

<b>PCN Number:</b>	20150116000B	<b>PCN Date:</b>	05/19/2015
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**Title:** Qualification of JCET as an Alternate Assembly Site for Select Devices in PDIP Package

**Customer Contact:** [PCN Manager](#) **Dept:** Quality Services

**Proposed 1<sup>st</sup> Ship Date:** 04/19/2015 **Estimated Sample Availability:** Provided upon Request

<b>Change Type:</b>			
<input checked="" type="checkbox"/>	Assembly Site	<input type="checkbox"/>	Assembly Process
<input checked="" type="checkbox"/>	Assembly Materials	<input type="checkbox"/>	Electrical Specification
<input type="checkbox"/>	Design	<input type="checkbox"/>	Mechanical Specification
<input type="checkbox"/>	Test Site	<input type="checkbox"/>	Packing/Shipping/Labeling
<input type="checkbox"/>	Test Process	<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 Bump Process
<input type="checkbox"/>	Wafer Fab Site	<input type="checkbox"/>	Wafer Fab Materials
<input type="checkbox"/>	Wafer Fab Process	<input type="checkbox"/>	Wafer Fab Process
<input type="checkbox"/>	Part number change		

**PCN Details**

**Description of Change:**

**Revision B** is to announce the retraction of the OP07CP device. This device will continue to be manufactured as prior and will not be subjected to the change described in this notification. This device is identified with a ~~strikethrough~~ and is highlighted in yellow in the Product Affected Section.

Texas Instruments is pleased to announce the qualification of JCET ChuZhou as an alternate Assembly site for the PDIP devices listed below. Material differences between the current sites and new site is shown below:

	MLA		ALP		FMX			JCETCZ		
Package	14 pin PDIP	16 pin PDIP	8 pin PDIP	14 pin PDIP	8 pin PDIP	14 pin PDIP	16 pin PDIP	8 pin PDIP	14 pin PDIP	16 pin PDIP
Mount Compound	4042500	4042500	4147858	4147858	4147858	4147858	4147858	<b>11204001701</b>	<b>11204001701</b>	<b>11204001701</b>
Mold Compound	4042503	4042503	141002027	141002027	4042503	4042503	4042503	<b>13102026801</b>	<b>13102026801</b>	<b>13102026801</b>
Lead Finish	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	NiPdAu	<b>Matte Sn</b>	<b>Matte Sn</b>	<b>Matte Sn</b>
Bond wire composition	Cu	Cu	Au	Au	Cu	Cu	Cu	<b>Cu</b>	<b>Cu</b>	<b>Cu</b>
Bond wire diameter	0.96 MIL	0.96 MIL	1.0 MIL	0.8 MIL	0.96 MIL	0.96 MIL	0.96 MIL	<b>1.0 MIL</b>	<b>1.0 MIL</b>	<b>1.0 MIL</b>

Upon expiry of this PCN TI will combine lead free solutions in a single standard part number, for example; [CD4052BE](#) – can ship with both Matte Sn and NiPdAu/Ag.

**Example:**

- Customer order for 7500units of CD4052BE with 2500 units SPQ (Standard Pack Quantity per Reel).
- TI can satisfy the above order in one of the following ways.
  - I. 3 Reels of NiPdAu finish.
  - II. 3 Reels of Matte Sn finish
  - III. 2 Reels of Matte Sn and 1 reel of NiPdAu finish.
  - IV. 2 Reels of NiPdAu and 1 reel of Matte Sn finish.

**Reason for Change:**

Continuity of Supply

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

None

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

Assembly Site		
TI Malaysia	Assembly Site Origin (22L)	ASO: MLA
Microchip Technology	Assembly Site Origin (22L)	ASO: ALP
TI Mexico	Assembly Site Origin (22L)	ASO: MEX
<b>JCET Chuzhou</b>	<b>Assembly Site Origin (22L)</b>	<b>ASO: GP6</b>

Sample product shipping label (not actual product label)

**TEXAS INSTRUMENTS**  
 MADE IN: Malaysia  
 2DC: 20:  
 MSL 2 /260C/1 YEAR SEAL DT  
 MSL 1 /235C/UNLIM 03/29/04  
 OPT:  
 ITEM: 39  
**LBL: 5A (L)T0:1750**

(1P) SN74LS07NSR  
 (Q) 2000 (D) 0336  
 (31T) LOT: 3959047MLA  
 (4W) TKY (1T) 7523483SI2  
 (P)  
 (2P) REV: (V) 0033317  
 (20L) CSO: SHE (21L) CCO:USA  
 (22L) ASO: MLA (23L) ACO: MYS

**Topside Device marking:**

Assembly site code for MLA= K

Assembly site code for ALP= 8

Assembly site code for MEX= M

**Assembly site code for GP6= F**

**Product Affected**

CD4052BE	LM2902N	LM393AP	SN74HC04N
CD4066BE	LM2904P	NA555P	SN74HC138N
CD4541BE	LM293P	NE5532P	SN74HC14N
LM239N	LM324NE3	<b>OP07CP</b>	SN74HC165N
LM258AP	LM339AN	SN74HC00N	SN74HC595N
LM258P	LM358AP	SN74HC02N	ULN2003AIN

## Qualification Report

### JCET Chuzhou 8-pin PDIP (P) Cu Wire Package Qual Approved on 03/11/2014

#### Product Attributes

Attributes	Qual Device: LM358P	Qual Device: LM393P	Qual Device: NE555P	QBS Package: CD4051BE	QBS Package: ULN2003AN
Assembly Site	JCET CHUZHOU	JCET CHUZHOU	JCET CHUZHOU	JCET CHUZHOU	JCET CHUZHOU
Package Family	PDIP	PDIP	PDIP	PDIP	PDIP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Site	SFAB	SFAB	SFAB	SFAB	SFAB
Wafer Fab Process	J11	J11	J11	HC-C	J11

- QBS: Qual By Similarity  
- Qual Devices qualified at LEVEL1-260C: LM358P, LM393P, NE555P

#### Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	Test Name / Condition	Duration	Qual Device: LM358P	Qual Device: LM393P	Qual Device: NE555P	QBS Package: CD4051BE	QBS Package: ULN2003AN
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	-	-	3/231/0	3/231/0
AC	Autoclave, 121C	96 Hours	1/77/0	-	-	3/231/0	-
TC	Temperature Cycle, -65C/150C	500 Cycles	1/77/0	-	-	3/231/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	1/77/0	-	-	3/231/0	-
HTOL	Life Test, 150C	300 Hours	1/77/0	-	-	3/231/0	-
WBS	Ball Bond Shear	Wires	3/228/0	1/76/0	1/76/0	3/228/0	3/228/0
WBP	Bond Pull	Wires	3/228/0	1/76/0	1/76/0	3/228/0	3/228/0
SD	Solderability	8 Hours Steam Age-Pb Free	3/66/0	-	-	3/66/0	-
PD	Physical Dimensions	--	3/15/0	-	-	3/15/0	-
LI	Lead Fatigue	Leads	3/66/0	-	-	3/66/0	-
ED	Electrical Characterization	Per Datasheet Parameters	Pass	-	-	Pass	-
LI	Lead Pull to Destruction	Leads	3/66/0	-	-	3/66/0	-
FLAM	Flammability (IEC 695-2-2)	--	3/15/0	-	-	3/15/0	-
FLAM	Flammability (UL 94V-0)	--	3/15/0	-	-	3/15/0	-
FLAM	Flammability (UL-1694)	--	3/15/0	-	-	3/15/0	-

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV: 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours  
- The following are equivalent HTSL options based on an activation energy of 0.7eV: 150C/1k Hours, and 170C/420 Hours

- The following are equivalent Temp Cycle options per JESD47: -55C/125C/700 Cycles and -65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

#### Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

TI Qualification ID: 20130204-77481

## Qualification Report

### JCET Chuzhou 14-pin PDIP (N) Cu Wire Package Qual Approved on 02/04/2014

#### Product Attributes

Attributes	Qual Device: LM324N	Qual Device: LM339N	Qual Device: SN74HC164N	QBS Package: CD4051BE	QBS Package: ULN2003AN
Assembly Site	JCET CHUZHOU	JCET CHUZHOU	JCET CHUZHOU	JCET CHUZHOU	JCET CHUZHOU
Package Family	PDIP	PDIP	PDIP	PDIP	PDIP
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0
Wafer Fab Site	SFAB	SFAB	SFAB	SFAB	SFAB
Wafer Fab Process	J11	J11	HCMOS	HC-C	J11

- Qual Devices qualified at LEVEL1-260C: LM324N, LM339N  
- Qual Device SN74HC164N is qualified at Not Classified

- QBS: Qual By Similarity

#### Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

Type	Test Name / Condition	Duration	Qual Device: LM324N	Qual Device: LM339N	Qual Device: SN74HC164N	QBS Package: CD4051BE	QBS Package: ULN2003AN
HAST	Biased HAST, 130C/85%RH	96 Hours	-	-	1/77/0	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	-	-	1/77/0	3/231/0	-
TC	Temperature Cycle -65C/150C	500 Cycles	-	-	1/77/0	3/231/0	-
HTSL	High Temp. Storage Bake 170C	420 Hours	-	-	-	3/231/0	-
HTOL	Life Test, 150C	300 Hours	-	-	1/77/0	3/231/0	-
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0	3/228/0	3/228/0	3/228/0
WBP	Bond Pull	Wires	3/228/0	3/228/0	3/228/0	3/228/0	3/228/0
SD	Solderability	Pb Free/Solder	-	-	3/66/0	3/66/0	-
PD	Physical Dimensions	--	-	-	3/15/0	3/15/0	-
LI	Lead Fatigue	--	3/66/0	3/66/0	3/66/0	3/66/0	-
LI	Lead Pull to Destruction	Leads	3/66/0	3/66/0	3/66/0	3/66/0	-
FLAM	Flammability (IEC 695-2-2)	--	-	-	-	3/15/0	-
FLAM	Flammability (UL 94V-0)	--	-	-	-	3/15/0	-
FLAM	Flammability (UL-1694)	--	-	-	-	3/15/0	-

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV: 125C/1khrs, 140C/480hrs, 150C/300hrs, and 155C/240hrs

- The following are equivalent HTSL options based on an activation energy of 0.7eV: 150C/1khrs, and 170C/420hrs

- The following are equivalent Temp Cycle options per JESD47: -55C/125C/700cyc and -65C/150C/600cyc

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

#### Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

## Qualification Report

### JCET Chuzhou 16-pin PDIP (N) Cu Wire Package Qual Approved on 02/04/2014

#### Product Attributes

Attributes	Qual Device: CD4051BE	Qual Device: ULN2003AN
Assembly Site	JCET CHUZHOU	JCET CHUZHOU
Package Family	PDIP	PDIP
Flammability Rating	UL 94 V-0	UL 94 V-0
Wafer Fab Site	SFAB	SFAB
Wafer Fab Process	HC-C	J11

- Qual Devices qualified at Not Classified: CD4051BE, ULN2003AN

- QBS: Qual By Similarity

#### Qualification Results

Data Displayed as: Number of lots/ Total sample size/ Total failed

Type	Test Name / Condition	Duration	Qual Device: CD4051BE	Qual Device: ULN2003AN
HAST	Biased HAST, 130C/85%RH	96 Hours	3/231/0	3/231/0
AC	Autoclave 121C	96 Hours	3/231/0	-
TC	Temperature Cycle -65C/150C	500 Cycles	3/231/0	-
HTSL	High Temp. Storage Bake, 170C	420 Hours	3/231/0	-
HTOL	Life Test, 150C	300 Hours	3/231/0	-
WBS	Ball Bond Shear	Wires	3/228/0	3/228/0
WBP	Bond Pull	Wires	3/228/0	3/228/0
SD	Solderability	8 Hours Steam Age	3/66/0	-
PD	Physical Dimensions	--	3/15/0	-
LI	Lead Fatigue	Leads	3/66/0	-
LI	Lead Pull to Destruction	Leads	3/66/0	-
ED	Electrical Characterization	Per Datasheet Parameters	1/77/0	-
FLAM	Flammability (IEC 695-2-2)	--	3/15/0	-
FLAM	Flammability (UL 94V-0)	--	3/15/0	-
FLAM	Flammability (UL-1694)	--	3/15/0	-

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV: 125C/1khrs, 140C/480hrs, 150C/300hrs, and 155C/240hrs

- The following are equivalent HTSL options based on an activation energy of 0.7eV: 150C/1khrs, and 170C/420hrs

- The following are equivalent Temp Cycle options per JESD47: -55C/125C/700cyc and -65C/150C/500cyc

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

#### Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

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>