



This document has been made public and no NDA is needed.

The "Confidential" statement in the attached material is no longer valid and may be disregarded.

This document falls into one of these categories:

- 1. Document has MaxLinear branding**

The "MaxLinear Confidential" statement will be removed from the document upon its next revision

- 2. Document has non-MaxLinear branding**

In 2020, MaxLinear acquired the Connected Home Division business of Intel Corporation, including the former Intel® product/s referenced in the title of the attached material. The MaxLinear logo will be added to the attached material upon its next revision.

MaxLinear is now the manufacturer of this product.

Direct any questions and product support requests to your MaxLinear sales contact, [MaxLinear Sales Representative or Distributor](#), or login to your myMxL account and [create a new support ticket](#).



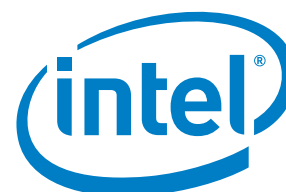
Corporate Headquarters:
5966 La Place Court
Suite 100
Carlsbad, CA 92008
Tel.: +1 (760) 692-0711
Fax: +1 (760) 444-8598
www.maxlinear.com

The content of this document is furnished for informational use only, is subject to change without notice, and should not be construed as a commitment by MaxLinear, Inc. MaxLinear, Inc. assumes no responsibility or liability for any errors or inaccuracies that may appear in the informational content contained in this guide. Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced into, stored in, or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of MaxLinear, Inc.

MaxLinear, Inc. does not recommend the use of any of its products in life support applications where the failure or malfunction of the product can reasonably be expected to cause failure of the life support system or to significantly affect its safety or effectiveness. Products are not authorized for use in such applications unless MaxLinear, Inc. receives, in writing, assurances to its satisfaction that: (a) the risk of injury or damage has been minimized; (b) the user assumes all such risks; (c) potential liability of MaxLinear, Inc. is adequately protected under the circumstances.

MaxLinear, Inc. may have patents, patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from MaxLinear, Inc., the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other intellectual property.

MaxLinear, the MaxLinear logo, and any MaxLinear trademarks, MxL, Full-Spectrum Capture, FSC, G.now, AirPHY, Puma, AnyWAN and the MaxLinear logo are all on the products sold, are all trademarks of MaxLinear, Inc. or one of MaxLinear's subsidiaries in the U.S.A. and other countries. All rights reserved. Other company trademarks and product names appearing herein are the property of their respective owners.



Attention

The table below lists discontinued brand names that have now been replaced with **new Intel names**.

The discontinued brand names in this document originate from Lantiq Beteiligungs-GmbH & Co. KG or one of its predecessor companies, Infineon Technologies AG or Siemens AG.

Lantiq became part of the Intel Corporation on April 15th 2015.

Discontinued Name	New Intel Name	Category
DUSLIC™ XS	Intel® Telephony Chipset for CPE, DXS Series	Family
DUSLIC™ XS1	DXS101	Device
DUSLIC™ XS2	DXS102	Device



Legal Notice

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document. Intel disclaims all warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.

All information provided here is subject to change without notice. Intel may make changes to its test conditions and internal reliability goals at any time. Contact your Intel representative to obtain the latest Intel product specifications and road-maps.

The products described may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Intel, the Intel logo, Intel AnyWAN, Intel Atom, Celeron, Intel CONVERGATE, Intel Core, Intel DUALFALC, Intel ISAC, Intel OCTALFALC, Intel OCTAT, Pentium, Intel Puma, Intel QUADFALC, Intel SCOUT, Intel SICOFI, Intel SMINT, and Intel Xeon are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.

© 2017 Intel Corporation

DUSLIC™ XS

The Next Generation Voice CPE Solution



The DUSLIC™ XS1 and DUSLIC™ XS2 line interface solutions combine a CMOS codec and high-voltage SLICs in a single package. This reduced footprint provides the unrivaled flexibility and performance that is required to implement cost-optimized Voice CPE (Customer Premises Equipment) applications of superior design.

DUSLIC™ XS complements Intel's established and field-proven Voice CPE product line and blends optimally with Home Gateways (DSL, PON, Cable, Ethernet) as well as small and medium-sized Enterprise solutions. Its pin-to-pin compatible 1 and 2-channel solutions empower customers to produce a single hardware design implementing a 2-layer PCB. In comparison to the other devices that are available, DUSLIC™ XS offers full transmission performance for Central Office (CO) compliance (for ringing, feeding, DTMF generation & detection, and Caller ID) over the entire industrial temperature range.

DUSLIC™ XS also supports industry standard (GR-909) line testing and unique tests such as Capacitance Measurement, AC Level Meter, Make-and-Break Dial Tone and Universal Tone Detection.

The best-in-class Bill of Material (BOM) for dual-line termination is achieved through optimal on-board integration and elimination of duplicated external components, augmented by the device's 2-layer PCB capability.

Now, CPE system manufacturers can offer voice telephony with CO-grade performance and full wideband support (16 kHz/16 bit) at optimized system cost.

The low power consumption of the DUSLIC™ XS (measured under all operating conditions) is the industry benchmark for manufacturers who need to meet exacting Code of Conduct on Energy Consumption of Broadband Equipment Version 5.0 requirements for power efficiency, while integrating a smaller power supply to further enhance the design and cost of the system. Its combined DC/DC mode means that only one single power converter is required to supply two voice lines – with no compromise on power efficiency and voice quality.

Hardware Highlights:

- Pin-to-pin compatible 1 and 2-channel solutions
- Industrial temperature range (-40°C to +85°C)
- Exceptional power efficiency
- Low pin count SoC interface (CSI)
- CO-grade transmission performance including:
 - 142 V peak ringing voltage
 - automatic ring current regulation
 - Caller ID generation
 - DTMF generation & detection
- Conducted Immunity: 10 V disturber without Common Mode Choke
- Advanced integrated line testing (exceeding GR-909)

Software Highlights:

- New High-Level API in Linux* user space with:
 - generic Linux* SPI driver
 - no proprietary kernel space driver required
 - intuitive functional interface
 - low demand on memory/resources
 - easy porting to other operating systems

Design Highlights:

- Best-in-class BOM
 - with combined DC/DC converter for 2-channel
 - and only a single 3.3 V supply for 1-channel solution
- Dedicated schematics and LOM for various applications
- Complete design-in package
 - with development kit, DUSLIC™ XS reference boards including on-board DC/DC converters
 - plus full-feature API functions
 - and documentation

Key Applications:

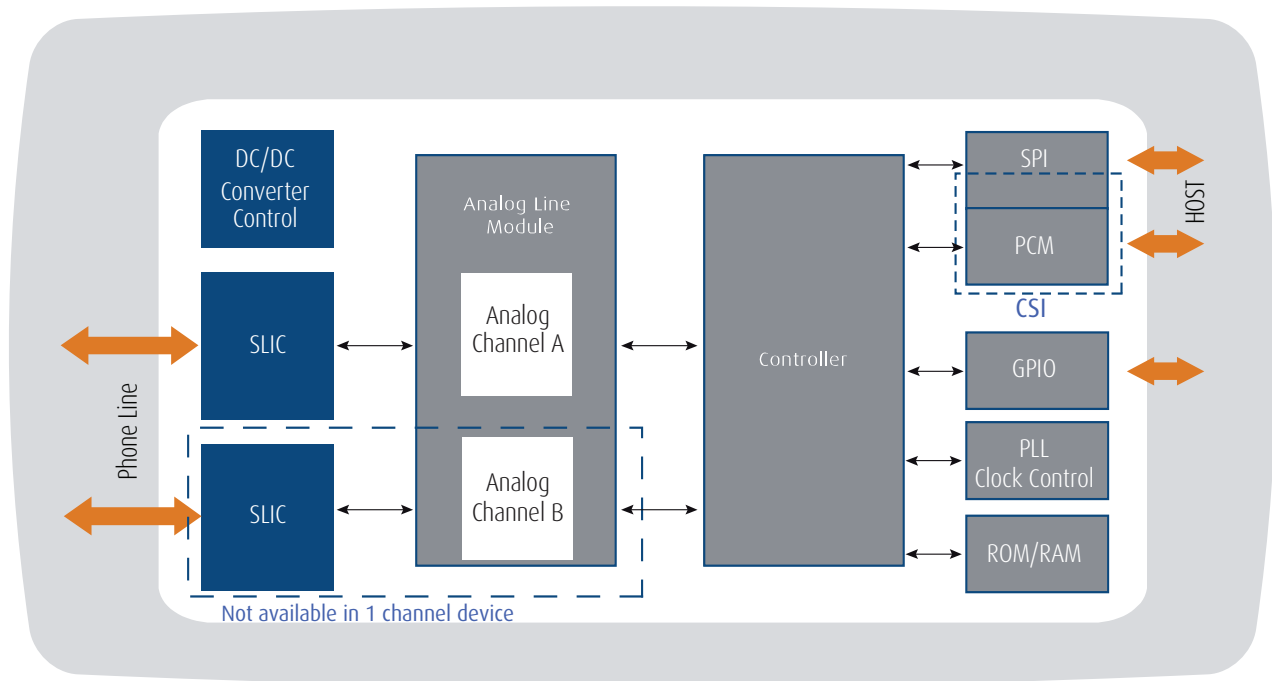
- Analog Terminal Adapters
- Cable eMTA and Set-Top Boxes
- DSL Integrated Access Devices
- PBX and Business Gateways
- VoIP terminals
- xPON Single Family Units and Home Gateway Units

Hardware Features:

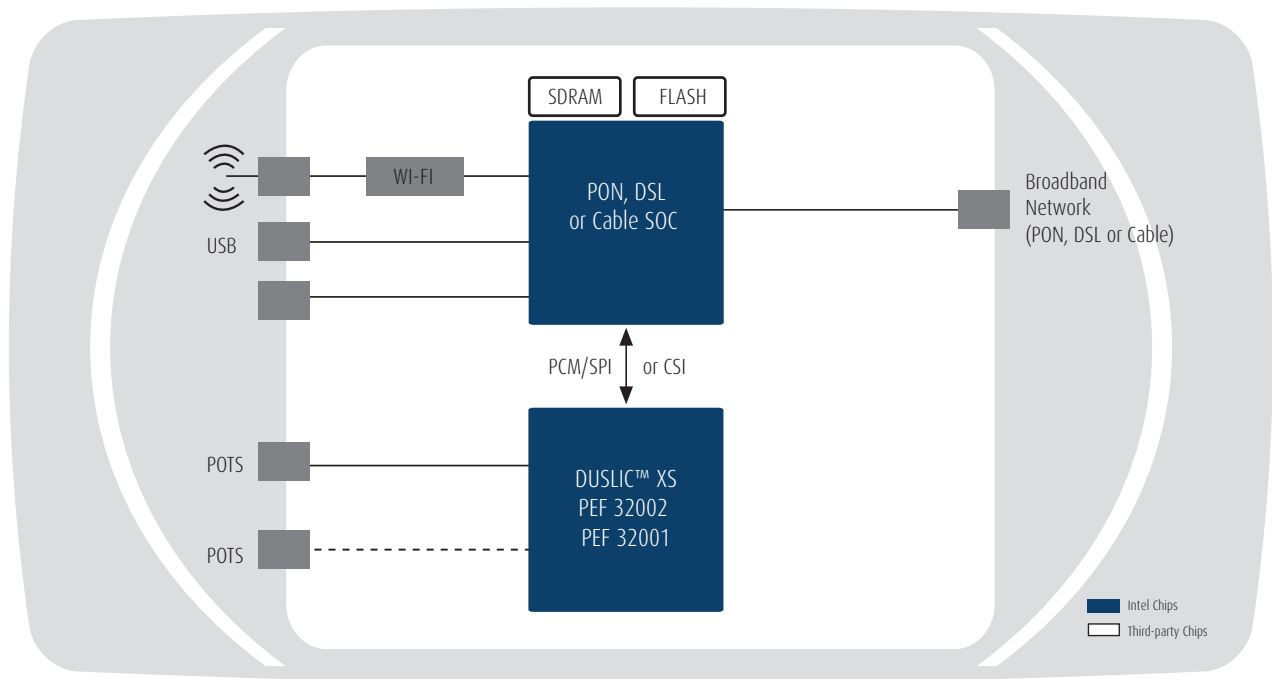
- Balanced (up to 85 Vrms) and unbalanced (up to 50 Vrms) ringing
- Caller ID type 1, 2 transmission support
- DC, AC and fast ring trip detection
- DTMF generator & receiver
- Ground key indication
- Loop Start and Ground Start signaling
- Integrated DC/DC PWM controller
- Integrated test and diagnostic functions
 - GR-909 test sequence
 - capacitance measurements
 - voice quality tests (AC level meter)
- On-hook transmission
- PCM interface G.711 A-law/μ-law or 16-bit linear
- Pulse metering (TTX)
- Serial Peripheral Interface (SPI)
- Combined Serial Interface (CSI)
- Wideband audio support (16 kHz, 16-bit linear)
- Worldwide programmability for AC transmission performance parameters acc. to ITU-T Q.552 and Telcordia GR-57-CORE

Software Features:

- Linux* driver in source code
- Big and little endian support
- Polling or interrupt driven access
- BSD/GPL License



Block Diagram DUSLIC™ XS



Application Diagram

PRODUCT NAME	PRODUCT TYPE	ORDERING CODE	PACKAGE
DUSLIC™ XS2, 2 channel CODEC/SLIC	PEF 32002 VT V1.2	PEF32002VTV12	PG-VQFN-68
DUSLIC™ XS1, 1 channel CODEC/SLIC (pin-to-pin compatible version)	PEF 32001 VT V1.2	PEF32001VTV12	PG-VQFN-68
DUSLIC™ XS1, 1 channel CODEC/SLIC, single 3.3 V supply voltage	PEF 32001 VS V1.2	PEF32001VSV12	PG-VQFN-44



Legal Notice

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document. Intel disclaims all warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.

All information provided here is subject to change without notice. Intel may make changes to its test conditions and internal reliability goals at any time. Contact your Intel representative to obtain the latest Intel product specifications and road-maps.

The products described may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

Intel, the Intel logo, AnyWAN, Atom, Celeron, CONVERGATE, Core, DUALFALC, ISAC, OCTALFALC, OCTAT, Pentium, Puma, QUADFALC, SCOUT, SICOFI, SMINT, Xeon, XWAY, are trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.

© 2017 Intel Corporation

Please Recycle