MC1364

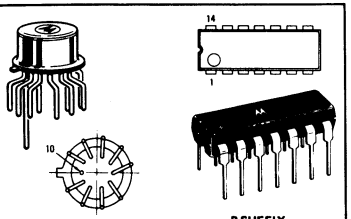
Advance Information

MONOLITHIC TV AUTOMATIC FREQUENCY CONTROL

- High Gain Amplifier – 18 mV Input for Rated Output
- Direct Replacement for the CA3064
- Also Available in the 14-Lead Dual In-Line Package

AUTOMATIC FREQUENCY CONTROL

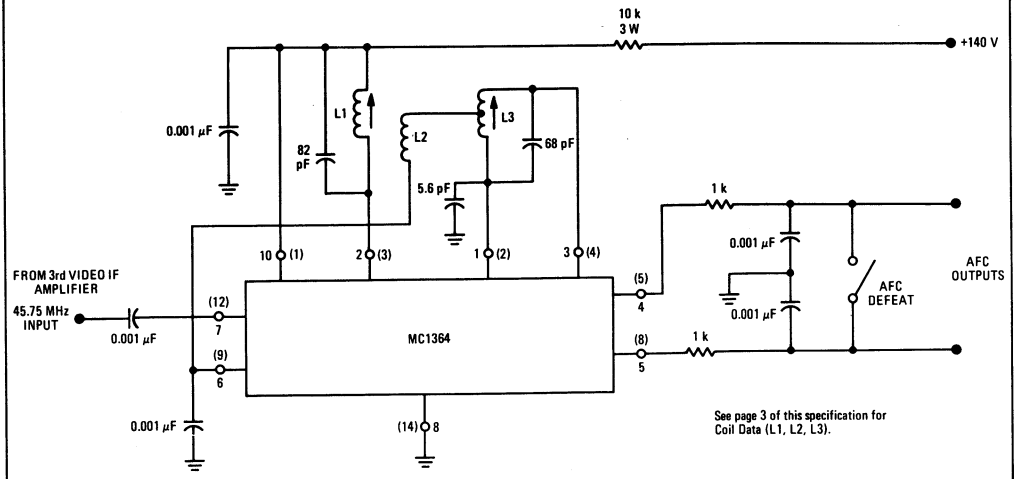
MONOLITHIC SILICON INTEGRATED CIRCUIT



G SUFFIX
METAL PACKAGE
CASE 686

P SUFFIX
PLASTIC PACKAGE
CASE 646
TO-116

FIGURE 1 – TYPICAL APPLICATION CIRCUIT



See page 3 of this specification for Coil Data (L1, L2, L3).

The number without parenthesis is the pin number for the metal package. The number in parenthesis is the pin number for the plastic package.

Metal Package, Pin 9 – no connection
Plastic Package, Pins 6,7,10,11,13 – no connection

MAXIMUM RATINGS (T_A = +25°C unless otherwise noted, see Note 1)

Rating	MC1364G	MC1364P	Unit
Input Signal Voltage (Pin 7 to 8)	+2.0, -10	+2.0, -10	Vdc
Output Collector Voltage (Pins 2 and 8)	20	20	Volts
Power Dissipation (Package Limitation) Derate above T_A = +25°C	680 5.6	625 5.0	mW mW/°C
Operating Temperature Range	-40 to +85	0 to +75	°C
Storage Temperature Range	-65 to +150	-65 to +125	°C

Maximum Ratings as defined in MIL-S-19500, Appendix A.

ELECTRICAL CHARACTERISTICS (V^+ = +30 Vdc, T_A = +25°C, see Test Circuit of Figure 2 unless otherwise noted)

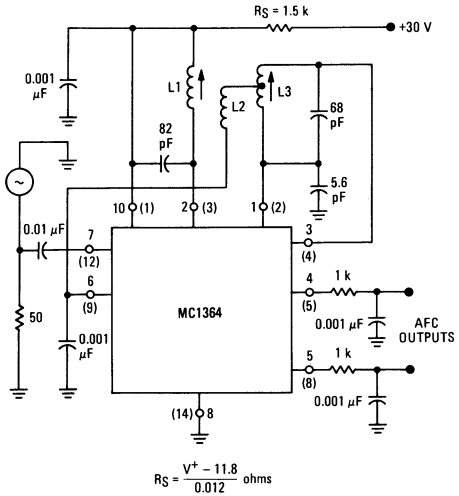
Characteristic	Min	Typ	Max	Unit
Total Device Dissipation	–	140	–	mW
Total Supply Current	–	12	–	mA
Current Drain, Total (Reduce V^+ so that V10 = 10.5 Vdc)	4.0	6.5	9.5	mA
Zener Regulating Voltage	10.9	11.8	12.8	V
Quiescent Current to Pin 2	1.0	2.0	4.0	mA
Quiescent Voltage at Pin 4 or Pin 5	5.0	6.6	8.0	V
Output Offset Voltage (Pin 4 to Pin 5)	-1.0	0	+1.0	V

DESIGN PARAMETERS, TYPICAL VALUES (V^+ = +30 Vdc, R_S = 1.5 k, f = 45.75 MHz)

Parameter	Symbol	Typ	Unit
Input Admittance	y_{11}	0.4 + j1	mmho
Reverse Transfer Admittance	y_{12}	0 + j3.4	μmho
Forward Transfer Admittance	y_{21}	110 + j140	mmhos
Output Admittance (Pin 2)	y_{22}	0.02 + j1	mmho

Note 1. Pin numbers used in the above tables are for the metal package, Case 686. For corresponding pin numbers for the plastic package, Case 605, see the Test Circuit, Figure 2).

FIGURE 2 – TEST CIRCUIT



$$R_S = \frac{V^+ - 11.8}{0.012} \text{ ohms}$$

The number without parenthesis is the pin number for the metal package. The number in parenthesis is the pin number for the plastic package.

Metal Package, Pin 9 - no connection
Plastic Package, Pins 6,7,10,11,13 - no connection

COIL DATA FOR DISCRIMINATOR WINDINGS FOR FIGURES 1 AND 2

L1 – Discriminator Primary: 3-1/6 turns; 0,8 mm Ø Enamel-covered wire – close-wound, at bottom of coil form. Inductance of L1 = 0.165 μH; Q_O = 120 at f_O = 45.75 MHz.

Start winding at Terminal #6; finish at Terminal #1. See Notes below.

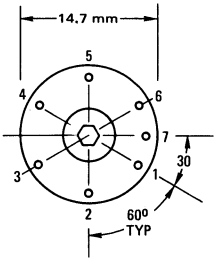
L2 – Tertiary Windings: 2-1/6 turns; 0,8 mm Ø Enamel-covered wire – close-wound over bottom end of L1.

Start winding at Terminal #3; finish at Terminal #4. See Notes below.

L3 – Discriminator Secondary: 3-1/2 turns; 0,8 mm Ø Enamel-covered wire, center-tapped, space wound at bottom of coil form.

Start winding at Terminal #2; finish at Terminal #5, connect center tap to Terminal #7. See Notes below.

Notes:
1. Coil Forms; Cylindrical; 7,6 mm Dia. Max.
2. Tuning Core: 6.35 Ø x 9.4 mm Length.
   Material: Carbinal J or equivalent.
3. Coil Form Base: See drawing below.
4. End of coil nearest terminal board to be designated the winding start end.
5. Mount the coils 19.05 mm apart, center to center.



TYPICAL CHARACTERISTICS

(See Test Circuit of Figure 2)

FIGURE 3 – TYPICAL NARROW BAND DYNAMIC CHARACTERISTICS

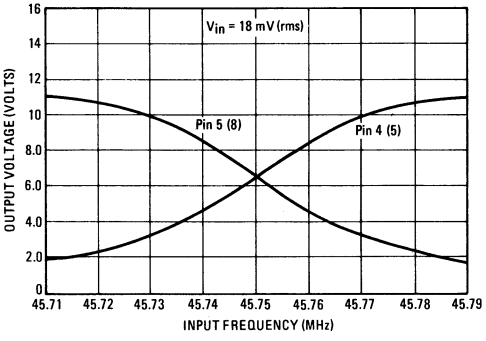


FIGURE 4 – TYPICAL WIDE BAND DYNAMIC CHARACTERISTICS

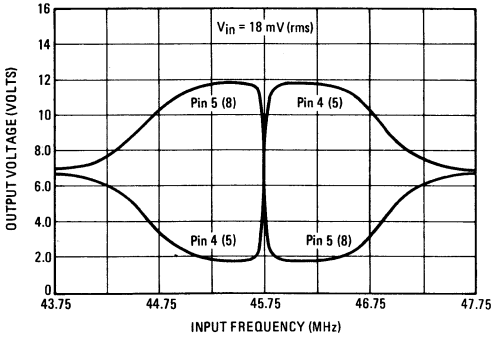
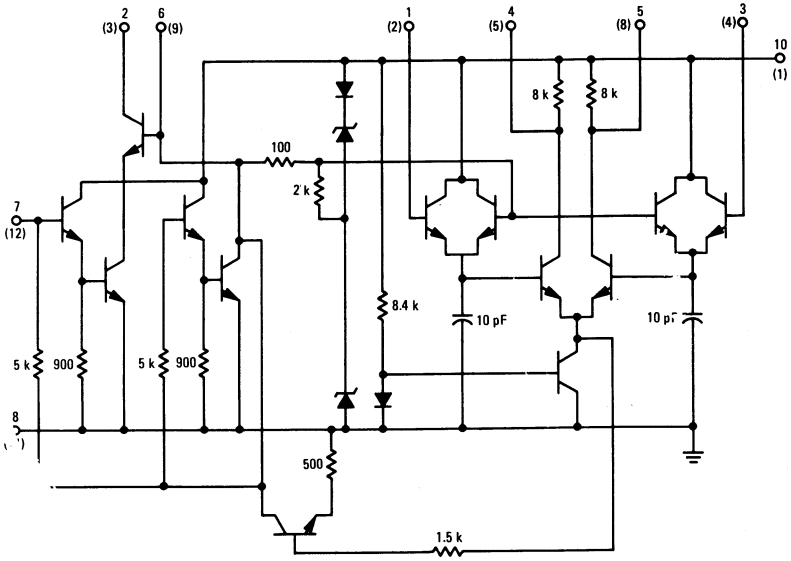


FIGURE 5 – CIRCUIT SCHEMATIC



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Metal Package, Pin 9 – no connection
Plastic Package, Pins 6,7,10,11,13 – no connection

FIGURE 6 – PRINTED CIRCUIT BOARD AND PARTS ARRANGEMENT
(Copper Side)