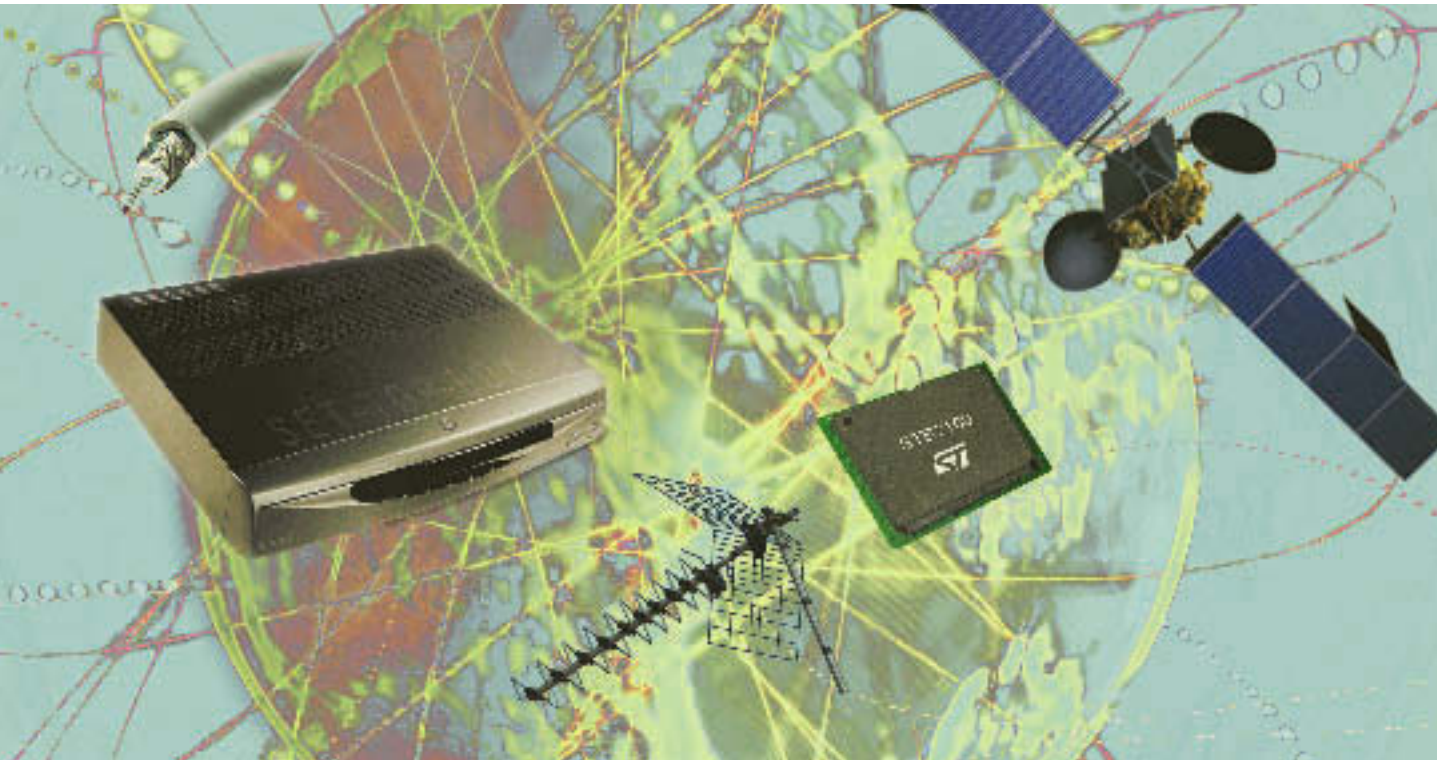


Leading the way in the set-top box world

And expanding future horizons



June 2005



You decide the functionality...

The digital consumer industry is evolving in several ways, including the migration from MPEG2 to other video and audio compression standards like H264 and Microsoft VC1 CODEC technology. MPEG2 high-definition services are becoming established and many trials are ongoing. Convergence means that lots of "combo" products are appearing such as DVD-R/DVR, portable video via DVB-H and cellular technology. STMicroelectronics is supporting all of these with its new generation of front-end and back-end chipsets while maintaining its commitment to the volume, cost-sensitive market.

Interactive STB



Free-to-air



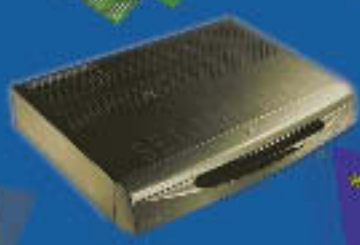
ADSL

STMicroelectronics matches your vision

Integration
DVD



Intelligence
DVR time shifting



Set-top box



Home networking

Satellite

Terrestrial

Cable

Connectivity options to the expanding world

ST is leading the DVB-S2 rollout

DVB-S2 is the next generation standard for broadcast satellite transmission. Together with MPEG4 encoding DVB-S2 will enable low-cost, high-definition images to be received, via satellite, in any living room. Satellite is unique in that it is the only medium that has the capacity to transmit literally hundreds of HD images, and it is thought that this may lead to high growth demand from consumers as they seek to maximize value from their flat screen (HD enabled) investments. The DVB-S2 standard improves transmission rates, over the same bandwidth, by over 30% when compared with the legacy standard DVB-S. The DVB-S2 error correction techniques approach to within 0.8dB of the theoretical limit for any given channel. ST has been working closely with customers, partners and standards bodies to define a world beating chipset and is currently launching its DVB-S2 solution comprising of two ICs; the STB6100 tuner and the STB0899 demodulator.

Interactive television (SatMode)

SatMode is a return channel via satellite from the living room to the broadcaster. SatMode implements a low speed (<64Kbits/sec) return path for interactive TV (iTV) applications. These may include program voting, home shopping, menu browsing, TV SMSs (short text messages) and near video on demand as well as service improvements including link quality monitoring and security. ST is participating in the SatMode consortium.

Single cable solution for satellite (SatCR)

Today's consumers are demanding many new features in their satellite STBs; they include watch and record, picture-in-picture and multi-screen viewing - for a second TV. This poses particular problems for satellite systems as channels may be received from several satellites and different bands and polarizations. Normally this would necessitate a separate down cable for each channel watched. This is no longer the case thanks to ST's revolutionary SatCR (Satellite Channel Router) technology. SatCR stacks multiple channels on a single down cable allowing up to 8 channels to be watched without the requirement for more cables between the STB and rooftop. ST has taken a leading role in the development of this technology and has recently proposed modifications to the DiSEqC (Digital Satellite Equipment Control) standard to CENELEC (the European standards body which issues electrical specifications) to enable single cable solutions. This technology is designed to be compatible with SatMode, DVB-S2 and legacy DVB-S. Thus complementing ST's range of forward looking front-end solutions for satellite STBs.

Terrestrial

The STV0361 single-chip, digital COFDM terrestrial demodulator features a built-in A/D converter and implements all COFDM decoder functions as specified in DVB-T ETSI EN 300 744. The device is compliant with the latest NorDig Unified standard.

DVB-H for mobile

ST is developing a performant DVB-H module solution to be coupled with its family of Nomadik® application processors. The DVB-H module will

be fully-compliant to DVB-H standard and MBRAI category 3 specifications. Featuring a dual A/D converter to interface with ZIF tuners, the DVB-H module optimizes channel estimation and synchronization algorithms to cope with fast varying channels and will implement all the processing required for transport stream demultiplexing, MPE, MPE-FEC and time-slicing management.

ADSL/ADSL2+

The ST20190 Utopia chipset supports all the latest ADSL standards including TR069 annex A,B,L and M. The chips have a Utopia interface. We supply royalty free software drivers with the Unicorn2 chipset supporting ADSL via a USB interface.

QAM cable

All cable TV networks are using quadrature amplitude modulation (QAM) to enable efficient delivery of digital data and video streams for broadcast and interactive services. The STV0297 is the most cost-effective solution for integration in set-top-boxes and cable tuners. In addition to all of the necessary demodulation and FEC functions required for recovery of the QAM modulated bit streams with outstanding BER results, it also includes several features that give simple and immediate access to various quality monitoring parameters and lock status. The STV0297 family is being further enhanced to give increases in performance and cost-effectiveness to maintain its number one position in the digital cable demodulator market.

Ethernet

ST is starting to develop the ethernet MAC into future generations of its advanced chipset, but is still continuing to supply the STE100P single port ethernet/phy transceiver.

STB – System

From low-cost zapper to

Camera

ST's CMOS imaging technology enables a low-cost camera to be connected directly to the set-top box. CMOS area image sensors can be matched to co-processors to offer complete camera solutions (QCIF/CIF/VGA CCIR656,USB, etc.) for many vision-based applications and services.

Audio

Set-top box decoders support multiple audio formats. These include Dolby Digital, MP3, AAC and AAC+ decoding, as well as Dolby ProLogic® and SRS TruSurround®XT post-processing. This allows box manufacturers to differentiate their products in the market versus competitors. You can also remove the wires from your speakers and send audio through the living room using Bluetooth™.

DVD recorder and DVD combo products

ST is leveraging on its knowledge of STB, DVD, security and systems to help address the DVD-R and DVD-R/DVR combo markets. ST is taking advantage of its extensive experience and technology integrating and converging into new and advanced multimedia products. The STd8010 family will support all the DVD-R formats including +RW,-RW and RAM and it will also allow real-time encoding of analog signals to MPEG2. ST is also introducing devices like the STd5100/STd5301 families to support the combo DVD-R/set-top box market for free to air and pay-TV operators in a single chip. ST is offering a complete software stack supporting eight day EPG for these chipsets, networking, security, DVD navigation and authoring plus the media middlewares. In the next generation, ST combo families using STd710x devices are providing full HD-DVD™ and BD support for the new high-definition DVD standards on Blu-ray technology. These families will be providing solutions capable of decoding advance CODECs and high-definition to the rest of the markets.

Digital video recording (DVR)

A hard disk drive connected directly to the OMEGA interface provides a low-cost implementation of the personal video recorder. While all OMEGA variants support simple time shift recording, the STi5100 enables enhanced functionality such as simultaneous multiple watch and record. Such advanced features enable broadcasters to deliver a rich media spectrum to their viewing audience. As this device also has a USB2.0 interface it is also being used to download video and audio content for portable viewing devices or pictures from digital cameras.

Displays



Storage

on Chip

interactive media server



Price sensitive SD MPEG2

ST is committed to continue to drive the volume zapper (simple channel selection, non-interactive) STB market and is introducing devices for low-cost boxes that also support MHEG and MHP solutions and all the world leading conditional access systems. The STB5105 family has more power and higher level of integration than the STi5518. ST common architecture and software (STAPI) support throughout enables scalability of both performance and functionality, enabling OEMs to develop new, advanced profile set-top boxes, while capitalizing on existing software investment and maintaining support for legacy applications.

HD MPEG2

ST now has a wide portfolio of products to support the growing HD MPEG2 market. The STi7710 single chip decoder is the latest device supporting all formats for the traditional MPEG2 market and is being used in stand alone set-top box and in IDTV solutions.

HD new compression standards and streaming – STB710x family

ST is introducing a family of single chip devices supporting H.264, MPEG2 and Microsoft's VC1 video formats, both in standard and high-definition. Use of advanced compression allows the broadcaster to make better use of bandwidth by transmitting HD content in H.264 or Microsoft's VC1 technology. Capable of running Linux, WinCE and ST own OS21 operating systems, these devices support a wide range of application software. The STB710x family of devices can be interfaced with ST satellite, cable or terrestrial front-ends for broadcast applications. The product is also suitable for streaming services delivered over DSL or DOCSIS which can be supported by a range of ST devices. The STB7109 will include features for enhanced content protection (SVP), support of DRM and connectivity by integrating ethernet capability.

Voice-over-IP (VoIP) (triple play)

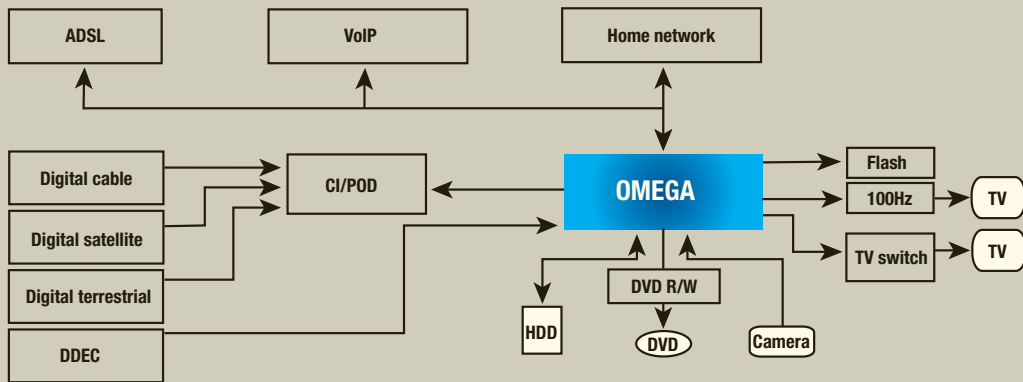
STB710x family of products supports VoIP and will enable deployment of triple play in the home. ST sees this a key requirement for future IP and DOCSIS interactive set-top boxes and will maintain it in future generations.

Home network

ST is developing a broad range of ICs for home networking, covering both wired and wireless standards, including Ethernet, powerline, Bluetooth® and wireless LAN including 802.11n. ST has a number of devices that are suitable for server/client architectures and is incorporating enhanced content protection with SVP into its product range. ST products allow sharing of content on a HDD across a network environment with software to support time shifting, space shifting and smooth trick modes.

Modular hardware and software with increased capability

ST ensures customers' investments in platforms are protected by a range of modular hardware supported by STAPI, (ST application interface layer). Moreover the underlying functionality of the chips is increasing so ST is adding more software resources to support these new hardware functions. End users will see STAPI functionality broaden to support new features. ST devices now include advanced CPU cores such as the ST40 and the ST200 which are Linux capable, these are also supported by STAPI enabling easy porting of middleware such as NDS MediaHighway™ and Openptv.

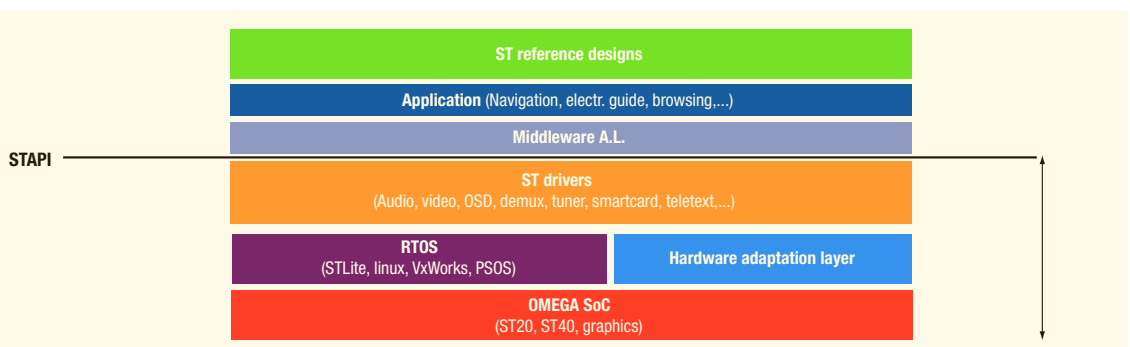


OMEGA comparisons

Application	Product	CPU	Clock	Dram type	# of MPEG decodes	Video CODECs			Watch and record	USB
						MPEG2	MPEG4	WM9		
Basic STi5518 replacement	STM5118	ST20	200MHz	SDRAM	1x SD	•				NO
Basic+MHP	STM5105	ST20	200MHz	SDRAM/DDR	1x SD	•				NO
Watch and record DVR	STx5100	ST20	243MHz	DDR	1x SD	•			•	2.0
	STB5301	ST231	333MHz			•			•	2.0
Dual TV DVR	STi5528	ST20/ST40	166/200MHz	SDRAM/DDR	2x SD	•			•	1.1
	STB5525	ST231	400MHz	DDR	2x SD	•			•	2.0
HD MPEG2	STx7710	ST20	200MHz	DDR	1x HD	•			•	2.0
HD H264	STx7100	ST40/ST231	266/400MHz	DDR	1x HD/2x SD	•	•		•	2.0
HD VC1/H264	STB7109	ST40/ST231	266/400MHz	DDR	1x HD/2x SD	•	•	•	•	2.0

Interactive software architecture

ST provides development platforms and software to support all members of the OMEGA family. The ST application programming interface (STAPI) driver provides a stable base on which developers can build their applications. For some applications, ST even provides the full reference design. STAPI drivers enable software to be reused across multiple platforms. STAPI functionality is increasing to support DVR high-definition and advanced CODECs as well as multiple TV boxes.



STMicroelectronics offers a

Secure ICs: challenges and solutions

Innovative system-on-chip

Today, losses due to electronic fraud are impossible to assess. And, as new applications – interactive pay-TV, e-commerce, remote network access – emerge, building trustworthy solutions becomes essential. ST's wide range of innovative smartcard and secure ICs are designed to address this crucial issue. The range includes standard/cryptographic smartcard products built upon the 8-bit ST19 platform. This platform includes products with multi-protocols (USB, I2C, LPC, ISO7816, ISO14443) enabling security solutions to be embedded into a wide range of applications. The arrival of open systems and networks has also been addressed with ST's 32-bit SmartJ™ platform (ST22), ideal for building open multi-application solutions. The ST22 products feature high computing power, large memory capacity, management (up to several Mbit), a range of connectivity options and a JavaCard™ hardware accelerator.

Smartcard bank reader and front panel 8-bit microcontroller

For secure payment applications, ST's smartcard interface ST8004/ST8024 with voltage-supervisor extra feature and front panel 8-bit microcontroller ST7SCR offer advanced read-out protection, display and control panel management, and provide an infrared interface between receiver and remote control. Its features include 16KBytes of Flash and ROM memory with read/write protection, ISO-7816 UART with programmable baud rate, 4kV ESD protection on all ISO pins and a smartcard power supply management unit.

Front panel display controller with driver

ST also offers the STM86312, STFPC311 and STFPC320 intelligent VFD controller drivers, providing high-voltage outputs capable of directly driving the grids and segments of a VFD display. A dedicated SPI (serial peripheral interface), allowing communication with every MCU, offers fast and easy configuration and data loading. The



STFPC311 device is similar to the STM86312, but with an additional stand-by feature and a built-in remote control decoder module. The stand-by feature is ideal for power consumption reduction when in stand-by mode. The STFPC320 has the same characteristics as the STFPC311, plus an additional real-time clock feature.

Security

The security level of a smartcard IC depends on many factors. These include the implementation of hardware and software security features, secure development, production and distribution environments, development methodology, quality assurance and the adherence to standards and common evaluation methodologies (ITSEC, ISO 15408 common criteria). Our unrivalled 20 years of smartcard experience ensure the highest levels of security.

Modem return channel

ST also offers an 8-bit modem return channel, the ST7, ideal for controlling data flow from the modem line to the main set-top box processor. The ST7 8-bit microcontroller family offers up to 60K Flash and ROM program memory and up to 2K RAM and low-voltage range versions.

ST's standard products include a broad range of devices, as common interface (CI) devices, suitable for the European market or point of deployment (POD) modules in the USA. Providing a set-top box interface via a separate hardware module, they provide solutions for hardware controllers, power switching, logics with the VHC/VHCT LCX LVX families and buffering up to 32 bits.

Application	Features	Part number
Smartcard and embedded security	8-bit CPU, cryptography, (USB, I ² C, LPC, ISO7816, ISO14443)	ST19
	32-bit CPU, cryptography, large memory	ST22
Smartcard interface	ISO7816-3 compliant with NDS CA system	ST8004/ST8024
Smartcard bank reader/front panel	8-bit MCU with integrated smartcard analog interface and UART	ST7SCR
Modem return channel	8-bit industry standard microcontroller with low voltage range versions	ST7
POD power switching	Programmable R _{ds} =80mOhm 500mA current limit	ST2042/ST2052
Standard logics	Low noise 2 to 5.5 I _o =8mA t _{pd} =4ns	VHC/VHCT family
	Low voltage 1.65 to 3.6V I _o =24mA t _{pd} =4ns	LCX/LVC family
	Low noise 2 to 3.6V I _o =4mA t _{pd} =4.7ns	LVX family
PCMCIA (CI)	16-bit D-Latch and 16-bit bus buffer 3State	74ACT32701
VFD controller/driver	22-bit high-voltage output	STM86312

wide range of complementary devices

Memory for every requirement

Digital consumer applications – and set-top boxes in particular – are driving the demand for more flexible, more secure and enhanced performance non-volatile memories. Benefiting from close relationships with the world's leading set-top box manufacturers, ST offers a broad range of competitive solutions for the current and emerging generation of set-top boxes

Krypto™ security features for the challenging set-top box market



Krypto is the name given to a new superset of features developed to increase security in set-top box applications, allowing different levels of software and hardware protection depending on customers' application needs; it is the evolution of the already existing, widely marketed and well accepted security options (smart protection and unique code), with a complete backward compatibility. Included in the features available with Krypto is a mechanism of mutual authentication between the NOR Flash and the CPU capable of stopping any illegal operation on the Flash memory firmware; a read protection option and automatic reactivation are also included. Krypto has been implemented on the M28WxxxFS family for set-top box, in 32 to 64Mb



densities, 3V supply, 0.13µm process technology. A lower density 16Mb device in 0.15µm technology, with a reduced security feature level, is also offered to address the basic protection level for set-top box.

Higher densities for enhanced performance

ST NOR Flash memory wide portfolio is even able to support requests for higher densities in order to cope with different set-top boxes requests. Available to be marketed a new 128Mb density secure device, and soon a 256Mb density without any additional security options, both offer also multiple bank, multi-bit per cell, burst mode features.

Density	Part number	Description	Package
16Mb	M28W160ES	16Mb, x16, 70ns boot block, secure	TBGA64
32Mb	M28W320FS	32Mb, x16, 70ns boot block, Krypto, secure	TBGA64
64Mb	M28W640FS	64Mb, x16, 70ns boot block, Krypto, secure	TBGA64

Industry-standard Flash

ST offers a wide range of industry-standard NOR Flash memories for consumer applications, responding to the market needs in terms of features and performances. ST's comprehensive range of NOR Flash products offers densities from 16 to 64Mb, with 3V single and dual supply, single and dual bank and an access time of 70 to 100ns. Industry-standard NOR Flash devices are available in TSOP, SO and BGA packages. ST also offers a wide range of NAND Flash ideal for code/application storage and time-shift functions. They are available with densities from 128Mb up to 16Gb and reduce system cost.

Serial Flash

Serial Flash are particularly well suited for small code storage (patches, model-specific codes), featuring high-density and high data-transfer rate, sequential read capability, low power consumption and a small low-cost 8- and 16-pin package. ST's portfolio covers 1 to 64Mb Serial Flash memories with SPI serial interface and 2.7 to 3.6V supply voltage.

Serial EEPROMs

Offered in a very small package, these are a cost-effective and flexible solutions for the storage of system and user parameters. Used by the major set-top box manufacturers, these devices are easily upgradeable to higher densities. ST's complete range includes 1Kb to 1Mb devices supporting I²C bus (most popular choice), 1 to 512Kb products with SPI bus, and 1 to 16Kb supporting MICROWIRE® bus with supply voltages from 1.8 to 5.5V. ST custom solutions also offer the opportunity to customize the interface and associated protocol, the logic circuitry, the access control and the memory partitioning.

STMicroelectronics offers a

Standard ICs and discrete solutions

ST's standard product range consists of a broad range of devices, from commodity products to innovative devices such as application specific standard products (ASSPs), designed specifically to meet the requirements of key driving applications such as set-top boxes.

Audio/video

ST offers a range of high-speed, low-power operational amplifiers designed for high-quality audio/video signal processing, as well as a complete range of ESD clamping diodes for protection up to 15kV.

Function	Features	Part number
Low-power, high-speed operational amplifiers for video signal driving	Output rail-to-rail, 100MHz, low supply voltage	TSH7x, TSH8x
	150MHz, slew rate 110 V/us	TSH9x
	For progressive video/HDTV: CFA, 100MHz, slew rate 450 V/us	TSH11x
	For HDTV: Low input/output rail, single supply, 300MHz	TSH341
Low-power, high-speed video buffer	For HDTV: Low input/output rail, single supply, 320MHz	TSH340
Connector line clamping protection	± 15kV ESD protection	ESDA6V1-4BC6, ESDA5V3L, ESDA14V2L
Low-noise audio operational amplifier	Rail-to-rail output	TS97x, TS922
	Very low noise and low distortion	LM833, MC33078, TJM4558
Stereo headphone amplifier	16-32 ohms, 110dB(A) SNR, high crosstalk immunity 100dB	TS482
Stereo headphone amplifier with standby mode	103dB(A) SNR, on/off click reduction, 450V/us, fixed gain avail.	TS486, TS487
Stereo headphone amplifier with I ² C bus interface	Digital volume control via I ² C bus, 9 output modes, pop and click reduction	TS4975

Data communication

To meet the high-quality demands of signal amplification and conditioning, ST has introduced a complete range of rail-to-rail operational amplifiers, as the RS232 single-ended serial transmission that allows logic signals to meet the power requirements of transmission lines. ST has also developed a technology known as IPAD (integrated passive and active devices) – a range of devices which combine filtering, ESD protection and bus termination.

Function	Features	Part number
IEEE1394 termination network	Filter and ESD protection	ST1394
Ethernet port/ADSL rail to rail protection	± 15kV ESD protection	DALC208SC6
USB1.1 port termination and EMI filter	Downstream	USBDF01/02W5
	Upstream	USBUF01/02W6
USB2.0 port protection	Single port, data and $V_{bus} \pm 15kV$ ESD protection	USBLC6-2SC6/P6
	Dual port, data and $V_{bus} \pm 15kV$ ESD protection	USBLC6-4SC6

Modem line

To protect sensitive equipment from common electrical transients such as lightning-induced power surges, ST offers a wide range of devices rated in compliance with international standards (ITU K20/K21, IEC950 and FCC Part 68) and featuring low capacitance for high-speed applications. For hook switch applications, ST provides small signal bipolar transistors rated to 300V.

Function	Features	Part number
Analog/ADSL modem lightning protection	50A and 100A surge suppressor (Trisil)	SMP50-270, SMP80MC-270, SMP100MC series
ADSL line driver	Low noise, VFA, GBP 130MHz, $I_{out} 200mA$	TS612, TS613
ADSL2+ line driver	Low noise, CFA, 40MHZ@gain=4, slew rate 420 V/us, $I_{out} = 500mA$, $I_{out} 200mA$	TS612, TS613

Low noise block

Designed for analog and digital satellite set-top box receivers, the LNBP families are voltage regulators and interface ICs, specifically designed to provide power to the external LNB down converter in an antenna, or to the multiswitch box with 13V/18V, 22kHz tone signaling, and I²C bus standard interfacing.

Function	Features	Part number
Supply and control voltage regulator (parallel interface)	Dual input voltage accurate 22kHz tone oscillator LNB short circuit protection and diagnostic	LNBP20/10 LNBK20/10
Supply and control voltage regulator	DC/DC controller for single 12V supply accurate 22kHz tone with step-up converter and I ² C oscillator LNB short circuit protection and diagnostic	LNBP21/LNBS21
Dual supply and control for dual tuner applications with step-up converters and I ² C	Complete interface between two LNBS with I ² C bus	LNBS221
Supply and control voltage regulator with step-up converter and I ² C	DC/DC controller for single 12V supply accurate 22kHz tone oscillator LNB short circuit protection and diagnostic with semi low-drop post regulator for lower-power dissipation	LNBS21
Power supply protection	Protection against electrical overstress (IEC61000-4-5)	SM15T22A, 1.5KE22A

wide range of complementary devices

Power supply

Most set-top boxes require up to five different voltages. The topology of power supplies which meet this requirement are either flyback converters for power in the range from 3 to 100W, or forward converters. ST's wide range of products is dedicated to power supplies which include our smart VIPer family, Power MOSFETs, Power bipolar transistors, line regulators, DC-DC converters, voltage referencing, Schottky diodes and ultrafast rectifiers which meet with all power supply requirements.

Function	Features	Part number
Bipolar transistor technology tailored for SMPS	NPN power bipolar transistor	STx1300x
Quasi resonant controller	Low EMI low quiescent current	L6565
Off-line SMPS smart primary IC	Automatic burst mode operation in stand-by mode enables compliance with the standby efficiency norms, low stand-by current, integrated start-up supply, built-in protections	VIPer22A, VIPer32, VIPer53, VIPer50/A, VIPer100/A
MOSFET technology providing high performance at optimized cost	Low $R_{DS(on)}$ Minimised gate charge and low capacitance for fast switching	STxxNKxxZ
Secondary rectification 2.5 to 24V output and DC/DC	30 to 150V Schottky diodes with optimized forward and reverse characteristics	STPSxxx
Secondary rectification 12 to 48V output	High efficiency 200 to 400V ultrafast diodes with optimized forward and reverse characteristics	STTHxxx
Boost diode 3 and 5A for PFC	600V Turbo2 diodes with several trade-offs available for forward and reverse characteristics	STTHxx06
Integrated MOSFET	Snubber Transil and blocking diode in one package for MOSFET	PKC-136
Programmable voltage reference	2.52V V_{ref} , 2% and 1% voltage precision	TL431
Low voltage adjustable shunt reference	1.24V V_{ref} , 2% and 0.5% voltage precision	TS431
Post regulation	Very low-drop voltage regulator	LD29300, LD1117, L4931
	Dual LDO voltage regulator	KF/LF series ST2L05xxyy
	Low saturation voltage power bipolar transistors	STN790A
	Switching regulators	L597x series

Video switch

The STMAV340 is a wide bidirectional quad (4 channel) single pole/double throw high-speed, low-power CMOS TTL-compatible analog video switch designed for advanced video applications which demand superior image quality. Its low on-resistance allows inputs to be connected to outputs without causing propagation delay or generating additional ground bounce noise. The switch is also designed for very low cross-talk, low bit-to-bit skew, high channel-to-channel noise isolation and low I/O capacitance. The switch offers very little or practically no attenuation of the high-speed signals at the outputs, thus preserving the signal integrity to comply with stringent requirements. The video switch can be used in either direction for multiplexing or de-multiplexing signals from/to the main graphics controller for composite and RGB video switching. The wide bandwidth of the device makes it ideal even for high frequency applications.

Analog switches

Analog switches are low voltage CMOS switches digitally controlled. They allow analog signals to pass through with minimum distortion. These can be useful for switching/multiplexing audio signals from the main processor to the amplifier and output audio ports.

Level translators

ST's level translators provide a bi-directional interface for buses operating at mixed voltage levels in the range of 3.0 to 5.0V, giving true signal translation. These can be used in a system where the main processor runs at a lower voltage from the peripheral I/O or memory interface.

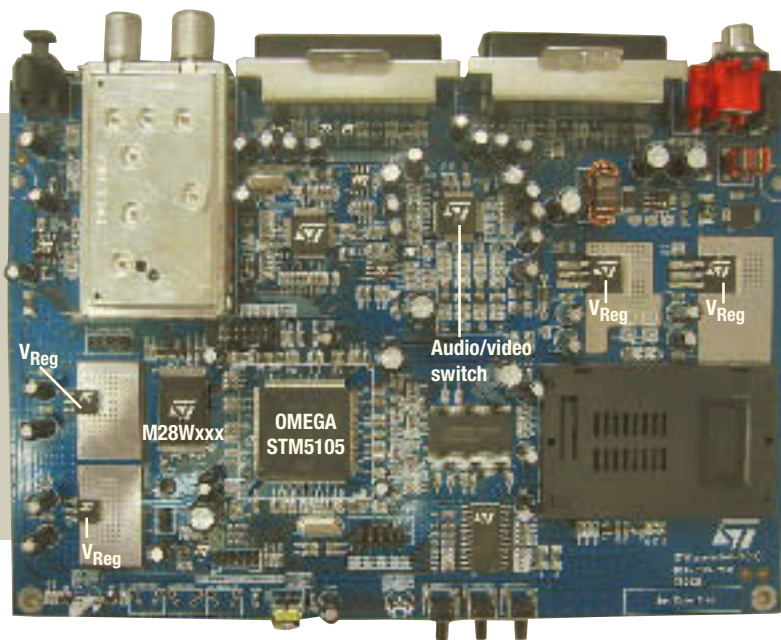
Application	Features	Part number
VFD controller/driver	22-bit high-voltage outputs	STM86312
	28-bit high-voltage outputs with stand-by feature	STFFPC311
	28-bit high-voltage outputs with stand-by and real-time clock	STFFPC320
Power switch	Programmable current single output power switch with active low/high enable signal Max 1.2A current limit	ST890B/C
	Current-limited dual output USB power switch with active low/high enable signal $R_{ds}=80m\Omega$ 500mA current limit	ST2042/ST2052
	Current-limited quad output USB power switch with active low/high enable signal $R_{ds}=80m\Omega$ 500mA current limit	ST2044/ST2054
Video switch	High bandwidth, bidirectional quad (4 channel) single pole/double throw video switch	STMAV340
Analog switch	Low-voltage and low noise CMOS quad bilateral switch	74LVQ4066
Analog mux/de-mux	Dual 4-channel analog mux/de-mux providing 8 bidirectional digitally controlled analog switches. Triple 2-channel incorporates 6 bidirectional digitally controlled analog switches	M74HC4052/3
Level translators	Bi-directional interface between 5V and 3V buses	74LVX/XC4245
	24mA at 5V bus and 12mA at 3V bus	74LVX/XC3245

Visions of the future

STMicroelectronics has a full range of front- and back-end products to meet the requirements of all satellite, terrestrial, cable and IP set-top boxes. These products are integrated into production-ready reference designs that give customers an extremely quick time to market.

Development and functionality

The ST roadmap and series of reference platforms allows you to develop a range of set-top boxes, starting from the basic zapper, and adding functionality for DVR, DVD, HD and advanced CODECs, but also allowing you to reuse a significant amount of your valuable software code base.



STAPI

Hardware reference designs are complemented by the established low level driver set, STAPI. This allows third-party software houses to port either proprietary middleware application layers or open standard applications such as MHP and MHEG directly on to ST reference platforms. ST has worked with many third-parties so as to be able to offer complete solutions while continuously reducing time to market.

Advanced process technology

Implemented with the most advanced digital silicon process technology available, and meeting the need for even smaller IC geometry, our chipsets' price/performance ratio allows the set-top box market to optimize system cost and to achieve rapid growth in both the operator controlled and retail markets.

As set-top boxes continue to evolve in terms of performance and functionality, ST is developing new solutions to meet the changing market requirements in terms of both hardware and software. Standards of transmission are evolving too, so ST has also designed a range of chips specifically for low bit rate video and high-definition television.

ST offers solutions for connectivity and content protection in home server/client environments and, as the demand for viewing content on the move continues to increase, we have introduced new devices with low power consumption, ideal for extending battery life.



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