



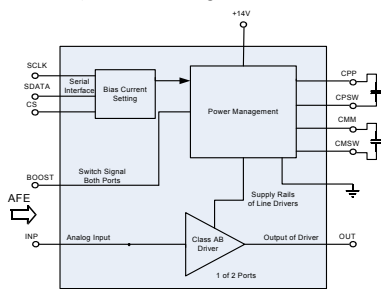
# Wired Communication ICs (DSL Line Drivers)

## ISL1561

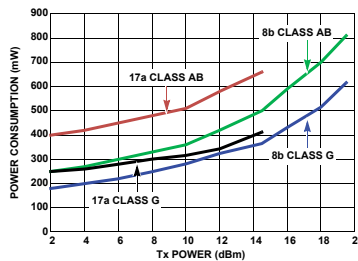
### Fixed Gain Dual Port Class-G Differential xDSL Line Driver

The ISL1561 is a fixed gain dual port class-G differential amplifier designed for driving full rate ADSL2+ and VDSL2 signals at very low power dissipation. The driver runs on a single +14V power supply and internally generates higher supply voltages when needed to enable power efficient operation for high peak to average ratio (PAR) ADSL2+ and VDSL2 signals.

In ADSL2+ mode of operation with full 19.8dBm transmit signal power across 100Ω line load, each port consumes only 425mW of power while with VDSL2 8b profile a port consumes 569mW of power. In VDSL2 17a mode of operation with 14.5dBm transmit power, a port will consume 411mW of power. The stated power consumption figures account for receiver hybrid loading effects and transformer losses.



BLOCK DIAGRAM



CLASS G+ vs CLASS AB DRIVER TOTAL POWER

#### Key Features

- Internal fixed gain (see figure 3)
- 360mA output drive capability
- 41.8VP-P differential output drive into 100W in class G mode
- VDSL2 8b profile MTPR of -65dBc
- VDSL2 17a profile MTPR of -60dBc
- ADSL2+ power consumption of 425mW
- VDSL2 8b and 17a power consumption of 569mW and 411mW respectively
- 8-bit programmable register to set supply current on each port
- 3 pin serial port interface
- Single charge pump operation

#### Applications

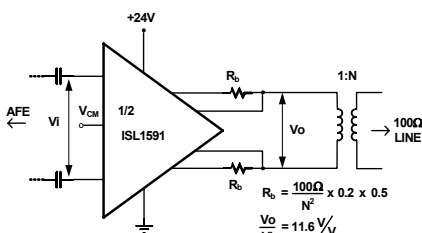
- Dual port ADSL2+ and VDSL2 DSLAM

## ISL1591

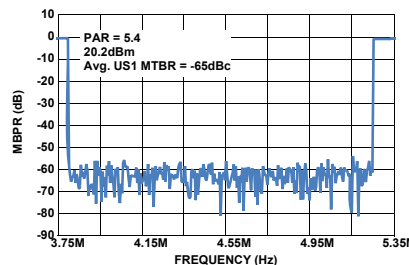
### Fixed Gain, Dual Port, VDSL2 Line Driver

The ISL1591 provides 4 internal wideband op amps intended to be used as two pairs of fixed gain differential line drivers. The ISL1591's high bandwidth, and ultra low distortion enables the support of VDSL2 8b, 17a, and 30a in central office modem applications. This highly versatile line driver allows for operation from +14V to +24V nominal power supplies, while delivering exceptional MTPR distortion performance.

Using a single +24V supply, the ISL1591 MBPR distortion is below -62dBc in VDSL2 8b, -63dBc in VDSL2 17a, and -60dBc in VDSL2 30a profiles. Using a single +14V supply, ISL1591 supports 14.5dBm VDSL2 17a and 30a profiles at only a power consumption of 425mW. This capability is ideal for short loop, high bit rate VDSL2 applications where 14.5dBm transmit power is all that is required. For full power VDSL2 8b profile with 20dBm of transmit power, the line driver will require +24V single supply.



FIXED GAIN LINE DRIVER CIRCUIT



MBPR VDSL2 8b PERFORMANCE

#### Key Features

- Internal Fixed Gain of 11.6V/V at RLOAD
- ±360mA Output Drive Capability
- 42.4V<sub>p-p</sub> Differential Output Drive into 82.6W
- -62dBc MBPR (VDSL 8b Profile)
- -65dBc US1, -63dBc US2 MBPR (VDSL2 17a Profile)
- -64dBc US1, -62dBc US2, -60dBc US3 MBPR (VDSL 30a Profile)
- High Slew Rate of 2000V/μs Differential
- Bandwidth (170MHz)
- Supply Current Control Pins
- K.20, GR-1089 Surge Robustness Validated

#### Applications

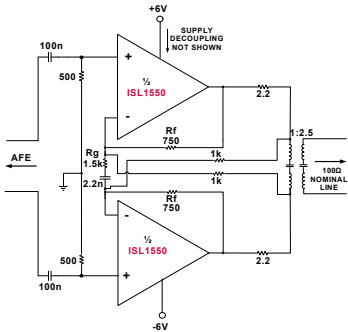
- ADSL2+
- VDSL2 Profiles: 8MHz, 17MHz, and 30MHz

Wired Communication ICs (DSL Line Drivers)

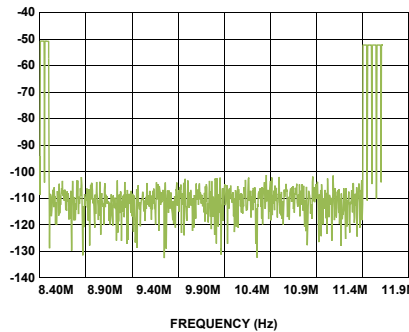
## ISL1550 Single Port, VDSL2 Differential Line Driver

The ISL1550 is a dual operational amplifier intended to be used as a differential line driver. ISL1550's high bandwidth and low distortion performance enables the support of VDSL2 8b, 17a and 30a modem applications.

This device features a high current drive capability of  $\pm 750\text{mA}$  required to drive large voltage peaks into heavy loads. In Central Office (CO) applications, the driver achieves a typical Missing Band Power Ratio (MBPR) of  $-66\text{dBc}$  in VDSL2 8b upstream (US) 1 band and MBPR's of  $-61\text{dBc}$  and  $-60\text{dBc}$  in VDSL2 17a US1 and US2 respectively.



TYPICAL APPLICATION CIRCUIT



US2 MBPR 17a VDSL2 PERFORMANCE

### Key Features

- 20dBm output power capability
- Drives up to  $\pm 750\text{mA}$  from a +12V supply
- $18\text{V}_{\text{p-p}}$  differential output drive into  $20\Omega$
- $-89\text{dBc}$  typical driver output distortion at full output at 200kHz,  $12\text{V}_{\text{p-p}}$  differential
- $-61\text{dBc}$  US1,  $-60\text{dBc}$  US2 avg. MBPR 17a
- Supply range:  $\pm 4.0\text{V}$  to  $\pm 6.6\text{V}$ ,  $+8.0\text{V}$  to  $+13.2\text{V}$
- Thermal shutdown
- K.20, GR-1089 Surge Robustness Validated

### Applications

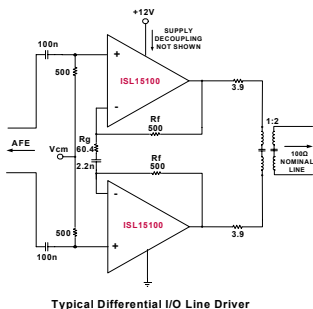
- VDSL2 Profiles: 8MHz, 17MHz, and 30MHz

## ISL15100 Single Port, PLC Differential Line Driver

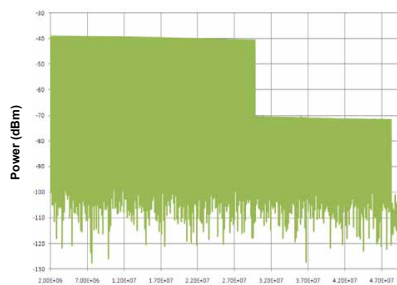


The ISL15100 is a single port differential line driver developed for Power Line Communication (PLC) applications. The device is designed to drive heavy line loads while maintaining high level of linearity required in OFDM PLC modem links. With  $15.5\text{dBm}$  of total transmit signal power into  $100\text{ohm}$  line load, the driver achieves  $-50\text{dB}$  average MTPR distortion across output spectrum up to 50MHz. Under heavy load conditions encountered in PLC, the line driver can deliver  $19\text{dBm}$  output signal power (CF= $15\text{dB}$ , 1:2.5 transformer ratio) with good AC performance.

The ISL15100 has two bias current control pins (C0, C1) to allow for four power settings (disable, low, medium, high). In disable mode, the line driver output maintains high impedance characteristic not to affect TDM receive signal integrity.



TYPICAL APPLICATION CIRCUIT



50MHz PLC SPECTRUM FREQUENCY (Hz)

### Key Features

- Dual differential drivers
- 50MHz Broadband PLC G.hn, Home Plug support
- Enable/Disable control pins for TDM operation
- $-50\text{dBc}$  average MTPR distortion
- Single supply 12V nominal operation
- High surge current handling capability
- High output impedance during disable

### Applications

- Power Line Communication Application

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