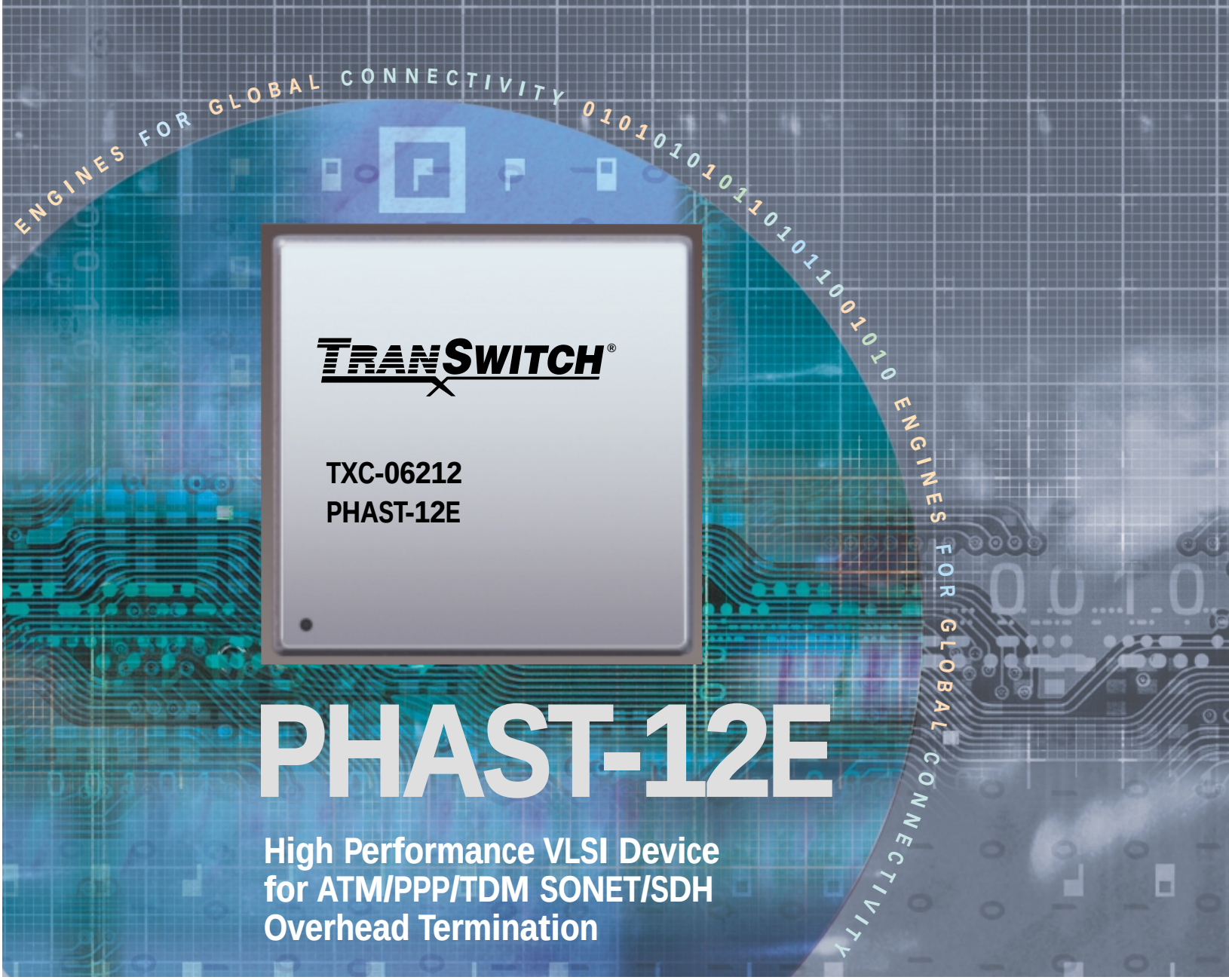


PHAST-12E

High Performance VLSI Device for ATM/PPP/TDM SONET/SDH Overhead Termination

Your Intelligent Choice for Multi-service SONET/SDH Overhead Termination.

The PHAST-12E provides overhead processing and termination for either four OC-3c lines or a single OC-12/OC-12c line while simultaneously supporting ATM, PPP and TDM payloads. This flexible solution features mixed interface options, variety in signal termination and integral support of protection switching - facilitating both your rapid design development and faster time-to-market in applications such as:

- **DSLAM uplink for cell or packet**
- **SONET/SDH ring add/drop multiplexers**
- **Multi-service access devices**
- **Add/drop multiplexers**
- **ATM IP frame relay switches**
- **Terminal multiplexers**

PHAST-12E

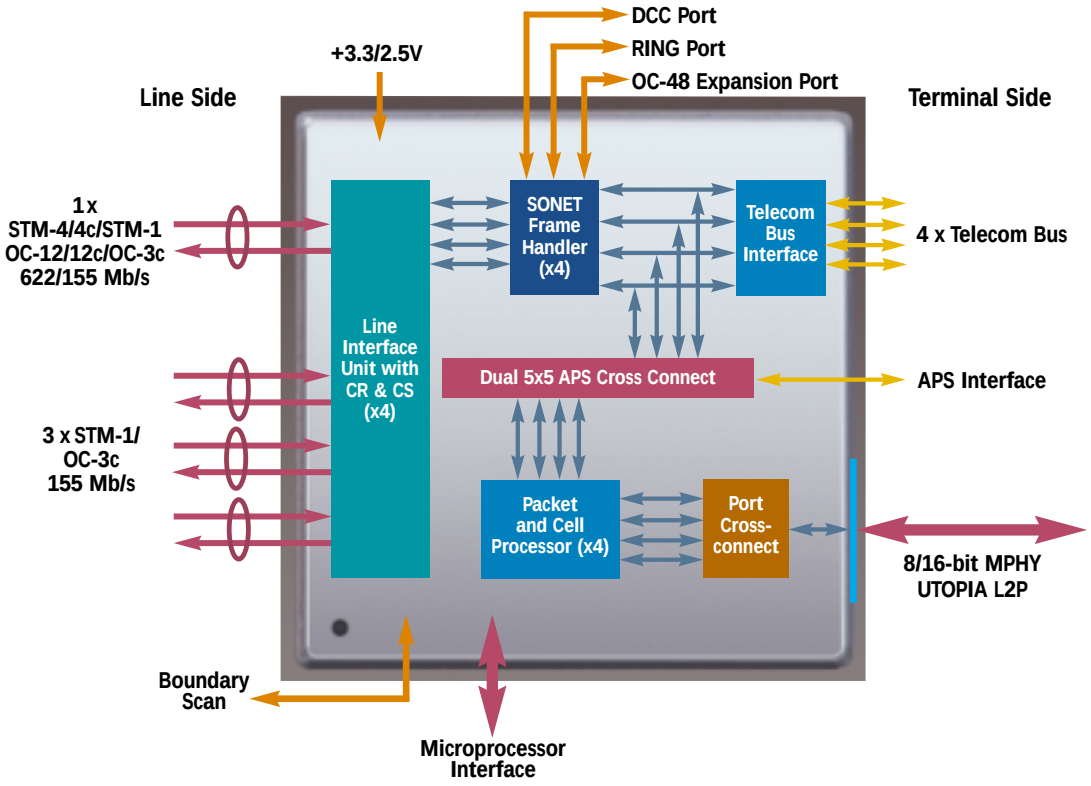
OC-3/OC-12 SONET/SDH Overhead Terminator Processor

Versatility for design.

TranSwitch's **PHAST-12E** is a highly integrated SONET/SDH overhead termination device designed for ATM cell, frame, higher order TDM, and transport payload mappings. A single **PHAST-12E** device can terminate four individual STS-3c or STM-1 lines, a single STS-12/12c line, or a STM-4/4c line. Each **PHAST-12E** can perform clock synthesis and clock recovery for four 155 Mb/s signals or a single 622 Mb/s serial signal. Fully featured SONET frame handlers provide complete line and section overhead processing and have provisions for extensive performance monitoring. A parallel line interface port and an expansion port allows for four **PHAST-12E** devices to operate in parallel for STS-48/STM-16 applications. The versatility and reliability of the **PHAST-12E** makes it your higher-order solution for overhead termination in multi-service applications.

Mixed interfaces for multi-service applications.

The **PHAST-12E** supports multi-service applications with its mixed interface options. The **PHAST-12E** can terminate ATM, PPP, and SONET/SDH TDM payloads from STS-3c, STM-1, STS-12/12c, STM-4/4c, and satisfies STS-48/STM-16 applications (four **PHAST-12E** devices operate in parallel) through its expansion port feature. ATM payloads from any input signal are terminated into a single 8-bit or 16-bit UTOPIA level 2 PHY interface. PPP payloads are terminated into a 16-bit wide UTOPIA level 2P interface, and at the same time, SONET/SDH TDM payloads can be terminated into any of the four 8-bit wide Telecom Bus interfaces. When terminating a concatenated STM-4c payload, the four Telecom Bus interfaces act as a single 32-bit wide Telecom Bus interface. A parallel line interface port and an expansion port enables four **PHAST-12E** devices to operate in unison for STS-48/STM-16 applications. This flexibility of multiple interface and termination options provide you with the abilityto design and construct dynamic, reconfigurable, multi-use, multi-service systems.



TRANSWITCH

PHAST-12E

OC-3/OC-12 SONET/SDH Overhead Terminator Processor

Ultimate protection switching. Confident data transmissions.

Data network integrity depends on error free system operations. The **PHAST-12E**'s Automatic Protection Switching (APS) transmit and receive cross-connects take the worry out of signal failure or degradation and aids in increasing the overall reliability of your system. A single **PHAST-12E** device provides 1:3 APS for up to three OC-3c lines. Four **PHAST-12E** devices can provide 1:14 APS for up to fourteen OC-3c lines. When a minimal amount of glue logic is applied, two **PHAST-12E** devices can provide 1:1 APS for OC-12 applications. This integrated APS feature can significantly reduce your external parts count. Moreover, extensive alarm monitoring and reporting functions also augment the robust and reliable features of the **PHAST-12E** while reducing your invested time in software design.

The **PHAST-12E** and other TranSwitch TDM devices, support protection switching for TDM termination via their ring ports in dual configurations, meeting UPSR and BLSR standards.

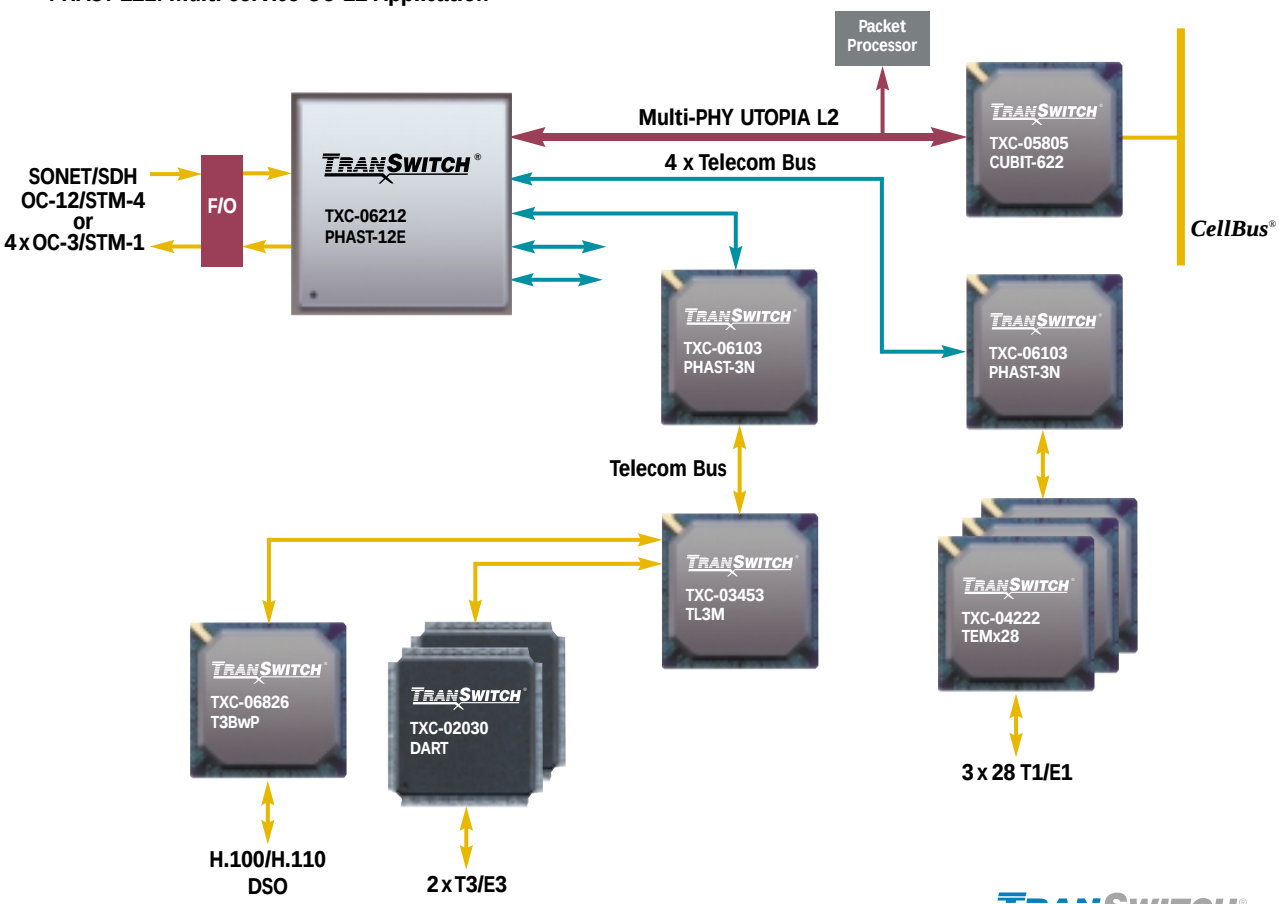
Simplified designs.

The **PHAST-12E** supports cross-connecting for ATM, PPP, and TDM payloads. It allows individual received ATM/PPP/TDM VC-4s to be looped back and time slot interchanged to the transmit direction while other data streams are interfaced to the UTOPIA or Telecom Bus interfaces. Five loopbacks are provided for use in various applications as well as to significantly simplify testing and troubleshooting.

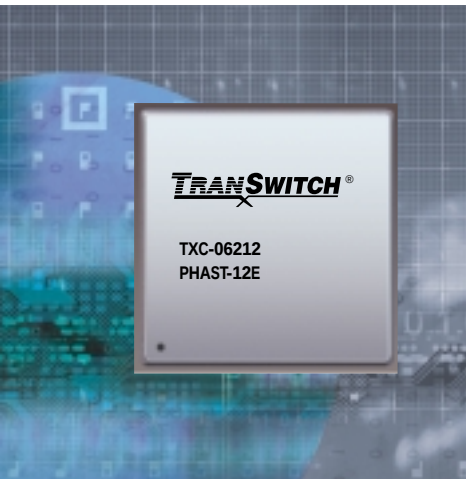
Foundation for success.

The **PHAST-12E**, in combination with other TranSwitch ATM and SONET/SDH-based complimentary devices, provides an excellent solution for higher-order multiplex and multi-service type applications. To maximize the effectiveness of your development time and resources, TranSwitch provides an extensive array of design support for the **PHAST-12E**, including reference designs, application notes, BSDL file, IBIS model, customer evaluation kit, and a comprehensive document set - all backed by TranSwitch's world-class customer engineering capabilities.

PHAST-12E: Multi-service OC-12 Application



TRANSWITCH



Key Features of the PHAST-12E TXC-06212

Interfaces

- Line: Serial line interfaces, four 155 Mb/s or one 622 Mb/s, byte wide parallel line interface at 622 Mb/s
- Terminal: UTOPIA level 2 (8/16-bit) or 2P (16-bit), quad byte-parallel Telecom Bus at 19.44 Mbyte/s
- Control: Motorola and Intel compatible microprocessor interface
- I/O Ports: Ring port, alarm port, APS, DCC, Boundary Scan

SONET/SDH Overhead Processing

- Integrated clock recovery and synthesis for four 155 Mb/s signals or one 622 Mb/s signal
- Transport overhead processing
- Path overhead processing and generation for one STS-12c/STM-4c signals or four STS-3c/STM-1 signals for ATM/PPP
- Framing, performance monitoring, cell or frame delineation for STS-12c/STM-4c signals or four STS-3c/STM-1 signals
- VC-4 cross-connect for 4 x STS-3c/STM-1 operation
- Expansion port for STS-48/STM-16 operation

Testing Capabilities

- Boundary Scan per IEEE 1149.1

Physical Characteristics

- Voltage: 2.5v core, +3.3v I/O
- Power: 2.2 W - four 155 Mb/s interfaces, 1.5 W - one 622 Mb/s interface
- Size: Compact - 27 x 27 mm
- Package: 675-lead enhanced PBGA

TranSwitch Corporation is a leading innovator of VLSI solutions for multi-service access and transport applications. TranSwitch serves the Original Equipment Manufacturers (OEMs) who supply three fast-growing communications end markets: Multi-service Access Infrastructure (including Wireless), Broadband Internet Infrastructure, and Converged Public Networks. Our solutions span Asynchronous/PDH, SONET/SDH, and ATM/IP technologies, providing the core functionality for network elements including:

Multi-service Access Devices • DSLAMs • SONET/SDH Add/Drop Multiplexers • Access Concentrators

Edge Switches • Voice Gateways • ATM, IP, and Frame Relay Switches

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