



**PCN# 20121210003  
ULQ2003/ULN2003 dual source - CMS C1210237  
Final Change Notification**

**Date:** 12/12/2012  
**To:** MOUSER PCN

Dear Customer:

This is a final announcement of change to a device that is currently offered by Texas Instruments. The details of this change are on the following pages.

This notice does not change the end-of-life status of any product. Should product affected be on a previously issued product withdrawal/discontinuance notice, this notification does not extend the life of that product or change the life time buy offering/discontinuance plan.

We request you acknowledge receipt of this notification within **30** days of the date of this notice. If you require samples to conduct an evaluation, please make any request within the 30 days—samples are not built ahead of the change. Please see the schedule on the following pages for availability dates. You may contact the PCN Manager or your local Field Sales Representative to acknowledge this PCN and request samples.

The changes discussed within this PCN will not take effect any earlier than the proposed 1<sup>st</sup> ship date indicated on the following pages, unless customer agreement has been reached on an earlier implementation of the change.

For questions regarding this notice, contact your local Field Sales Representative or the PCN Manager ([PCN\\_ww\\_admin\\_team@list.ti.com](mailto:PCN_ww_admin_team@list.ti.com)).

Sincerely,

PCN Team  
SC Business Services  
Phone: +1(214) 480-6037  
Fax: +1(214) 480-6659

**20121210003**

**Attachment: 1**

**Products Affected:**

The devices listed on this page are a subset of the complete list of affected devices. According to our records, these are the devices that you have purchased within the past twenty-four (24) months. The corresponding customer part number is also listed, if available.

<b>DEVICE</b>	<b>CUSTOMER PART NUMBER</b>
ULQ2003AD	null
ULQ2003ADR	null
ULQ2003ADG4	null
ULQ2003ATDQ1	null
ULQ2003AQDRQ1	null
ULQ2003ATDRQ1	null

Technical details of this Product Change follow on the next page(s).

<b>PCN Number:</b>	20121210003		<b>PCN Date:</b>	12/12/2012	
<b>Title:</b>	ULQ2003/ULN2003 dual source - CMS C1210237				
<b>Customer Contact:</b>	PCN_ww_admin_team@list.ti.com	<b>Phone:</b>	+1(214)480-6037		<b>Dept:</b>
<b>Proposed 1<sup>st</sup> Ship Date:</b>	06/12/2012	<b>Estimated Sample Availability:</b>	Upon request		
<b>Change Type:</b>					
<input checked="" type="checkbox"/> Assembly Site	<input type="checkbox"/>	Assembly Process	<input type="checkbox"/>	Assembly Materials	
<input type="checkbox"/> Design	<input type="checkbox"/>	Electrical Specification	<input type="checkbox"/>	Mechanical Specification	
<input type="checkbox"/> Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling	<input type="checkbox"/>	Test Process	
<input type="checkbox"/> Wafer Bump Site	<input type="checkbox"/>	Wafer Bump Material	<input type="checkbox"/>	Wafer Bump Process	
<input type="checkbox"/> Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials	<input type="checkbox"/>	Wafer Fab Process	

### PCN Details

#### Description of Change:

Dual source ULQ2003/ULN2003 family of devices from both Texas Instruments Malaysia and Mexico assembly and test sites. The devices are currently sourced from TI Mexico only.

#### Reason for Change:

To maintain continuity of supply.

#### Anticipated impact on Fit, Form, Function, Quality or Reliability (positive / negative):

No anticipated impact

#### Changes to product identification resulting from this PCN:

The box label Assembly Site Origin (ASO) code indicates the assembly site:

#### Mexico Label Information

Assembly Site	Assembly Site origin (ASO) (22L)	Assembly Country Origin (ACO) country code (23L)
Mexico	MEX	MEX

#### Malaysia Label Information

Assembly Site	Assembly Site origin (ASO) (22L)	Assembly Country Origin (ACO) country code (23L)
Malaysia	MLA	MYS

Sample product shipping label (not actual product label):



<b>Product Affected:</b>		
MLA00301DR	ULQ2003ADRG4	ULQ2003ATDRQ1
MLA00314DR	ULQ2003AQDRQ1	ULQ2003ATDRRB
ULQ2003AD	ULQ2003ATDG4Q1	ULQ2003ATDRYZ
ULQ2003ADG4	ULQ2003ATDQ1	ULQ2003IDRG4SV
ULQ2003ADR	ULQ2003ATDRAS	ULQ2003TDRG4SV

**Automotive New Product Qualification Plan/Summary**  
(As per AEC-Q100 and JEDEC Guidelines)

<b>Supplier Name:</b>	Texas Instruments Inc.	<b>Supplier Wafer Fabrication Site:</b>	Texas Instruments Sherman (SFAB)
<b>Supplier Code:</b>		<b>Supplier Die revision:</b>	G / -
<b>Supplier Part Number:</b>	MSA00021DG4 / LM2901QDG4Q1	<b>Supplier Assembly/Test Site:</b>	Texas Instruments Malaysia
<b>Customer Name:</b>	Texas Instruments	<b>Supplier Package/Pin:</b>	16D and 14D
<b>Customer Part Number:</b>	Catalog	<b>Pb-Free Lead Frame (Y/N):</b>	Y
<b>Device Description:</b>	Binary Counter / Quad Differential Comparator	<b>"Green" Mold Compound (Y/N):</b>	Y
<b>MSL Rating:</b>	MSL1	<b>Operating Temp Range:</b>	-40°C to +85°C / -40°C to +125°C
<b>Peak Solder Reflow Temp:</b>	260C	<b>Automotive Grade Level (1):</b>	Grade 3 / Grade 1
<b>Prepared by:</b>	James Berry	<b>Date:</b>	01/15/2008

Test	#	Reference	Test Conditions	Min Lots (2)	SS / lot (2)	Min Total (2)	Results Lot/pass /fail	Comments: (N/A =Not Applicable)	Exceptions to AEC - Q100
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**TEST GROUP A – ACCELERATED ENVIRONMENT STRESS TESTS (3)**

PC	A1	JESD22-113 J-STD-020	Preconditioning: SMD only; Moisture Preconditioning for THB/HAST, AC/UHST, TC, HTSL, and HTOL	Performed on ALL SMD devices prior to THB/HAST, AC/UHST, TC and PTC					
THB or HAST	A2	JESD22-A101 JESD22-A110	Temperature Humidity Bias: 85°C/85%/1000 hours Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	1 1 1	77 77 77	77 77 <sup>a</sup> 77 <sup>b</sup>	3/231/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	
AC or UHST	A3	JESD22-A102 JESD22-A118	Autoclave: 121°C/15 psig/96 hours Unbiased Highly Accelerated Stress Test: 130°C/85%/96 hours or 110°C/85%/264 hours	1 1 1	77 77 77	77 77 <sup>a</sup> 77 <sup>b</sup>	3/231/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	
TC	A4	JESD22-A104	Temperature Cycle: -65°C/+150°C/500 cycles	1 1 1	77 77 77	77 77 <sup>a</sup> 77 <sup>b</sup>	3/231/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	
HTSL	A6	JESD22-A103	High Temperature Storage Life: 150°C/1000 hours or 175°C/500 hours	1	45	45	1/77/0 2/90/0	One lot of the MSA00021DG4 at 150C. One lot of the MSA00021DG4 and one lot of the LM2901QDG4Q1 at 175C.	

**TEST GROUP B – ACCELERATED LIFETIME SIMULATION TESTS (3)**

HTOL	B1	JESD22-A108	High Temp Operating Life: 125°C/1000 hours 150°C/408 hours	1 1 1	77 77 77	77 77 <sup>a</sup> 77 <sup>b</sup>	3/231/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	
ELFR	B2	AEC-Q100-008	Early Life Failure Rate:	1 1 1	800 800 800	800 800 <sup>a</sup> 800 <sup>b</sup>	3/2400/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	

**TEST GROUP C – PACKAGE ASSEMBLY INTEGRITY TESTS (3)**

WBS	C1	AEC-Q100-001	Wire Bond Shear Test: (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
WBP	C2	Mil-Std-883 Method 2011	Wire Bond Pull: Each bonder used (Cpk > 1.67)	30 bonds	5 parts min.	30 bonds	Pass		
SD	C3	JESD22-B102	Solderability: (>95% coverage) 8 hr steam age (1 hour for Au-plated leads)	1	15	15	3/66/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	
PD	C4	JESD22-B100 JESD22-B108	Physical Dimensions: (Cpk > 1.67)	3	10	30	3/30/0	Two lots of MSA00021DG4 and 1 lot of LM2901QDG4Q1	

- (1) Grade 0 (or A): -40°C to +150°C ambient operating temperature range
- Grade 1 (or Q): -40°C to +125°C ambient operating temperature range
- Grade 2 (or T): -40°C to +105°C ambient operating temperature range
- Grade 3 (or I): -40°C to +85°C ambient operating temperature range
- Grade 4 (or C): -0°C to +150°C ambient operating temperature range
- (2) These are recommended minimum lot/sample sizes. Lot/sample size may be reduced depending on available data.
- (3) Generic data may be used.

**Quality and Reliability Data Disclaimer**

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customer should provide adequate design and operating safeguards. Quality and reliability data provided by Texas Instruments is intended to be an estimate of product performance based upon history only. It does not imply that any performance levels reflected in such data can be met if the product is operated outside the conditions expressly stated in the latest published data sheet or agreed-to customer specification for a device.

Reliability data shows characteristic failure mechanisms of the specific environmental stress as documented in the industry standards for each stress condition.

For questions regarding this notice, e-mails can be sent to the regional contacts shown below or your local Field Sales Representative.

Location	E-Mail
USA	<a href="mailto:PCNAmericasContact@list.ti.com">PCNAmericasContact@list.ti.com</a>
Europe	<a href="mailto:PCNEuropeContact@list.ti.com">PCNEuropeContact@list.ti.com</a>
Asia Pacific	<a href="mailto:PCNAsiaContact@list.ti.com">PCNAsiaContact@list.ti.com</a>
Japan	<a href="mailto:PCNJapanContact@list.ti.com">PCNJapanContact@list.ti.com</a>