

Transforming Multimedia



Transforming Next-Generation

Multimedia over IP



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TranSwitch is a leading designer and developer of silicon integrated circuits and intellectual property solutions, driven by a team of innovative engineers and scientists. Our mission is to enable OEMs and ODMs to deliver best-inclass voice and video quality for next generation multimedia over IP, while providing the full software platform and customer support needed for the fastest time-to-market.

TranSwitch has established a global presence; we have over 100 active industry-leading customers & partners, and our IP has been licensed by Fortune 1000 customers. With offices in Europe, Israel, India, Japan, Korea, China and USA, we remain devoted to providing excellent customer service and on-going support for our products and technologies.

As a recognized innovator of components for best-inclass integrated solutions, TranSwitch delivers strong differentiators in key consumer electronics market segments. Our turnkey expertise typically reduces time-to-market from years to 6 – 8 months, while simultaneously providing a 3x competitive advantage. With over 12 years of experience developing leading-edge IP designs, a wide portfolio of IP products and worldwide patents in 22 countries, TranSwitch is well-equipped to be your technology provider of first choice.

We welcome you to join us in transforming next generation multimedia over IP.





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HD Video High Speed Interconnect Solutions

In a home entertainment world driven by high quality audio and video, TranSwitch is developing the industry's most innovative, high-performance IP and IC solutions to deliver the highest quality HDTV and 3D-TV, while enabling televisions, PCs, tablets, and smart phones to communicate seamlessly with each other.

TranSwitch is a one-stop-shop for High Speed Interconnects for full-rate 3D video and 4K displays. Our patented HDP™ technology, developed for High Definition Television (HDTV) and 3-Dimensional Television (3D-TV), is the most advanced IP core technology in the industry. Capable of supporting both HDMI® 1.4 and DisplayPort® 1.1 standards, HDP™ provides one port and two solutions.

TranSwitch also provides the market-leading AnyCable™ technology, the industry's highest-performance receiver that can work with any low-cost HDMI® and DisplayPort® cables. AnyCable™ technology reduces the total cost of HDMI® solutions.

TranSwitch's new family of HDplay™ ICs eliminates the need for expensive, active converter cables. It allows consumers to view crisp, clear video from their notebook PCs, tablets and smart phones on high definition televisions using a simple passive cable.





High Speed



HDplay™ IC's - Bridging the gap between HDMI® and DisplayPort®

TranSwitch's HDplay[™] fully integrated ICs are designed with four HDP[™] inputs and one HDMI[®] output to enable electronics devices with HDMI[®] ports to now connect with those using DisplayPort[®], thereby working seamlessly with each.

The HDplay[™] chips are the first to support all HDMI® 1.4 resolutions including 4K, the highest resolution which is used in large screen TVs, and 3D 1080p at 60Hz, the highest resolution for 3D-TV. Other consumer electronics devices such as projectors and AV (audio/video) receivers will now be capable of supporting the exceptional image capability of the highest resolution 3D televisions. TranSwitch's patented HDplay[™] products integrates 10/100 Ethernet connectivity for digital TV's and other appliances.

TranSwitch's new family of HDplay™ ICs eliminates the need for expensive, active converter cables. It lets consumers view crisp, clear video from their notebook PCs, tablets and smart phones on high definition televisions using a simple passive cable.



PRODUCT	PART NO.	DESCRIPTION
HDplay™ Transceiver IC	TXC-44143	4xHDP™ (HDMI® 1.4 and DisplayPort® 1.1a) to HDMI® 1.4a, with Full HEAC, SmartCEC™ and Dual Parallel I/O
HDplay™ Transceiver IC	TXC-44144	1xHDP™ (HDMI® 1.4 and DisplayPort® 1.1a) & 3xHDMI 1.4 to HDMI® 1.4, with Full HEAC, and SmartCEC™
HDplay™ Transciever IC	TXC-44341	4xHDP™ (HDMI® 1.4 and DisplayPort® 1.1a) to HDMI® 1.4, with Full HEAC, and SmartCEC™

HDP™ - HDMI® and DisplayPort® in single PHY IP core

HDP™ is a cutting-edge technology developed by TranSwitch for High Definition Television (HDTV), AVR systems, projectors and monitors. It combines both HDMI® 1.4 and DisplayPort® in one single physical layer (PHY) enabling HDTV and 3D-TV manufacturers to support either standard with a single connector.

Conceived from TranSwitch's HDP™ technology, the HD-PXL™ 1.4 IP core, with bandwidth over 10Gbps, has been developed to meet all HDMI® 1.4 resolution requirements including 3D 1080p at 60Hz, the highest resolution for 3D televisions, and 4K, the resolution required for digital theatres HDP™ can also be integrated with other IP cores supplied by TranSwitch like Ethernet over HDMI® (HEC), as well as the audio return channel (ARC), which eliminates the need for separate audio cables between televisions and home entertainment systems.



PRODUCT	PART NO.	DESCRIPTION
HDP™ 1.4 Tx Combo-PHY IP at TSMC65GP, TSMC65LP, TSMC40LP	TXC-48356 TXC-48376	High-Definition Multimedia Interface® (HDMI®) v1.4 & DisplayPort® v1.1a Combo-PHY Transmitter IP Core at speed of 3.5Gbps
HDP™ 1.4 Rx Combo-PHY IP at TSMC65GP, TSMC65LP, SMIC65LL, TSMC40LP	TXC-48357 TXC-48377 TXC-48360 TXC-48363	High-Definition Multimedia Interface® (HDMI®) v1.4 & DisplayPort® v1.1a Combo-PHY Receiver IP Core at speed of 3.5Gbps
HDP™ 1.3 Tx Combo-PHY IP at TSMC65GP, TSMC65LP, TSMC40LP	TXC-48187	High-Definition Multimedia Interface® (HDMI®) v1.3 & DisplayPort® v1.1a Combo-PHY Transmitter IP Core at speed of 3.5Gbps
HDP™ 1.3 Rx Combo-PHY IP at TSMC65GP, TSMC65LP, SMIC65LL, TSMC40LP	TXC-48207	High-Definition Multimedia Interface® (HDMI®) v1.3 & DisplayPort® v1.1a Combo-PHY Receiver IP Core at speed of 3.5Gbps

HDMI® IP Cores

Tapping into the robust demand for affordable high performance video, the capabilities of TranSwitch's latest HDMI® technology enable mass market consumption of electronics products offering unparalleled television viewing experiences that also bring cutting edge video games to life.

TranSwitch's HDMI® products have a major performance advantage over competitors who do not support the full suite of features included in the HDMI® 1.4 specification or the maximum data rate that is required to support all extended resolutions.

Our transmitter and receiver cores incorporate all of the features in the HDMI® 1.4 specifications including 4K and all 3D resolutions, HDMI® Ethernet Channel (HEC) complete PHY, Audio Return Channel (ARC) which eliminates the need for separate audio cables between the television set and the Home Theatre equipment, HDCP version 1.4 and a full range of expanded color spaces.





PRODUCT	PART NO.	DESCRIPTION
HD-PXLTM-1.4 Transmitter – 3.50Gbps with ARC at TSMC90G, TSMC65GP, TSMC65LP, TSMC40LP	TXC-48350	High-Definition Multimedia Interface® (HDMI®) v1.4 Transmitter with ARC IP Core at speed of 3.50Gbps
HD-PXL [™] -1.4 Receiver – 3.50Gbps with ARC at TSMC90G, TSMC65GP, TSMC65LP, SMIC65LL, TSMC40LP	TXC-48351 TXC-48360	High-Definition Multimedia Interface® (HDMI®) v1.4 Transmitter with ARC IP Core at speed of 3.50Gbps
HD-PXLTM-1.3 Transmitter – 2.25Gbps at TSMC90G, TSMC65GP, TSMC65LP, TSMC40LP	TXC-98070 TXC-98120 TXC-98126	High-Definition Multimedia Interface® (HDMI®) v1.3 Transmitter IP Core at speed of 2.25Gbps
HD-PXLTM-1.3 Transmitter – 3.50Gbps at TSMC90G, TSMC65GP, TSMC65LP, TSMC40LP	TXC-98072 TXC-98122 TXC-98128	High-Definition Multimedia Interface® (HDMI®) v1.3 Transmitter IP Core at speed of 3.50Gbps
HD-PXLTM-1.3 Receiver – 2.25Gbp at TSMC90G, TSMC65GP, TSMC65LP, SMIC65LL, TSMC40LP	TXC-98071 TXC-98121 TXC-48113	High-Definition Multimedia Interface® (HDMI®) v1.3 Receiver IP Core at speed of 2.25Gbps
HD-PXLTM-1.3 Receiver – 3.50Gbps at TSMC90G, TSMC65GP, TSMC65LP, SMIC65LL, TSMC40LP	TXC-98073 TXC-98123 TXC-48133	High-Definition Multimedia Interface® (HDMI®) v1.3 Receiver IP Core at speed of 3.50Gbps

DisplayPort IP Cores

The design of TranSwitch's DisplayPort IP cores provide superior performance exceeding standards requirements for cable length and noise immunity while providing exceptionally low power consumption and small die size.

TranSwitch's DisplayPort IP core products provide AnyCable™ technology with accelerated adaptive equalizations and programmable impedance matching parameters, greatly enhancing the long and cheap cable performance. The IP Core also support special test modes that facilitate embedded testing in SoC designs.

Our DisplayPort-1.1 transmitter and receiver cores can be used for PC monitor, projector, flat panel displays, AV switches and other variety of digital video and audio applications operating over standard DisplayPort® cables. They are also compliant with VESA® DisplayPort® v.1.1a and support HDCP v.1.3 standards with a wide range of video interface modes.





PRODUCT	PART NO.	DESCRIPTION
DisplayPort-1.1 Transmitter IP Core at TSMC65GP, TSMC65LP, TSMC40LP	TXC-48147 TXC-48374 TXC-48153	DisplayPort® v1.1a Transmitter IP Core at speed of 1.62/2.70Gbps
DisplayPort-1.1 Receiver IP Core at TSMC65GP, TSMC65LP, SMIC65LL, TSMC40LP	TXC-48167 TXC-48375 TXC-48365 TXC-48173	DisplayPort® v1.1a Receiver IP Core at speed of 1.62/2.70Gbps

Ethernet IP Cores

TranSwitch provides intellectual property (IP) cores for Fast Ethernet (10/100) and Gigabit Ethernet (GigE) PHY applications, plus engineering services to customize these cores for specific applications. TranSwitch has designed over a dozen specific cores for 10/100 Ethernet PHY devices and most customers can license a hard macro core with little or no customization.



PRODUCT	PART NO.	DESCRIPTION
10/100Mbit Ethernet PHY IP Core (Technology Transfer)	MystiPHY110e	10BASE-T and 100BASE-TX/FX Ethernet PHY Core
1Giagbit Ethernet PHY IP Core (Technology Transfer)	MystiPHY1011	10BASE-T/100BASE-T/1000BASE-T Gigabit Ethernet PHY Core
HDMI®-1.4-HEC IP Core at TSMC65GP	TXC-48358	HDMI® v1.4a 100Mbit HDMI®-Ethernet-Channel (HEC) IP Core

IP Multimedia Customer Premises Equipment Solutions

TranSwitch offers a family of communications processors that provide best-in-class performance at the lowest power for a range of applications that require IP packet routing, encryption and voice processing at data rates of up to two gigabits-per-second. These applications include secure Triple-Play residential gateways, voice-enabled IEEE 802.11n Wi-Fi routers, 3G and 4G fixed wireless terminals, IADs and micro-PBX routers.

TranSwitch's communications processors are unique in that they support multiple services and applications simultaneously with no loss of performance due to the offload of packet classification, encryption, and voice processing to dedicated hardware engines including a voice-optimized DSP.

A comprehensive, robust and mature software codebase is also available that supports all applications and provides best-inclass JVM performance and HGI OSGi compliance. Additionally, complete reference designs are available, including turn-key home gateway and voice-enabled IEEE 802.11n Wi-Fi router platforms that enable equipment vendors to bring products to market faster, at a lower cost, and with a higher return on investment.



Atlanta™ Communications Processors Family

TranSwitch's communications processors are unique in that they support multiple services and applications simultaneously with no loss of performance due to the

offload of packet classification, encryption, and voice processing to dedicated hardware engines including a voice-optimized DSP.





PRODUCT	PART NO.	RISC CORES	CLOCK RATE (MHz)	DSP VOICE CAPACITY (LBR channels)	CRYPTO ENGINES	ETHERNET PORTS	USB PORTS	PCIe PORTS	PCI PORTS	PACKAGE TYPE
Atlanta™ 100	CT-A10RN14- PJ-AA-L	1	200	4	1	2 RMII	1 USB 1.1	0	1	256-pin LBGA
Atlanta™ 80	CT-A08RN12- PJ-AA-L	1	200	2	0	2 RMII	1 USB 1.1	0	1	256-pin LBGA
Atlanta™ 70	CT-A07RN11- PJ-AA-L	1	200	1	0	2 RMII	1 USB 1.1	0	1	256-pin LBGA
Atlanta™ 80M	CT-A08RN12- LG-AA-L	1	200	2	0	2 RMII	1 USB 1.1	0	0	128-pin eLQFP
Atlanta™ 70M	CT-A07RN11- LG-AA-L	1	200	1	0	2 RMII	1 USB 1.1	0	0	128-pin eLQFP
Atlanta™ 1000	TXC-62190 AHOG	2	400	2	0	2 RGMII	1 USB 2.0	1	0	256-pin LBGA
Atlanta™ 2000 A2198FG	TXC-62198 ARFG	2	400	8	2	3 RGMII	1 USB 2.0	1	1	484-pin LFBGA
Atlanta™ 2000 A2178FG	TXC-62178 ARFG	2	400	2	1	3 RGMII	1 USB 2.0	1	1	484-pin LFBGA
Atlanta™ 2000 A2206OG	TXC-62206 AHOG	2	400	8	2	3 RGMII	1 USB 2.0	1	0	256-pin LBGA
Atlanta™ 2000 A2186OG	TXC-62186 AHOG	2	400	2	1	3 RGMII	1 USB 2.0	1	0	256-pin LBGA

Diplomat[™]-IP configurable Ethernet/ATM packet processor

The DiplomatTM-IP is a configurable Ethernet/ATM packet processor with an integrated MIPS control processor, comprehensive traffic manager and full switching capability for next-generation applications. The TR-101 standards-compliant device is a complete System-on-a-Chip (SoC) solution for DSLAM line cards.

It is a feature-rich controller optimized to transport Ethernet and ATM traffic for next-generation IP-DSLAM equipment. The Diplomat™-IP is particularly useful to broadband access OEMs seeking a low-cost, high-performance packet processor for high-density line cards. Its two GE ports provide flexible system connectivity with 1:1 protection, link aggregation, or daisy chain for protection/restoration, remote DSLAM and stacked DSLAM respectively.





PRODUCT	PART NO.	DESCRIPTION
Diplomat™-IP	TXC-06876	DSLAM controller optimized to support Ethernet and ATM traffic for next-generation IP-DSLAM equipment; ideal for bandwidth intensive, tripleplay services
Diplomat™-ONT G MDU	TXC-07034	GPON ONT MDU/MTU System-on-Chip (SoC)
Diplomat™-ONT G SFU	TXC-07031	GPON ONT SFU/SBU System-on-Chip (SoC)

Mustang 300™

Mustang 300™ is a fully integrated, single chip, mixed-signal system-on-chip (SoC) for gigabit Ethernet passive optical network (EPON) optical networking unit (ONU) applications. This highly-integrated and low power EPON ONU SoC is ideal for service providers deploying next generation networks (NGN) which support premium Triple Play services such as bandwidth-intensive IPTV while meeting government targets for reduced power consumption circuit emulation over IPv4/v6, MPLS, VLAN-tagged Ethernet, and L2TP.



PRODUCT	PART NO.	DESCRIPTION
Mustang 300™	CT TPIMN04 PJ	Highly Integrated Ethernet Passive Optical Network (EPON) Optical Networking Unit (ONU) System-on-Chip (SoC)

PacketTrunk™-4 Plus

PacketTrunkTM-4 Plus is an interworking gateway device that transparently transports TDM trunks over packet-switched networks (PSNs) using the TDMoIP, SAToP, and CESoPSN standards for T/E carrier circuit emulation services (CES). The single-chip device includes robust clock recovery, encapsulation, jitter and wander compensation, QoS support, and support for transport of structured and unstructured TDM signals. This packet processor serves as a building block for cards and systems requiring circuit emulation over IPv4/v6, MPLS, VLAN-tagged Ethernet, and L2TP.



PRODUCT	PART NO.	DESCRIPTION
PacketTrunk™-4 Plus	TXC-06010	TDMoIP/SAToP/CESoPSN with High-precision Clock Recovery

Fixed & Mobile Infrastructure Solutions

TranSwitch provides integrated multi-core signal and network processor System-on-a-Chip (SoC) solutions, as well as a full software suite offering for Fixed, 3G and 4G Mobile, VoIP and Multimedia Infrastructures.

Our optimized single chip and comprehensive system software suites include IMS-Media-on-a-chip, NG-Access-on-a-chip, and NG-Enterprise-on-a-chip. TranSwitch has shipped more than 65 million IMS-compliant ports to worldwide Tier-1s.

Fixed & Mobile Infrastructure Solutions

Media Convergence Processor Family for Carrier Infrastructure and Enterprise

The Entropia multimedia convergence processor family provides integrated multi-core signal and network processor System-on-a-Chip (SoC) solutions, as well as a full software suite offering for Fixed, 3G and 4G Mobile, VoIP and Multimedia Infrastructures. Optimized single chip and comprehensive system software suites include IMS-Media-on-a-chip, NG-Access-on-a-chip, and NG-Enterprise-on-a-chip. Entropia 65 million IMS-compliant deployed ports include many worldwide Tier-1 networks. Entropia target



applications include media gateways, wireless infrastructure gateways, Class 4&5 switches, NG-Access and digital loop carriers (DLC), border gateways & session-border controllers (SBCs), media transcoding systems, multimedia enabled IP routers as well as Enterprise and IP private branch exchange (PBX) systems. Entropia family has been the performance-power leader in every generation since 2000. Multicore IP-DSP processors deliver twice the solution at half the power compares to our competitors.

PRODUCT	PART NO.	DESCRIPTION
Entropia III™ & Entropia IV™	CT-GWC4672 CT-GWC4002 CT-GWC4001 CT-GWC6672	High density (up to 1008 ports) VoIP Convergence Processor for (IMS) Fixed-Mobile Media-gateways, MRFP, MSAN/PON Access, Media cards in SBC/Routers, & Enterprise VoIP applications
Entropia III C™	CT-GWC4xxx	Low-Mid density (8 to 336 ports) Integrated VoIP Access/Enterprise-PBX Processor
Entropia V™	TXC-433xx	The new generation of low to high density media convergence processors

Carrier-Class Ethernet Controllers for Next Generation Telecom Networking

The Envoy™ products are the next generation of powerful Ethernet to SPI-3 Controllers for carrier-class networks. The Envoy™-CE2 incorporates two configurable Media Access Controllers (MACs). Each MAC can be configured as a single Gigabit Ethernet (10/100/1000 Mbits/s) or dual Fast Ethernet with extended buffers or octal Fast Ethernet (10/100 Mbits/s) interface and is programmable for either

full-duplex or half-duplex operation. This device extends the TranSwitch Envoy™ family and bridges the worlds of LAN and WAN with standard protocol interfaces.

The Envoy™-CE2 supports Super Jumbo (12 KBytes) packets on both Fast Ethernet and Gigabit Ethernet interfaces. The Envoy™-CE4 incorporates four configurable Media Access Controllers (MACs). Each MAC can be configured as a single Gigabit Ethernet (10/100/1000 Mbits/s) or dual Fast Ethernet with extended buffers or octal Fast Ethernet (10/100 Mbits/s) interface and is programmable for either full-duplex or half-duplex operation.





PRODUCT	PART NO.	DESCRIPTION
Envoy™-CE2	TXC-06880	Carrier-Class Ethernet Controller
Envoy™-CE4	TXC-06885	Carrier-Class Ethernet Controller

Ethernet over SONET/SDH Mapper Family

The Ethernet over SONET/SDH solution provides bandwidth efficiency and flexible mapping of Ethernet traffic streams into high and lower order SONET/SDH channels, which support eight 10/100 Mb/s ports or a single GigE port. Our solution to implement new EoS standards for virtual concatenation, generic framing procedure (GFP) and link access procedure SDH (LAPS); our solution also provides outstanding support of standard compliant mapping in order to meet the increased demand for emerging private line data transport over SONET/SDH metro networks. and a full range of expanded color spaces.



PRODUCT	PART NO.	DESCRIPTION
EtherMap®-3FE	TXC-04237	OC-3 Ethernet over SONET Mapper with Rapid Restoration
EtherMap®-3FE Pt	TXC-04247	OC-3/STM1 Ethernet over SONET/SDH Mapper
EtherMap®-3 Pt	TXC-04246	OC-3/STM-1 Ethernet Mapper for SONET/SDH Transport
EtherMap®-3 Plus	TXC-04236	OC-3 Ethernet over SONET Mapper with Rapid Restoration
EtherMap®-12	TXC-04212	OC-12/STM-4 Ethernet over SONET/SDH Mappe
EtherMap®-PDH	TXC-07861	Ethernet to PDH Mapper
EtherMap®-PDH TE8	TXC-07869	Ethernet to PDH Mapper

Ethernet, Packet and SAN Framer/Mapper Family

The Ethernet, Packet and SAN framer/mapper family is highly integrated Ethernet + SAN framer/mapper that maps GE, FE, Packets (PPP/HDLC), DVB-ASI, ESCON and Fibre Channel traffic into SONET/SDH. This family is all-in-one framer/mapper has many diverse features including extensive path grooming, SONET/SDH TOH/SOH, high order path termination/processing, non-blocking STS-1/VC-3 cross connect with payload alignment, Virtual Concatenation, LCAS...etc. The quad parallel telecom bus supports protection and rapid implementation of multi-service designs.



PRODUCT	PART NO.	DESCRIPTION
EtherPHAST™-24 Platinum	TXC-16745	Ethernet, Packet and SAN Framer/Mapper for Dual OC-12/STM-4
EtherPHAST™-2GE Platinum	TXC-16743	OC-48 Full Rate (2xGigE) Framer-Mapper
EtherPHAST™-48 Platinum	TXC-16742	Ethernet + SAN Framer/Mapper for OC-48/STM- 16 SONET/SDH Transport

SONET/SDH Framer Family

The SONET/SDH framer family is highly integrated SONET/SDH framer that processes and grooms virtual tributaries. The family is designed to interface directly with the Ethernet mapper for EoS applications, also, all the supportive software driver contains independent modules that allow the users to compile only relevant required components, which can reduce user's software development costs while still benefit from this family's lowest system cost, power and board-level component count.



PRODUCT	PART NO.	DESCRIPTION
PHAST®-12N	TXC-06312B	Multi-Rate PHY / Framer for Telecom Networks
PHAST®-12P	TXC-06412B	Multi-Rate PHY / Framer for Data Networks
PHAST®-3N	TXC-06103	STM-1/STS-3/STS-3c SDH/SONET Overhead Terminator
PHAST®-3P	TXC-06203	STM-1/STS-3c SDH/SONET Overhead Terminator
PHAST®-48V	TXC-06965	2.5G Framer, Scalable VT Cross Connect
PHAST®-6N	TXC-06306B	Multi-Rate PHY/Framer for Telecom Networks
PHAST®-6P	TXC-06406	Dual OC-3/STM-1 SONET/SDH Overhead Terminator, Cell & Packet with APS



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