,  $R_L = 3.3\text{ k ohms}$ ,  $T_A = +25^\circ\text{C}$  unless otherwise noted)

Characteristic	Pin No.	Min	Typ	Max	Unit
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**STATIC CHARACTERISTICS**

Quiescent Output Voltage (See Figure 2)	1,2,4	13.2	14.5	15.8	Vdc
Quiescent Input Current from Supply (Figure 2) ( $R_L = \infty$ ) ( $R_L = 3.3\text{ k ohms}$ )		— 16	7.5 19	— 26	mA
Reference Input DC Voltage (Figure 2)	5,12,13	—	6.2	—	Vdc
Chroma Reference Input DC Voltage (Figure 2)	8,9,10	—	3.4	—	Vdc
Differential Output Voltage (See Note 1 and Figure 2)	1,2,4	—	0.3	0.6	Vdc
Differential Output Voltage Temperature Coefficient (See Note 1 and Figure 2) ( $+25^\circ\text{C}$ to $+65^\circ\text{C}$ )	1,2,4	—	0.7	—	mV/ $^\circ\text{C}$
Output Voltage Temperature Coefficient (See Note 1 and Figure 2) ( $+25^\circ\text{C}$ to $+65^\circ\text{C}$ )	1,2,4	—	+0.5	$\pm 5.0$	mV/ $^\circ\text{C}$

**DYNAMIC CHARACTERISTICS** ( $V_{CC} = 24\text{ Vdc}$ ,  $R_L = 3.3\text{ k ohms}$ , Reference Input Voltage = 1.0 Vp-p,  $T_A = +25^\circ\text{C}$  unless otherwise noted)

Blue Output Voltage Swing (See Note 2 and Figure 3)	4	8.0	10	—	Vp-p
Chroma Input Voltage (B Output = 5.0 Vp-p) (See Note 3 and Figure 3)	8	—	280	550	mVp-p
Luminance Input Resistance	3	100	—	—	k $\Omega$
Luminance Gain From Pin 3 to Outputs (@ dc) (@ 5.0 MHz, reference at 100 kHz)	1,2,4	— —	0.95 -1.8	— —	— dB
Differential Luminance Gain, RGB Outputs (@ 5.0 MHz)		—	0.3	—	dB
Blanking Input Resistance (1.0 Vdc) (0 Vdc)	6	— —	1.1 75	— —	k $\Omega$
Detected Output Voltage (Adjust B Output to 5.0 Vp-p, Luminance Voltage = 23 V) (See Note 4)	4				Vp-p
G Output	1	1.4	1.8	2.2	
R Output	2	2.5	2.9	3.3	
PAL Switch Operating Voltage Range (7.8 kHz Square Wave)	11	0.3	—	3.0	Vp-p
R-Y Output dc Offset with PAL Switch Operation		—	—	100	mVdc
Demodulator Unbalance Voltage (no Chroma Input Voltage and normal Reference Signal Input Voltage)	1,2,4	—	200	300	mVp-p
Residual Carrier and Harmonics Output Voltage (with Input Signal Voltage, normal Reference Signal Voltage and B Output = 5.0 Vp-p)	1,2,4	—	0.6	1.0	Vp-p
Reference Input Resistance (Chroma Input = 0)	12,13	—	2.0	—	k $\Omega$
Reference Input Capacitance (Chroma Input = 0)	12,13	—	6.0	—	pF
Chroma Input Resistance	8,9,10	—	2.0	—	k $\Omega$
Chroma Input Capacitance	8,9,10	—	2.0	—	pF

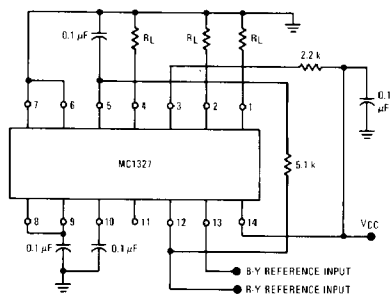
**NOTES:**

1. Chroma Input Signal Voltage = 0 and normal Reference Input Signal Voltage = 1.0 Vp-p.
2. With normal Reference Input Signal Voltage, adjust Chroma Input Signal Voltage to 1.2 Vp-p.
3. With normal Reference Input Signal Voltage, adjust Chroma Input Signal Voltage until the Blue Output Voltage = 5.0 Vp-p.
4. With normal Reference Input Signal Voltage, adjust Chroma Input Signal Voltage until the Blue Output Voltage = 5.0 Vp-p. At this point, the Red and Green voltages will fall within the specified limits.

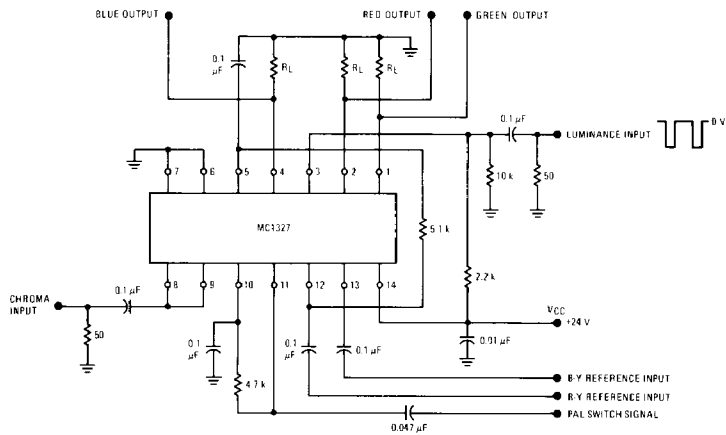
## TEST CIRCUITS

( $V_{CC} = 24 \text{ Vdc}$ ,  $R_L = 3.3 \text{ kilohms}$ ,  $T_A = +25^\circ\text{C}$  unless otherwise noted)

**FIGURE 2 – DC OUTPUT VOLTAGE TEST CIRCUIT  
WITH NORMAL REFERENCE INPUT VOLTAGE  
(B, R, AND G)**



**FIGURE 3 – DYNAMIC TEST CIRCUIT**



## CHROMA DEMODULATOR

