

DP83TC811-Q1 Low Power Auto PHY

100BASE-T1 Automotive Ethernet Physical Layer Transceiver

1 Features

- AEC-Q100 Qualified for Automotive Applications:
 - Device Temperature Grade 1: –40°C to +125°C Ambient Operating Temperature
 - Device HBM ESD Classification Level for All Pins Except 12 and 13: 2
 - Device HBM ESD Classification Level for Pins 12 and 13: 3B
 - Device CDM ESD Classification Level: C6
 - Device IEC61000-4-2 ESD Classifications Level 4: ±8-kV Contact Discharge
- IEEE 802.3bw – 100BASE-T1-Compliant
- VQFN, Wettable Flank Packaging
- IEEE 1588 SFD Support
- Low Transmit and Receive Latency for AVB/TSN
- Low Active Power Operation: < 300 mW
- Configurable I/O Voltages: 3.3 V, 2.5 V, and 1.8 V
- Power Savings Features:
 - Standby and Disable
 - Wake-on-LAN (WoL) Magic Packet and Custom Pattern
- Diagnostic Tool Kit
 - Signal Quality Indication (SQI)
 - Time Domain Reflectometry (TDR)
 - Electrostatic Discharge Sensor

- Voltage Sensor
- Temperature Sensor
- PRBS Built-In Self-Test
- Forward and Reverse Loopbacks

2 Applications

- Backbone Networks
- Gateway and Body Control
- ADAS

3 Description

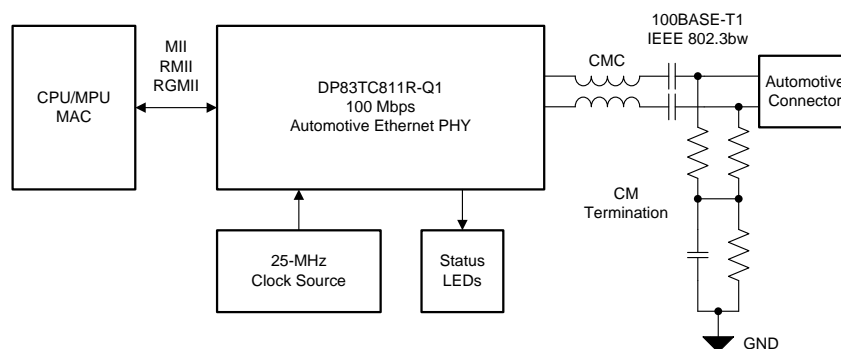
This device includes the Diagnostic Tool Kit, providing an extensive list of real-time monitoring tools, debug tools and test modes. Within the tool kit is the first integrated electrostatic discharge (ESD) monitoring tool. It is capable of counting ESD events on both the xMII and MDI as well as providing real-time monitoring through the use of a programmable interrupt. Additionally, the includes a pseudo random binary sequence (PRBS) frame generation tool, which is fully compatible with internal loopbacks, to transmit and receive data without the use of a MAC. The is housed in a 6.00-mm × 6.00-mm, 36-pin VQFN wettable flank package.

Device Information⁽¹⁾

PART NUMBER	PACKAGE	BODY SIZE (NOM)
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(1) For all available packages, see the orderable addendum at the end of the data sheet.

Simplified Schematic



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4 Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

DATE	REVISION	NOTES
November 2017	*	Initial release.

ADVANCE INFORMATION

5 Device and Documentation Support

5.1 Receiving Notification of Documentation Updates

To receive notification of documentation updates, navigate to the device product folder on ti.com. In the upper right corner, click on *Alert me* to register and receive a weekly digest of any product information that has changed. For change details, review the revision history included in any revised document.

5.2 Community Resources

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

TI E2E™ Online Community *TI's Engineer-to-Engineer (E2E) Community*. Created to foster collaboration among engineers. At e2e.ti.com, you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

Design Support *TI's Design Support* Quickly find helpful E2E forums along with design support tools and contact information for technical support.

5.3 Trademarks

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5.4 Electrostatic Discharge Caution



This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

5.5 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

6 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
DP83TC811RWRNDRQ1	PREVIEW	VQFNP	RND	36	2000	TBD	Call TI	Call TI	-40 to 125	DP83TC811R A1	
DP83TC811RWRNDTQ1	PREVIEW	VQFNP	RND	36	250	TBD	Call TI	Call TI	-40 to 125	DP83TC811R A1	

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

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Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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