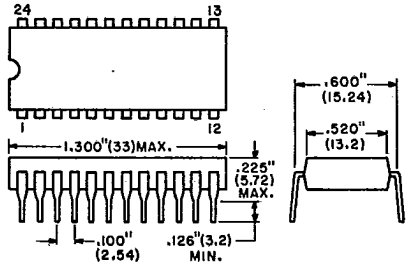
ECG® Semiconductors

ECG1409

Electronic Channel Selector

Features

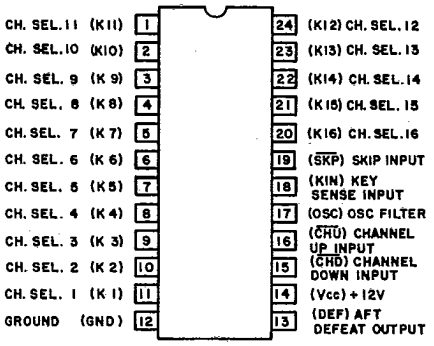
- **LED direct drive**
  Ik = 15 mA, V_{kSAT} 150 mV Max
- **Low power consumption**
  V_{cc} = 12 V, I_{cc} = 15 mA Typ
- **Up to 16 channel selection**
- **Internal schmitt trigger circuit (CHU, CHD Input)**
- **Power ON initial channel set**
- **TV, radio, etc., channel selection use**



The ECG1409 is an electronic channel selector integrated circuit and is capable of selecting up to 16 channels. The output terminals are designed to permit the direct driving of LED lamps.

The ECG1409 consists of clock oscillator circuit, channel up and down circuit, channel skip circuit, 4 bit up and down counter circuit, 1-16 decoder circuit and 16 channel output buffer circuit.

Connection Diagram (Top View)



Absolute Maximum Ratings (T_A = 25°C)

Parameters	Symbol	Rating	Unit
Supply Voltage	V_{cc}	15.0	V
Input Current to Channel Selection Circuit	$I_{K1 \text{ to } 11, 20 \text{ to } 24}$	−5 to 50	mA
Input Current to Control Circuit	$I_{C15 \text{ to } 1.9}$	−5 to 10	mA
Input Current to Control Circuit	I_{C13}	−5 to 20	mA
Output Voltage to Channel Selection Circuit*	$V_{K1 \text{ to } 11, 20 \text{ to } 24}$	−0.5 to 50	V
Output Voltage to Control Circuit*	V_{13}	−0.5 to 14.4	V
Input Voltage to Control Circuit*	V_{17}	−0.5 to V_{cc}	V
Power Dissipation	P_d	350	mW
Operating Temperature Range	T_{opg}	−20 to +75	°C
Storage Temperature Range	T_{stg}	−40 to +125	°C

* At V_{cc} = 12 V

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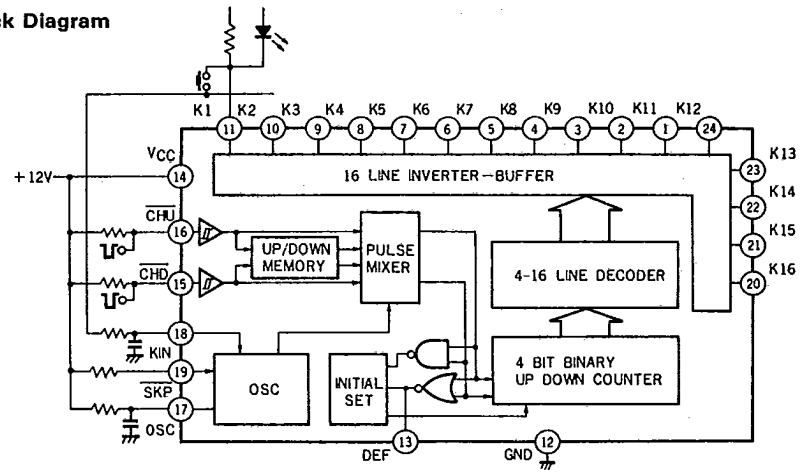
Block Diagram



Recommended Operating Conditions

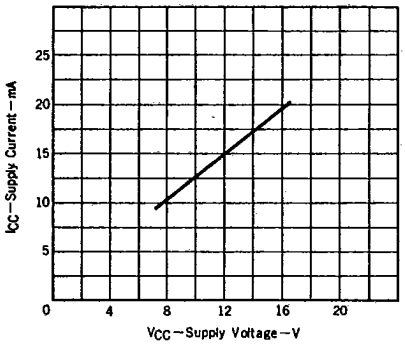
Parameters	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	9.6	12.0	14.4	V
Channel Selection Input Current	I_K	--	15.0	--	mA
Clock Oscillation Frequency	f_{OSC}	--	2.0	10.0	kHz

Electrical Characteristics ($T_A = 25° \pm 3°C$)

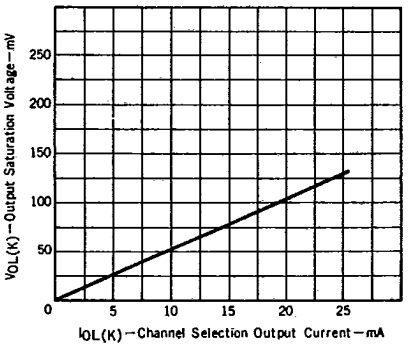
Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current	I_{DD}	$V_{CC} = 12$ V	7.0	15.0	22.0	mA
Channel Selection Saturation Voltage	$V_{OL(K)}$	$V_{CC} = 9.6$ V, $I_{OL} = 15$ mA	--	--	150	mV
Channel Selection Leakage Current	$I_{OH(K)}$	$V_{CC} = 14.4$ V, $V_{OH} = 35$ V	--	--	10	μA
AFT Defeat Output Voltage	$V_{OL(D)}$	$V_{CC} = 9.6$ V, $I_{OL} = 12$ mA	--	--	6	V
AFT Defeat Leakage Current	$I_{OH(D)}$	$V_{CC} = 14.4$ V, $V_{OH} = 14.4$ V	--	--	10	μA
Channel Input High Threshold Voltage	$V_{TH(CH)}$	$V_{CC} = 12$ V, $R_i = 15$ kΩ	3.5	--	7.0	V
Channel Input Low Threshold Voltage	$V_{TL(CH)}$	$V_{CC} = 12$ V, $R_i = 15$ kΩ	1.5	--	2.5	V
Channel Input Leakage Current	$I_{CH(CH)}$	$V_{CC} = 14.4$ V, $V_{IL} = 0$ V	−5	--	--	μA
Key Input Current	$I_{IH(KI)}$	$V_{CC} = 9.6$ V	200	--	--	μA
Key Input Leakage Current	$I_{IL(KI)}$	$V_{CC} = 14.4$ V, $V_{IL} = 0$ V	−10	--	--	μA
Skip Input Current	$I_{IH(SK)}$	$V_{CC} = 9.6$ V	50	--	--	μA
Skip Input Leakage Current	$I_{IL(SK)}$	$V_{CC} = 14.4$ V, $V_{IL} = 0$ V	−5	--	--	μA
OSC Input Current	$I_{IH(OSC)}$	$V_{CC} = 9.6$ V, $V_{IH} = 4$ V	1.5	--	3.0	mA
OSC Leakage Current	$I_{IL(OSC)}$	$V_{CC} = 14.4$ V, $V_{IL} = 1.0$ V	--	--	10	μA
OSC Frequency	f_{OSC}	$V_{CC} = 12$ V, $R = 68$ kΩ, $C = 0.022$ μF	1.5	--	2.5	kHz

Typical Characteristics

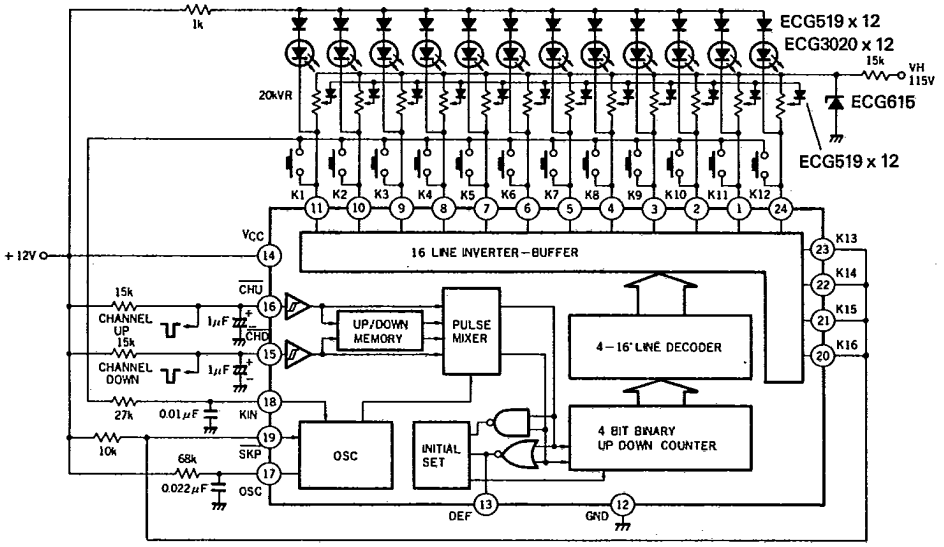
Supply Current vs Supply Voltage



Channel Selection Saturation Voltage Characteristic



Application Circuit



Application Circuit

Example of TV Channel Selection
12 Position Selection Circuit (4 Position Is Skipped)