



SANYO Semiconductors

# DATA SHEET

## CCB LV25300M — Bi-CMOS IC 1-chip Tuner IC

### Overview

The LV25300M integrates all six blocks (FM FE, FM IF, double conversion AM, AM-NC, and PLL diversity) required in car radio tuner on a single ship.

### Features

The LV25300M is a tuner system that supports the SANYO car audio DSP (SDRS300) that allows the creation of standard tuner modules. Various setting changes can be performed with the software of the control microcontroller according to the intended application. Small tuner modules can be developed with a smaller number of parts compared to conventional tuners and at a lower total cost.

Moreover, the LV25300M comes with an antenna switching diversity function that switches two antennas in response to various electric field changes while the vehicle is running, a malfunction prevention circuit that operates through antenna switching frequency detection, and a weak electric field detection, and antenna fixing circuit that uses S meter voltage, making stable reception possible.

### Functions

#### FM F.E.

- Balanced input type double balanced mixer (FM mixer 1)
- Dedicated RF tuner DAC (8 bits × 2)
- Pin diode drive AGC output (antenna damping)
- MOSFET second gate drive AGC output
- Keyed AGC adjustment pin (3D-AGC)
- Differential IF amplifier (first IF amplifier)

Continued on next page.

- CCB is a registered trademark of SANYO Electric Co., Ltd.
- CCB is SANYO Semiconductor's original bus format. All bus addresses are managed by SANYO Semiconductor for this format.

■ Any and all SANYO Semiconductor Co., Ltd. products described or contained herein are, with regard to "standard application", intended for the use as general electronics equipment (home appliances, AV equipment, communication device, office equipment, industrial equipment etc.). The products mentioned herein shall not be intended for use for any "special application" (medical equipment whose purpose is to sustain life, aerospace instrument, nuclear control device, burning appliances, transportation machine, traffic signal system, safety equipment etc.) that shall require extremely high level of reliability and can directly threaten human lives in case of failure or malfunction of the product or may cause harm to human bodies, nor shall they grant any guarantee thereof. If you should intend to use our products for applications outside the standard applications of our customer who is considering such use and/or outside the scope of our intended standard applications, please consult with us prior to the intended use. If there is no consultation or inquiry before the intended use, our customer shall be solely responsible for the use.

■ Specifications of any and all SANYO Semiconductor Co., Ltd. products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Continued from preceding page.

- Wide band AGC sensitivity setting pin, and narrow band AGC sensitivity setting pin
- Local oscillator circuit (oscillator 1)
- AM/FM second mixing oscillator (oscillator 2)
- FM second mixing (FM mixer 2)
- Supports both FM Japan band and US band.
- AM first oscillator coil for AM LW, MW, and SW frequency divider circuit, internal frequency divider with reduced number of varactor diode
- Weather band

## FM IF

- IF limiter amplifier (IFAMP: Also runs in AM mode.)
- S-meter output (shared pin for AM), 6-stage pickup (VSM: for DSP)
- Dedicated FM S-meter (for DSP and diversity circuit)
- Coilless detector circuit
- Digital detection buffer output
- IF counter buffer output (also used for AM)
- SD (IF counter buffer ON level) adjustment
- SD output (active high) (also used for AM)

## AM

- Double balance mixer (first and second)
- Eliminated IF amplification (AM 450kHz) AM IFT
- Digital detection IF buffer output (also used for FM)
- IF AGC (controlled by narrow band S-meter output)
- RF AGC (Wide)
- Pin diode drive pin (antenna damping)
- Wide band S-meter output (shared pin for FM IF)
- Narrow band S-meter output (detected by AM IF second amplifier)
- IF counter buffer output function (shared pin for FM IF), directly connected to PLL counter
- SD (IF counter buffer ON Level) adjustment
- SD output (active high) (also used for FM)
- AM noise canceller trigger output pin

## PLL

- Charge pump for high-speed locking
- Internal FET for active LPF
- Low radiation noise due to 3V operation
- 4-wire serial bus control circuit (SANYO's original CCB bus format)
- Reference divider
- Programmable divider (pulse swallow type)
- Crystal oscillator circuit
  - FM band selection signal detection and control circuits
  - AM, SW1, and SW2 reception
  - Weather band
  - AM/FM RF AGC voltage
  - FM/AM RF DAC (9 bits  $\times$  2)
- ADC (6/8bits  $\times$  2, selectable)



