

SANYO

No.595C

LA1130

AM Tuner for Car Radio

The LA1130 is an IC developed for AM tuner systems in car radio applications. It provides low-level local oscillation so that it can be applied in varactor diode tuning applications as well as μ tuning applications.

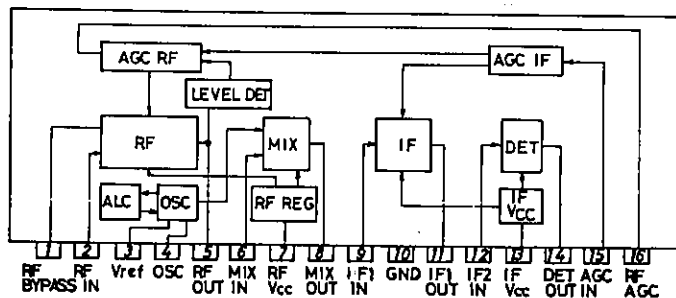
Functions

- RF amplification
- MIX
- OSC (with ALC)
- IF amplification
- Detection
- AGC (normal)
- RF wide-band AGC
- Others

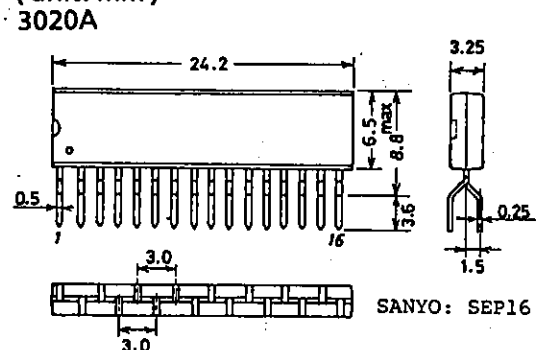
Features

- Good space factor due to single-end package
- Easy to design printed circuit pattern due to 3mm-pitch pin interval
- Double-balanced type MIX: Improvement in IF interference, spurious interference
- Normal AGC: Less variation in detector output to input
- RF wide-band AGC: Improvement in cross modulation distortion, especially strong input characteristics in varactor diode tuning applications because of low operating level (300mVrms)
- AGC drive output for FET: Possible to apply AGC to FET at input stage in varactor diode tuning applications
- ALC at OSC stage: Improvement in tracking error due to stabilized low-level (350mVrms) oscillation output in varactor diode tuning applications
- Reference voltage output: Possible to use 5.6V reference voltage for other bias (FET, etc.)
- V_{CC} variation compensation: Less variation in gain, distortion, etc. (7.5 to 16V)
- Less ripple voltage: Less modulation of carrier by supply voltage ripple
- Low pop noise: Possible to reduce pop noise at the time of V_{CC}-on, mode-on by selecting AGC time constant

Equivalent Circuit Block Diagram



Package Dimensions (unit: mm)



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Maximum Ratings at Ta = 25°C, See specified Test Circuit.

				unit
Maximum Supply Voltage	V _{CC} max	Pins 7, 13	16	V
Maximum Output Voltage	V _{O5}	Pin 5	17	V
	V _{O 8,11}	Pins 8, 11	24	V
Maximum Input Voltage	V _I max	Pin 2	5.6	V
Maximum Supply Current	I _{CC} max	Total of current at pins 5, 7, 8, 11, 13	35	mA
Maximum Flow-out Current	I ₃	Pin 3	6	mA
Allowable Power Dissipation	Pd max	Ta ≤ 45°C	520	mW
Operating Temperature	T _{opr}		-20 to +70	°C
Storage Temperature	T _{stg}		-40 to +125	°C

Recommended Operating Condition at Ta = 25°C

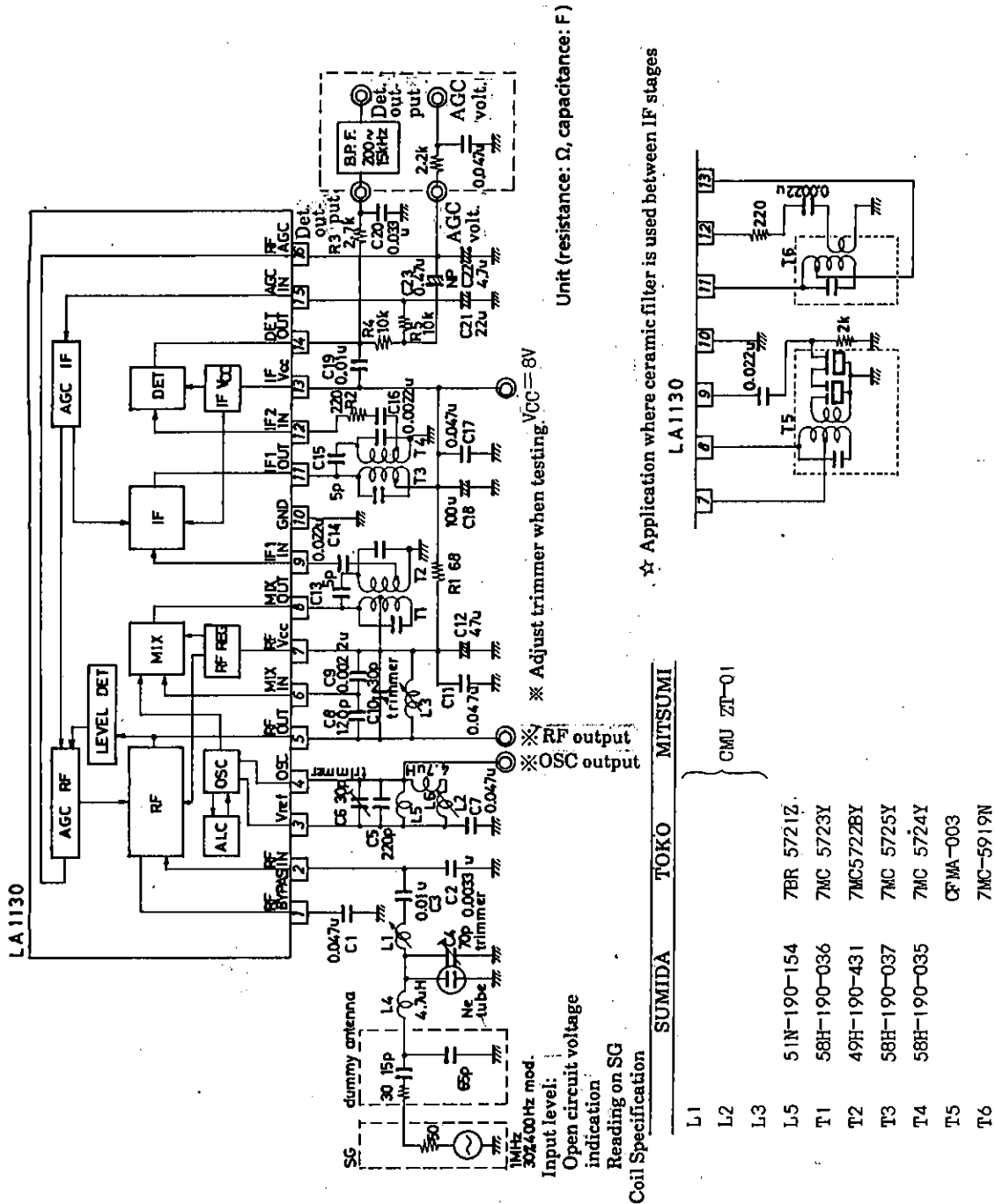
				unit
Reconnended Supply Voltage	V _{CC}		7.5 to 14.0	V

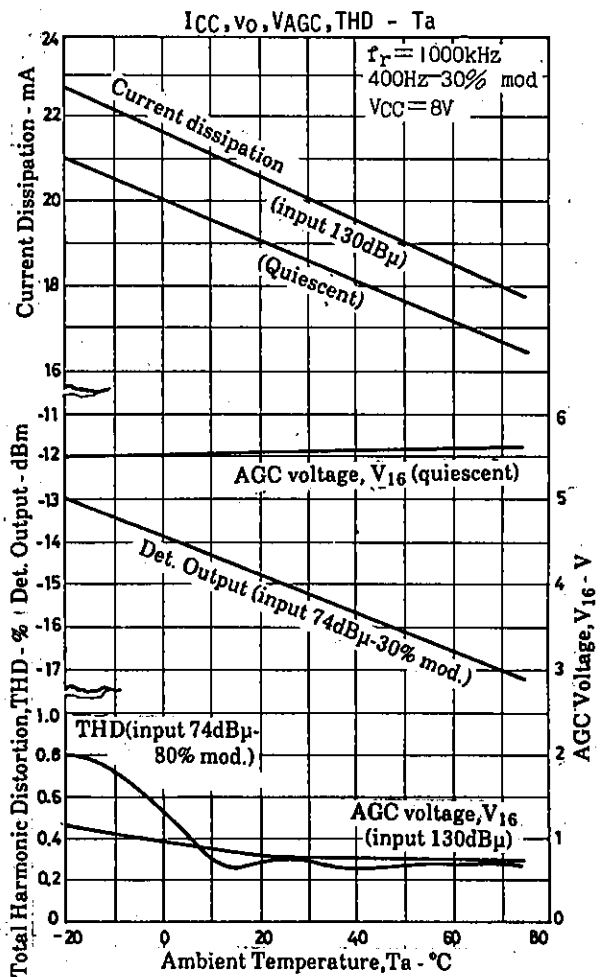
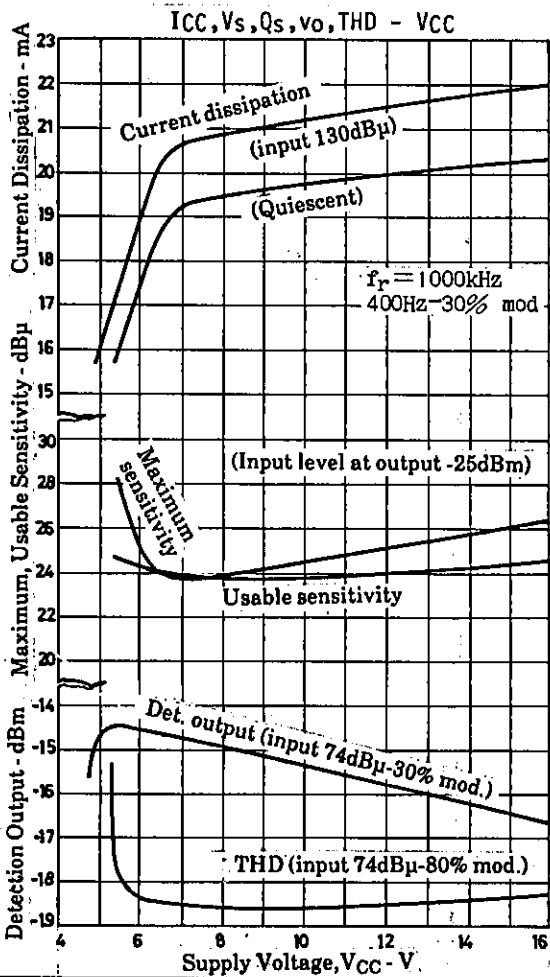
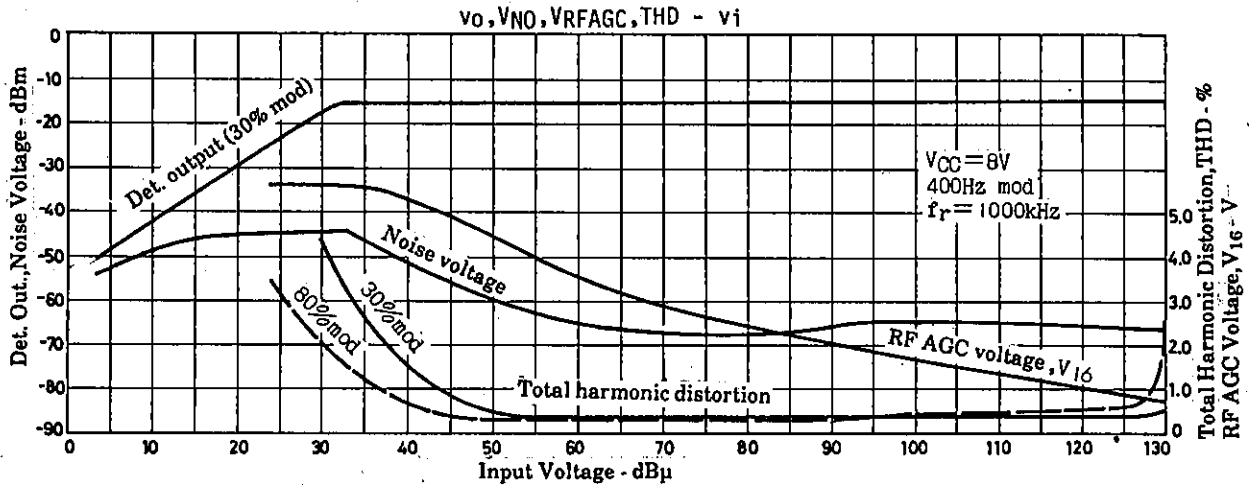
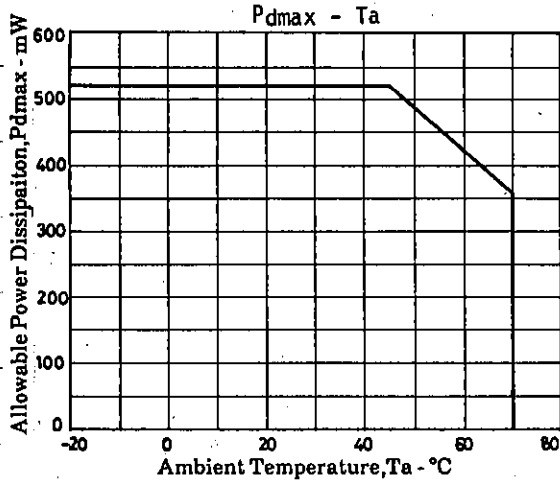
Operating Characteristics at Ta = 25°C, V_{CC} = 8V, f_r = 1MHz, f_m = 400Hz, See specified Test Circuit.

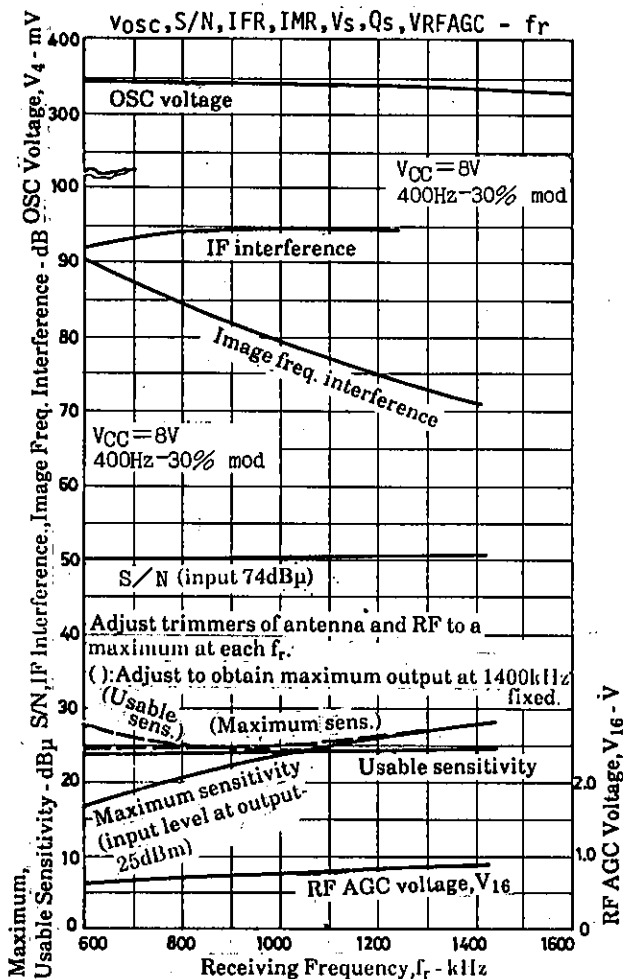
			min	typ	max	unit
Current Dissipation	I _{CC1}	Quiescent	12.5	18.0	24.5	mA
	I _{CC2}	120dBμ input	14.0	20.0	26.5	mA
Detection Output	V _{O1}	24dBμ input, 30% mod.	-31.0	-26.5	-12.0	dBm
	V _{O2}	74dBμ input, 30% mod.	-18.0	-15.5	-12.0	dBm
Signal to Noise Ratio	S/N 1	24dBμ input, 30% mod.	16	20		dB
	S/N 2	74dBμ input, 30% mod.	46	50		dB
Total Harmonic Distortion	THD1	74dBμ input, 30% mod.		0.35	1.0	%
	THD2	74dBμ input, 80% mod.		0.35	1.5	%
	THD3	120dBμ input, 30% mod.		0.35	2.0	%
RF AGC Voltage (V ₁₆)	V _{RFAGC1}	Quiescent	5.2	5.6	5.9	V
[Reference Characteristics]						
Signal to Noise Ratio	S/N 3	35dBμ input, 30% mod.		31		dB
Total Harmonic Distortion	THD4	128dBμ input, 80% mod.		0.58		%
Detection Output Variation	ΔV _O	V _O (128dBμ)/V _O (74dBμ)		0.4		dB
Bandwidth (6dB)	BW ₆	6dB width, 15dBμ input 30% mod.		7		kHz
	(60dB)	BW ₆₀		30		kHz
Selectivity (1 Signal)	ACA	±10kHz detuning, 15dBμ input, 30% mod.		40		dB
Ripple Rejection Ratio		100dBμ input, IF V _{CC} (pin 13) ripple level 50Hz-15dBm		40.5		dB
Local Oscillation Voltage	V _{osc}			350		mVrms
Local OSC Drift	ΔV _{osc}	V _{oscL} (515kHz)-V _{oscH} (1660kHz)		20		mVrms
Whistle	2f _i Tweet	74dBμ input, 400Hz beat max.		-33		dB
RF AGC Voltage (V ₁₆)	V _{RFAGC2}	120dBμ input		1		V
RF Output Voltage	V _{ORF}	100dBμ input, ±10kHz		300		mVrms
IF Interference		f _r = 600kHz, 15dBμ input		91.5		dB
Image Frequency Interference		f _r = 1400kHz, 15dBμ input		70.5		dB

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Sample Application Circuit (excluding the area bounded by the dotted line) / also used as characteristics test circuit.







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