



# Integrated Circuit Systems, Inc.

2435 Boulevard of the Generals - Norristown, PA 19403 Phone:(610) 630-5234 - Fax:(610) 630-2387

SUBJECT: Process Change Notification, Addition of Carsem, China. Assembly Location Date: February 6, 2006  
PCN#: 020606  
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## PRODUCT CHANGE NOTIFICATION

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**1. DESCRIPTION OF CHANGE:**

Initiate the assembly builds of ICS product at Carsem China assembly location.  
Product planned to be assembled at Carsem China are the "QFN/MLF" package configurations.

**1.A. DOES CHANGE AFFECT EU RoHS "GREEN" DIRECTIVE:**

No. Based on order requirements from customers, parts can be produced in either "standard" plating (Sn/Pb) or Pb Free (100% Matte tin).

**2. REASON FOR CHANGE:**

- a. Cycle time reduction: to allow for flexibility of assembly sources to obtain the best achievable through-put time for the sub-contracted assembly operation.
- b. To utilize Carsem China as another sub-contract source that will enable ICS to maintain the necessary leverage to facilitate obtaining cost competitive product for our customers.
- c. To obtain another source of supply for this type of package, which is in great demand and for which capacity is being exceeded at all of ICS's current sources.

**3. SCHEDULED IMPLEMENTATION DATE:**

Implementation of the use of Carsem China assembly location for subject ICS product is pending the approvals from ICS customers from whom prior approvals are required.

Requested date for implementing this change is May 6, 2006.

**3.A. IF PCN IS AN EOL, B.U. SUGGESTED REPLACEMENT/MIGRATION PATH:**

Not applicable.

**4. PART NUMBERS AFFECTED BY THE CHANGE:**

All ICS product built in "QFN/MLF" package style will be subject to the change. Please see Attachment 1 for part # details.

**5. RELIABILITY/QUALIFICATION DATA:**

Tests have been conducted on assembled product that is representative of planned ICS product build. Following are the qualification test details:

**Product Information:**

Package:	MLF7x7 – 48 leads	Mold Compound:	EME-G770H
Dimension:	7mmx7mmx0.9mm	Die Attach:	QMI519
Lot No:	7QGHL3A, 7QGHL3B, 7QGHL3C	Leadframe:	AgCu
		Wire:	GMG-S/1.0mil
Assembly Site:	CARSEM Suzhou	Quantity:	720 units



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### **Reliability Test Description:**

Pre-conditioning, Autoclave, Temperature Cycling, Thermal Shock, and High Temperature Storage tests are performed to assess on-going robustness and long term reliability of the package from the manufacturing process.

**Pre-conditioning** is based on JEDEC MSL=Level 3. All the parts (Autoclave, Temperature Cycling, and Thermal Shock) are first moisture soaked with 30 deg. C. / 60 % RH for 192 hours, then followed by IR reflow with a peak temperature of 255 +/- 5 deg.C for three cycles. Parts are 100% tested and visually examined before and after this test. Pre-conditioned parts are then used for subsequent reliability test (Autoclave, Temperature Cycling, and Thermal Shock).

**Autoclave** testing is conducted at 121 deg. C. / 100% RH, unbiased for a minimum of 504 hours. Parts are 100% tested and visually examined.

**Temperature Cycling** is performed at -65 to 150 deg. C., air-to-air, for 1000 cycles. Parts are 100% tested and visually examined.

**Thermal Shock** is tested at -55 to 125 deg. C., liquid-to-liquid, for 500 cycles. Parts are 100% tested and visually examined.

**High Temperature Storage (HTS)** is conducted at 150°C up to final time duration of 1008 hours followed by 100% test.



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### Test Summary:

Precondition	Level 3	Lot	Lot	Lot
		7QGHL3A	7QGHL3B	7QGHL3C
		273/0	185/0	185/0
Autoclave	Lot	96hrs	168hrs	504hrs
	7QGHL3A	77/0	77/0	77/0
	7QGHL3B	77/0	77/0	77/0
	7QGHL3C	77/0	77/0	77/0
Temperature Cycle	Lot	200cys	500cys	1000cys
	7QGHL3A	77/0	77/0	77/0
	7QGHL3B	77/0	77/0	77/0
	7QGHL3C	77/0	77/0	77/0
Thermal Shock	Lot	200cys	500cys	
	7QGHL3A	77/0	77/0	
HTS	Lot	192hrs	504hrs	1008hrs
	7QGHL3A	77/0	77/0	77/0

### Conclusion:

Reliability test results indicate that the packages demonstrate acceptable results for the environmental conditions to which they were subjected.



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**6. SUMMARY OF PROCESS DATA:**

Process characterization data has been issued for the 3 lots to verify processing stability. These include data related to die attach, wire bond, molding, solder plate, physical dimensions and solderability. All reading and measurement yield results equivalent to a Cpk – 1.67 or greater.

**7. MEANS OF IDENTIFYING PARTS WITH CHANGE:**

Product traceability through lot numbers and date code as identified on every part allows parts to be traced for origin.

**8. SAMPLE AVAILABILITY:**

Typical lead time for assembly if requested..

**9. SUPPLIER INITIATING CHANGE & CONTACT PERSON:**

Bimla Paul, QA Manager	(408) 574-6419
Alan Silfies, QA Director	(610) 630-5231

**10. IF PROVIDING A RESPONSE, PLEASE SEND IT TO THE APPLICABLE SALES REP.**

If no response is received by May 6, 2006 the change will be approved by ICS for incorporation of Carsem China as an assembly source.

PCN\_Carsem China

## ATTACHMENT 1

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ICS85401AK	ICSMK3724AK	ICS842S02TVK	ICSSSTV16859DK	ICS954326AKLF
ICS889831AK	ICS421K-03LF	ICSSIGETV	ICSSSTVF16859BK	ICS9LPR321AKLF
ICS889874AK	ICS421K-04LF	ICS95V857AK-110	ICSSSTVF16859BKLF	ICS9LPR321BKLF
ICS858018AK	ICS421K-08LF	ICS95V857AK-110LF	ICS954101DK	ICS18100AK
ICS85354AK	ICS421K-10LF	ICS95V857AK-130	ICS952909AKLF	ICS9LPR325AKLF
ICS85354AKLF	ICS421K-11LF	ICS95V857AK	ICS9LPRS502CKLF	ICS9LPRS325AKLF
ICS858011AK	ICS1493K-17LF	ICS95V857AKLF	ICS1893BKI	ICS9LPRS325BKLF
ICS858020AK	ICS8EN31AK	ICS95FV857AK	ICS1893BKILF	ICS9LPRS325CKLF
ICS889834AK	ICS8EN31AKLF	ICS95LPFV857AK	ICS954226AKLF	ICS9LPRS325DKLF
ICS85301AK	ICS8634BK-01	ICS95V2F857AKLF	ICS952303AK	ICS954302AK
ICS85301AKLF	ICS8432BK-51	ICS95V2F857AK	ICSSSTVA16859AK	ICS954302AKLF
ICS85354AK-01	ICS84320AK-01	ICS95U877AK	ICSSSTVA16859AKLF	ICS932S309CK
ICS85454AK-01	ICS8402AK	ICS97U877AKI	ICSSSTVA16859BK	ICS954305AK
ICS85454AK-01LF	ICS8402AKLF	ICS97U877AK	ICSSSTVA16859BKLF	ICS9FG1901CK
ICS858012AK	ICS8427AK	ICS97U877AKLF	ICSSSTVA16859CK	ICS9FG1901CKLF
ICS8589871AK	ICS8427BK-02	ICS93V857BK-130	ICSSSTVA16859CKLF	ICS954305BK
ICS889832AK	ICS843002AKI-40	ICS97ULP877AK	ICSSSTVA16859DK	ICS954305BKLF
ICS7100KLF	ICS843002AK-40	ICS97ULP877AKLF	ICSSSTVA16859DKLF	ICS954315AK
ICS871001AK	ICS843002AK-41	ICS97ULP878AK	ICS1893BK	ICS954315AKLF
ICS874001AK	ICS843002AKI-41	ICS97ULP878AKLF	ICS1893BKLF	ICS9FG1902AK
ICS840001AK-31	ICS8316AK	ICS97U870AK	ICSSSTVF16859CK	ICS9FG1902AKLF
ICS840001AK-34	ICS810001CK-21	ICS97ULP877BK	ICS9LPR228BKLF	ICS954305CK
ICS840001BK-32	ICS814001AK-21	ICS97ULP877BKLF	ICS9LPRS228AKLF	ICS954305CKLF
ICS840001CK-32	ICS813001AK-21	ICS97ULP878BK	ICS9LPRS228BKLF	ICS954305DKLF
ICS570BK	ICS9FG110AK	ICS97ULP878BKLF	ICS9LPRS228CKLF	ICS954305EKLF
ICS8535AK-01	ICS853111BK	ICS97U870AKI	ICS954309AK	ICS9LPR335BKLF
ICS8535AK-01LF	ICS9DB202CK-01	ICSHDL103K	ICS954309AKLF	ICS9FG1901EKLF
ICS8535BK-01	ICS9DB202CK-01LF	ICSSSTV16859CK	ICS954312AK	ICS9LPR335AKLF
ICS8543BK	ICS83848AK	ICSSSTV16859CKG	ICS954309BKLF	ICS9LPR335BKLF
ICS83905AK	ICS872S33TVK	ICSSSTV16859CKLF	ICS9LPR228AKLFALT	
ICS81006AK	ICS842S02AK	ICSSSTVF16859AK	ICS9LPR311AKLF	
ICS81006TV	ICS82S675AK	ICSSSTVF16859AKLF	ICS9LPR309AKLF	

**Note: For Tape and Reel option, suffix "T" is added to the part #.**

