Communication Circuits

LM703L low power drain rf/if amplifier

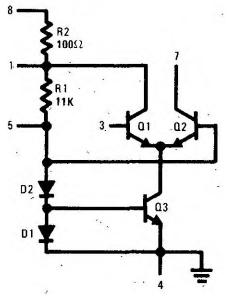
general description

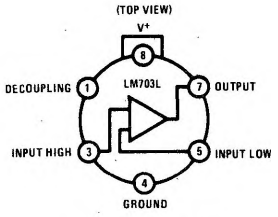
The LM703L is a monolithic RF-IF amplifier, having an efficient DC biasing system, reducing demands upon power supply and decoupling elements. Its low internal feedback guarantees a high stability-limited gain. In addition, the device features:

Power Consumption	84 mw (max.)
Forward Transadmittance	33 mmhos
Input Conductance	0.35 mmhos
Output Conductance	0.03 mmhos
Peak-to-Peak Output Current	5.0 mA

Applications include limiting and nonlimiting amplifiers, mixers, and RF oscillators. The LM703L is specifically characterized for operation in consumer applications such as TV sound IF, FM-IF limiter amplifier, and Chroma reference oscillator for color TV.

schematic and connection diagrams

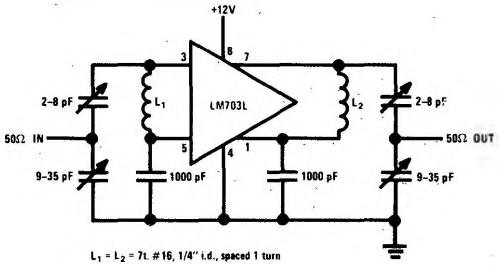




NOTE: Pin 4 connected to case.

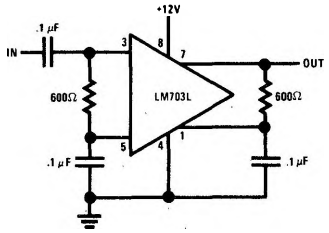
typical applications

100 MHz Narrow Band Amplifier

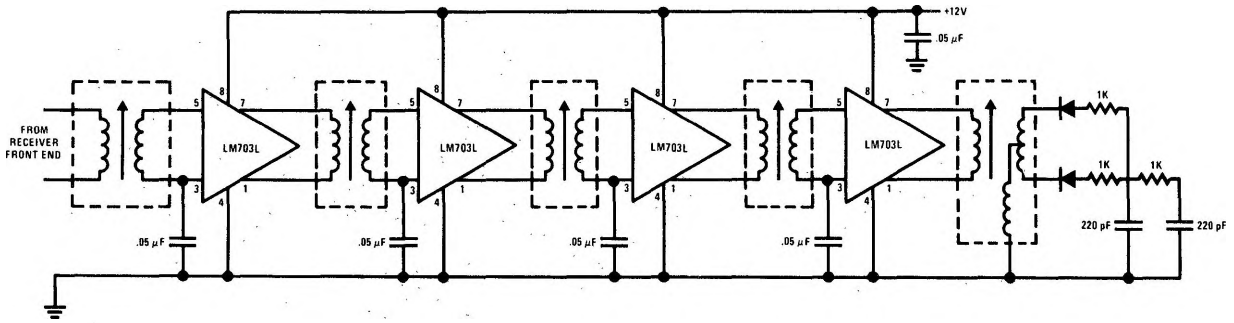


$L_1 = L_2 = 7t.$ #16, 1/4" i.d., spaced 1 turn

RC Coupled Video Amplifier



Four Stage 10.7 MHz FM-IF Amplifier



absolute maximum ratings

Supply Voltage	20V	Operating Temperature Range	0°C to 70°C
Output Collector Voltage	24V	Storage Temperature Range	−65°C to 150°C
Voltage Between Input Terminals	±5.0V	Lead Temperature (soldering – 60 seconds)	300°C
Internal Power Dissipation	200 mW		

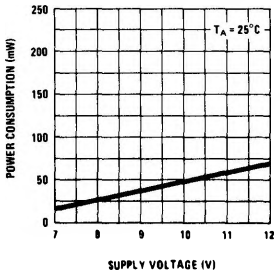
electrical characteristics (Note 1)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Power Consumption	$e_{in} = 0$		71	84	mW
Quiescent Output Current	$e_{in} = 0$	1.5	2.5	3.3	mA
Peak-to-Peak Output Current	e_{in} = 400 mV rms, f = 10.7 MHz	3.0	5.0		mA
Output Saturation Voltage				1.7	V
Forward Transadmittance	e_{in} = 10 mV rms, f ≤ 10.7 MHz	24.0	33.0		mmho
Reverse Transadmittance	e_{in} = 10 mV rms, f ≤ 10.7 MHz		0.002		mmho
Input Conductance	e_{in} = < 10 mV rms, f ≤ 10.7 MHz		0.35	1.0	mmho
Input Capacitance	e_{in} < 10 mV rms, f ≤ 10.7 MHz		9.0	12.5	pF
Output Capacitance	f ≤ 10.7 MHz		2.6	4.0	pF
Output Conductance	f ≤ 10.7 MHz		0.03	0.05	mmho
Noise Figure	R_S = 500Ω, f = 10.7 MHz R_S = 500Ω, f = 100 MHz		6.0 8.0		dB dB
Maximum Stable Gain	f = 100 MHz		28.0		dB

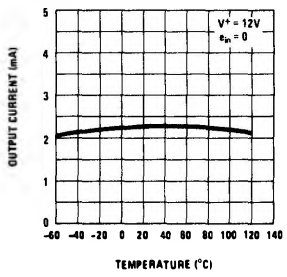
Note 1: These specifications apply for T_A = 25°C, V^+ = 12V unless otherwise specified.

typical performance characteristics

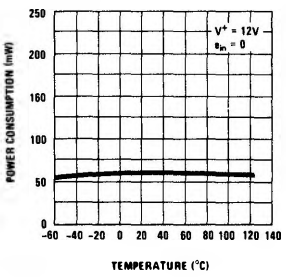
Power Consumption as a Function of Supply Voltage



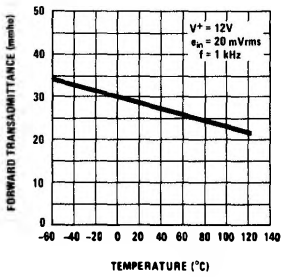
Output Current as a Function of Ambient Temperature



Power Consumption as a Function of Ambient Temperature



Forward Transadmittance as a Function of Ambient Temperature



Note: For additional performance curves, and packaging, see LM703/C/E data sheet.