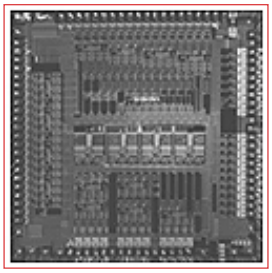
BCM6020

PRODUCT Brief



BCM6020 SCALABLE DSL TRANSCEIVER

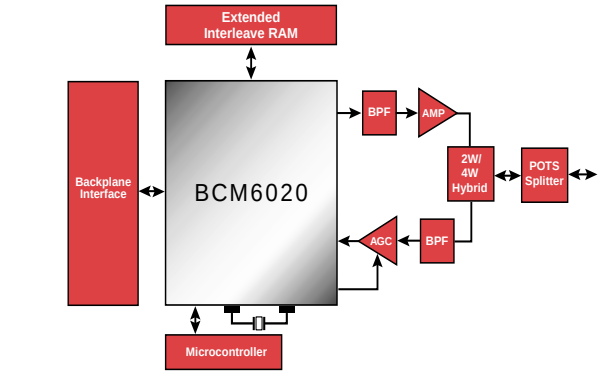
BCM6020 FEATURES

- **The Broadcom® BCM6020 is a Single-chip QAM, Twisted-pair, Scalable, DSL Transceiver Optimized for Low-cost, Low-power and High-density Applications on both Shielded and Unshielded Telephone Wiring.**
- **General**
  - Supports bit rates to 52 Mbps and baud rates to 13 Mbaud
  - Sub 1-watt power consumption
  - Integrated carrier and clock recovery loops for ease of use
  - Programmable 4-256 QAM constellations
  - Single 3.3V supply operation
  - On-chip A/D and D/A converters
  - On-chip clock generation
  - Adjustable upstream and downstream center frequencies
  - Extensive power management features
  - JTAG test interface
  - Small 100-pin PQFP form factor
- **Transport Interfaces**
  - Complete ATM UTOPIA Level 1 and 2
  - Rate matching and cell delineation
  - Bit or byte synchronous modes
  - Programmable frame formats
  - Coded/Uncoded payload support
- **Transceiver**
  - Transmit notching for amateur radio band compatibility
  - On-chip and off-chip RAM interleaving
  - Reed-Solomon FEC
  - Packet scrambling
  - Digital square root Nyquist filters
  - Tomlinson precoder
  - X/SinX transmit pre-emphasis
  - Enhanced adaptive decision feedback equalizer

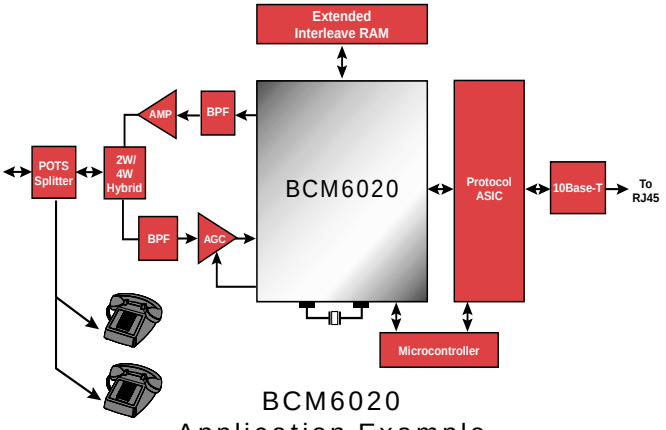
SUMMARY OF BENEFITS

- **Operates up to 52 Mbps Fully Symmetric**
- **Supports Symmetric and Asymmetric Services**
- **Operates on Shielded and Unshielded Distribution Cables**
- **Suitable for CO, HDT, ONU, and CPE Applications**
- **Small Size and Low Power Enables High Port Densities**
- **Simple Spectrum Control via Register Programming**
- **Supports Frame-based and Cell-based Transport Streams**

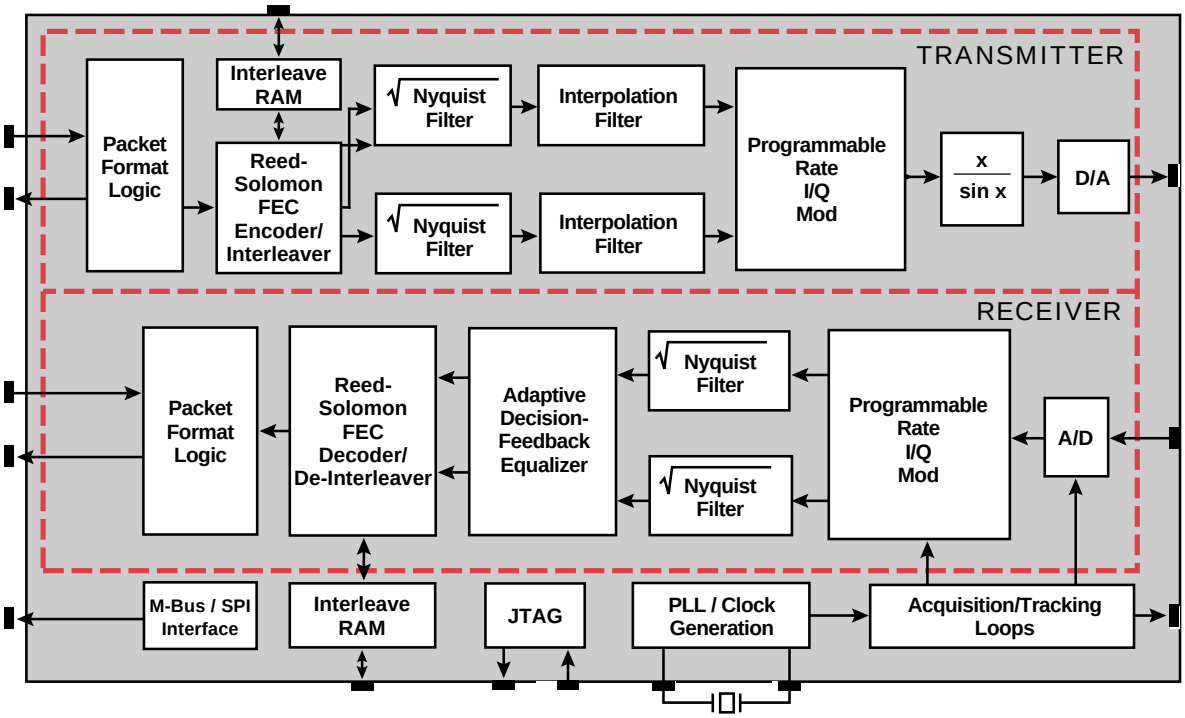
Central Office Linecard Block Diagram



Customer Modem Block Diagram



BCM6020
Application Example



The **BCM6020** is the first single-chip VDSL solution to offer support for unshielded telephone distribution cable through the use of on-chip advanced digital filtering, precoding and equalization techniques. The **BCM6020** offers DSL system vendors an unmatched capability for the provision of high-speed data transmission services on twisted pair copper wire supporting applications such as Internet access, LAN extensions, work-at-home, remote-office and switched digital video. Rates up to 52 Mbps are supported fully symmetric. The **BCM6020** can also be configured to support full-speed ADSL and G.Lite data rates.

The **BCM6020** has been designed for any digital subscriber line application where low-cost, low-power and compact size are paramount. It is especially suited for use in frame-based applications such as Ethernet transport and bridging over long-reach telephone grade wiring. Spectral compatibility is assured by virtue of its programmable center frequency and baud rate. With its small footprint the **BCM6020** is ideal for use in NIC, PC Card and mini-PCI CPE modem designs. Robustness to even severe bursty ingress is guaranteed through support of on-chip and off-chip interleaving memory. This feature is useful for industrial applications where such ingress can be a problem.

The **BCM6020** also supports UTOPIA Level 1 and Level 2 interfaces and may easily be connected to industry-standard ATM segmentation and reassembly engines. This facilitates the delivery of multiple virtual circuits and traffic classes. Its flexible frame structure enables transport of FEC encoded and uncoded traffic, and an embedded operations channel protocol is supported. Automatic rate-adaptive software is available for support of symmetric and asymmetric links. The **BCM6020** employs Tomlinson pre-coding and a programmable equalizer to improve the immunity of the device to radio frequency interference that can occur in the case where unshielded wiring is used in the distribution plant. The equalizer tap length is programmable thereby effectively combating inter-symbol interference over a wide range of symbol rates.

The **BCM6020** is also ideal for WAN connections to SOHO routers and integrated access devices. Supporting multi-megabit symmetric data rates in excess of HDSL, SDSL and G.Lite, it represents the next step in broadband WAN access to small businesses.

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