

Chapter 12, 13, 14

Consumer Linear Circuits

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... reflecting Motorola's continuing commitment to semiconductor products necessary for Television, Audio, Radio, Refrigerator, Washing Machine, Power Tool, and Automotive Applications.

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TV and Radio

Television Subsystems

FUNCTION	FEATURES	CASE	TYPE
MONOMAX - 1-Chip TV	Include video IF, detector, AGC, video amplifier, horizontal processor, vertical processor, and sync for 525 line systems	710-02	MC13001
	Same as above except for 625 line systems	710-02	MC13002
	Same as MC13001, but reverse AGC	710-02	MC13008
	Same as MC13002, but reverse AGC	710-02	MC13009
Sound IF, Low Pass Filter, Detector, dc Volume Control, Preamplifier, Power Amplifier	Complete TV sound system; 100 μ V, 3 dB limiting sensitivity, 4 Watts output; $V_{CC} = 24$ V; $R_L = 16$ Ω	648C	TDA3190P
	Same as TDA3190P except for 750 mW output	648C	TDA1190P

Video

1st and 2nd Video IF Amplifier	IF gain at 45 MHz = 60 dB typ, AGC range = 70 dB min	626	MC1349
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Chroma I

Dual Chroma Demodulator	Dual doubly balance demodulator with RGB output matrix and PAL switch	646	MC1327AP
Chrominance PAL Control	Internal supply line stabilization, 20 dB ACC range. Designed to be used in conjunction with TBA396 and MC1327AP	646	TBA395
Luminance & Chrominance	DC control of brightness, contrast and saturation. Beam current limiting. Black level clamping	646	TBA396
PAL Chroma Processing System	Internal supply stabilization, 30 dB ACC range, \pm 400 Hz min-Oscillator pull in, 2 Vpp output	646	TDA3950A

Chroma III

PAL, NTSC Decoder	Full multi-standard capability, on screen display (with fast blanking), three DC high impedance user controls, automatic black level set-up, beam current limiting. Low dissipation (typically 600 mW)	711	TDA3300
Secam Adaptor	Expands TDA3300 to Secam, on-chip NTSC hue control, electronic on-chip Pal-Secam switching. Low dissipation (typically 400 mW)	710	TDA3030

Chroma IV

PAL, NTSC Decoder	Full multi-standard capability, on chip contrast, brightness and saturation controls, automatic black level set-up, on chip NTSC hue control, low dissipation (typically 600 mW)	711	TDA3301
Secam Adaptor	Same features as TDA3030, plus on chip tracking trap, coilless application circuit	710	TDA3031

Deflection

FUNCTION	FEATURES	CASE	TYPE
Horizontal Processor	Includes line oscillator, noise gated sync. separator, phase comparator loop gain and time constant switching	648	TBA920, S

Sound

Sound IF Detector, dc Volume Control, Preamplifier	Excellent AMR, interchangeable with CA3065	646	MC1358
Sound IF Detector-Limiter	30 μ V, 3 dB limiting at 5.5 MHz, 1 V (RMS) output, improved DC volume control	646	TBA120C
Sound IF, Low Pass Filter, Detector, dc Volume Control, Preamplifier	Complete TV sound system; 100 μ V, 3 dB limiting sensitivity; 4 Watts output; $V_{CC} = 24$ V; $R_L = 16 \Omega$	648C	TDA3190P
	750 mW output	648C	TDA1190P
Stereo Sound Control System	Stereo balance, volume, bass, treble control. Low component count. Supply voltage 8-18 V	707	TCA5550

TV Tuning and Control Circuits

Linear Processor Circuit for Tuning Memory System	<ul style="list-style-type: none"> - Active filter for D/A conversion of tuning voltage - Regulation of operation voltages - Band decoder and direct tuner drivers (35 mA) - TV station capture control - AFC output 	724	UAA1008A-DP
Linear Control Chip for Frequency Synthesizer System	- Interface between a NMOS PLL frequency synthesizer chip and a varicap diode tuner	707	MC2801*
Phase Locked Loop Synthesizer and Driver for Frequency Synthesizer System	<ul style="list-style-type: none"> - 14-bit variable divider and 4-bit band select - PLL and frequency comparator - Filter and tuning voltage amplifier - 16 MHz max. input frequency - 4 MHz reference. Buffered output - Pin option for 125 KHz or 62.5 KHz resolution - 4 band driver outputs (35 mA) 	724	UAA2000A
16-Line to 4-Bit Diode Matrix Binary Encoder	- Local encoder for remote control receivers MC6526 and MC6529	648	SAA1006
Limiting Amplifier and PLL Demodulator for PSK Remote Control Signals	<ul style="list-style-type: none"> - FSK demodulator - No adjustments - RC oscillator - High input impedance - High sensitivity 	646	TBA2110
Synthesizer Amplifier and Driver in Bipolar 1 ² L Technology	<ul style="list-style-type: none"> - Direct tuner driver from 4 band drivers - 60 mA band driver capability - Direct control of the tuner's varicap diode 	648	UAA2001
Synthesizer Amplifier and Driver in Bipolar 1 ² L Technology	<ul style="list-style-type: none"> - Direct tuner drive from 4 band drivers - Direct control of the tuner varicap diode - Interface for external open collector band drivers - Extremely low input current (1 nA typ.) 	648	UAA2010
16-Segment Led Driver	<ul style="list-style-type: none"> - Led brightness control voltage - Current source segment driver output (so no external resistor for segment currents) - No multiplexing (no RFI) - Reliable data transfer from microprocessor - Cascadable 	724	UAA2022

* To be introduced

Sound IF – Audio and Radio Circuits

FUNCTION	FEATURES	CASE	TYPE
Sound IF, Detector Limiter	– 30 μ V, 3 dB limiting at 5 MHz, 1 V (RMS) output – Improved DC control	646	TBA120C

Decoders

FUNCTION	Channel Separation dB Typ	TDH % TYP	STEREO INDICATOR	FEATURES	CASE	TYPE
FM Multiplex Stereo Decoder	40	0.3	75	Coiless operation	646	MC1310
FM Multiplex Stereo Decoder	47		50	6 Volt operation	646	MC1309
FM Multiplex Stereo Decoder	45	0.2	100	Variable blend	648	TCA4500A
FM Multiplex Stereo Decoder	45	0.9	100	8 Volt operation	648	UA758A

IF Amplifiers – Radio

FUNCTION	GAIN AT 10.7 MHz dB TYP	3 dB LIMITING AT 10.7 MHz μ V (RMS) TYP	AMR dB TYP	RECOVERED AUDIO OUTPUT $f = \pm 75$ KHz mV (RMS)	POWER SUPPLY VOLTS MAX	CASE	TYPE
Low-Power FM-IF for Dual Conversion Scanning Receivers	–	5.0	50	350 ($f = \pm 3.0$ KHz)	8.0	648	MC3357
Hi Gain Low Power Narrow Band FM	100	2.0	40	700	12	701-01	MC3359

Radio Frequency Synthesizer Circuits

FUNCTION	FEATURES	CASE	TYPE
Two Modulus Prescaler	Divide-by-15 and 16. Toggle frequency = 140 MHz	626	MC3393
Divide-by-20 Prescaler	200 MHz toggle frequency	626	MC3396
AM/FM Linear Prescaler Circuit for Radio Frequency Synthesizer System	– Divide by 80/82 operation to 120 MHz (FM) – Divide by 10/11 operation to 20 MHz (AM) – High input sensitivity	646	UAA2002
Phase Locked Loop Interface Circuit for Radio Frequency Synthesizer System	– Direct switching (10 mA) of up to 5 bands – Tuning voltage output – Frequency discriminator analyser	648	UAA2003

Attenuator

FUNCTION	VCC RANGE Vdc	THD %TYP	V dB TYP	ATTENUATION RANGE dB TYP	CASE	TYPE
Electronic Attenuator	9.0–18	0.6	13	90	626	MC3340
Low Noise Electronic Attenuator	6.0–30	< 0.1	0	+20 to –100	623	MC3341*

Transistor Array

FUNCTION	I_C (max) mA	V_{CE0} VOLTS MAX	V_{CBO} VOLTS MAX	V_{EBO} VOLTS MAX	CASE	TYPE
One Differentially Connected Pair and Three Isolated Transistors	50	15	20	5.0	646	MC3346 MC3386

* To be introduced

Modulators

FUNCTION	FEATURES	CASE	TYPE
Color TV Video Modulator	Includes Chroma oscillator and clock driver, lead and lag network, chroma modulator, RF oscillator, and modulator	646	MC1372
	Includes RF oscillator and modulator	626	MC1373
TV Modulator (Hi Quality)	Includes RF oscillator/modulator, and FM sound oscillator/modulator	646	MC1374
FM Modulator	Includes FM oscillator and modulator Ideal for base station/cordless telephone applications	626	MC1376

Power Supply Control

Flyback Converter Regulator Control Circuit	Wide operational range, high-voltage stability, direct control of switching transistors, low start-up current, reverse linear overload characteristic curve	SIP9	TDA4600
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Power Amplifiers

FEATURES	P_Q Watts	V_{CC} Vdc max.	V_{in} rated P_o mV typ	I_D mA typ	R_L Ohms	CASE	TYPE
Audio Power Amplifiers	0.5 8.0	15 28	30 50	40 55	80 2.0	625 314A 314B	MC1306 TDA2002

Tone Control

FUNCTION	FEATURES	CASE	TYPE
Tone Control	<ul style="list-style-type: none"> - Stereo balance, volume, bass, treble control - Low component count - Supply voltage 8–13 V 	701	TCA5500

Subsystems

AM Radio Receiver	RF amplifier, AGC mixer, oscillator 1st IF amplifier, 2nd IF amplifier and detector	648	HA1199
FM/AM 1-Chip Radio Receiver	<ul style="list-style-type: none"> - Wide operating supply voltage range (1.8 V to 8 V) - Complete 1-chip FM/AM radio receiver system - Low external component count - Low distortion (FM = 0.15% typ; AM = 0.35% typ) - High sensitivity 	701	MC2828*

* To be introduced