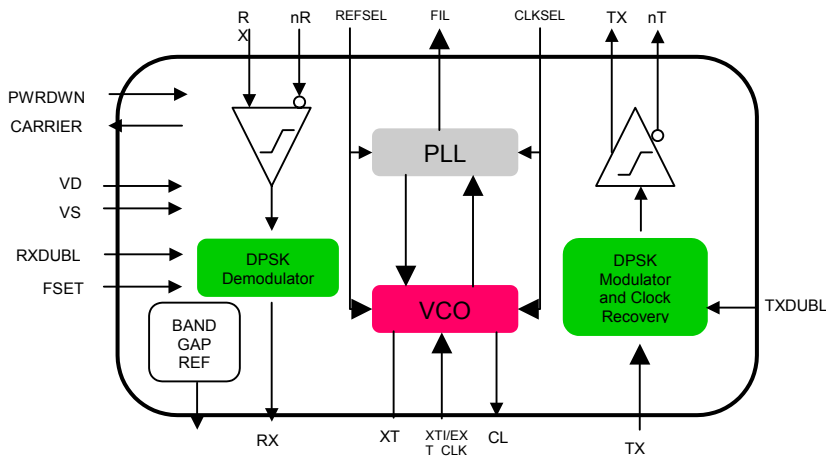


Product Brief V2.3.3

SMARTwireX Physical Layer Controller (PLC)



- Physical Layer Controller for copper Unshielded Twisted Pair (UTP) cables in automotive multimedia & telematics networks
- Very low emission, high immunity Differential Phase Shift Keying (DPSK) design for excellent EMC performance for data rates of up to 50Mbps
- Optimized for operation with the CONAN[®] family of Transceivers
- Very Low stand-by power consumption
- Automotive Grade EMC

SMARTwireX

The SMARTwireX technology has been designed for the optimum transmission and reception of data at rates of up to 50 Mbps over copper UTP cables in automotive multimedia and telematics networks. Depending on the Data Link Layer protocol used the SMARTwireX PLC can handle Synchronous as well as Asynchronous digital data.

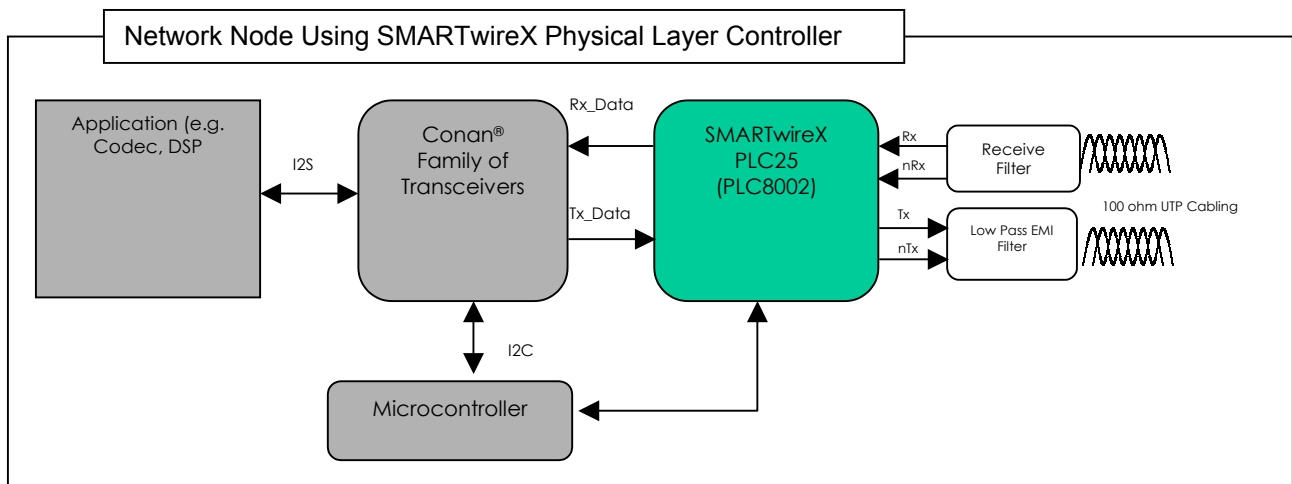
The first device implementing the SMARTwireX technology is the PLC25. It has been optimized for excellent EMC performance, and uses robust and low noise modulation techniques to ensure the best possible results on UTP cables.

SMARTwireX PLC25 ensures compatibility with FM tuners in the car with emissions from the UTP cable in the FM radio band (76MHz - 108MHz) of <6dBuV and immunity to mobile telephones field strengths of 10V/m in the mobile communications band (800MHz - 2GHz).

Extensive EMC tests have been carried out on the SMARTwireX PLC25 device, and based on these results, plus collaboration with carmakers has resulted in it being demonstrably capable of meeting CISPR25 class 5 requirements. Tests have also been carried out according to the publicly available Ford and GM EMC specifications, also with excellent results. Detailed EMC test data is available from C&CE.

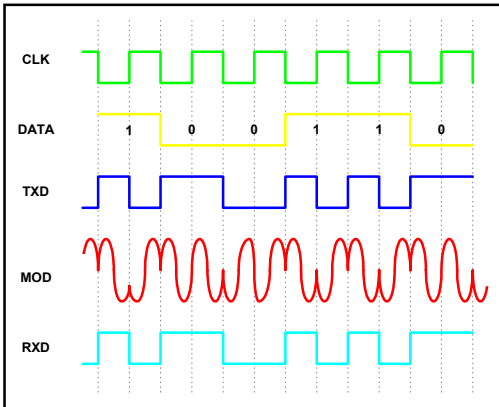
Multimedia over UTP

By transporting data at up to 25Mbps the SMARTwireX PLC25 allows car makers to design-in high performance digital multimedia networks, supporting both leading edge features such as high quality audio and high resolution video using low cost and easily handled unshielded twisted pair cables.



Modulation Technique

The SMARTwireX PLC25 has been designed specifically to operate in the difficult EMC environment encountered in vehicles using a novel form of Differential Shift Keying (DPSK)



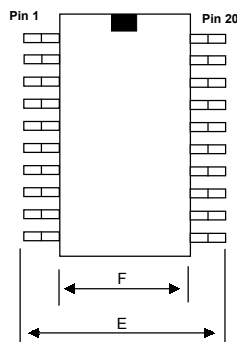
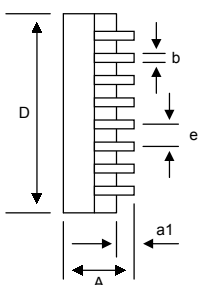
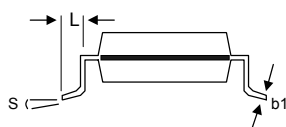
Emissions in the FM Radio Band

Emissions from the UTP must not interfere with the operation of sensitive FM radio receivers in the 76 to 108MHz bands. In practice, the level of emissions at a distance of 1 meter from the cabling must be less than -100dBm. Excellent results have been obtained using a simple 7th order low pass filter using zeros at FM to get maximum attenuation.

Susceptibility

Mobile radio transmitters operating in the vehicle have been shown to generate EM

Dim	Min. (mm)	Max. (mm)
A	-	1.75
a1	0.10	0.25
b	0.35	0.46
b1	0.19	0.25
D	9.80	10.00
E	5.80	6.20
e	1.27 (typ.)	
F	3.80	4.00
L	0.40	1.27
S	-	8°



fields with strengths in excess of 10V/m in the 800-1000MHz band. The differential methods used in the PLC8002 have shown to be immune to CW, AM and FM modulated signals in excess of 10V/m in mobile communications bands.

Data Rate NRZ	30Mbps
Data Rate Bi-phase	60Mbps
Data Rate 8b/9b	25Mbps
Modulation Frequency	30/25MHz
Modulation	DPSK
Direct connection to UTP	$Z_0 = 100$ ohms
Direct connection to logic	OCC8001 and SCI8001
Supply voltage	5v \pm 0.5v
Modulation Output Voltage	0.8v peak to peak
Line voltage (after EMC filter)	0.8v peak to peak
Supply Current	35mA nominal
Standby Current	25 μ A maximum
Input/Output protection	MIL-STD-883C 4..5kV Model
Line encoding	TBA
UTP Interface	Reversible (auto polarity)
Operating Temperature	-40°C to +85°C

Order-information for the SMARTwireX PLC25

Part:
PLC8002

Order number:
2-03-000-01

For further information on any other C&C Electronics products, please visit our Web site or contact us:

C&C Electronics Web site: <http://www.candc.co.uk>

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