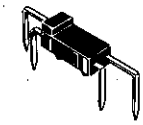
DEVICE DISCONTINUED – CONSULT FACTORY

1/4-WATT AUDIO AMPLIFIER

. . . designed for the output stage of battery-powered portable radios.

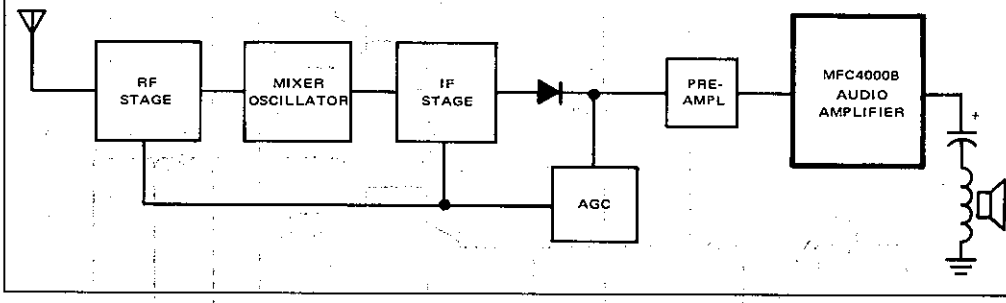
- 250 mW of Audio Output Power
- Low Standby Current – 3.5 mA typical
- Low Harmonic Distortion
- Reduces Component Count in Portable Radios

1/4-WATT AUDIO AMPLIFIER
SILICON MONOLITHIC FUNCTIONAL CIRCUIT



PLASTIC PACKAGE
CASE 206A

TYPICAL APPLICATION



MAXIMUM RATINGS (T_A = + 25°C unless otherwise noted.)

Rating	Value	Unit
Power Supply Voltage	12	Vdc
Power Dissipation (Package Limitation) (Soldered on a circuit board and held in free air)	1.0	Watt
Derate above T_A = +25°C	10	mW/°C
Operating Temperature Range	-10 to +75	°C

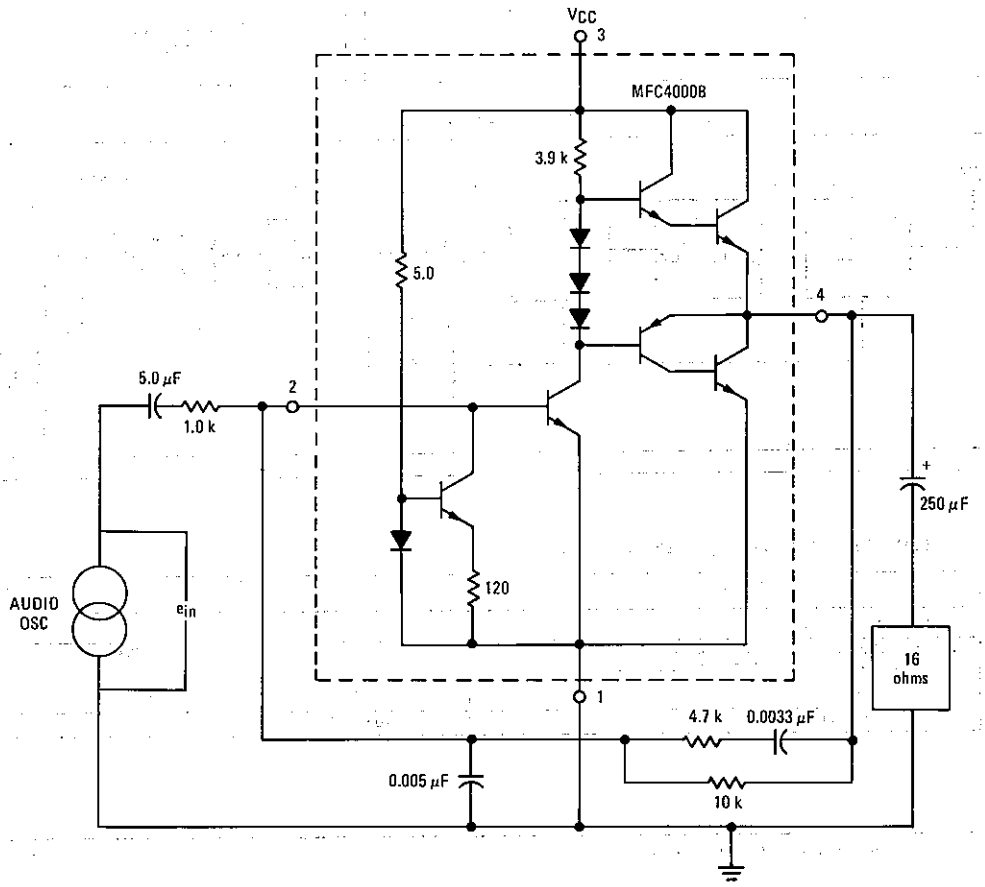
See Packaging Information Section for outline dimensions.

ELECTRICAL CHARACTERISTICS* (V_{CC} = 9.0 Vdc, R_L = 16 Ohms, T_A = +25°C unless otherwise noted.)

Characteristic	Min	Typ	Max	Unit
Zero Signal Current Drain	–	3.0	5.0	mAdc
Sensitivity P_O = 250 mW(RMS)	–	–	240	mV(RMS)
Output Power Total Harmonic Distortion ≤ 10%	250	350	–	mW(RMS)
Total Harmonic Distortion P_O = 50 mW(RMS) P_O = 50 mW(RMS), V_{CC} = 6.0 Vdc	– –	0.7 4.5	– –	%

*As measured in test circuit shown in Figure 1.

FIGURE 1 – TEST CIRCUIT



TOTAL HARMONIC DISTORTION versus OUTPUT POWER

FIGURE 2 – V_{CC} = 9.0 Vdc

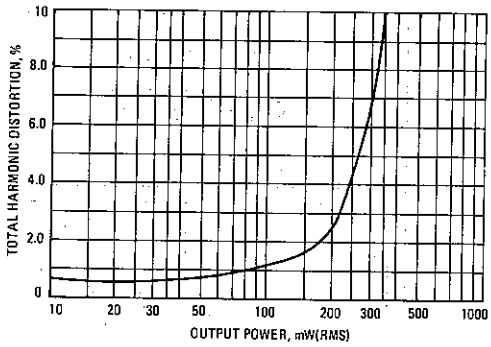


FIGURE 3 – V_{CC} = 6.0 Vdc

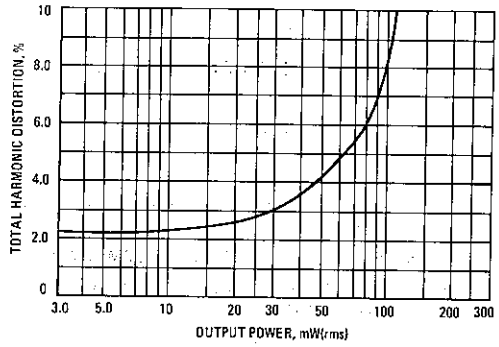


FIGURE 4 – CURRENT DRAIN versus OUTPUT POWER

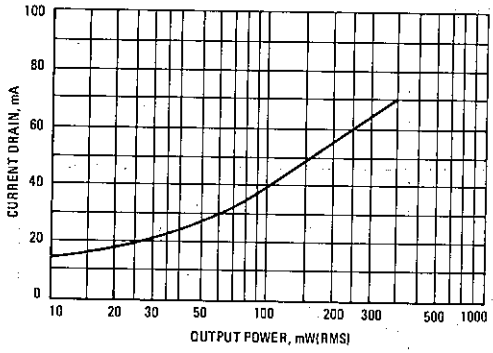


FIGURE 5 – TOTAL HARMONIC DISTORTION versus SUPPLY VOLTAGE

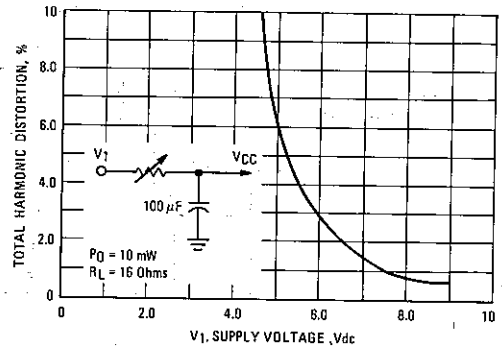
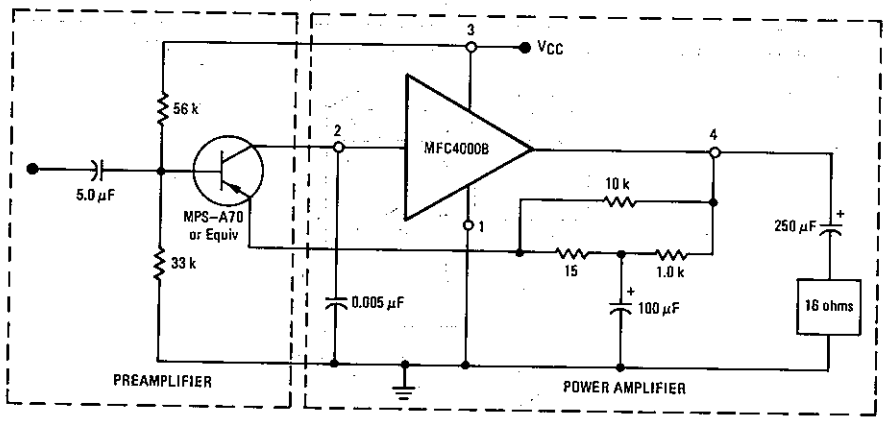


FIGURE 6 – TYPICAL CIRCUIT APPLICATION



PACKAGE DISCONTINUED – AVAILABLE IN CASE 626
CONSULT FACTORY

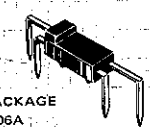
WIDE-BAND AMPLIFIER

. . . designed for FM/IF and low-level audio applications.

- High Audio Gain – 60 dB minimum
- Useful as a Microphone Amplifier and in Tape Recorders and Cassettes
- Excellent Performance as a 10.7 MHz FM/IF Amplifier
- High Transconductance (g_m) Ideally Suited to Low Impedance Ceramic Filters

WIDE-BAND AMPLIFIER

SILICON MONOLITHIC
FUNCTIONAL CIRCUIT



PLASTIC PACKAGE
CASE 206A

TYPICAL APPLICATIONS

FIGURE 1 – FM/IF AMPLIFIER

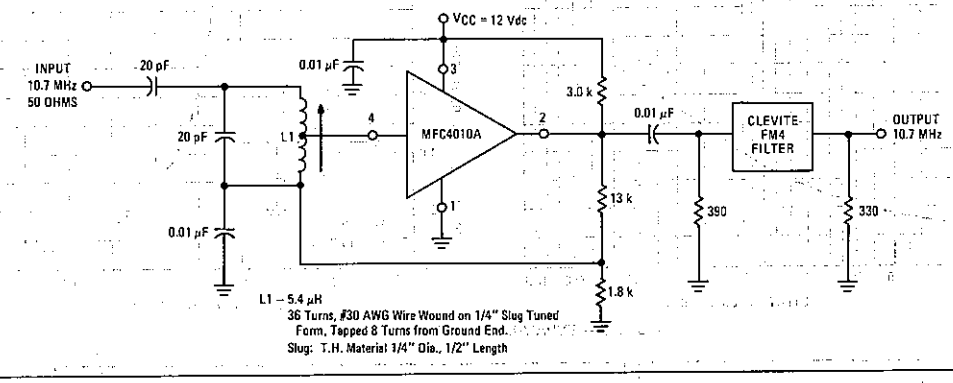
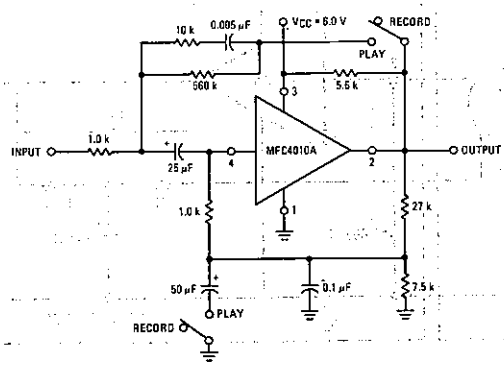


FIGURE 2 – RECORD/PLAY PREAMPLIFIER FOR CASSETTE AND PORTABLE TAPE RECORDERS



8

See Packaging Information Section for outline dimensions.

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted).

Rating	Value	Unit
Power Supply Voltage	21	Vdc
Power Dissipation @ T_A = 25°C (Package Limitation)	1.0	Watt
Derate above 25°C	8.0	mW/°C
Operating Temperature Range	0 to +75	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 6.0 Vdc, T_A = 25°C unless otherwise noted).

Characteristic		Min	Typ	Max	Unit
Open Loop Voltage Gain (Figure 3) (f = 1.0 kHz)		60	68	–	dB
h Parameters(1) (f = 1.0 kHz)	h_{11}	–	1.0	–	k ohms
	h_{12}	–	10^{-6}	–	–
	h_{21}	–	1000	–	–
	h_{22}	–	10^{-5}	–	mhos
Output Noise Voltage (Figure 3) (BW = 20 Hz to 20 kHz, R_S = 1.0 k ohms)		–	3.0	–	mV(RMS)
		–	3.0	–	
Current Drain		–	3.0	–	mA

HIGH FREQUENCY CHARACTERISTICS (V_{CC} = 12 Vdc, f = 10.7 MHz, T_A = 25°C unless otherwise noted).

Power Gain (Figure 1) e_{in} = 0.1 mVRMS)		–	42	–	dB
Noise Figure (Figure 1) ($R_S \approx$ 740 Ohms)		–	6.0	–	dB
y Parameters(1) (f = 10.7 MHz, I_2 = 2.0 mA)	y_{11}	–	1.3 + j1.5	–	mmhos
	y_{12}	–	-3.4 + j8.1	–	μmhos
	y_{21}	–	-0.33 + j0.68	–	mho
	y_{22}	–	120 + j0	–	μmhos

(1) Device only, without external passive components.

FIGURE 3 – AUDIO TEST CIRCUIT

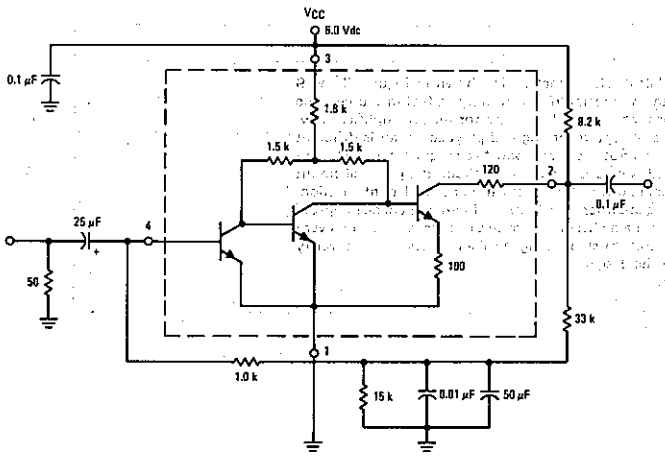
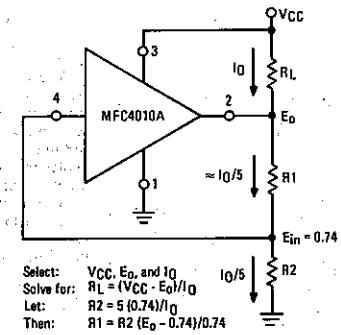


FIGURE 4 – BIASING RECOMMENDATIONS



TYPICAL CHARACTERISTICS

AUDIO PERFORMANCE CHARACTERISTICS
(for Test Circuit Figure 3)

FIGURE 5 – VOLTAGE GAIN versus FREQUENCY

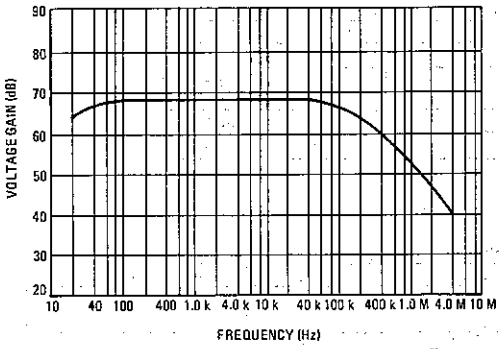
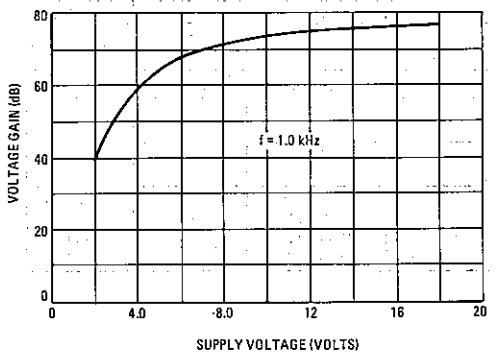


FIGURE 6 – VOLTAGE GAIN versus POWER SUPPLY



*TAPE PREAMPLIFIER PERFORMANCE
(for Circuit Figure 2)

FIGURE 7 – RECORD VOLTAGE GAIN versus FREQUENCY

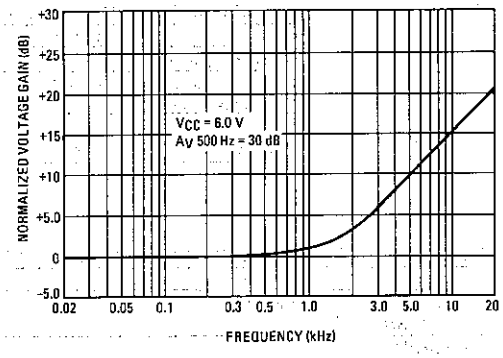
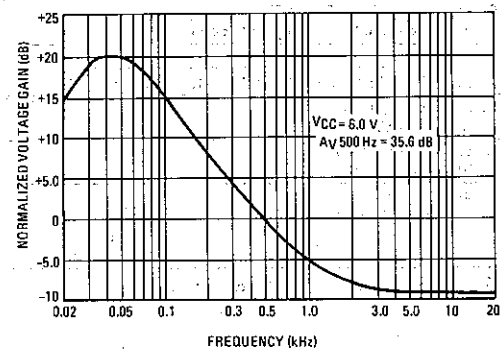


FIGURE 8 – PLAYBACK VOLTAGE GAIN versus FREQUENCY



Note:
The record/playback characteristics shown in Figures 8 and 9 were taken with the preamplifier driven by a 50 ohm source. The curves are typical of a desired response for the preamplifier; however, every type of tape recording and playback head is different and this circuit will not necessarily satisfy all requirements. No particular tape head was used as a basis for circuit design. The circuit is only an example showing the equalization network configuration.

The ideal preamplifier will have an input impedance approximately 10 times the highest impedance of the tape head and every preamplifier circuit must be designed using a test tape to verify the response of the design.

8

10.7 MHz y PARAMETERS

FIGURE 9 – INPUT ADMITTANCE

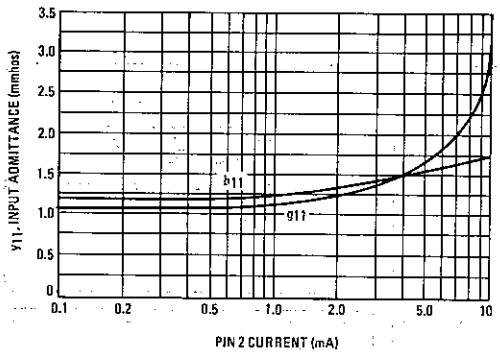


FIGURE 10 – REVERSE TRANSFER ADMITTANCE

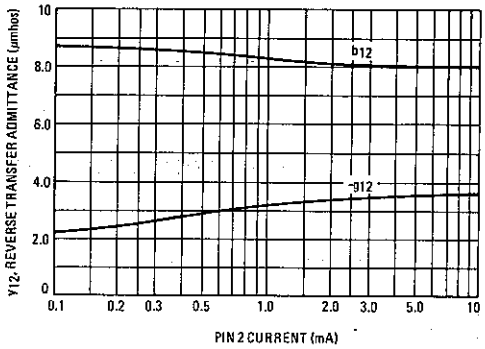


FIGURE 11 – FORWARD TRANSFER ADMITTANCE

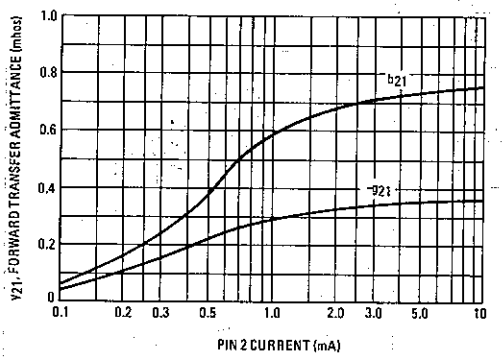
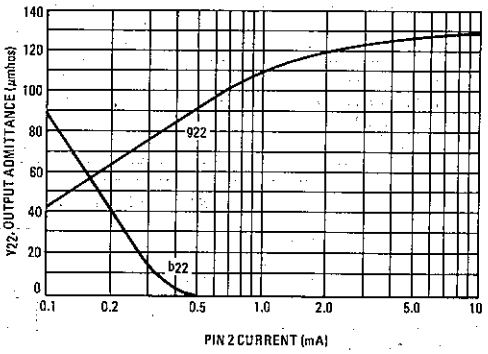


FIGURE 12 – OUTPUT ADMITTANCE



10.7 MHz PERFORMANCE
(Circuit of Figure 1)

FIGURE 13 – POWER GAIN versus SUPPLY VOLTAGE

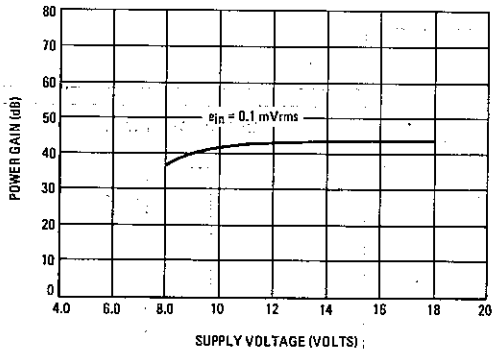
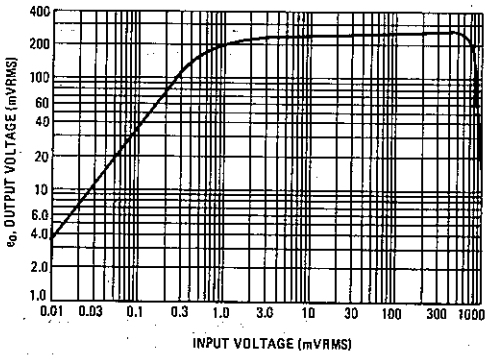


FIGURE 14 – VOLTAGE TRANSFER CHARACTERISTIC



8

MFC4040

DEVICE DISCONTINUED – CONSULT FACTORY

SINGLE TOGGLE FLIP-FLOP

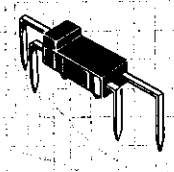
- Wide Operating Voltage Range — 6.0 to 16 Volts
- Regulated Supply Not Required
- Economical 4-Lead Plastic Package

SINGLE TOGGLE FLIP-FLOP

Silicon Monolithic
Functional Circuit

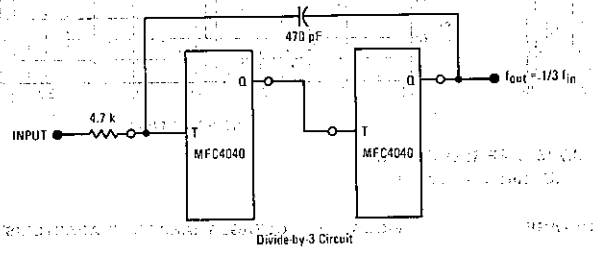
MAXIMUM RATINGS (T_A = +25°C unless otherwise noted.)

Rating	Value	Volts
Power Supply Voltage	19	Vdc
Output Sinking Current	10	mA
Negative Input Voltage	0.5	Vdc
Power Dissipation (Package Limitation) Derate above T_A = +25°C	1.0 10	Watt mW/°C
Operating Temperature Range	–10 to +75	°C



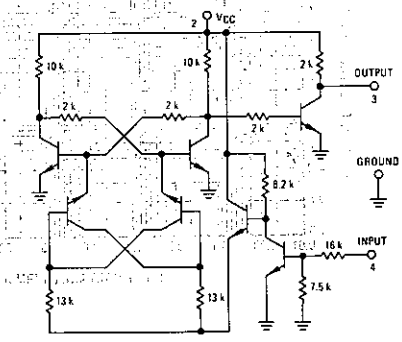
CASE 206A
PLASTIC PACKAGE

TYPICAL APPLICATION

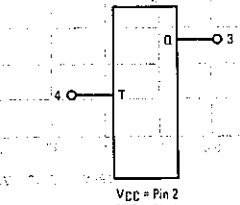


Divide-by-3 Circuit

FIGURE 1 – CIRCUIT SCHEMATIC



BLOCK DIAGRAM



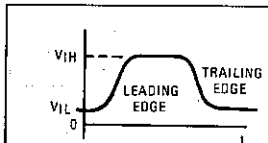
V_{CC} = Pin 2
GND = Pin 1

See Packaging Information Section for outline dimensions.

ELECTRICAL CHARACTERISTICS (V_{CC} = 12 Vdc, V_{in} = 4.0 V(p-p) Square Pulse, f = 10 kHz, 50% Duty Cycle, t_{PHL} = 1.0 V/μs, T_A = +25°C unless otherwise noted.)

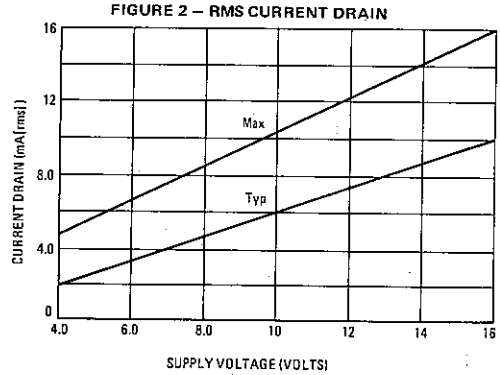
Characteristic	Min	Typ	Max	Unit
Operating Power Supply Voltage	6.0	–	16	Vdc
Toggle Frequency	–	3.0	–	MHz
Output Voltage (High) (V_{CC} = 6.0 Vdc) (V_{CC} = 16 Vdc)	 5.5 15.5	 – –	 – –	Vdc
Output Voltage (Low) (V_{CC} = 6.0 Vdc) (V_{CC} = 16 Vdc)	 – –	 – –	 0.3 0.5	Vdc
Operating Drain Current (V_{CC} = 16 Vdc)	–	–	32	mAdc
Output Sinking Current ($V_O \leq 1.0$ Vdc)	–	2.0	–	mAdc
Rise Time	–	250	–	ns
Storage Time	–	350	–	ns
Fall Time	–	60	–	ns
Input Resistance	10	–	–	kΩ
Output Resistance (Output High)	–	–	2.8	kΩ

INPUT PULSE REQUIREMENTS



Characteristic	Min	Max	Unit
Pulse Magnitude	+4.0	–	Volts
Zero Level	–	+1.0	Volts
Leading Edge	No Requirement		
Trailing Edge $\frac{dv}{dt}$	-1.0	–	$\frac{\text{Volts}}{\text{ns}}$

FIGURE 2 – RMS CURRENT DRAIN



MFC4060A
MFC4062A
MFC4063A
MFC4064A

VOLTAGE REGULATORS

These devices are not recommended for new design, but Motorola will continue to supply these devices for existing applications.

For a complete data sheet, mail your request to Motorola Semiconductor Products, Inc., P.O. Box 20912, Phoenix, Arizona 85036