

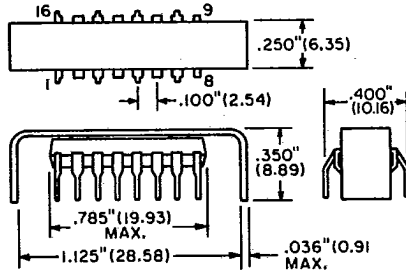
ECG[®] Semiconductors

ECG1175 TV Sound IF and AF Output Subsystems

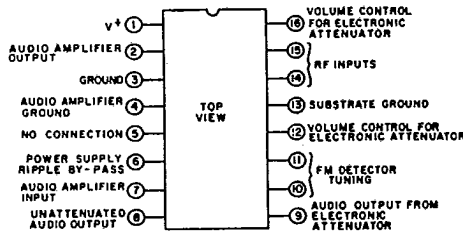
Features

- Output power 3 W (typ) at $V^+ = 24$ V, $RL = 16\Omega$
- Power amplifier with current limiting and thermal shutdown
- Wide power-supply range: 12 V to 33 V
- Low quiescent current: 30 mA typ
- 5-kHz deviation sensitivity: 1 W output typ
- 3-dB limiting sensitivity: 200 μ V typ
- Excellent AM rejection: 50 dB typ
- Differential peak detector - requires one tuned coil
- Electronic volume control with improved taper
- Optional unattenuated audio output
- Optional power-supply ripple by-pass

The ECG1175 combines the sound IF and audio output subsystems on a single monolithic integrated circuit to provide a television sound system for color or black and white applications. Each device includes a multistage IF amplifier-limiter, and FM detector, and an audio power amplifier that is designed to drive an 8, 16 or 32 ohm speaker.



Connection Diagram

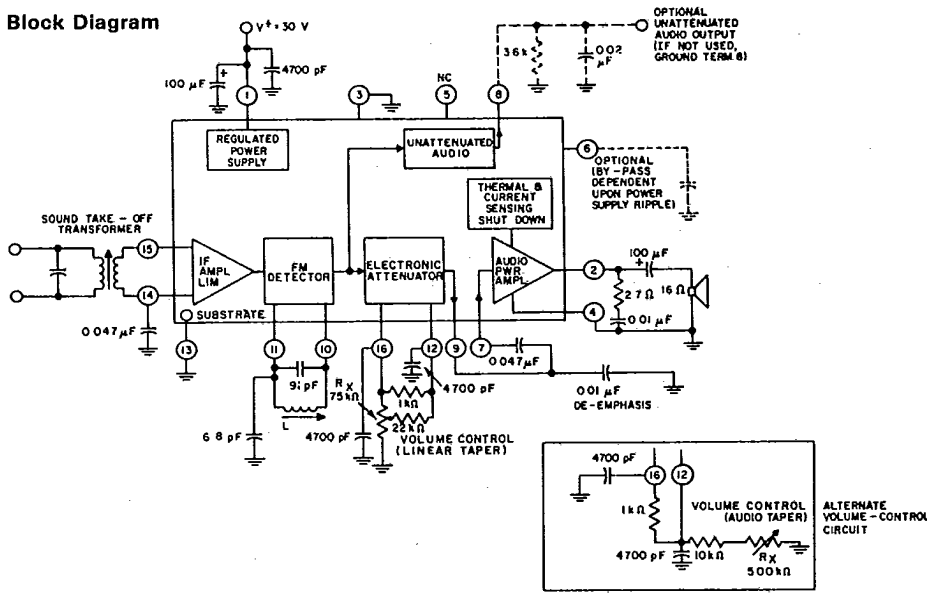


The ECG1175 is supplied in a 16-lead quad in-line package, with an attached tin plated copper-strap heat sink.

Absolute Maximum Ratings

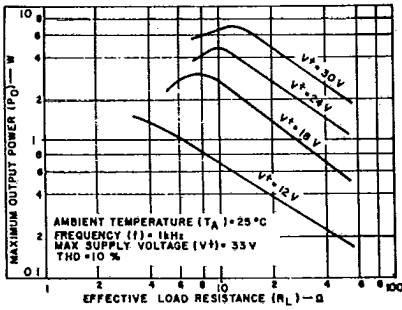
Characteristic	Symbol	Rating	Unit
Supply Voltage (Between Terminal 1, V^+ and Terminals 4, Audio-Output Ground and 13, Substrate)	V^+	33	V
Input Signal Voltage (Between Terminals 14 and 15)	V_i	± 3	V
Power Dissipation Soldered to PC Board Up to $T_A = 25^\circ\text{C}$ Above $T_A = 25^\circ\text{C}$, derate linearly Unsoldered Up to $T_A = 25^\circ\text{C}$ Above $T_A = 25^\circ\text{C}$, derate linearly	PD	3.9 31.2	W mW/ $^\circ\text{C}$
Thermal Resistance Junction to Stud	θ	12	$^\circ\text{C}/\text{W}$
Operating Temperature	T_{opg}	-40 to +85	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

Block Diagram

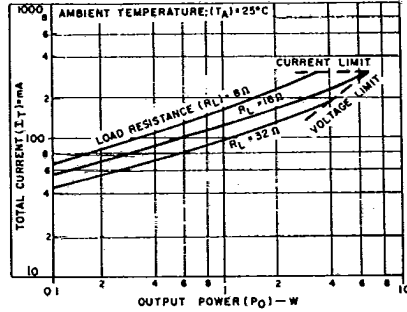


Typical Characteristics

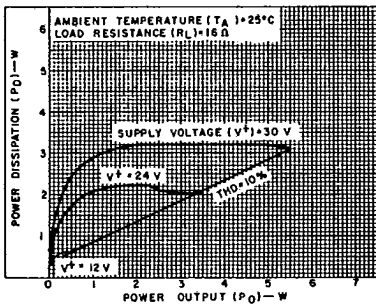
Maximum Output Power vs Effective Load Resistance



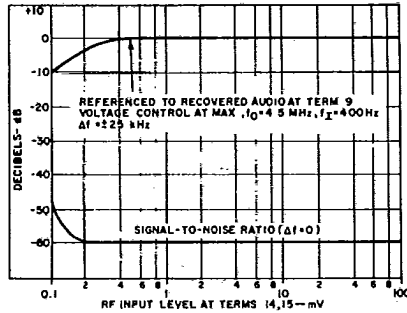
Total Supply Current vs Output Power



Power Dissipation vs Output Power



Recovered Audio and Signal-to-Noise Ratio vs RF Input Level



Electrical Characteristics ($T_A = 25^\circ\text{C}$, $V^+ = +30\text{ V}$ (applied to Term. 1), DC Volume Control, $R_X = 75\text{ k}\Omega$, $R_L = 16\ \Omega$, unless otherwise indicated)

Static Characteristics	Symbol	Test Condition	Min	Typ	Max	Unit
Current into Terminal 1	I_1	$P_O = 0$	15	30	45	mA
Dynamic Characteristics						
IF Amplifier: Input Limiting Voltage (at -3 dB point)	$V_{15}(\text{Lim})$	$f_O = 45\text{ MHz}$ $f_m = 400\text{ Hz}$ $\Delta f = \pm 25\text{ kHz}$	--	200	400	μV
AM Rejection	AMR	$f_O = 4.5\text{ MHz}$, $f_m = 400\text{ Hz}$, Modulation Index = 0.3, $V_{15} = 20\text{ mV}$	40	50	--	dB
Input Resistance	R_i	$V_{15} = 35\text{ mV}$	--	25	--	k Ω
Input Capacitance	C_i	$V_{15} = 35\text{ mV}$	--	3	--	pF
Detector: Recovered AF Voltage (Terminal 9)	$V_O(f)$	$f_O = 4.5\text{ MHz}$, $f_m = 400\text{ Hz}$, $\Delta f = \pm 25\text{ kHz}$, $V_{15} = 100\text{ mW}$	--	700	--	mV
Total Harmonic Distortion	THD		--	0.8	3	%
Output Resistance	R_o	At Terminal 9	--	7.5	--	K Ω
Attenuator: Maximum Attenuation		$R_X = 0$	--	10	15	mV
Unattenuated Audio: Recovered AF Voltage (Terminal 8)	$V_O(\text{AF})$	$f_O = 4.5\text{ MHz}$, $f_m = 400\text{ Hz}$, $\Delta f = \pm 25\text{ kHz}$, $V_{15} = 100\text{ mV}$	--	600	--	mV
Total Harmonic Distortion	THD		--	0.8	--	%
Audio Power Amplifier: Voltage Gain	$A(\text{AF})$	$f = 1\text{ kHz}$	--	35	--	dB
System Total Harmonic Distortion	THD	$P_O = 1\text{ W}$ ($I_T = 140\text{ mA}$ typ)	--	1.5	--	%
		$P_O = 2\text{ W}$ ($I_T = 180\text{ mA}$ typ)	--	1.6	3	%
Power Output	P_O	THD (System) = 10% ($I_T = 210\text{ mA}$ typ)	--	5*	--	W
Input Resistance	$R_i(\text{AF})$	$f = 1\text{ kHz}$	--	100	--	k Ω

* With suitable heat sink

Schematic Diagram

