

**LA1130**

monolithic linear IC

CIRCUIT DRAWING  
No.2001

AM TUNER SYSTEM FOR CAR RADIO



3020A

**Functions**

- RF amp.
- Detector
- Mixer
- Normal AGC
- Oscillator with ALC
- RF wide band AGC
- IF amp.
- Others

**Features**

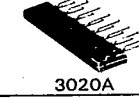
- Single end packaging makes space useful.
- 3mm pitch pin interval makes printed pattern designing easy.
- Double balance type mixer: Improves IF disturbance and spurious disturbance.
- Normal AGC: Less fluctuation of detector output to input.
- RF wide band AGC: Low operating level (300 mVrms) improves cross modulation distortion, and especially strong input characteristics at tuning of varactor diode.
- AGC driving output of FET: AGC on an input FET in varactor diode tuning.
- ALC on OSC: Low level stabilization of osc output (350mVrms) at varactor diode tuning makes tracking error better.
- Reference voltage output: 5.6V reference voltage is available for other biasing (of FET and others).
- Vcc characteristics compensation: Less fluctuation of gain and distortion over 7.5 to 16V.
- Ripple rejection: Less modulation of carrier by power ripple.
- Pop noise rejection: Less pop noise due to AGC time constant at V<sub>CC</sub> turning on or mode switch on.

**LA1132**

monolithic linear IC

CIRCUIT DRAWING  
No.2002

AM TUNER FOR CAR RADIO APPLICATIONS



3020A

**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: Little variation in detector output to input
- RF wide-band AGC: Improvement in cross modulation distortion, especially strong input characteristics in varactor diode tuning applications
- 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 (350m Vrms) oscillation output in varactor diode tuning applications
- Reference voltage output: Possible to use 5.6V reference voltage for other bias (FET, etc.)
- VCC variation compensation: Little variation in gain, distortion, etc. (7.5 to 16V)
- Ripple rejection: Little modulation of carrier by power ripple
- Pop noise reduction: Possible to reduce pop noise at the time of V<sub>CC</sub>-on, mode-on by selecting AGC time constant
- Meeting AM stereo requirements: More improved subchannel S/N as compared with the LA1130

**LA1135**

monolithic linear IC

CIRCUIT DRAWING  
No.2003**AM ELECTRONIC TUNER FOR CAR APPLICATIONS**

3021B

**Functions**

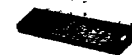
- MIX
- OSC (With ALC)
- IF amp.
- Detector
- AGC (Normal)
- RF wide band AGC
- Automatic search stop signal (Signal meter output)
- Local buffer output
- Others

**Features**

- Excellent cross modulation characteristic. Meets the requirements for preventing not only adjacent-channel interference ( $\pm 40\text{kHz}$  detuning) but also interference caused by all channels within broadcast band.
- Narrow-band signal meter output  
Usable as automatic search stop signal. Stop sensitivity is adjustable for usable sensitivities up to about 80dBu.
- Local buffer output  
Easy to design electronic tuning system, frequency display, etc.
- OSC (With ALC)  
Oscillation output is stabilized at a low level ( $400\text{m V}_{\text{rms}}$ ) for varactor diode, and tracking error is improved.
- MIX  
Double-balanced differential MIX meets the requirements for preventing spurious interference, IF interference.
- Low noise  
Good S/N at medium input: At 57dB typ./74dB $\mu$  input
- Good usable sensitivity: (At S/N = 20dB)  
2SK315 F rank 25.8dB $\mu$  typ./ $I_{\text{DSS}}=8\text{mA}$   
2SK315 G rank 24.5dB $\mu$  typ./ $I_{\text{DSS}}=14\text{mA}$
- VCC variation compensation  
Little variation in gain, distortion, etc.: 8 to 16V
- Reduced pop noise  
Capable of reducing pop noise caused by AGC time constant at the time of VCC ON, mode select.

**LA1140**

monolithic linear IC

CIRCUIT DRAWING  
No.2004**FM IF SYSTEM FOR CAR USE**

3020A

**Functions**

- IF amplifier, limiter
- Quadrature detector
- AF preamplifier
- Muting at small input
- Muting at detuning
- Output for signal level indicator
- AFC output
- AGC output

**Features**

- High limiting sensitivity. (25dB $\mu$  typ. with muting off)
- Muting is freely selectable.
  - (1) Variable of input signal level at muting starting.
  - (2) Variable of maximum attenuation of muting. (6 to 40dB)
  - (3) Variable of a gradient between input signal and muting attenuation.
- AFC output is clamped.

**LA1150, 1150N**

monolithic linear IC

CIRCUIT DRAWING  
No.2006**FM IF AMP., DETECTOR FOR CAR**

3015A(LA1150), 3060B(LA1150N)

**Function**

- 3-stage differential IF amplifier
- Differential peak detector
- Large output signal.
- Excellent characteristics of AMR and limiter.

**Features**

- Difference between LA1150 and LA1150N.
  - LA1150: Without pin 0
  - LA1150N: With pin 0
- Easy adjusting.
- Fewer external components.