Specification Details:

Specification: MIL-PRF-38535
Title: Advanced Microcircuits
Federal Supply Class (FSC): 5962
Conventional: No
Specification contains quality assurance program: Yes
MIL-STD-790 Established Reliability & High Reliability: No
MIL-STD-690 Failure Rate Sampling Plans & Procedures: No
Weibull Graded: No
Specification contains space level reliability requirements: Yes
Specification allows test optimization: Yes

Contact Information:
Office of Primary Involvement: Custom Devices Branch, DLA Land and Maritime - VQC
Primary Qualifying Activity Contact: 614-692-0606, e-mail: vqc.vt@dla.mil
Secondary Qualifying Activity Contact: 614-692-0589, e-mail: vqc.at@dla.mil

Notes:
If a manufacturer desires to have test data considered for qualification, he must be certified and perform all required qualification tests; the qualification sample must be produced under a valid authorization to test with DLA Land and Maritime-VQ certified materials and manufacturing techniques; and he must comply with the requirements specified in MIL-PRF-38535 prior to the start of any testing.

The listing of microcircuit manufacturing lines in the QML applies only to products produced in the plant(s) specified herein. Therefore, only those products that have been manufactured, assembled, and tested on the certified/qualified lines herein, can be supplied as qualified microcircuit QML devices.

Microcircuits manufactured, assembled, and tested in accordance with MIL-PRF-38535 shall bear the "QML" certification mark or the "Q" abbreviation. Products manufactured, assembled, and tested shall meet all the provisions of MIL-PRF-38535; and shall be manufactured on the DLA Land and Maritime-VQ certified lines as indicated herein. The information contained in this QML reflects the actual manufacturing lines, materials, and manufacturing construction techniques of the particular test sample(s). Any product represented as being compliant shall be manufactured on the lines/flows using the material and manufacturing construction techniques listed herein, as is necessary to meet the requirements of the user. The user shall be responsible for determining if the QML listing is adequate to demonstrate capability for the intended application.

1/ This note has been removed.
2/ Package lead counts are listed by the maximum number of leads covered by the qualification. If the manufacturer's package outline drawing is covered by MIL-STD-1835, then the case outline letter will be listed.
3/ The manufacturer has certified that the advanced microcircuits listed were/are being built, tested, and shipped, using the certified/qualified lines/flows, processes, and materials, and as defined by a completed Standardized Military Drawing (SMD) or MIL-M-38510 part number are in full compliance with MIL-PRF-38535.
4/ Caution. Do not use this number for item acquisition. Items acquired to this number are NOT QML devices and may not satisfy the performance, quality, or reliability requirements of the military.
5/ All devices are in the military temperature range -55 to +125°C, unless otherwise specified in the SMD
6/ Devices found in this table meet the qualification requirement of MIL-PRF-38535 but are not covered by a Standardized Microcircuit Drawing (SMD). Please contact Mr. Tom Hess (614) 692-0547 concerning the possibility of covering these devices with an SMD.
7/ Contact Texas Instruments for plastic package availability for a given device type.
8/ This product is being actively supplied under MIL-PRF-38535 and is considered acceptable for use in new designs.
9/ SMD devices and MIL-M-38510 slash sheet devices which meet the RHA requirements of MIL-PRF-38535 shall be marked with the appropriate RHA designator M, D, P, L, R, F, G, or H replacing the dash "-" in the PIN as indicated.

Only the highest RHA level that the device is qualified for shall be listed in this QML; however, at the request of the customer, the manufacturer is authorized to supply any lower RHA level device. Upon request of the customer, the non-RHA PIN designated with a dash (\(\_\)) may be supplied at the option of the manufacturer. The manufacturer may also opt to submit a certificate of compliance to have the non-RHA PIN listed in addition to the RHA PIN in this QML.
10/ The lead finish indicated in the Section I Table I listing is the most readily available from the manufacturer listed for the part. The manufacturer is authorized to supply other lead finishes than that listed provided that further testing/qualification is performed by the manufacturer on the other lead finish(es). The user needs to contact the manufacturer to determine the availability of other lead finishes not listed herein.

Important Information concerning User Decision to Procure Texas Instruments QML Devices in Plastic Packaging Technology

1. The user must carefully research the device end-use applications to determine if plastic packaging is appropriate.
2. Because plastic packages are not hermetic, if product is to be stored for a certain period in uncontrolled conditions, "dry bag" packaging may be required. TI will identify devices that require dry bag packaging. It is the buyer's responsibility to insure that these conditions are maintained over the storage life of the product.
3. Plastic packages typically do not dissipate heat as well as ceramic or metal packages.

4. The QML packaging technology flow is typically the same as commercial through assembly, therefore, users cannot require "specials".

These are some of the basic differences between TI's plastic commercial Off the Shelf (COTS) and plastic QML.

1. TRACEABILITY
COMMERCIAL OFF THE SHELF - LIMITED
QML - YES

2. BURN-IN
COMMERCIAL OFF THE SHELF - NOT UNLESS COMMERCIAL PERFORMS
QML - NOT UNLESS COMMERCIAL PERFORMS 1/

3. PRODUCT CHANGE NOTIFICATION
COMMERCIAL OFF THE SHELF - LIMITED
QML - YES

4. AVAILABILITY
COMMERCIAL OFF THE SHELF - VARIES BY DEVICES (COULD BE AS LITTLE AS 2 YEARS)
QML - EXTENDED SUPPORT WITH OPPORTUNITY FOR LIFETIME BUY

5. MILITARY TEMPERATURE TESTING
COMMERCIAL OFF THE SHELF - NO
QML - YES

6. AVAILABILITY OF QUALIFICATION AND RELIABILITY DATA
COMMERCIAL OFF THE SHELF - LIMITED
QML - YES

7. FAILURE ANALYSIS FOR FIELD FAILURES
COMMERCIAL OFF THE SHELF - LIMITED
QML - YES

8. EXTENSIVE BACKGROUND INFORMATION IN USING PRODUCT IN MILITARY ENVIRONMENTS
COMMERCIAL OFF THE SHELF - LIMITED
QML - YES

9. SUPPORT FOR SPECIAL QUALITY CLAUSES AND/OR FLOW-DOWN REQUIREMENTS
COMMERCIAL OFF THE SHELF - NO
QML - YES

For more detailed information the user may contact:

TI/QML Program Manager/(915) 561-6614
DLA Land and Maritime-VQC/Mr. Andy Thacker/(614) 692-0589
Rome Lab/Mr. James Reilly/(315) 330-4055
NASA/Mr. Nick Vermani/(301) 731-8902
DLA Land and Maritime-VAC/Mr. Tom Hess/(614) 692-0547

1/ TI's QML plastic product offering follows TI's BEST COMMERCIAL PRACTICE approach. The Military and Commercial plastic flows are essentially the same with the exception of extended Military temperature testing in accordance with the SMD. Therefore, a QML plastic device will not receive burn-in unless the commercial device also receives burn-in (regardless of test optimization results). Life test is performed during initial qualification and as part of periodic reliability monitors. In addition, some QML plastic lead frames are palladium and burn-in may degrade the solderability of the palladium lead frame.

Part Configuration:

<table>
<thead>
<tr>
<th>Federal Stock Class Designator</th>
<th>RHA Designator</th>
<th>Drawing Designator</th>
<th>Device Type</th>
<th>Device Class</th>
<th>Case Outline</th>
<th>Lead Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>5962</td>
<td>M.D.P.L.R.F., G.or H</td>
<td>XXXXX</td>
<td>ZZ</td>
<td>M.N.Q.V. or T</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Device specification documents, originally published prior to 27 July 1990, shall be as follows:

<table>
<thead>
<tr>
<th>Military Designator</th>
<th>RHA Designator</th>
<th>Specification Designator</th>
<th>Device Type</th>
<th>Device Class</th>
<th>Case Outline</th>
<th>Lead Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>M38510</td>
<td>H or /</td>
<td>XXX</td>
<td>ZZ</td>
<td>B or S</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
Product Types:
memory, CMOS gate array, linear Bipolar

Technology Types:
0.6um, 0.8um, 1.2um, 1.5 um and 1.2 um CMOS, and 0.18, 0.25, 0.35 um logic

Product Types:
memory, CMOS gate array, linear Bipolar

Design Center(s)
Location: Colorado Springs, CO
Line: CMOS Gate Array
Flow: 63202 Rev A

Mask Development Center(s)
Location: Colorado Springs, CO
Line: CMOS Gate Array
Flow: 63003 Rev M

Wafer Fabrication Operation(s)
Location: Manassas, VA
Line: 0.8 um CMOS
Location: Camas, WA
Line: 0.18 um
Flow: Logic
Location: TSMC, Taiwan
Line: 0.18 um,0.25um ,0.35um
Flow: Antifuse Logic
Location: Pocatello, ID
Line: 0.6um, 0.8um CMOS
Flow: 141280/121260 1.2 um; 14101/14102 1.5 um
Location: Colorado Springs, CO
Line: CMOS Gate Array 1.5 & 1.2
Flow: 141280/121260 1.2um; 14101/14102 1.5um
Location: Camas, WA
Line: 0.25 um
Flow: ASIC Logic

Assembly Operation(s)
Location: Colorado Springs, CO
Line: Flatpack, DIP, PGA & LCC packages
Flow: 30503/01 Rev A (Class Q); 30503/02 Rev A (Class V)

Electrical Test Operation(s)
Location: Colorado Springs, CO
Flow: 30503/01 Rev A (Class Q); 30503/02 Rev A (Class V)

Environmental Test Operation(s)
Location: Colorado Springs, CO
Line: CMOS Gate Array
Flow: 30503/01 Rev A (Class Q); 30503/02 Rev A (Class V)

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIP</td>
<td>28-304</td>
<td></td>
<td>solder</td>
<td>50-100 mil</td>
</tr>
<tr>
<td>Flatpack</td>
<td>28-352</td>
<td></td>
<td>solder/gold</td>
<td>20-50 mil</td>
</tr>
<tr>
<td>LCC</td>
<td>84 max</td>
<td>8x8/18x18</td>
<td>solder/gold</td>
<td>50 mil</td>
</tr>
<tr>
<td>PGA</td>
<td></td>
<td></td>
<td>solder/gold</td>
<td>100 mil</td>
</tr>
</tbody>
</table>
Amkor Technology

Quality System Information
Amkor Technology
KM 22 East Service Road
Mauntinlupa City, PH
CAGE Code: N/A
Company Contact: Louie Reyes, (632) 850 7583
Qualifying Activity Contact: Andy Thacker, (614) 692-0589
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q (A/T)

Technology Types:
Assembly/Test

Product Types:
N/A

Assembly Operation(s)
Location: Bina, Laguna, Philippines
Line: PBGA
Flow: 02-0501-0993
Location: Bina, Laguna, Philippines
Line: Flex Array
Flow: 02-0501-1632
Location: Muntinlupa City, Metro Manila, Philippines
Line: PDIP
Flow: 001-0501-2300
Location: Muntinlupa City, Metro Manila, Philippines
Line: PSOP2
Flow: 001-0501-2950
Location: Muntinlupa City, Metro Manila, Philippines
Line: TSSOP
Flow: 001-0501-2317
Location: Muntinlupa City, Metro Manila, Philippines
Line: Hermetic
Flow: 02-0501-1904
Location: Bina, Laguna, Philippines
Line: SBGA
Flow: 001-0501-2870
Location: Bina, Laguna, Philippines
Line: CABGA
Flow: 02-0501-1251
Location: Bina, Laguna, Philippines
Line: PBGA
Flow: 02-0501-0993
Location: Bina, Laguna, Philippines
Line: Flex Array
Flow: 02-0501-1632
Location: Muntinlupa City, Metro Manila, Philippines
Line: QFP
Flow: 001-0501-2306
Location: Bina, Laguna, Philippines
Line: CABGA
Flow: 02-0501-1251
Location: Muntinlupa City, Metro Manila, Philippines
Line: PSOP3
Flow: 001-0501-2952
Location: Bina, Laguna, Philippines
Line: SBGA
Flow: 001-0501-2870
Location: Muntinlupa City, Metro Manila, Philippines
Line: TSSOP
Flow: 001-0501-2317

DSCC Supplemental Information Sheet for Electronic QML-38535
<table>
<thead>
<tr>
<th>Technology Types:</th>
<th>Assembly/Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Types:</td>
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</tr>
<tr>
<td>Assembly Operation(s)</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: TSOP</td>
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</tr>
<tr>
<td>Flow: 001-0501-2317</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: PSOP3</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2952</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: SSOP</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2319</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: PLCC</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2304</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: TQFP</td>
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</tr>
<tr>
<td>Flow: 001-0501-2322</td>
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<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: SOIC</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2302</td>
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<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
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<tr>
<td>Line: PLCC</td>
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<td>Flow: 001-0501-2304</td>
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<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
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<tr>
<td>Line: PDIP</td>
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<tr>
<td>Flow: 001-0501-2300</td>
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<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
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<tr>
<td>Line: SIP</td>
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<tr>
<td>Flow: 001-0501-2310</td>
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</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
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</tr>
<tr>
<td>Line: Hermetic</td>
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</tr>
<tr>
<td>Flow: 02-0501-1904</td>
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</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: TSOP</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2317</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: PSOP2</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2950</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: SSOP</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2319</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
</tr>
<tr>
<td>Line: TQFP</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2322</td>
<td></td>
</tr>
<tr>
<td>Location: Muntinlupa City, Metro Manila, Philippines</td>
<td></td>
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<tr>
<td>Line: SOIC</td>
<td></td>
</tr>
<tr>
<td>Flow: 001-0501-2302</td>
<td></td>
</tr>
</tbody>
</table>
Amkor Technology

Quality System Information
Amkor Technology
KM 22 East Service Road
Mauntinlupa City, PH
CAGE Code: N/A
Company Contact: Louie Reyes, (632) 850 7583
Qualifying Activity Contact: Andy Thacker, (614) 692-0589
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q (A/T)

Technology Types:
Assembly/Test

Product Types:
N/A

Assembly Operation(s)
Location: Muntinlupa City, Metro Manila, Philippines
Line: SIP
Flow: 001-0501-2310
Location: Muntinlupa City, Metro Manila, Philippines
Line: QFP
Flow: 001-0501-2306

Environmental Test Operation(s)
Location: Bina, Laguna, Philippines
Line: Test
Flow: 02-0529-1255
Location: Bina, Laguna, Philippines
Line: Test
Flow: 02-0529-1255

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>CerDip (glass seal)</td>
<td>8-48</td>
<td></td>
<td>solder</td>
<td></td>
</tr>
<tr>
<td>Flexarray</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LCPGA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PBGA</td>
<td></td>
<td>28-655</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PGA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLCC</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>PSOP</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic-DIP</td>
<td>8-64</td>
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<td></td>
</tr>
<tr>
<td>Plastic-PGA</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Quad Flat Pack</td>
<td>44-208</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBGA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIP</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SOIC</td>
<td>8-16,16-30</td>
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</tr>
<tr>
<td>SOJ</td>
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<td></td>
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<tr>
<td>SSOP</td>
<td>8-28,16-28</td>
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<tr>
<td>Side-Braze</td>
<td>8-68</td>
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<td>N/A</td>
<td>variable</td>
</tr>
<tr>
<td>TQFP</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

DSCC Supplemental Information Sheet for Electronic QML-38535
Product Types:
data converters, op amps, analog and digital signal processors, sensors, references, switches, multiplexers

Technology Types:
Bipolar, CMOS, Bi-CMOS, Bi-FET

Quality System Information
Analog Devices
7910 Triad Center Dr
Greensboro, NC  27409
Website:  http://www.analog.com/salesdir/continent.asp
CAGE Code:  24355, Symbol Code:  CEKS
Company Contact:  Elaine Trotter, (336) 605-4234
Qualifying Activity Contact:  Scott Thomas, (614) 692-0587
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  100 K
Class:  Q and V

Design Center(s)
Location:  Wilmington, MA
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver. 1.0
Location:  Limerick, Ireland
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Greensboro, NC
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver. 1.0
Location:  Wilmington, MA
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver. 1.0
Location:  Newbury, United Kingdom
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver. 1.0
Location:  Santa Clara, CA
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  San Jose, CA
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Vancouver, WA
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Beaverton, OR
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver. 1.0
Location:  Nashua (DSP Tools), NH
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Sandy, UT
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Longmont, CO
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Raleigh, NC
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Location:  Aalborg, Denmark
Line:  Linear, Mixed Signal, & Digital (Q and V)
Flow:  Design Manual Ver 1.0
Analog Devices
7910 Triad Center Dr
Greensboro, NC 27409
Website: http://www.analog.com/salesdir/continent.asp
CAGE Code: 24355, Symbol Code: CEKS
Company Contact: Elaine Trotter, (336) 605-4234
Qualifying Activity Contact: Scott Thomas, (614) 692-0587
QML Status: Full QML Certification/Qualification
Radiation hardness level: 100 K
Class: Q and V

Technology Types:
Bipolar, CMOS, Bi-CMOS, Bi-FET

Product Types:
data converters, op amps, analog and digital signal processors, sensors, references, switches, multiplexers

Design Center(s)
Location: Cambridge, Great Britain
Line: Linear, Mixed Signal, & Digital (Q and V)
Flow: Design Manual Ver 1.0
Location: Somerset, NJ
Line: Linear, Mixed Signal, & Digital (Q and V)
Flow: Design Manual Ver 1.0
Location: San Diego, CA
Line: Linear, Mixed Signal, & Digital (Q and V)
Flow: Design Manual Ver 1.0
Location: Austin, TX
Line: Linear, Mixed Signal, & Digital (Q and V)
Flow: Design Manual Ver 1.0
Location: Toronto, Canada
Line: Linear, Mixed Signal, & Digital (Q and V)
Flow: Design Manual Ver 1.0
Location: Valencia, Spain
Line: Linear, Mixed Signal, & Digital (Q and V)
Flow: Design Manual Ver 1.0

Wafer Fabrication Operation(s)
Location: TSMC; Hsin-chu, Taiwan
Line: CMOS, Bi-MOS (Q)
Flow: ADI-0088
Location: Chartered Semiconductor, Singapore
Line: Fabs 1,2 and 3, CMOS (Q)
Flow: ADI-0088
Location: Santa Clara, CA
Line: Bipolar, BiFET, BiCMOS (Q and V)
Flow: ADI-0088
Location: Limerick, Ireland
Line: CMOS, BIMOS (Q and V)
Flow: ADI-0088
Location: Wilmington, MA
Line: Bipolar, BiFET, BiCMOS (Q and V)
Flow: ADI-0088
Location: OKI Tokyo, Japan
Line: Bipolar (Q)
Flow: ADI-0088

Assembly Operation(s)
Location: ADI, Gen. Trias, Cavite, Philippines
Line: Ceramic, metal can
Flow: F-0133M,F0153M & F0154M
Location: ADI, Greensboro, NC
Line: Ceramic Packages
Flow: ADI-0300
**Product Types:**
data converters, op amps, analog and digital signal processors, sensors, references, switches, multiplexers

**Technology Types:**
Bipolar, CMOS, Bi-CMOS, Bi-FET

---

**Quality System Information**
Analog Devices
7910 Triad Center Dr
Greensboro, NC  27409
Website:  http://www.analog.com/salesdir/continent.asp
CAGE Code:  24355, Symbol Code:  CEKS
Company Contact:  Elaine Trotter, (336) 605-4234
Qualifying Activity Contact:  Scott Thomas, (614) 692-0587
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  100 K
Class:  Q and V

---

**Assembly Operation(s)**
Location:  ADI, Manila, Philippines
Line:  Ceramic Package, metal can package
Flow:  F-0133M, F-0153M, F-0154M

**Electrical Test Operation(s)**
Location:  ADI, Manila, Philippines
Line:  Electrical Screening, Group A
Flow:  Per PROMIS system corresponding to part number
Location:  ADI, Manila, Philippines
Line:  Electrical Test
Flow:  Per PROMIS system corresponding to part number
Location:  Wilmington, MA
Line:  Electrical Screening, Group A
Flow:  Per PROMIS system corresponding to part number
Location:  Greensboro, NC
Line:  Electrical Test
Flow:  Per PROMIS system corresponding to part number

**Environmental Test Operation(s)**
Location:  Wilmington, MA
Line:  Screening, Burn-In, Group B/C/D
Flow:  Per PROMIS system corresponding to part number
Location:  Limerick, Ireland
Line:  Environmental Test
Flow:  LK-00399
Location:  ADI, Manila, Philippines
Line:  Screening, Burn-In, Group B/C
Flow:  ADI-0300
Location:  ADI, Gen. Trias, Cavite, Philippines
Line:  Screening, Burn-In, Group B/C
Flow:  Per PROMIS system corresponding to part number

**Package Information**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>Can</td>
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<td>100-600 mil</td>
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<td>Flatpack</td>
<td>2-52</td>
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<td>50 mil</td>
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<tr>
<td>J-Lead Chip Carrier</td>
<td>44</td>
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<td>gold</td>
<td>50 mil</td>
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<td>20-48</td>
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<td>solder/gold</td>
<td>50 mil</td>
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</table>
### Product Types:
- ASICS, Memories, FIFO, SRAM, Gate Arrays, Microprocessors, Microcontrollers, DSP

### Technology Types:
- CMOS 0.8μm-0.6μm-0.5μm-0.35μm and RT variants

### Quality System Information
- **Company:** Atmel-Nantes
  - **Address:** La Chantrerie BP 70602, 44306 Nantes Cedex 3, FR
  - **Website:** [http://www.atmel.com/dyn/general/contact.asp](http://www.atmel.com/dyn/general/contact.asp)
  - **CAGE Code:** F7400
  - **Company Contact:** Valerie Lepaludier, 33240181633
  - **Qualifying Activity Contact:** Andy Thacker, (614) 692-0589
  - **QML Status:** Full QML Certification/Qualification
  - **Radiation hardness level:** N/A
  - **Class:** Q and V

### Design Center(s)
- **Location:** Nantes, France
  - **Line:** Atmel Design Center
  - **Flow:** contact manufacturer
- **Location:** Milan, Italy
  - **Line:** Atmel Design Center
  - **Flow:** contact manufacturer
- **Location:** Bracknell, UK
  - **Line:** Atmel Design Center
  - **Flow:** contact manufacturer
- **Location:** Garching, Germany
  - **Line:** Atmel Design Center
  - **Flow:** contact manufacturer

### Mask Development Center(s)
- **Location:** Taoyuan, Taiwan
  - **Line:** TOPPAN CHUNGWA ELECTRONICS CO., LTD. (T.C.E.)
  - **Flow:** N/A

### Wafer Fabrication Operation(s)
- **Location:** UMC, Tainan, Taiwan
  - **Line:** 12A for CMOS 0.09μm and RT Variants
  - **Location:** L Foundry (formerly Atmel), Rousset Cedex, France
  - **Line:** CMOS 0.35μm, 0.25μm, 0.18μm and RT Variants
  - **Flow:** contact manufacturer
- **Location:** UMC, HsinChu, Taiwan
  - **Line:** 8S for CMOS 0.18μm and RT Variants
  - **Flow:** 8S for CMOS 0.18μm and RT Variants
- **Location:** MHS Nantes, FR --- (Formerly Atmel-Nantes) France
  - **Line:** CMOS 0.8, 0.6, 0.5 RT and RTP Variants
  - **Flow:** contact manufacturer

### Assembly Operation(s)
- **Location:** e2v, Grenoble, France
  - **Line:** Hermetic Assembly, PGA, Sidebraze, Flat Pack, MCGA
  - **Flow:** contact manufacturer
- **Location:** Millennium Microtech Co, Ltd, Chachoengsao, Thailand
  - **Line:** MMT
  - **Flow:** MMTAH027 & 035 (QMLV and QMLQ DLA qualified)

### Electrical Test Operation(s)
- **Location:** Nantes, France
  - **Line:** Atmel Nantes
  - **Flow:** contact manufacturer

### Environmental Test Operation(s)
- **Location:** Nantes, France
  - **Line:** Atmel S.A.
  - **Flow:** contact manufacturer
Quality System Information
Atmel-Nantes
La Chantrerie BP 70602
44306 Nantes Cedex 3, FR
Website:  http://www.atmel.com/dyn/general/contact.asp
CAGE Code:  F7400
Company Contact:  Valerie Lepaludier, 33240181633
Qualifying Activity Contact:  Andy Thacker, (614) 692-0589
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q and V

Technology Types:
CMOS 0.8um-0.6um-0.5um-0.35um and RT variants

Product Types:
ASICS, Memories, FIFO, SRAM, Gate Arrays, Microprocessors, Microcontrollers, DSP

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
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<th>Lead Pitch</th>
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<tbody>
<tr>
<td>DIP</td>
<td>14-48</td>
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<td>Flatpack</td>
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<td>solder/gold</td>
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<td>LCC</td>
<td>24</td>
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<td>gold</td>
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<td>LGA</td>
<td>349-625</td>
<td></td>
<td>gold</td>
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<tr>
<td>MCGA</td>
<td>349-472</td>
<td>64-232</td>
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<td>50 mil</td>
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<td>PGA</td>
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<td>100 mil</td>
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</table>
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

**BAE Systems**

**Quality System Information**

BAE Systems
9300 Wellington Road
Manassas, VA  22110-4122
Website:  http://www.baesystems.com
CAGE Code:  1RU44
Company Contact:  Paul Nixon, (571) 364-7657
Qualifying Activity Contact:  Paul Granchi, (614) 692-9975
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  2 Meg
Class:  Q and V

**Technology Types:**

- 0.8um RHCMOS (RHCMOS3M, RHCMOS4E, RHCMOS4S)
- 0.8um RHCMOS-E with ONO Anti-fuse (RHCMOS4EF)
- 0.5um RHCMOS (RHCMOS5M, RHCMOS5ML)
- 0.25um RHCMOS (RH25)
- 0.25um RHCMOS (R25) Class Q only

**Product Types:**

Memory (SRAM, PROM), FPGA, microprocessor, logic, custom, semi-custom and gate array ASICs

**Design Center(s)**

Location:  Manassas, VA
Line:  VLSI Design and Product Development
Flow:  per QM plan and technology specific design rules

**Mask Development Center(s)**

Location:  Outside location
Line:  Toppan (Dupont), Photronics, IBM, Towne Labs
Flow:  Contact Supplier

**Wafer Fabrication Operation(s)**

- Location:  East Fishkill, NY
  Line:  IBM Microelectronics
  Flow:  RH45 (IBM 45nm SOI12S0)
- Location:  Manassas, VA
  Line:  Semiconductor Technology Center
  Flow:  QM Plan Baseline Process Flows RH25
- Location:  Burlington, VT
  Line:  IBM Microelectronics
  Flow:  R25 (IBM 0.25um CMOS6SF)
- Location:  Manassas, VA
  Line:  Semiconductor Technology Center
  Flow:  QM Plan Baseline Process Flows 0.8um with ONO anti-fuse- RHCMOS4EF
- Location:  Manassas, VA
  Line:  Semiconductor Technology Center
  Flow:  QM Plan Baseline Process Flows 0.5um - RHCMOS5M, RHCMOS5ML

**Assembly Operation(s)**

Location:  Manassas, VA
Line:  BAE Systems assembly - Memory, Logic, Microprocessors, Multi-Chip modules
Flow:  QM Plan Baseline Process Flows, Wirebond, Flipchip, Ceramic FP or Column Grid Array

**Electrical Test Operation(s)**

Location:  Manassas, VA
Line:  BAE Systems Memory and Logic Test
Flow:  QM Plan Baseline Process Flows

**Environmental Test Operation(s)**

Location:  USA
Line:  subset of TCI Group B and D testing done by DLA-suitable Labs (e2v, Pernicka, Silicon Cert, Oneida, Silicon Turnkey Solutions, Integra Technologies)
Flow:  Contact Supplier
Location:  Manassas, VA
Line:  BAE Systems Burn-in and Mil-screen
Flow:  QM Plan Baseline Process Flows

DSCC Supplemental Information Sheet for Electronic QML-38535
**BAE Systems**

**Quality System Information**

BAE Systems  
9300 Wellington Road  
Manassas, VA  22110-4122  
Website:  http://www.baesystems.com  
CAGE Code:  1RU44  
Company Contact:  Paul Nixon, (571) 364-7657  
Qualifying Activity Contact:  Paul Granchi, (614) 692-9975  
QML Status:  Full QML Certification/Qualification  
Radiation hardness level:  2 Meg  
Class:  Q and V  

**Technology Types:**

- 0.8µm RHCMOS (RHCMOSMOS3E, RHCMOS4E, RHCMOS4S0)  
- 0.8µm RHCMOS-E with ONO Anti-fuse (RHCMOS4EF)  
- 0.5µm RHCMOS (RHCMOS5M, RHCMOS5ML)  
- 0.25µm RHCMOS (R25) Class Q only  

**Product Types:**

- Memory (SRAM, PROM), FPGA, microprocessor, logic, custom, semi-custom and gate array ASICs  

**Package Information**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<td>28-340</td>
<td>gold</td>
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<td>LCC</td>
<td>32</td>
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Quality System Information
Criteria Labs
706 Brentwood Street
Austin, TX 78744
Website: http://criterialabs.com
CAGE Code: 1NQ10
Company Contact: Yolanda Guillory, (512) 637-4516
Qualifying Activity Contact: Paul Granchi, (614) 692-9975
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q (A/T)

Technology Types:
Assembly/Test

Product Types:
N/A

Assembly Operation(s)
Location: Austin, TX
Line: Military Hermetic
Flow: Customer Specific

Environmental Test Operation(s)
Location: Austin, TX
Line: Military 883
Flow: Customer Specific

Package Information

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<th>Type</th>
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<th>Lead Pitch</th>
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<td>LCC</td>
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<tr>
<td>Side-Braze</td>
<td>CM</td>
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</table>
Product Types:
- nvSRAM, PLD, clocks

Technology Types:
- 0.8, 0.65 um DLM and TLM, CMOS and BICMOS

Quality System Information
Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709
Website: http://www.cypress.com
CAGE Code: 65786, Symbol Code: CETK
Company Contact: David Hoffman, 408-943-2108
Qualifying Activity Contact: Michael Grammens, (614) 692-0604
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q, M

Design Center(s)
Location: San Jose, CA
Line: N/A
Flow: Cypress design rules

Wafer Fabrication Operation(s)
Location: Bloomington, MN
Line: 72Meg QDR Rad Hard R9 90nm
Flow: 001-00536

001-00536
Location: Tainan Taiwan
Line: UMC Fab 12A, 144Meg QDRII+ Rad Hard LL65P-18R 65nm
Flow: A439/A439P

A866/A866P

A918/A918P, A866/A866P, A918/A918P
Location: Tainan Taiwan
Line: UMC FAB 12A, 144Meg QDRIV Rad Hard LL65FH-12 65nm
Flow: A866/A866P

Location: Tainan Taiwan
Line: UMC FAB12A, 16Meg Fast Async Rad Hard LL65UP-25ODR 65nm
Flow: A918/A918P

Location: Taiwan Semiconductor Mfg, Taiwan
Line: PLD, 0.5 u
Flow: QM Plan 90-00033
Location: Bloomington, MN
Line: 4Meg QDR Rad Hard C9 90nm
Flow: 001-00536

Assembly Operation(s)
Location: Amkor Anam, Manila, Philippines
Line: CLCC, CERDIP
Flow: 49-1xxxx per package type
Location: Simi Valley Ca
Line: DPACI
Flow: FP 4 Meg QDR Rad Hard C9 90nm
Location: Simi Valley Ca
Line: DPACI
Flow: LGA/C WA 72Meg QDR
LGA/C WA 72 Meg QDR Rad Hard R9 90nm

Electrical Test Operation(s)
Location: Integra, Wichita, KS
Line: nvSRAM
Flow: 16-0001 program change procedure
Cypress Semiconductor

Quality System Information
Cypress Semiconductor
198 Champion Court
San Jose, CA 95134-1709
Website: http://www.cypress.com
CAGE Code: 65786, Symbol Code: CETK
Company Contact: David Hoffman, 408-943-2108
Qualifying Activity Contact: Michael Grammens, (614) 692-0604
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q, M

Technology Types:
0.8, 0.65 um DLM and TLM, CMOS and BICMOS

Product Types:
nvSRAM, PLD, clocks

Electrical Test Operation(s)
Location: CML, Cavite City, Philippines
Line: PROM, PLD, clocks
Flow: 16-0001 program change procedure
Location: Hsinchu Taiwan
Line: KEYEC Wafer Sort,
Flow: SORT Test 144M QDRIV SRAM, 16M Async SRAM
Location: Hsinchu Taiwan
Line: ChipMos Wafer Sort
Flow: SORT Test 144M QDRII+ SRAM

Environmental Test Operation(s)
Location: SemPac, Philippines
Line: Burn-in & Life Test
Flow: 29-nnnnn per device type
Location: Albuquerque NM
Line: JD instruments Radiation Testing
Location: CML, Cavite City, Philippines
Line: Reliability & QCI Lab, Burn-in & Life Test
Flow: 22-00012, Group C and D Travelers
Location: Atlantic Analytical Laboratories, Whitehouse, NJ
Line: Internal Water Vapor
Flow: 22-00011, Quality Conformance and Qualification Procedure
Location: QP Semiconductor, Santa Clara, CA
Line: Reliability, mechanical
Flow: 22-00011, Quality Conformance and Qualification Procedure

Package Information 2/

<table>
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<tr>
<th>Type</th>
<th>Lead Range</th>
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Quality System Information
Data Device Corporation (DDC), formerly Maxwell
9244 Balboa Avenue
San Diego, CA 92123
CAGE Code: 68911
Company Contact: Dean Hulett, (858) 503-3413
Qualifying Activity Contact: Vinh Tran, (614) 692-0606
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q and V

Technology Types:
CMOS
Product Types:
A/D Converters, RAD PAK Technology, EE PROM

Design Center(s)
Location: San Diego, CA
Line: Maxwell
Flow: Characterization of Hitachi Die

Wafer Fabrication Operation(s)
Location: Kofu, Japan
Line: Hitatchi, K4 fab facility
Flow: 1 MEG EEPROM CMOS 1LM, 6", 0.8um
Location: Pocatello, ID
Line: AMI, Fab 9
Flow: A/D Converter

Assembly Operation(s)
Location: San Diego, CA
Line: Maxwell
Flow: Side Braze, Dip, Flat pack, LCC, ES-028
Location: San Diego, CA
Flow: Pyramid Class B Travelers

Electrical Test Operation(s)
Location: San Diego, CA
Line: Maxwell
Flow: Per device specification

Environmental Test Operation(s)
Location: San Diego, CA
Line: Maxwell
Flow: Screening per QCII-028

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
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<td>LLC</td>
<td>28-40</td>
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Quality System Information
DPA Components International (DPACI)
2251 Ward Avenue
Simi Valley, CA 93065
CAGE Code: 6S055
Company Contact: Douglas Schweitzer, (805) 581-9200
Qualifying Activity Contact: Jonathan Puhalsky, (614) 692-2458
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q&QV(A/T)

Technology Types:
90 nm CMOS & Assembly/Test

Product Types:
Asyncronus SRAM, Class Q&amp;V assembly/test

Design Center(s)
Location: Original Manufacturer
Line: Various
Flow: Various
Location: San Jose, CA
Line: Cypress
Flow: Cypress Design Rules

Mask Development Center(s)
Location: Original Manufacturer
Line: Various
Flow: Various

Wafer Fabrication Operation(s)
Location: Bloomington, MN
Line: Cypress
Flow: R9 (90 Nanometer CMOS)
Location: Bloomington, MN
Line: Cypress
Flow: R9 (90 Nanometer CMOS)
Location: Original IC Manufacturer
Line: Various
Flow: Various

Assembly Operation(s)
Location: Simi Valley, CA
Line: DPA Class Q SRAM
Flow: Standard DPA Components QML Flow DPA-OID-009
Location: Simi Valley, CA
Line: DPA Class V contract assembly
Flow: Standard DPA Components QML Flow DPA-OID-009
Location: Milpitas, CA
Line: Alternate Tinning
Flow: QML Tinning procedure
Location: Milpitas, CA
Line: Golden Altos, Alternate Assembly
Flow: Standard Golden Altos QML Line, GAF 1491, 1492

Environmental Test Operation(s)
Location: Milpitas, CA
Line: Alternate Solderability
Flow: DSCC Approved Solderability Flow
Location: Simi Valley, CA
Line: DPA Environmental test
Flow: Standard DPA 883 Environmental Test Procedure
Quality System Information
DPA Components International (DPACI)
2251 Ward Avenue
Simi Valley, CA  93065
CAGE Code:  6S055
Company Contact:  Douglas Schweitzer, (805) 581-9200
Qualifying Activity Contact:  Jonathan Puhalsky, (614) 692-2458
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q&QV(A/T)

Technology Types:
90 nm CMOS & Assembly/Test

Product Types:
Asyncronus SRAM, Class Q&V assembly/test

Package Information

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<td>solder/gold</td>
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<td>Flatpack</td>
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<td>4-504</td>
<td>solder/gold</td>
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<td>4-504</td>
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<td>SSOP</td>
<td>20-28</td>
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<td>solder</td>
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<td>Side-Braze</td>
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<td>TSOP II</td>
<td>44-54</td>
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</table>
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

**e2v Technologies**

*Quality System Information*

e2v Technologies  
Avenue de Rochepleine BP-123,  
38521 Saint-Egreve Cedex, FR  
Website: http://www.e2v.com/  
CAGE Code: F8385  
Company Contact: Christian Carmona, 33476583189  
Qualifying Activity Contact: Scott Thomas, (614) 692-0587  
QML Status: Full QML Certification/Qualification  
Radiation hardness level: N/A  
Class: Q  

*Technology Types:*

- HCMOS 0.5um, 0.65um, 1.0 um, 1.5 um, 3.0 um, CMOS 0.6 um

*Product Types:*

- Microprocessors, Microcontrollers, Memory

*Design Center(s)*

- **Location:** France  
  **Line:** N/A  
  **Flow:** 54ACMOS  
  **Location:** France  
  **Line:** N/A  
  **Flow:** M54HC00M

*Wafer Fabrication Operation(s)*

- **Location:** Sendai, Japan  
  **Line:** TCS  
  **Flow:** 1 um  
  **Location:** Austin, TX  
  **Line:** MOS13  
  **Flow:** HiP1.3 (.5um)  
  **Location:** Austin, TX  
  **Line:** MOS11  
  **Flow:** 0.65 um  
  **Location:** Scotland  
  **Line:** MOS1  
  **Flow:** 1.5 um  
  **Location:** Austin, TX  
  **Line:** MOS8  
  **Flow:** 1.0 um  
  **Location:** Italy  
  **Line:** F8  
  **Flow:** CMOSE5-U35  
  **Location:** France  
  **Line:** HCMOS  
  **Flow:** 3.0 um

*Assembly Operation(s)*

- **Location:** France  
  **Line:** F5  
  **Flow:** CDSG-QFPBTDN

*Electrical Test Operation(s)*

- **Location:** France  
  **Line:** J971-B1300  
  **Flow:** 2A00Q  
  **Location:** France  
  **Line:** GR180-AEHR  
  **Flow:** TC23EFM, TC13FM, TC23FVB  
  **Location:** France  
  **Line:** GR180-B1300  
  **Flow:** 0AR3QT0A, 0ARAR3QT

---

DSCC Supplemental Information Sheet for Electronic QML-38535
Quality System Information

e2v Technologies
Avenue de Rochepleine  BP-123,
38521 Saint-Egreve Cedex, FR
Website: http://www.e2v.com/
CAGE Code: F8385
Company Contact: Christian Carmona, 33476583189
Qualifying Activity Contact: Scott Thomas, (614) 692-0587
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q

Technology Types:
HCMOS 0.5um, 0.65um, 1.0 um, 1.5 um, 3.0 um, CMOS 0.6 um

Product Types:
Microprocessors, Microcontrollers, Memory

Electrical Test Operation(s)
Location: France
Line: Sentry20-AEHR
Flow: 2A00QT, 2A00Q
Location: France
Line: J971-AEHR
Flow: 2A00QT, 2A00QL
Location: France
Line: J971-AEHR
Flow: 1AR3BIN
Location: France
Line: GR18-B160
Flow: 2A00Q
Location: France
Line: F3
Flow: ASSG-QFPBDMA

Environmental Test Operation(s)
Location: France
Line: Periodically Qualification
Flow: ‘FIA’ Software

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>DIP</td>
<td>40-48</td>
<td></td>
<td>gold/tin</td>
<td>100 mil</td>
</tr>
<tr>
<td>Flatpack</td>
<td>52-240</td>
<td></td>
<td>gold/tin</td>
<td>20-50 mil</td>
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<tr>
<td>LCC</td>
<td>44-240</td>
<td>68-241</td>
<td>gold/tin</td>
<td>20-50 mil</td>
</tr>
<tr>
<td>PGA</td>
<td></td>
<td></td>
<td>gold/tin</td>
<td>100 mil</td>
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</table>
Golden Altos Corporation

Quality System Information
Golden Altos Corporation
402 South Hillview Drive
Milpitas, CA 95035
Website: http://www.goldenaltos.com/
CAGE Code: 065N4
Company Contact: Clemence Palero, (408) 956-1010
Qualifying Activity Contact: Sean McNulty, (614) 692-8800
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: QV (A/T)

Technology Types:
Assembly/Test

Product Types:
N/A

Assembly Operation(s)
Location: Milpitas, CA
Line: Hermetic
Flow: GAF 1492

Environmental Test Operation(s)
Location: Milpitas, CA
Line: 883 Testing

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>Cerdip</td>
<td>8-48</td>
<td></td>
<td>solder</td>
<td>100 mil</td>
</tr>
<tr>
<td>Cerpac</td>
<td>8-48</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
</tr>
<tr>
<td>Cerquad</td>
<td>20-304</td>
<td>28-476</td>
<td>solder/gold</td>
<td>15, 19-50 mil</td>
</tr>
<tr>
<td>Flat Packages</td>
<td>8-172</td>
<td></td>
<td>solder/gold</td>
<td>19-50 mil</td>
</tr>
<tr>
<td>JLCC</td>
<td>28-84</td>
<td></td>
<td>solder/gold</td>
<td>50-100 mil</td>
</tr>
<tr>
<td>LCC</td>
<td>3-84</td>
<td></td>
<td>solder/gold</td>
<td>25 35 40 50 mil</td>
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<tr>
<td>PGA</td>
<td></td>
<td></td>
<td>solder/gold</td>
<td>50, 100 mil</td>
</tr>
<tr>
<td>SOIC</td>
<td>8-30</td>
<td></td>
<td>solder/gold</td>
<td>25, 50, 100 mil</td>
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<td>Sidebraze</td>
<td>8-64</td>
<td></td>
<td>solder/gold</td>
<td>70, 100 mil</td>
</tr>
<tr>
<td>TO CAN/Header</td>
<td>2-16</td>
<td></td>
<td>solder/gold</td>
<td>50-400 mil</td>
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</table>
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

**Honeywell Aerospace**

**Quality System Information**
Honeywell Aerospace  
12001 State Highway 55  
Plymouth, MN 55441-4799  
Website: http://www.honeywellmicrowaveelectronics.com/  
CAGE Code: 34168  
Company Contact: Trish Hertog, (763) 954-2594  
Qualifying Activity Contact: Shing Yu, (614) 692-0588  
QML Status: Full QML Certification/Qualification  
Radiation hardness level: 1 Meg  
Class: Q, V, Y

**Technology Types:**  
0.8um SOI IV, 0.7um SOI IVE, 0.35um SOI V, 0.15um S150

**Product Types:**  
Core Product Types (CPT): [SRAM, FIFO, ROM, Gate Array ASICs, Full Custom]; SOI IV, V, and S150: CPT, SOI IVE, V, and S150: Memory

**Design Center(s)**  
Location: Plymouth, MN  
Line: SOI IV(Q & V), SOI IVE(Q & V), SOI V (Q & V), S150 (V), MRAM  
Flow: GMS 10022

**Mask Development Center(s)**  
Location: Plymouth, MN  
Line: SOI IV (Q & V), SOI IVE(Q & V), SOI V (Q & V), S150 (V), MRAM  
Flow: GMS 10027

**Wafer Fabrication Operation(s)**  
Location: Plymouth, MN  
Line: SOI IV (Q & V), SOI IVE(Q & V), SOI V (Q & V), S150 (V), MRAM  
Flow: 22017935 (SOI IV), 22019135 (SOI IVE), 22020920 (SOI V), 22025794 (S150)  
Location: NXP (Chandler, AZ and Austin, TX)  
Line: Wafer Bumps  
Flow: 22027391  
Location: Chandler, AZ  
Line: MRAM  
Flow: 22031906-SD, 58035282-SD

**Assembly Operation(s)**  
Location: Micross Components, Orlando, FL  
Line: Military Hermetic QML Q/V Certified  
Flow: S HW SCA  
Location: Plymouth, MN  
Line: SOI IV (Q & V), SOI IVE(Q & V), SOI V (Q & V), S150 (V), MRAM  
Flow: 22009590(SCP), 22021691(MCMs)  
Location: Six Sigma, Milpitas, CA  
Line: Column Attach (Q & V)  
Flow: PR-2010  
Location: Kyocera, San Diego, CA  
Line: Non-hermetic Flip Chip  
Flow: 22028780

**Electrical Test Operation(s)**  
Location: Plymouth, MN  
Line: SOI IV (Q & V), SOI IVE(Q & V), SOI V (Q & V), S150 (V), MRAM  
Flow: GMS 10006

**Environmental Test Operation(s)**  
Location: Six Sigma, Milpitas, CA  
Line: Test Services  
Flow: TS-2001  
Location: Plymouth, MN  
Line: SOI IV (Q & V), SOI IVE(Q & V), SOI V (Q & V), S150 (V), MRAM  
Flow: GMS 10006  
Location: Micross Components, Orlando, FL  
Line: 883 Testing  
Flow: GMS 10006
### Technology Types:
0.8um SOI IV, 0.7um SOI IVE, 0.35um SOI V, 0.15um S150

### Product Types:
Core Product Types (CPT): [SRAM, FIFO, ROM, Gate Array ASICs, Full Custom]; SOI IV, V, and S150: CPT, SOI IVE, V, and S150: Memory

### Package Information

<table>
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<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>CGA</td>
<td>783 Max</td>
<td></td>
<td>solder</td>
<td>40-50 mil</td>
</tr>
<tr>
<td>DBGA/LGA</td>
<td>783 Max</td>
<td></td>
<td>solder balls/Au</td>
<td>40-50 mil</td>
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<tr>
<td>DIP</td>
<td>24-28</td>
<td></td>
<td>gold</td>
<td>100 mil</td>
</tr>
<tr>
<td>Flatpack</td>
<td>28-352</td>
<td></td>
<td>gold</td>
<td>20-50 mil</td>
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<tr>
<td>Pin Grid Array</td>
<td>128 Max</td>
<td></td>
<td>gold</td>
<td>100 mil</td>
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Integra Technologies Silicon Valley (formerly CORWIL)

1635 McCarthy Boulevard
Milpitas, CA  95035
Website:  http://www.corwil.com
CAGE Code:  061F4
Company Contact:  Nawal Cotran, (408) 321-6556
Qualifying Activity Contact:  Sean McNulty, (614) 692-8800
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  QV (A/T)

Product Types:
Assembly/Test

Technology Types:

Assembly Operation(s)
Location:  Milpitas, CA
Line:  Military Hermetic
Flow:  Customer Specific

Environmental Test Operation(s)
Location:  Milpitas, CA
Line:  Military 883
Flow:  Customer Specific

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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</thead>
<tbody>
<tr>
<td>CerDip (glass seal)</td>
<td>8-64</td>
<td></td>
<td>solder</td>
<td></td>
</tr>
<tr>
<td>CerPack (glass seal)</td>
<td>14-28</td>
<td></td>
<td>solder</td>
<td></td>
</tr>
<tr>
<td>Flatpack</td>
<td>6-172</td>
<td></td>
<td>gold</td>
<td>25mil</td>
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<td>LCC</td>
<td>6-132</td>
<td>28-391</td>
<td>gold</td>
<td>50 mil</td>
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<tr>
<td>PGA</td>
<td></td>
<td></td>
<td>gold</td>
<td>25 mil</td>
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<td>Quad Flat Pack</td>
<td>20-304</td>
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<td>solder</td>
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<td>SOIC</td>
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<td>gold</td>
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<td>Side-Braze</td>
<td>8-64</td>
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<td>gold</td>
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<tr>
<td>TO</td>
<td>TO-18</td>
<td></td>
<td>solder</td>
<td></td>
</tr>
</tbody>
</table>
## Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

### Integrated Device Technology, Inc (IDT)

#### Quality System Information
Integrated Device Technology, Inc (IDT)  
6024 Silver Creek Valley Road  
San Jose, CA 95138  
Website: http://www.idt.com/  
CAGE Code: 0SP21  
Company Contact: Mary Vesey, (408) 284-4565  
Qualifying Activity Contact: Jonathan Puhalsky, (614) 692-2458  
QML Status: Full QML Certification/Qualification  
Radiation hardness level: N/A  
Class: Q

#### Technology Types:
- BiCMOS, 08um CMOS 7, 0.6 um CMOS 8, CMOS 9

#### Product Types:
- SRAM, Logic

### Design Center(s)
- **Location:** IDT, San Jose, CA  
  **Line:** N/A  
  **Flow:** IDT Design Rules

### Mask Development Center(s)
- **Location:** IDT, San Jose, CA  
  **Line:** N/A  
  **Flow:** IDT Design Rules

### Wafer Fabrication Operation(s)
- **Location:** IDT, Hillsboro, OR  
  **Line:** Fab 4  
  **Flow:** CMOS 7, CMOS 8, CMOS 9
- **Location:** IDT, Salinas, CA  
  **Line:** Fab 2 (Die/Wafer Stock Only)  
  **Flow:** 0.6um CMOS 8, 0.8um CMOS 7
- **Location:** TSMC Fab 3, Hsinchu, Taiwan  
  **Line:** Fab 3  
  **Flow:** TSMC 0.5u (1-2P/2-3M), TSMC 0.35u (1-2P/3-4M)

### Assembly Operation(s)
- **Location:** MMT, Tambon Saladang Bangnumpriew, Thailand  
  **Line:** Hermetic Assembly  
  **Flow:** Form 4H-LS-0309
- **Location:** Amkor, Muntinlupa City, Philippines  
  **Line:** Hermetic Assembly  
  **Flow:** IDT Hermetic Flow

### Electrical Test Operation(s)
- **Location:** IDT, Penang,  
  **Line:** N/A  
  **Flow:** IDT Military Test Flow QCA-1797, QCA-0600

### Environmental Test Operation(s)
- **Location:** MMT, Tambon Saladang Bangnumpriew, Thailand  
  **Line:** QCI Monitor  
  **Flow:** Form TSP-4019
- **Location:** IDT, Penang,  
  **Line:** N/A  
  **Flow:** QCA-0600  
  **Location:** KESP, Penang, Malaysia  
  **Line:** Burn-In Monitor  
  **Flow:** TSS-5512-C, TSC-6121
Integrated Device Technology, Inc (IDT)

Quality System Information
Integrated Device Technology, Inc (IDT)
6024 Silver Creek Valley Road
San Jose, CA  95138
Website:  http://www.idt.com/
CAGE Code:  0SP21
Company Contact:  Mary Vesey, (408) 284-4565
Qualifying Activity Contact:  Jonathan Puhalsky, (614) 692-2458
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

Technology Types:
BiCMOS, .08um CMOS 7, 0.6 um CMOS 8, CMOS 9

Product Types:
SRAM, Logic

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIP</td>
<td>16-48</td>
<td></td>
<td>solder</td>
<td>100 mil</td>
</tr>
<tr>
<td>Flatpack</td>
<td>16-84</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
</tr>
<tr>
<td>LCC</td>
<td>20-68</td>
<td>68-84</td>
<td>solder</td>
<td>100 mil</td>
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<tr>
<td>PGA</td>
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<tr>
<td>Quality System Information</td>
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<tr>
<td>-----------------------------</td>
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<tr>
<td>Intersil Corporation</td>
<td></td>
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<tr>
<td>1650 Robert J. Colan Blvd.</td>
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<tr>
<td>Palm Bay, FL 32905-3398</td>
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<tr>
<td>Website: <a href="http://www.intersil.com/cda/Support/contacts/">http://www.intersil.com/cda/Support/contacts/</a></td>
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<td>CAGE Code: 34371, Symbol Code: CDWO</td>
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<tr>
<td>Company Contact: Jeff Touvell, (321) 729-5602</td>
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<tr>
<td>Qualifying Activity Contact: Paul Granchi, (614) 692-9975</td>
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<td>QML Status: Full QML Certification/Qualification</td>
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<tr>
<td>Class: Q,V,T,M</td>
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</tbody>
</table>

**Technology Types:**
Bipolar, CMOS, linear, CMOS SAJI

**Product Types:**
memories, logic, switches, timers, microprocessors, micro-peripherals

**Wafer Fabrication Operation(s)**
- **Location:** Intersil, Palm Bay, FL
  - **Line:** Fab 59
  - **Flow:** Bipolar, CMOS, SAJI, SAJI I, Scaled SAJI IV, SAJI V, SAJI VI, L7, Linear Silicon Gate, DI Bipolar, DI Linear CMOS
  - **Location:** Yamaha, Hamamatsu, Japan
  - **Line:** Yamaha C5.6
  - **Flow:** Non-rad hard, Class M only

**Assembly Operation(s)**
- **Location:** Intersil, Palm Bay, FL
  - **Line:** Compliant Hermetic
  - **Flow:** 841XXX, 240XXX, 352XXX
  - **Location:** Amkor, Philippines
  - **Line:** Hermetic (DIP, FP, Leadless CC, PGA)
  - **Flow:** Non-rad hard, Class M only
  - **Location:** Millennium Microtech, Chachoengsao, Thailand
  - **Line:** Compliant Hermetic (DIP, FP, Leadless CC, PGA)
  - **Flow:** Non-rad hard, Class B/Q only

**Electrical Test Operation(s)**
- **Location:** Intersil, Palm Bay, FL
  - **Line:** Compliant
  - **Flow:** Contact Manufacturer
  - **Location:** Criteria/Austin, Texas
  - **Line:** Wafer Probe
  - **Flow:** Class Q, T, V
  - **Location:** Carsem (S), Ipoh, Malaysia
  - **Line:** Wafer Probe
  - **Flow:** Non-rad hard, Class B/Q only
  - **Location:** Criterion Labs, Austin, TX
  - **Line:** Wafer Probe
  - **Flow:** Class Q, T, V
  - **Location:** STATS ChipPAC, Kuala Lumpur, Malaysia
  - **Line:** Test
  - **Flow:** Contact Manufacturer
  - **Location:** Intersil, Milpitas, CA
  - **Line:** Test
  - **Flow:** Non-rad hard, Class M only
  - **Location:** Lingsen, Taichung, Taiwan
  - **Line:** Test
  - **Flow:** Non-rad hard, Class M only

**Environmental Test Operation(s)**
- **Location:** Millennium Microtech, Chachoengsao, Thailand
  - **Line:** Compliant Hermetic
  - **Flow:** 86XXXX, 40-H721-052-XXX, 8*XXXXX, 9*XXXXX, 87XXXX, 240XXX
Intersil Corporation

Product Types:
memories, logic, switches, timers, microprocessors, micro-peripherals

Technology Types:
Bipolar, CMOS, linear, CMOS SAJII

Environmental Test Operation(s)
Location: Intersil, Palm Bay, FL
Line: Compliant Hermetic
Flow: 86XXX, 40H-721-052-XXX, 8*XXXXX, 9*XXXXX, 54XXXX, 87XXXX, 240XXX
Location: STATS ChipPAC, Kuala Lumpur, Malaysia
Line: Compliant Hermetic
Flow: 86XXXX, 40H-721-052-XXX, 8*XXXXX, 9*XXXXX, 87XXXX, 240XXX

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>Can</td>
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<td>solder/gold</td>
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<td>DIP</td>
<td>8-40</td>
<td></td>
<td>solder/gold</td>
<td>100 mil</td>
</tr>
<tr>
<td>Flatpack</td>
<td>8-48</td>
<td></td>
<td>gold</td>
<td>25/40/50 mil</td>
</tr>
<tr>
<td>LCC</td>
<td>3-44</td>
<td>68</td>
<td>solder/gold</td>
<td>30/40/50 mil</td>
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<tr>
<td>PGA</td>
<td></td>
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<td>gold</td>
<td>100 mil</td>
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</tbody>
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Quality System Information
Kyocera America, Inc.
8611 Balboa Avenue
San Diego, CA  92123-1580
Website:  http://americas.kyocera.com/kai/semiparts/
CAGE Code:  03KL1
Company Contact:  Gregg Burnett, (858) 614-2589
Qualifying Activity Contact:  Vinh Tran, (614) 692-0606
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q,V,Y(A/T)

Product Types:
Assembly/Test

Assembly Operation(s)
Location:  San Diego, CA
Line:  Kyocera America, Inc.
Flow:  Full QML Class Q and V/S Assembly

Electrical Test Operation(s)
Location:  San Diego, CA
Line:  Kyocera America, Inc.
Flow:  QML Flow

Environmental Test Operation(s)
Location:  San Diego, CA
Line:  Kyocera America, Inc.
Flow:  QML Flow
Location:  Milpitas, CA
Line:  Hi-Reliability Microelectronics

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<td>BGA</td>
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<td>gold</td>
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</tr>
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<td>gold</td>
<td>N/A</td>
</tr>
<tr>
<td>LGA</td>
<td>1272 max</td>
<td></td>
<td>gold</td>
<td>N/A</td>
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<tr>
<td>PGA</td>
<td></td>
<td>540 max</td>
<td>gold</td>
<td>N/A</td>
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<tr>
<td>Quad Flat Pack</td>
<td>352 max</td>
<td></td>
<td>gold</td>
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</tr>
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Lansdale Semiconductor Incorporated

Quality System Information
Lansdale Semiconductor Incorporated
5245 South 39th St.
Phoenix, AZ  85040-9008
Website:  http://www.lansdale.com/
CAGE Code:  58625
Company Contact:  Lee Mathiesen, (602) 438-0123
Qualifying Activity Contact:  Scott Thomas, (614) 692-0587
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

Technology Types:
TTL, Bipolar, linear, ECL, CMOS, NMOS, others

Product Types:
logic, memory, microprocessors, others

Design Center(s)
Location:  Original Manufacturer

Mask Development Center(s)
Location:  Original Manufacturer
Line:  Contact Manufacturer
Flow:  Contact Manufacturer

Wafer Fabrication Operation(s)
Location:  Tempe, AZ
Line:  Panjit
Flow:  Contact Manufacturer

Assembly Operation(s)
Location:  Milpitas, CA
Line:  Golden Altos
Flow:  Standard Golden Altos QML flow
Location:  Milpitas, CA
Line:  Corwil
Flow:  Standard Corwil QML Flow

Electrical Test Operation(s)
Location:  Sunnyvale, CA
Line:  EAST
Flow:  Standard EAST Electrical Test procedures

Environmental Test Operation(s)
Location:  Sunnyvale, CA
Line:  EAST
Flow:  Standard EAST 883 Environmental Test Procedures

Package Information 2:

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>Can</td>
<td>8-12</td>
<td></td>
<td>solder/gold</td>
<td>N/A</td>
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<tr>
<td>DIP</td>
<td>8-64</td>
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<td>solder</td>
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<tr>
<td>Flatpack</td>
<td>10-64</td>
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<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>LCC</td>
<td>20-132</td>
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<td>solder/gold</td>
<td></td>
</tr>
</tbody>
</table>

DSCC Supplemental Information Sheet for Electronic QML-38535
Product Types:
Qualified for: Comparators, power, op amps.  Capable for: rf, wireless.

Technology Types:
Bipolar, CMOS, BiCMOS

Quality System Information
Linear Technology
720 Sycamore Drive
Milpitas, CA  95035-7406
Website:  http://www.linear.com/
CAGE Code:  64155, Symbol Code:  CENU
Company Contact:  Regina Soares, (408) 432-1900
Qualifying Activity Contact:  Michael Grammens, (614) 692-0604
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  100 K
Class:  Q and V

Design Center(s)
Location:  Linear Technology, Yishun Industrial Park A, Singapore
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, North Chelmsford, MA
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Hangzhou, P.R.C
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Tempe, AZ
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Milpitas, CA
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Auburn, NH
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Plano, TX
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Colorado Springs, CO
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Grass Valley, CA
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Colchester, VT
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Cary, NC
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Santa Barbara, CA
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M
Location:  Linear Technology, Ismaning, Germany
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M

Mask Development Center(s)
Location:  Mask Fab Contractors
Line:  QM Plan 06-03-7039
Flow:  Q,V,B,S,M

Wafer Fabrication Operation(s)
Product Types:
Qualified for: Comparators, power, op amps. Capable for: rf, wireless.

Technology Types:
Bipolar, CMOS, BiCMOS

Quality System Information
Linear Technology
720 Sycamore Drive
Milpitas, CA 95035-7406
Website: http://www.linear.com/
CAGE Code: 64155, Symbol Code: CENU
Company Contact: Regina Soares, (408) 432-1900
Qualifying Activity Contact: Michael Grammens, (614) 692-0604
QML Status: Full QML Certification/Qualification
Radiation hardness level: 100 K
Class: Q and V

Technology Types:
Bipolar, CMOS, BiCMOS

Product Types:
Qualified for: Comparators, power, op amps. Capable for: rf, wireless.

Wafer Fabrication Operation(s)
Location: Linear Technology, Milpitas, CA
Line: Fab 4 Hillview Bipolar, CMOS, BiCMOS
Flow: Q,V,B,S,M
Location: Linear Technology, Camas, WA
Line: Fab 3 Bipolar, CMOS, BiCMOS
Flow: Q,V,B,S,M

Assembly Operation(s)
Location: Team Pacific, FTI Complex, Taguig, Philippines
Line: TO Can, with screening
Flow: Q, B, M
Location: Linear Technology, Milpitas, CA
Line: Ceramic and Metal Can, with screening
Flow: Q,V,B,S,M
Location: Linear Technology, Milpitas, CA
Line: Hillview, Ceramic and TO Can
Flow: Q,V,B,S,M
Location: Amkor/Anam, Muntinlupa, Philippines
Line: Ceramic, with screening
Flow: Q, B, M

Electrical Test Operation(s)
Location: Linear Technology, Yishun Industrial Park A, Singapore
Line: Screening and Group A
Flow: Q, B, M
Location: Linear Technology, Penang, Malaysia
Line: Wafer Sort
Flow: Q,V,B,S,M
Location: Linear Technology, Milpitas, CA
Line: Wafer Sort & Final Test
Flow: Q,V,B,S,M

Environmental Test Operation(s)
Location: Linear Technology, Yishun Industrial Park A, Singapore
Line: Burn-In and Quality Conformance Tests
Flow: Q, B, M
Location: Linear Technology, Milpitas, CA
Line: Burn-In and Quality Conformance Tests
Flow: Q,V,B,S,M
**Quality System Information**
Linear Technology
720 Sycamore Drive
Milpitas, CA 95035-7406
Website: http://www.linear.com/
CAGE Code: 64155, Symbol Code: CENU
Company Contact: Regina Soares, (408) 432-1900
Qualifying Activity Contact: Michael Grammens, (614) 692-0604
QML Status: Full QML Certification/Qualification
Radiation hardness level: 100 K
Class: Q and V

**Product Types:**
Bipolar, CMOS, BiCMOS

**Qualified Types:**
Qualified for: Comparators, power, op amps. Capable for: rf, wireless.

**Package Information**

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<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tbody>
<tr>
<td>B/Brazed FP (Solder Seal)</td>
<td>10-14</td>
<td></td>
<td>solder or gold</td>
<td>50</td>
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<tr>
<td>CerDip (glass seal)</td>
<td>8-28</td>
<td></td>
<td>solder only</td>
<td>100</td>
</tr>
<tr>
<td>CerPack (glass seal)</td>
<td>10-14</td>
<td></td>
<td>solder only</td>
<td>50</td>
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<td>LCC</td>
<td>20</td>
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<td>solder only</td>
<td>50</td>
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<tr>
<td>Other Cans</td>
<td>2-10</td>
<td></td>
<td>solder only</td>
<td></td>
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<tr>
<td>S/Brazed DIP</td>
<td>14-16</td>
<td></td>
<td>solder or gold</td>
<td>100</td>
</tr>
</tbody>
</table>

DSCC Supplemental Information Sheet for Electronic QML-38535
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

Mercury Corp.- Memory and Storage Solutions

Quality System Information
Mercury Corp.- Memory and Storage Solutions
3601 East University Drive
Phoenix, AZ  85034-7217
CAGE Code:  54230
Company Contact:  Tim Johnson, (602) 437-1520
Qualifying Activity Contact:  Michael Grammens, (614) 692-0604
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

Technology Types:
CMOS

Product Types:
SRAM

Design Center(s)
Location:  N/A
Line:  N/A
Flow:  N/A

Mask Development Center(s)
Location:  N/A
Line:  N/A
Flow:  N/A

Wafer Fabrication Operation(s)
Location:  Purchased Die,
Line:  Certified through TRB process 035A00002

Assembly Operation(s)
Location:  Amertron, Pampanga, Philippines
Line:  Ceramic, with screening
Flow:  Q Only
Location:  Fremont, CA
Line:  Ceramic, with screening
Flow:  Q Only
Location:  Tempe, AZ
Line:  Premier Semiconductor Services
Flow:  Solder lead finish

Electrical Test Operation(s)
Location:  White Electronic Designs, Phoenix, AZ
Line:  Electrical Tests
Flow:  Q Only
Location:  Amertron, Pampanga, Philippines
Line:  Electrical Test
Flow:  Q Only

Environmental Test Operation(s)
Location:  Amertron, Pampanga, Philippines
Line:  Burn-in
Flow:  Q Only
Location:  White Electronic Designs, Phoenix, AZ
Line:  Conformance Tests
Flow:  Q Only

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIP-J lead</td>
<td></td>
<td></td>
<td>solder/gold</td>
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<tr>
<td>DIP-S lead</td>
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<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>DIP-straight lead</td>
<td></td>
<td></td>
<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>Flatpack</td>
<td></td>
<td></td>
<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>LCC</td>
<td></td>
<td></td>
<td>solder/gold</td>
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<tr>
<td>ZIP</td>
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DSCC Supplemental Information Sheet for Electronic QML-38535
Microchip Technology (Thailand) Co., Ltd (MTHAI)

Quality System Information
Microchip Technology (Thailand) Co., Ltd (MTHAI)
17/2 Moo 18, Suwiontawong Road
Chachoengsao, Th 24000
CAGE Code: N/A
Company Contact: Padet Sang nikornnopkao, (66-38)845530
Qualifying Activity Contact: Andy Thacker, (614) 692-0589
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: NQV (A/T)

Technology Types:
Assembly/Test

Product Types:
N/A

Assembly Operation(s)
Location: Chachoengsao, Thailand
Line: Hermetic and Plastic
Flow: Standard Military

Environmental Test Operation(s)
Location: Chachoengsao, Thailand
Line: Hermetic and Plastic
Flow: Screening

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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</thead>
<tbody>
<tr>
<td>CerDip (glass seal)</td>
<td>8-40</td>
<td></td>
<td>solder</td>
<td></td>
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<tr>
<td>CerPack (glass seal)</td>
<td>14-28</td>
<td></td>
<td>solder</td>
<td></td>
</tr>
<tr>
<td>Flatpack</td>
<td>16-32</td>
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<td>solder</td>
<td></td>
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<td>LCC</td>
<td>16-68</td>
<td>32,68,84,100</td>
<td>solder</td>
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<tr>
<td>PGA</td>
<td>20-84</td>
<td></td>
<td>solder</td>
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<tr>
<td>PLCC</td>
<td>44-208</td>
<td></td>
<td>solder</td>
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<td>PQFP</td>
<td>18-28</td>
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<td>solder</td>
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<tr>
<td>Quad Flat Pack</td>
<td>28-64</td>
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<td>solder</td>
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<tr>
<td>SOIC</td>
<td>24,28</td>
<td></td>
<td>solder</td>
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<tr>
<td>SOJ</td>
<td>24,28</td>
<td></td>
<td>solder</td>
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</tr>
<tr>
<td>Side-Braze</td>
<td>8-48</td>
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<td>solder</td>
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</tr>
</tbody>
</table>

DSCC Supplemental Information Sheet for Electronic QML-38535

-36-
**Product Types:**
- regulators, op amps, comparators, sense amps, drivers, transistor arrays

**Technology Types:**
- Bipolar

**Design Center(s)**
- Location: Garden Grove, CA
- Line: Linear
- Flow: Contact Manufacturer

**Mask Development Center(s)**
- Location: Garden Grove, CA
- Line: Linear
- Flow: Contact Manufacturer

**Wafer Fabrication Operation(s)**
- Location: Garden Grove, CA
- Line: Linear
- Flow: SGM5900

**Assembly Operation(s)**
- Location: Philippines, (PSI)
- Line: Linear
- Flow: SGM5901, SGM5902
- Location: Garden Grove, CA
- Line: Linear
- Flow: SGM5901, SGM5902
- Location: Team Pacific, FTI Complex, Taguig, Philippines
- Line: Linear
- Flow: SGM5901, SGM5902

**Electrical Test Operation(s)**
- Location: Philippines, (PSI)
- Line: Linear
- Flow: SGM5901, SGM5902
- Location: Garden Grove, CA
- Line: Linear
- Flow: SGM5901, SGM5902

**Environmental Test Operation(s)**
- Location: Philippines, (PSI)
- Line: Linear
- Flow: SGM5901, SGM5902
- Location: Garden Grove, CA
- Line: Linear
- Flow: SGM5901, SGM5902

**Package Information**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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</thead>
<tbody>
<tr>
<td>Can</td>
<td>2-12</td>
<td></td>
<td>solder</td>
<td>N/A</td>
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<tr>
<td>DIP</td>
<td>8-18</td>
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<td>solder</td>
<td>100 mil</td>
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<td>Flatpack</td>
<td>10-24</td>
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<td>solder</td>
<td>30-50 mil</td>
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<td>LCC</td>
<td>20</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
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</table>
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

Microsemi SoC Corp., a Microchip company

Quality System Information
Microsemi SoC Corp., a Microchip company
3870 North First Street
San Jose, CA 95134
Website: http://www.actel.com/company/contact/offices/disti_na.aspx
CAGE Code: 0J4Z0
Company Contact: Lisa Konigsberg, (408) 643-6213
Qualifying Activity Contact: Vinh Tran, (614) 692-0606
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q

Technology Types:
CMOS Field Programmable Gate Arrays

Product Types:
Field Programmable Gate Array and Rad hard FPGA

Design Center(s)
Location: Sunnyvale CA
Line: Actel Design System
Flow: Per QM Plan 1-04-13047

Mask Development Center(s)
Location: Manassas, VA
Line: BAE Systems
Flow: Per QM Plan 1-04-1347
Location: Nagaokakyoyo, Kyoto, Japan
Line: MEC
Flow: Per QM Plan 1-04-1347
Location: Singapore,
Line: Photronics
Flow: Per QM Plan 1-04-1347

Wafer Fabrication Operation(s)
Location: Manassas, VA
Line: BAE Systems
Flow: 0.8 Micron CMOS Rad Hard FPGA
Location: Singapore,
Line: Chartered Semiconductor (CSM)
Flow: 0.35um, .45um, .6um CMOS FPGA
Location: Nagaokakyoyo, Kyoto, Japan
Line: Matsushita (MEC)
Flow: 0.25um, 0.6um, 0.8um and 1.0um CMOS FPGA
Location: Hsinchu City, Taiwan
Line: United Microelectronics corp (UMC)
Flow: .15um, 0.25um CMOS and .22u Flash/CMOS FPGA
Location: Regensburg, Germany
Line: Infineon Technologies
Flow: 0.25um Flash/CMOS FPGA
Location: Hsinchu City, Taiwan
Line: Winbond Electronics
Flow: .045um, 0.6um, 0.8um CMOS FPGA

Assembly Operation(s)
Location: Manassas, VA
Line: BAE Systems
Flow: Hermetic Package Assembly for J Lead Chip Carrier & Quad Flatpack & Column Grid Array (CCGA)
Location: Fremont, CA
Line: Pantronix Corporation
Flow: Ceramic Quad Flatpak (CQFP) and Pin Grid Array (CPGA)
Location: Manila, Philippines
Line: AAIP
Flow: Ceramic Quad Flatpak (CQFP) and Pin Grid Array (CPGA)
Quality System Information
Microsemi SoC Corp., a Microchip company
3870 North First Street
San Jose, CA  95134
Website:  http://www.actel.com/company/contact/offices/disti_na.aspx
CAGE Code:  0J4Z0
Company Contact:  Lisa Konigsberg, (408) 643-6213
Qualifying Activity Contact:  Vinh Tran, (614) 692-0606
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

Technology Types:
CMOS Field Programmable Gate Arrays

Product Types:
Field Programmable Gate Array and Rad hard FPGA

Assembly Operation(s)
Location:  San Diego, CA
Line:  Kyocera
Flow:  Ceramic Quad Flatpak (CQFP) and Pin Grid Array (CPGA)
Location:  San Jose, CA
Line:  Six Sigma
Flow:  Solder Dip

Electrical Test Operation(s)
Location:  Sunnyvale CA
Line:  Actel
Flow:  Per QM Plan 1-04-1347
Location:  Manassas, VA
Line:  BAE Systems
Flow:  Per BAE Systems QM Plan Baseline Flow

Environmental Test Operation(s)
Location:  Spokane, WA
Line:  Hi Rel
Flow:  Failure analysis, SEM analysis
Location:  Milpitas, CA
Line:  RQE
Flow:  Burn-In, Life Test
Location:  Santa Clara, CA
Line:  QP Semi
Flow:  Group B & D
Location:  Sunnyvale, CA
Line:  Accurel
Flow:  Failure analysis, SEM analysis
Location:  Sunnyvale, CA
Line:  AMER
Flow:  Failure analysis, SEM analysis
Location:  Santa Clara, CA
Line:  Riga Analytical Lab inc.
Flow:  Failure analysis
Location:  San Jose, CA
Line:  Six Sigma
Flow:  Solderability

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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</thead>
<tbody>
<tr>
<td>Flatpack</td>
<td>256</td>
<td></td>
<td>gold</td>
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</table>
Micross Components

Quality System Information
Micross Components
7725 N. Orange Blossom Trail
Orlando, FL 32810-2696
Website: http://www.micross.com/
CAGE Code: 57300
Company Contact: Allen Wares, (407) 296-5642
Qualifying Activity Contact: Scott Thomas, (614) 692-0587
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q&QV(A/T)

Technology Types:
OEM & Assembly/Test

Product Types:

Design Center(s)
Location: Original QML Manufacturer
Line: Original QML Design
Flow: Original QML Design

Wafer Fabrication Operation(s)
Location: Original QML Manufacturer
Line: Original QML Die
Flow: Original QML Die

Assembly Operation(s)
Location: Orlando, FL
Line: Chip Supply Assembly
Flow: TVL-0396

Electrical Test Operation(s)
Location: Orlando, FL
Line: Chip Supply Electrical Test
Flow: TVL-0397 thru TVL-0400

Environmental Test Operation(s)
Location: Orlando, FL
Line: Chip Supply Environmental Testing
Flow: TVL-0397 thru TVL-0400

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<tr>
<td>Flatpack</td>
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<td>solder/gold</td>
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<td>3-116</td>
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<td>Contact Mfr.</td>
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<td>Metal Can/TO-5</td>
<td>2-12</td>
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<td>solder/gold</td>
<td>Contact Mfr.</td>
</tr>
<tr>
<td>PGA</td>
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<td>6x5-19x19</td>
<td>solder/gold</td>
<td>Contact Mfr.</td>
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<tr>
<td>Side-Braze</td>
<td>8-64</td>
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<td>solder/gold</td>
<td>Contact Mfr.</td>
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ON Semiconductor

Quality System Information
ON Semiconductor
2300 Buckskin Road
Pocatello, ID 83201-2798
Website: http://www.onsemi.com/
CAGE Code: 31471
Company Contact: Jensen Dietrich, 208-233-4690
Qualifying Activity Contact: Shing Yu, (614) 692-0588
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q and N

Technology Types:
CMOS .13u, .35u C3H/2LM, C3I/3LM; .5u C5A/2LM, C5B/3LM; .6u C6H/C6O/2LM, C6I/3LM; .8u CWB/C8H/2LM, CWC/C8I/3LM; 1.25u CAB/C8W/2LM; 1.5u ABM MixSig, 1.0u CYC/C8I/3LM, CYB/C8H/2LM

Product Types:
ASICs, gate arrays, standard cells

Design Center(s)
Location: ON Semiconductor, Dallas, TX
Line: QML Design
Flow: 12MQE00004A
Location: ON Semiconductor, Lower Gwynedd, PA
Line: QML Design
Flow: 12MQE00004A
Location: ON Semiconductor, American Fork, UT
Line: QML Design
Flow: 12MQE00004A
Location: ON Semiconductor, Pocatello, ID
Line: QML Design
Flow: 12MQE00004A

Mask Development Center(s)
Location: Wafer Fab Controlled
Line: Wafer Fab Controlled
Flow: 12MID7619163

Wafer Fabrication Operation(s)
Location: ON Semiconductor, Gresham, OR
Line: Y2: ONC18D
Flow: 12MID7019030
Location: ON Semiconductor, Pocatello, ID
Line: Fab 10: ABB,CAB,CYB,CYC,CWB,CWC,C6H,C6I,C60,C5A,C5B,C3H,C3I,C8I,C8H,C8W
Flow: 12MID7019030

Assembly Operation(s)
Location: Amkor Technology, Metro Manila, Philippines
Line: QML Plastic Packages
Flow: 12MID7020037
Location: Amkor Technology, Metro Manila, Philippines
Line: QML Plastic LQFP Packages
Flow: 12MID7020062
Location: Pantronix, Fremont, CA
Line: QML Ceramic Packages and hot solder dip
Flow: 12MID7020040
Location: Kyocera, San Diego, CA
Line: QML Ceramic DBGA Packages
Flow: 12MID7020040
Location: Integra Technologies Silicon Valley, Milpitas CA
Line: QML Ceramic Packages
Flow: 12MID7020040
Location: Criteria Labs, Austin, TX
Line: Hot Solder Dip
Flow: 12MID7050013
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

ON Semiconductor

Quality System Information
ON Semiconductor
2300 Buckskin Road
Pocatello, ID 83201-2798
Website: http://www.onsemi.com/
CAGE Code: 31471
Company Contact: Jensen Dietrich, 208-233-4690
Qualifying Activity Contact: Shing Yu, (614) 692-0588
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q and N

Technology Types:
CMOS .13u, .35u C3H/2LM, C3I/3LM; .5u C5A/2LM, C5B/3LM; .6u C6H/C6O/2LM, C6I/3LM; .8u CWB/C8H/2LM, CW/C8I/3LM; 1.25u CAB/C8W/2LM; 1.5u ABM MixSig, 1.0u CYC/C8I/3LM, CYB/C8H/2LM
Product Types:
ASICs, gate arrays, standard cells

Assembly Operation(s)
Location: Amkor Technology, Gwangju, South Korea
Line: QML Plastic Packages
Flow: 12MID7020037

Electrical Test Operation(s)
Location: ON Semiconductor Carmona Philippines (OSPI)
Line: QML Technology Flow 12MID7050013 & 12MID7050026
Flow: 12MID7050024
Location: ON Semiconductor, Pocatello, ID
Line: QML Technology Flow 12MID7050013 & 12MID7050026
Flow: 12MID7450000

Environmental Test Operation(s)
Location: ON Semiconductor Carmona Philippines (OSPI)
Line: QML Technology Flow 12MID7050013 & 12MID7050026
Flow: 12MID7020044
Location: Hi-Reliability Microelectronics, Milpitas, CA
Line: QML Technology Flow 12MID7050013 & 12MID7050026
Flow: 12MID7020044

Package Information 2/

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<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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<td>84</td>
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<td>DBG A</td>
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<td>PBGA</td>
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<td>SBGA</td>
<td>560 balls</td>
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<td>Side-Braze</td>
<td>28-48</td>
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Pantronix Corporation

Quality System Information
Pantronix Corporation
2710 Lakeview Court
Fremont, CA 94538
CAGE Code: 2V289
Company Contact: Solomon Ching, 510-656-5898
Qualifying Activity Contact: Shing Yu, (614) 692-0588
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: QV (A/T)

Technology Types:
Assembly/Test

Product Types:
all (assembly and test house only)

Assembly Operation(s)
Location: Pantronix Corp, Fremont, CA
Line: Ceramic and TO Metal Can/Screening
Flow: Military (Class Q: 710-019 and Class V: 710-020)

Environmental Test Operation(s)
Location: Pantronix Corp, Fremont, CA
Line: Conformance Test
Flow: Military (Class Q: 710-026 and Class V: 710-027)

Package Information

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<td>Can</td>
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<td>CerDip (glass seal)</td>
<td>8-40</td>
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<td>CerPack (glass seal)</td>
<td>8-40</td>
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<td>DIP</td>
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<td>Flatpack</td>
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<td>Quad Flat Pack</td>
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<td>SOIC</td>
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<td>SOJ</td>
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<td>SSOP</td>
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PSI Technologies

Quality System Information
PSI Technologies

Taguig, Manilla
CAGE Code: N/A
Company Contact: Mabel Dalagan, 632 838 49 66
Qualifying Activity Contact: Andy Thacker, (614) 692-0589
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q (A/T)

Technology Types:
Assembly/Test

Product Types:

Assembly Operation(s)
Location: Taguig City 1604, Metro Manilla, Philippines
Line: Hermetic

Environmental Test Operation(s)
Location: Taguig City 1604, Metro Manilla, Philippines
Line: Test
Flow: Contact Manufacturer

Package Information 2/

<table>
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<tr>
<th>Type</th>
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<th>Lead Pitch</th>
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<td>CLCC Can</td>
<td>3-12</td>
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<td>CerDip (glass seal)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CerPack (glass seal)</td>
<td></td>
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<tr>
<td>Flatpack</td>
<td>8-48</td>
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<td>TO257</td>
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</table>
Pyramid Semiconductor

Quality System Information
Pyramid Semiconductor
1249 Reamwood Ave
Sunnyvale, CA  94089
Website:  http://www.pyramidsemiconductor.com/
CAGE Code:  3DTT2
Company Contact:  Joe Rothstein, (408) 734 8240
Qualifying Activity Contact:  Philip Patterson, (614) 692-2178
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

Technology Types:
0.5, 0.6, 0.8, 1.0 um CMOS Single poly double metal, 0.6, 0.8um 1P2M CMOS, 0.6um 1P2M Silicide CMOS, 0.25um 1P3M CMOS

Product Types:
SRAMs, EEPROMs, Microprocessor, EEPROM, , Processor Interface

Design Center(s)
Location: Sunnyvale, CA
Line: CMOS
Flow: Contact Pyramid Semiconductor

Mask Development Center(s)
Location: Pocatello, ID
Line: CWB, C8H
Flow: ON Semiconductor (formerly AMIS) QML Flow
Location: Hsin-Chu,
Line: TSMC Mask
Flow: TSMC ISO 9000 Flow

Wafer Fabrication Operation(s)
Location: Hsin-Chu,
Line: TSMC Fab 2A
Flow: TSMC ISO-9000 Flow
Location: Pocatello, ID
Line: CWB, C8H
Flow: ON Semiconductor (formerly AMIS) QML Flow

Assembly Operation(s)
Location: Millennium Microtech (Thailand) Co., Ltd.- (MMT), Chachoengsao,
Line: Millennium Microtech
Flow: Ceramic with glass seal flow, Cerdip
Location: Milpitas, CA
Line: Corwil
Flow: Ceramic with glass seal flow, Cerpack
Location: Sunnyvale, CA
Line: Pyramid Assembly Clean Roon
Flow: Pyramid Class B Travelers

Electrical Test Operation(s)
Location: Sunnyvale, CA
Line: Pyramid
Flow: Per Lot Traveler

Environmental Test Operation(s)
Location: Milpitas, CA
Line: Hi-Rel Microelectronics
Flow: Group D, Constant Acceleration, Temperature Cycle, PIND
Location: Milpitas, CA
Line: Golden Altos
Flow: Temp Cycle, Group D
Location: Sunnyvale, CA
Line: Pyramid, Hermicity Tests, Constant Acceleration, PIND, Temp Cycle
Flow: Pyramid Lot Traveler
Quality System Information
Pyramid Semiconductor
1249 Reamwood Ave
Sunnyvale, CA  94089
Website:  http://www.pyramidsemiconductor.com/
CAGE Code:  3DTT2
Company Contact:  Joe Rothstein, (408) 734 8240
Qualifying Activity Contact:  Philip Patterson, (614) 692-2178
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

Technology Types:
0.5, 0.6, 0.8, 1.0 um CMOS Single poly double metal, 0.6, 0.8um 1P2M CMOS, 0.6um 1P2M Silicide CMOS, 0.25um 1P3M CMOS

Product Types:
SRAMs,  EEPROMs, Microprocessor,  EEPROM, , Processor Interface

Package Information

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<td>PGA</td>
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<td>solder/gold</td>
<td>100 mil</td>
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DSCC Supplemental Information Sheet for Electronic QML-38535
**Product Types:**
Logic, Memory, Linear, Interface, Microprocessor, Microcontroller

**Technology Types:**
CMOS, NMOS, HCMOS, BPTTL, Schottky TTL, FAST, FACT BiCMOS

**Quality System Information**
Rochester Electronics, LLC  
16 Malcolm Hoyt Drive  
Newburyport, MA 01950  
Website: http://www.rocelec.com  
CAGE Code: 3V146  
Company Contact: Steve Hirschfeld, (978) 462-9332  
Qualifying Activity Contact: Jonathan Puhalsky, (614) 692-2458  
QML Status: Full QML Certification/Qualification  
Radiation hardness level: NSC,30-300  
Class: Q and V

**Wafer Fabrication Operation(s)**
Location: OEM Suppliers with EOL Agreements  
Line: OEM Purchased Die  
Flow: QIP 32  
Location: Xfab, Lubbbuck, TX  
Line: CMOS, BiCMOS  
Flow: Q  
Location: Fairchild Semiconductor, S. Portland, ME  
Line: Schottky, CMOS and BiCMOS  
Flow: Q

**Design Center(s)**
Location: Desert Microtechnology Assoc.,Scottsdale AZ  
Line: Subcontractors Re-design of OEM licensed devices  
Flow: QIP91

**Assembly Operation(s)**
Location: Golden Altos, Milpitas, CA  
Line: Hermetic Assembly and Environmental Screening  
Flow: Q and V  
Location: Millennium Microtech, Bangkok, Thailand  
Line: Hermetic Assembly and Environmental Screening  
Flow: Q and V

**Electrical Test Operation(s)**
Location: Rochester, Newburyport MA  
Line: Digital, Analog and Mixed Signal Electrical Test  
Flow: Q and V

**Environmental Test Operation(s)**
Location: Rochester, Newburyport MA  
Line: Burn-in and Life Test, QCI Group D  
Flow: Q and V

**Package Information**

<table>
<thead>
<tr>
<th>Type</th>
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<td>J-Lead Chip Carrier</td>
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<td>PGA</td>
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Semelab

Quality System Information
Semelab

CAGE Code: U3158
Company Contact: David Hall, 01455 552505
Qualifying Activity Contact: Andy Thacker, (614) 692-0589
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q

Technology Types:

Product Types:
Linear IC

Wafer Fabrication Operation(s)
Location: Semifab, Scotland

Assembly Operation(s)
Location: Lutterworth, England
Line: Hermetic metal can
Location: Lutterworth, England
Line: Hermetic CerDip

Electrical Test Operation(s)
Location: Lutterworth, England
Line: Linear Test

Environmental Test Operation(s)
Location: Lutterworth, England
Line: Linear Screening

Package Information

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<th>Type</th>
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<tr>
<td>Can</td>
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<tr>
<td>CerDip (glass seal)</td>
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Quality System Information
Silicon Turnkey Solutions
1804 McCarthy Blvd
Milpitas, CA 95035
Website: http://www.sts-usa.com/
CAGE Code: 1VVP6
Company Contact: Madho Dhouni, (310) 259-9326
Qualifying Activity Contact: Michael Grammens, (614) 692-0604
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q (A/T)

Technology Types:
Assembly/Test

Product Types:
N/A

Assembly Operation(s)
Location: Milpitas, CA
Line: STS
Flow: Hermetic Single Die/Planar MCM Class Q Flow Rev 01

Electrical Test Operation(s)
Location: Milpitas, CA
Line: STS
Flow: DLA Laboratory Suitability per VQC-15-028944

Environmental Test Operation(s)
Location: Milpitas, CA
Line: STS
Flow: DLA Laboratory Suitability per VQC-15-028944

Package Information

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Quality System Information
Six Sigma
905 Montague Expressway
Milpitas, CA 95035-6817
Website: http://www.sixsigmaservices.com/
CAGE Code: 1PBC8
Company Contact: Russ Winslow, (408) 956 0100
Qualifying Activity Contact: Paul Granchi, (614) 692-0604
QML Status: Full QML Certification/Qualification
Class: Q, V, Y

Technology Types:

Product Types:

Assembly Operation(s)
Location: Milpitas, CA
Line: Hot Solder Dip
Flow: PR-2001
Location: Milpitas, CA
Line: Column Attach
Flow: PR-2010

Environmental Test Operation(s)
Location: Milpitas, CA
Line: Test Services
Flow: TS-2001

Package Information

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<td>LCC</td>
<td>4-2400</td>
<td>Solder</td>
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<td>LGA</td>
<td>4-2400</td>
<td>Solder</td>
<td>&gt;= 1 mil</td>
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<tr>
<td>OFN</td>
<td>4-2400</td>
<td>Solder</td>
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Quality System Information

SRI International
201 Washington Road
Princeton, NJ 08540-6449
CAGE Code: 0DKS7
Company Contact: George Kocsis, (609) 734-2933
Qualifying Activity Contact: Philip Patterson, (614) 692-2458
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q

Technology Types:
5V 1.5 um BiCMOS, 20V BiCMOS, 100 V Driver/1.5um, 5V 0.8um, CMOS 5V 1.2um BiCMOS, 1.2 um SOS Rad Hard, 0.8um ECL, Dielectrically Isolated Schottky

Product Types:
TTL, CMOS, CMOS4000, HiNil, PMOS, NMOS, ECL, Schottky

Design Center(s)
Location: Princeton, NJ
Line: N/A
Flow: GEM Design Rules

Mask Development Center(s)
Location: Princeton, NJ
Line: Design
Flow: Photronics Brookfield, CT

Wafer Fabrication Operation(s)
Location: Princeton, NJ
Line: SRI International IC Center
Flow: GEM5VCOMB; GEMBICMOS2; GEMHV,GEM16 1.2u, GEM20 100v, SOSPRD, GEM 0.8u, DTI SHOT5V, DTI SHOT, BIP ECL

Assembly Operation(s)
Location: Milpitas, CA
Line: Golden Altos
Flow: Hermetic, Solder Seal
Location: Orlando, FL
Line: Micross Components
Flow: Hermetic, Solder Seal
Location: Fremont, CA
Line: Pantronix Corp, QML
Flow: Hermetic, Solder Seal

Electrical Test Operation(s)
Location: Milpitas, CA
Line: Hi-Rel Microelectronics (Micross)
Flow: Digital / Memory
Location: Round Rock, TX
Line: Anloy Technologies
Flow: Digital / Memory
Location: Princeton, NJ
Line: SRI International
Flow: Digital / Memory
Location: Sunnyvale, CA
Line: Engineering and Solutions Technology (EAST), LLC
Flow: Digital / Memory
Location: Austin, TX
Line: Micross Components
Flow: Digital / Memory

Environmental Test Operation(s)
Location: Princeton, NJ
Line: SRI International
Flow: MIL-STD-883
Location: Fremont, CA
Line: Pantronix Corp, QML
Flow: MIL-STD-883
Quality System Information
SRI International
201 Washington Road
Princeton, NJ 08540-6449
CAGE Code: 0DKS7
Company Contact: George Kocsis, (609) 734-2933
Qualifying Activity Contact: Philip Patterson, (614) 692-2458
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q

Technology Types:
5V 1.5 um BiCMOS, 20V BiCMOS, 100 V Driver/1.5um, 5V 0.8um, CMOS 5V 1.2um BiCMOS, 1.2 um SOS Rad Hard, 0.8um ECL, Dielectrically Isolated Schottky

Product Types:
TTL, CMOS, CMOS4000, HiNil, PMOS, NMOS, ECL, Schottky

Environmental Test Operation(s)
Location: Austin, TX
Line: Micross Components
Flow: MIL-STD-883
Location: Milpitas, CA
Line: Hi-Rel Microelectronics (Micross)
Flow: MIL-STD-883
Location: Milpitas, CA
Line: Golden Altos
Flow: MIL-STD-883

Package Information

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<tbody>
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<td>solder/gold as required</td>
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<td>DIP</td>
<td>64</td>
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<td>solder/gold as required</td>
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<td>Flatpack</td>
<td>48</td>
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<td>solder/gold as required</td>
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<td>LCC</td>
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<td></td>
<td>solder/gold as required</td>
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<tr>
<td>LGA</td>
<td></td>
<td></td>
<td>gold        as required</td>
<td></td>
</tr>
<tr>
<td>PGA</td>
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<tr>
<td>QFP</td>
<td>68</td>
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<td>solder/gold as required</td>
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Quality System Information

STMicroelectronics
3 rue de suisse CS60816
35208 Rennes Cedex 2 FR
Website: http://www.st.com/stonline/address/distrib/index.htm
CAGE Code: F8859
Company Contact: Sylvie Peron, 33299264800
Qualifying Activity Contact: Jonathan Puhalsky, (614) 692-2458
QML Status: Full QML Certification/Qualification
Radiation hardness level: 300 K
Class: Q and V

Technology Types:
2µm (RHF voltage regulators & operational amplifiers), 0.7µm (RHF ACMOS), 0.35µm (RHR/RHF VCX), 0.25µm (RHF AD converters)

Product Types:
buffers, flip flops, latches, counters, registers, multiplexers, decoders, voltage regulators, operational amplifiers, AD converters

Design Center(s)
Location: Catania, Italy
Line: N/A
Flow: RHF ACMOS, RHF voltage regulators, RHF operational amplifiers, RHR/RHF VCX, RHF AD converters

Wafer Fabrication Operation(s)
Location: Agrate, Italy
Line: RHF ACMOS
Flow: confidential, contact manufacturer
Location: Carrollton, TX
Line: RHF ACMOS
Flow: confidential, contact manufacturer
Location: Carrollton, TX
Line: RHF voltage regulators + RHF operational amplifiers
Flow: confidential, contact manufacturer
Location: Crolles, France
Line: RHF VCX Family
Flow: confidential, contact manufacturer
Location: Crolles, France
Line: RHF AD converters
Flow: confidential, contact manufacturer

Assembly Operation(s)
Location: Rennes, France
Line: Hermetic Assembly
Flow: 7086591 QML V
Location: Rennes, France
Line: Hermetic Assembly
Flow: 7084427 QML Q

Environmental Test Operation(s)
Location: Rennes, France
Line: N/A
Flow: Contact Manufacturer

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIP</td>
<td>up to 24</td>
<td></td>
<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>Flatpack</td>
<td>up to 48</td>
<td></td>
<td>solder/gold</td>
<td></td>
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<tr>
<td>SMD</td>
<td>up to 5</td>
<td></td>
<td>solder/gold</td>
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<tr>
<td>TO</td>
<td>3</td>
<td></td>
<td>solder/gold</td>
<td></td>
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</table>
Quality System Information
Teledyne e2v, Inc. (aerospace and defense)
765 Sycamore Drive
Milpitas, CA 95035
Website: http://www.qpsemi.com/default.asp
CAGE Code: 0C7V7
Company Contact: Margaret Dancey, (408) 585-7172
Qualifying Activity Contact: Vinh Tran, (614) 692-0606
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q and V

Technology Types:
Bipolar, Linear, MCO, Digital, FAST, ECL, CMOS, BiCMOS, HCMOS

Product Types:
Bipolar Memory, Linear, Microcontroller, SRAM, PROM, EPROM, PLD and Logic

Design Center(s)
Location: e2v a&d (DBA QP Semiconductor) - Milpitas, CA
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Tempe, AZ
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Hong Kong
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Taiwan
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Los Angeles, CA
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Seattle, WA
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: San Jose, CA
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Swindon, UK
Line: N/A
Flow: Per SCD-14 Device Design Requirements
Location: Canada
Line: N/A
Flow: Per SCD-14 Device Design Requirements

Wafer Fabrication Operation(s)
Location: California
Line: QP11 Micrel, OP AMPs/Switches bipolar
Flow: 1u, 2 metal
Location: UK
Line: QP12 Plessey, Bipolar logic
Flow: 1u, 3 metal
Location: Lubbock, TX
Line: QP2 Xfab, CMOS
Flow: 0.8u, 3 metal
Location: Taiwan
Line: QP5 Macronix, CMOS Non-Volatile
Flow: 0.45u, 2 metal
Location: California
Line: QP7 BICMOS, Bipolar logic, Bipolar analog
Flow: 1u, 2 metal

Assembly Operation(s)
**Product Types:**
Bipolar, Linear, MCO, Digital, FAST, ECL, CMOS, BiCMOS, HCMOS

**Technology Types:**
Bipolar Memory, Linear, Microcontroller, SRAM, PROM, EPROM, PLD and Logic

**Assembly Operation(s):**
Location: e2v a&d (DBA QP Semiconductor) - Milpitas, CA
Line: Military Hermetic, QML Q, S/V Certified
Flow: Per QAP-21, Military Screening, Qualification and QCI Testing
Location: Millennium Microtech (Thailand) Co., Ltd. - (MMT), Chachoengsao, Thailand
Line: Military Hermetic, QML Q, S/V Certified
Flow: QPL-AH-001, QP Labs Process Flow and Special Requirements
Location: Golden Altos, Milpitas, CA
Line: Military Hermetic
Flow: Per SCD-12 Assembly Build Requirements

**Electrical Test Operation(s):**
Location: e2v a&d (DBA QP Semiconductor) - Milpitas, CA
Line: Electrical Test
Flow: Per SOP-01-0004, Burn-in and Test Program Development (DRO/BRO)
Location: Millennium Microtech (Thailand) Co., Ltd. - (MMT), Chachoengsao, Thailand
Line: Electrical Test
Flow: Per SOP-01-0004, Burn-in and Test Program Development (DRO/BRO)
Location: Integra, Wichita, Kansas
Line: Electrical Test
Flow: Per SOP-01-0004, Burn-in and Test Program Development (DRO/BRO)

**Environmental Test Operation(s):**
Location: e2v a&d (DBA QP Semiconductor) - Milpitas, CA
Line: Military Screening and QCI. (See DSCC Lab Suitability Certification VQC-05-007332)
Flow: Per QAP-21, Military Screening, Qualification and QCI Testing
Location: Millennium Microtech (Thailand) Co., Ltd. - (MMT), Chachoengsao, Thailand
Line: Military Screening
Flow: DSCC QML Approved - Class Q and S/V

**Package Information:**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIP</td>
<td>8-64</td>
<td></td>
<td>solder/gold</td>
<td>100 mil</td>
</tr>
<tr>
<td>Flatpack / QFP</td>
<td>10-132</td>
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<td>solder/gold</td>
<td>25/50 mil</td>
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<tr>
<td>J-Lead Chip Carrier</td>
<td>28-84</td>
<td></td>
<td></td>
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<tr>
<td>LCC</td>
<td>14-84</td>
<td></td>
<td>solder/gold</td>
<td>40/50 mil</td>
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<tr>
<td>Metal Can/ TO-5</td>
<td>8-10 L</td>
<td></td>
<td>solder/gold</td>
<td>N/A</td>
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<tr>
<td>Metal Can/ TO-66</td>
<td>9 L</td>
<td></td>
<td>solder</td>
<td>N/A</td>
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<tr>
<td>Metal Can/ TO-8</td>
<td>12 L</td>
<td>11x11, 15x15</td>
<td>solder/gold</td>
<td>100 mil</td>
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<tr>
<td>PGA</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>
Texas Instruments

Quality System Information
Texas Instruments
12500 TI Blvd
Dallas, TX  75243
Website:  http://focus.ti.com/hirel/howtobuy.shtml
CAGE Code:  01295
Company Contact:  Dorothy Taylor, (214) 567-2769
Qualifying Activity Contact:  Andy Thacker, (614) 692-0589
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  100K
Class:  Q,N, V

Technology Types:
TTL, ABT, AC/ACT, AHC/AHCT, ALV, CHC/HCT, LV/LVC/LVCH, LVT/LVTH, S/LS/ALS, TTL, BCT, CDC, CBT, FCT, FAST, CMOS, HCMOS, BICMOS, SiGe, Bipolar

Product Types:
DSP, op amp, comparators, DAC/ADC, mixed signal, voltage regulators, interface, supervisors, general purpose linear and logic, power management, fifo, jtag, Bipolar logic, MCOMS Logic, programmable logic, microcontrollers, memory, ASIC

Design Center(s)
Location:  Sherman, TX
Line:  SLL Logic/Mixed Signal/ Linear
Flow:  HVAL Design Rules
Location:  Sherman, TX
Line:  MPD ASIC / FIFO / JTAG / Mixed Signal
Flow:  Military Products Design Rules
Location:  Dallas, TX
Line:  Linear Design
Flow:  Linear Design Rules
Location:  Dallas, TX
Line:  Logic Design
Flow:  Logic Design Rules
Location:  Freising, Germany
Line:  Logic / Mixed Signal / Linear
Flow:  HVAL Design Rules
Location:  Dallas, TX
Line:  DSP Design
Flow:  DSP Design Rules

Mask Development Center(s)
Location:  Corbell, France
Line:  Toppan
Flow:  Contact Texas Instruments
Location:  Round Rock, TX
Line:  Toppan
Flow:  Contact Texas Instruments
Location:  Corbell, France
Line:  Toppan
Flow:  Contact Texas Instruments
Location:  Allen, TX
Line:  Photronics
Flow:  Contact Texas Instruments
Location:  Brookfield, CT
Line:  Photronics
Flow:  Contact Texas Instruments
Location:  Dresden, Germany
Line:  Toppan
Flow:  Contact Texas Instruments

Wafer Fabrication Operation(s)
Location:  Anam, Korea
Line:  DSP (Q Level Only)
Flow:  ANAM1
Product Types:
DSP, op amp, comparators, DAC/ADC, mixed signal, voltage regulators, interface, supervisors, general purpose linear and logic, power management, fifo, jtag, Bipolar logic, MCOMS Logic, programmable logic, microcontrollers, memory, ASIC

Technology Types:
TTL, ABT, AC/ACT, AHCH/ACT, ALV, CHC/HCT, LV/LVC/LVCH, LVT/LVTH, S/LS/ALS, TTL, BCT, CDC, CBT, FCT, FAST, CMOS, HCMOS, BICMOS, SiGe, Bipolar

Quality System Information
Texas Instruments
12500 TI Blvd
Dallas, TX 75243
Website: http://focus.ti.com/hirel/howtobuy.shtml
CAGE Code: 01295
Company Contact: Dorothy Taylor, (214) 567-2769
Qualifying Activity Contact: Andy Thacker, (614) 692-0589
QML Status: Full QML Certification/Qualification
Radiation hardness level: 100K
Class: Q, N, V

Wafer Fabrication Operation(s)
Location: Dallas, TX
Line: Logic, Interface, Analog/Mixed Signal, ASIC, DSP (Classes Q and V)
Flow: DFAB
Location: Freising, Germany
Line: Logic, Interface, Analog/Mixed Signal (Class Q and V)
Flow: FFAB
Location: Dallas, TX
Line: DSP (Class Q and V)
Flow: DMOS5
Location: Houston, TX
Line: Logic (Q/V); Interface, CMOS/Bipolar ASIC, Memory (Class Q); Die Stock Only
Flow: HFAB
Location: Hiji, Japan
Line: Die Wafer Bank Only (Class Q)
Flow: Contact Texas Instruments
Location: Sherman, TX
Line: Logic, Analog/Mixed Signal, Programmable Logic (Classes Q and V)
Flow: SFAB
Location: Dallas, TX
Line: Logic, Analog/Mixed Signal (Class Q/V)
Flow: DMOS6
Location: Merrimack, NH
Line: MFAB (Classes Q and V) Die/Wafer Bank only
Flow: Contact Texas Instruments

Assembly Operation(s)
Location: Taipei, Taiwan (TITL)
Line: Plastic
Flow: Contact Texas Instruments
Location: Microchip Technology (MMT), Bangkok, Thailand
Line: Special Products Assembly (Hermetic) (Classes Q and V)
Flow: Contact Texas Instruments
Location: Baguio City, Philippines (TIPI)
Line: Contact Texas Instruments (Plastic)
Flow: Contact Texas Instruments

Electrical Test Operation(s)
Location: Sherman, TX
Line: Special Products Test (Class Q)
Flow: Sherman Test Floor
Location: Baguio City, Philippines (TIPI)
Line: Contact Texas Instruments (Classes Q and V)
Flow: Contact Texas Instruments
**Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information**

**Texas Instruments**

**Quality System Information**
Texas Instruments  
12500 TI Blvd  
Dallas, TX 75243  
Website: http://focus.ti.com/hirel/howtobuy.shtml  
CAGE Code: 01295  
Company Contact: Dorothy Taylor, (214) 567-2769  
Qualifying Activity Contact: Andy Thacker, (614) 692-0589  
QML Status: Full QML Certification/Qualification  
Radiation hardness level: 100K  
Class: Q, N, V

**Technology Types:**
- TTL, ABT, AC/ACT, AHC/AHCT, ALV, CHC/HCT, LV/LVC/LVCH, LVT/LVTH, S/LS/ALS, TTL, BCT, CDC, CBT, FCT, FAST, CMOS, HCMOS, BICMOS, SiGe, Bipolar

**Product Types:**
- DSP, op amp, comparators, DAC/ADC, mixed signal, voltage regulators, interface, supervisors, general purpose linear and logic, power management, fifo, jtag, Bipolar logic, MCOMS Logic, programmable logic, microcontrollers, memory, ASIC

**Electrical Test Operation(s)**
Location: Microchip Technology (MMT), Bangkok, Thailand  
Line: Test (Classes Q and V)  
Flow: Contact Texas Instruments  
Location: Taipei, Taiwan (TITL)  
Line: Special Products Test (Classes Q and N)  
Flow: Contact Texas Instruments  
Location: Dallas, TX (CLAB)  
Line: Special Product (Class Q)  
Flow: Contact Texas Instruments

**Environmental Test Operation(s)**
Location: Microchip Technology (MMT), Bangkok, Thailand  
Line: Environmental Test (Classes Q and V)  
Flow: Contact Texas Instruments  
Location: Dallas, TX  
Line: Environmental Test (Classes Q and V)  
Flow: Contact Texas Instruments

**Package Information**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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</thead>
<tbody>
<tr>
<td>CBGA</td>
<td>144-567</td>
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<td>Solder</td>
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<td>CDBGA</td>
<td>352-600</td>
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<td>Solder</td>
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<td>CDIP</td>
<td>8-40</td>
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<td>Solder</td>
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<tr>
<td>CFCBGA (Flip Chip)</td>
<td>429</td>
<td></td>
<td>Solder</td>
<td></td>
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<tr>
<td>CFP</td>
<td>8-408</td>
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<td>Solder or Gold</td>
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<tr>
<td>CLGA</td>
<td>10-400</td>
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<td>Gold</td>
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<td>CQFP</td>
<td>36-64</td>
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<td>Solder or Gold</td>
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<tr>
<td>HTQFP</td>
<td>48</td>
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<td>Palladium or Sn</td>
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<tr>
<td>LCC (Metal/Ceramic Lid)</td>
<td>20-68</td>
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<td>MCGA</td>
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<td>68-325</td>
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<tr>
<td>PGA</td>
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<td>Solder or Gold</td>
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<td>QFP (Plastic)</td>
<td>100-144</td>
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<td>Palladium or Sn</td>
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<td>SOIC</td>
<td>8-14</td>
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<td>Side Braze DIP</td>
<td>8-64</td>
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<td>Solder or Gold</td>
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<td>TSSOP</td>
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<td>Palladium or Sn</td>
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</tbody>
</table>
**Product Types:**
Analog, linear, interface, LVDS

**Technology Types:**
BiPolar, CMOS, BiCMOS

**Design Center(s)**
- **Location:** TISVA, Furstenfeldbruck, Germany
  - **Line:** TISVA Design Rules
  - **Flow:** Q and V
- **Location:** TISVA, Takada, Japan
  - **Line:** TISVA Design Rules
  - **Flow:** Q and V
- **Location:** TISVA, Arlington, TX (Die Bank)
  - **Line:** TISVA Design Rules
  - **Flow:** Q and V
- **Location:** TISVA, Greenock, Scotland
  - **Line:** TISVA Design Rules
  - **Flow:** Q and V

**Mask Development Center(s)**
- **Location:** Photronics, Danbury, CT
  - **Line:** TISVA Specific
  - **Flow:** Q and V
- **Location:** Dupont, Santa Clara, CA
  - **Line:** TISVA Specific
  - **Flow:** Q and V
- **Location:** Dupont, Rousett, France
  - **Line:** TISVA Specific
  - **Flow:** Q and V

**Wafer Fabrication Operation(s)**
- **Location:** Taiwan Semiconductor Manuf. Co., Hsin-Chu, Taiwan
  - **Line:** 8" (BiPolar and CMOS)
  - **Flow:** Q only
- **Location:** Scientific Coating Lab, Santa Clara, CA
  - **Line:** Wafer Backside Gold
  - **Flow:** Selected analog parts (Q and V)
- **Location:** TISVA, Greenock, Scotland
  - **Line:** Fab 3, 6" (BiPolar and CMOS)
  - **Flow:** Q and V
- **Location:** Quality Backgrind and Backmetal Service, Santa Clara, CA
  - **Line:** Wafer Thinning
  - **Flow:** Selected analog parts (Q and V)
- **Location:** TISVA, Arlington, TX (Die Bank)
  - **Line:** 6" (BiPolar and CMOS)
  - **Flow:** Q and V
- **Location:** TISVA, South Portland, ME
  - **Line:** 8" CMOS 7, CMOS 8, CMOS 9
  - **Flow:** Q and V
<table>
<thead>
<tr>
<th>Quality System Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas Instruments SVA (formerly National Semiconductor)</td>
</tr>
<tr>
<td>2900 Semiconductor Drive</td>
</tr>
<tr>
<td>Santa Clara, CA  95052-8090</td>
</tr>
<tr>
<td>Website:  <a href="http://www.ti.com/contacts/">http://www.ti.com/contacts/</a></td>
</tr>
<tr>
<td>CAGE Code:  27014, Symbol Code:  CCXP</td>
</tr>
<tr>
<td>Company Contact:  Dennis Tanguay, (408) 721-3509</td>
</tr>
<tr>
<td>Qualifying Activity Contact:  Shing Yu, (614) 692-0588</td>
</tr>
<tr>
<td>QML Status:  Full QML Certification/Qualification</td>
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<tr>
<td>Radiation hardness level:  30-300 K</td>
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<tr>
<td>Class:  Q and V</td>
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<table>
<thead>
<tr>
<th>Technology Types:</th>
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<tbody>
<tr>
<td>BiPolar, CMOS, BiCMOS</td>
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<table>
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<tr>
<th>Product Types:</th>
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<tbody>
<tr>
<td>Analog, linear, interface, LVDS</td>
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</table>

<table>
<thead>
<tr>
<th>Assembly Operation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:  Golden Altos, Milpitas CA</td>
</tr>
<tr>
<td>Line:  TO Metal Can, with selected screen tests (no burn-in)</td>
</tr>
<tr>
<td>Flow:  V</td>
</tr>
<tr>
<td>Location:  Millennium Microtech, Bangkok, Thailand</td>
</tr>
<tr>
<td>Line:  Ceramic, with selected screen tests (no burn-in)</td>
</tr>
<tr>
<td>Flow:  Q and V</td>
</tr>
<tr>
<td>Location:  Amkor Technology, site P1, Muntinlupa City, Philippines</td>
</tr>
<tr>
<td>Line:  Ceramic, with selected screen tests (no burn-in)</td>
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<tr>
<td>Flow:  Q and V</td>
</tr>
<tr>
<td>Location:  Golden Altos, Milpitas CA</td>
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<tr>
<td>Line:  high pin count ceramics, with selected screen tests (no burn-in)</td>
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<tr>
<td>Flow:  Q and V</td>
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<tr>
<td>Location:  Team Pacific, FTI Complex, Taguig, Philippines</td>
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<tr>
<td>Line:  TO Metal Can, with selected screen tests (no burn-in)</td>
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<tr>
<td>Flow:  Q only</td>
</tr>
<tr>
<td>Location:  TISVA Melaka, Malaysia</td>
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<tr>
<td>Line:  Wafer Thinning</td>
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<tr>
<td>Flow:  Selected analog parts (Q and V)</td>
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<thead>
<tr>
<th>Electrical Test Operation(s)</th>
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<tbody>
<tr>
<td>Location:  TISVA Melaka, Malaysia</td>
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<tr>
<td>Line:  Electrical Test</td>
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<tr>
<td>Flow:  Q and V</td>
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<tr>
<td>Location:  TISVA, Santa Clara, CA</td>
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<tr>
<td>Line:  Electrical Test</td>
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<tr>
<td>Flow:  Q and V</td>
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<table>
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<tr>
<th>Environmental Test Operation(s)</th>
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<tbody>
<tr>
<td>Location:  Aeroflex RAD, Colorado Springs, CO</td>
</tr>
<tr>
<td>Line:  Ionizing Radiation (Low Dose)</td>
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<td>Flow:  Q and V</td>
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<tr>
<td>Location:  contact manufacturer</td>
</tr>
<tr>
<td>Line:  Burn-In, Life Test</td>
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<tr>
<td>Flow:  Q and V</td>
</tr>
<tr>
<td>Location:  TISVA Melaka, Malaysia</td>
</tr>
<tr>
<td>Line:  Group B, D</td>
</tr>
<tr>
<td>Flow:  Q and V</td>
</tr>
<tr>
<td>Location:  White Sands Missile Range, New Mexico</td>
</tr>
<tr>
<td>Line:  Ionizing Radiation (Low Dose)</td>
</tr>
<tr>
<td>Flow:  Q and V</td>
</tr>
<tr>
<td>Location:  TISVA, South Portland, ME</td>
</tr>
<tr>
<td>Line:  Ionizing Radiation (Total Dose)</td>
</tr>
<tr>
<td>Flow:  Q and V</td>
</tr>
<tr>
<td>Location:  Golden Altos, Milpitas CA</td>
</tr>
<tr>
<td>Line:  Group B, D</td>
</tr>
<tr>
<td>Flow:  Q and V</td>
</tr>
</tbody>
</table>
Quality System Information
Texas Instruments SVA (formerly National Semiconductor)
2900 Semiconductor Drive
Santa Clara, CA  95052-8090
Website:  http://www.ti.com/contacts/
CAGE Code:  27014, Symbol Code:  CCXP
Company Contact:  Dennis Tanguay, (408) 721-3509
Qualifying Activity Contact:  Shing Yu, (614) 692-0588
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  30-300 K
Class:  Q and V

Technology Types:
BiPolar, CMOS, BiCMOS

Product Types:
Analog, linear, interface, LVDS

Environmental Test Operation(s)
Location:  TISVA, Santa Clara, CA
Line:  Burn-In, Life Test, Ionizing Radiation (Total Dose)
Flow:  Q and V

Package Information

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>CerDip (glass seal)</td>
<td>8, 14, 16</td>
<td></td>
<td>solder</td>
<td>100 mil</td>
</tr>
<tr>
<td>CerPack (glass seal)</td>
<td>10, 14, 16, 20</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
</tr>
<tr>
<td>Leadless Chip Carrier</td>
<td>20, 28</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
</tr>
<tr>
<td>Other Cans</td>
<td>2, 3, 8, 10</td>
<td>180 (15x15)</td>
<td>solder</td>
<td>100 and 200 mil</td>
</tr>
<tr>
<td>PGA</td>
<td></td>
<td></td>
<td>gold</td>
<td>100 mil</td>
</tr>
<tr>
<td>Quad CerPack - Gull Wing</td>
<td>128</td>
<td></td>
<td>gold</td>
<td>20 mil</td>
</tr>
<tr>
<td>Quad Cerpack</td>
<td>48, 68</td>
<td></td>
<td>gold</td>
<td>25 and 50 mil</td>
</tr>
<tr>
<td>S/Brazed DIP</td>
<td>14, 24</td>
<td></td>
<td>solder</td>
<td>100 mil</td>
</tr>
<tr>
<td>SOIC</td>
<td>10, 14, 16</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
</tr>
<tr>
<td>TO-3 Can</td>
<td>2</td>
<td></td>
<td>solder</td>
<td>430 mil</td>
</tr>
</tbody>
</table>
**Product Types:**
analog switches, analog multiplexers, video switch

**Technology Types:**
Bipolar, metal gate II, silicon gate I & II LDMOS

**Quality System Information**
Vishay-Siliconix
2201 Laurelwood Road
Santa Clara, CA  95056-0951
Website:  http://www.vishay.com/company/contacts/#sales
CAGE Code:  17856, Symbol Code:  CDBN
Company Contact:  Liz Korntved, (408) 970-5640
Qualifying Activity Contact:  Michael Grammens, (614) 692-0604
QML Status:  Full QML Certification/Qualification
Radiation hardness level:  N/A
Class:  Q

**Technology Types:**
Bipolar, metal gate II, silicon gate I & II LDMOS

**Product Types:**
analog switches, analog multiplexers, video switch

**Design Center(s)**
Location:  Santa Clara, CA
Line:  Design
Flow:  4149

**Mask Development Center(s)**
Location:  Santa Clara, CA
Line:  Mask
Flow:  4016

**Assembly Operation(s)**
Line:  Military Assembly
Flow:  Sub-001APPANP01 Rev AC
Location:  Santa Clara, CA
Line:  Metal Can Assembly and Back-up Assembly
Flow:  PF-S-0005-FT Rev AX

**Electrical Test Operation(s)**
Location:  Santa Clara, CA
Line:  Electrical Test
Flow:  PF-S-0005-FT Rev AX

**Environmental Test Operation(s)**
Location:  Santa Clara, CA
Line:  Environmental
Flow:  PF-S-0005-FT Rev AX

**Package Information**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can</td>
<td>10</td>
<td></td>
<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>CerDip (glass seal)</td>
<td>8-28</td>
<td></td>
<td>solder</td>
<td></td>
</tr>
<tr>
<td>Flatpack</td>
<td>14-16</td>
<td></td>
<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>LCC</td>
<td>20-28</td>
<td></td>
<td>solder/gold</td>
<td></td>
</tr>
<tr>
<td>Side-Braze</td>
<td>14-28</td>
<td></td>
<td>solder/gold</td>
<td></td>
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</table>
Quality System Information
Xilinx Incorporated
2100 Logic Drive
San Jose, CA 95124-3450
Website: http://www.xilinx.com/company/sales/ww_disti.htm
CAGE Code: 68994
Company Contact: Craig Taylor, (408) 626 6381
Qualifying Activity Contact: Philip Patterson, (614) 692-2178
QML Status: Full QML Certification/Qualification
Radiation hardness level: 100 K
Class: Q

Technology Types:
0.6um, 0.5um, 0.35um, 0.22um, 0.18 um 0.15 um, 0.13 um, CMOS, 0.6um CMOS floating gate

Product Types:
logic, gate arrays, FPGA, EPROM, SPROM

Design Center(s)
Location: Longmont, Colorado
Line: Programmable Platforms Development (PPD), Software Development
Flow: DPS0021
Location: San Jose, CA
Line: Programmable Platforms Development (PPD)
Flow: DPS0021

Mask Development Center(s)
Location: San Jose, CA
Line: Programmable Platforms Development (PPD)
Flow: DSP0015

Wafer Fabrication Operation(s)
Location: Hsin-chu Taiwan, UMC
Line: 8 and 12 inch, 0.35um, 0.25um, 0.18um, 0.15um, 0.13 um
Flow: per UMC (new & legacy product)

Assembly Operation(s)
Location: Amkor, Philippines
Line: Ceramic
Flow: MFC0007, MFC0008
Location: SPIL, Taiwan
Line: Bump
Flow: MFC0082

Electrical Test Operation(s)
Location: Silicon Turnkey Solutions (STS), Milpitas, CA
Line: Burn-in / QCI
Flow: BIC0009, ADQ0007
Location: San Jose, CA
Line: Xilinx (backup)
Flow: QAP0094

Package Information 2/

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
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</thead>
<tbody>
<tr>
<td>CLCC</td>
<td>44</td>
<td></td>
<td>solder</td>
<td>50 mil</td>
</tr>
<tr>
<td>CQFP</td>
<td>100-228</td>
<td></td>
<td>gold plate</td>
<td>25 mil</td>
</tr>
<tr>
<td>Cerdip (DD)</td>
<td>8</td>
<td></td>
<td>solder dip</td>
<td>100 mil</td>
</tr>
<tr>
<td>FG</td>
<td>256-1156</td>
<td>63Sn/37Pb Ball</td>
<td>Solder plate</td>
<td>40 mil</td>
</tr>
<tr>
<td>HQFP</td>
<td>208-240</td>
<td></td>
<td>Solder plate</td>
<td>20 mil</td>
</tr>
<tr>
<td>PGA</td>
<td>68-559</td>
<td></td>
<td>gold plate</td>
<td>50mil/100mil</td>
</tr>
<tr>
<td>PQFP</td>
<td>100-240</td>
<td></td>
<td>Solder plate</td>
<td>50 mil</td>
</tr>
<tr>
<td>SOIC</td>
<td>20</td>
<td></td>
<td>Solder plate</td>
<td>50 mil</td>
</tr>
<tr>
<td>VQFP</td>
<td>4</td>
<td></td>
<td>Solder plate</td>
<td>32 mil</td>
</tr>
</tbody>
</table>
Master Listing of QML Technologies, Operations, Lines, Flows, Packages and Qualification Information

**XTREME Semiconductor**

**Quality System Information**
XTREME Semiconductor
12908 Trails End Road, Suite E
Leander, TX 78641
CAGE Code: 3RNH0
Company Contact: Marty Lanning, (858) 230-6961
Qualifying Activity Contact: Sean McNulty, (614) 692-8800
QML Status: Full QML Certification/Qualification
Radiation hardness level: N/A
Class: Q

**Technology Types:**
1.2um CMOS, 3.0 um CMOS

**Product Types:**
A/D Converter

**Design Center(s)**
Location: Contact Xtreme Semiconductor
Line: OEM
Flow: OEM

**Mask Development Center(s)**
Location: Pocatello, ID
Line: ON Semiconductor (formerly AMIS)
Flow: Contact XTREME Semiconductor

**Wafer Fabrication Operation(s)**
Location: Pocatello, ID
Line: AMI Semiconductor
Flow: QML Flow

**Assembly Operation(s)**
Location: Milpitas, CA
Line: Golden Altos
Flow: Military Hermetic QML Q Certified/Qualified
Location: San Diego, CA
Line: Maxwell Technology
Flow: Military Hermetic QM Q/V Certified/Qualified

**Electrical Test Operation(s)**
Location: San Diego, CA
Line: Maxwell Technology
Flow: Military Hermetic QML Q Certified, Tested to SMD specification
Location: Leander, TX
Line: Anloy Technology
Flow: DLA Suitable Commercial Lab for 883 Electrical Test, Tested to SMD specifications

**Environmental Test Operation(s)**
Location: San Diego, CA
Line: Maxwell Technology
Flow: Military Hermetic QML Q Certified/Qualified
Location: Milpitas, CA
Line: Golden Altos
Flow: Military Hermetic QML Q Certified/Qualified

**Package Information 2/**

<table>
<thead>
<tr>
<th>Type</th>
<th>Lead Range</th>
<th>Matrix Size</th>
<th>Lead Finish</th>
<th>Lead Pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIP</td>
<td>8-64</td>
<td></td>
<td>Solder/Gold</td>
<td>100 mil</td>
</tr>
<tr>
<td>LCC</td>
<td>4-84</td>
<td></td>
<td>Solder/Gold</td>
<td>40-50 mil</td>
</tr>
</tbody>
</table>

DSCC Supplemental Information Sheet for Electronic QML-38535
QML Manufacturer Military Distributors

This section contains a list of QML manufacturers’ military distributors. This information was supplied by the QML manufacturers and is provided in QML-38535 as a service from DLA Land and Maritime-VQC. This listing is provided as a service only and is in no way intended to be an endorsement or restriction by the Government. For additional information or further update contact the applicable manufacturer in the QML Program Status section.

Analog Devices, 7910 Triad Center Dr, Greensboro,, NC  27409
Distributors:
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034
Digi-Key, 701 Brooks Avenue South, Thief River Falls, MN  56701
Rochester Electronics, 10 Malcolm Hoyt Drive, Newburyport, MA  01950-4018
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210

Atmel-Nantes, La Chantrerie BP 70602, 44306 Nantes Cedex 3,, FR
Distributors:
All American Semiconductor, 16115 Northwest 52nd Avenue, Miami, FL  33014
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034

Cypress Semiconductor, 198 Champion Court, San Jose,, CA  95134-1709
Distributors:
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210

Intersil Corporation, P O Box 37, Palm Bay,, FL  32905-3398
Distributors:
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034

Linear Technology, 720 Sycamore Drive, Milpitas,, CA  95035-7406
Distributors:
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210

Microsemi Analog Mixed Signal Group, 11861 Western Avenue, Garden Grove,, CA  92641-2119
Distributors:
Universal Semiconductor, 2775 West Cypress Creek Drive, Fort Lauderdale, FL  33309
Richardson Electronics, 40W267 Keslinger Road, LaFox, IL  60147
Falcon Electronics, 47 Mall Dr (# 5), Commack, NY  11725
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034
All American Semiconductor, 16115 Northwest 52nd Avenue, Miami, FL  33014
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210

Microsemi SoC Corp., a Microchip company, 3870 North First Street, San Jose,, CA  95134
Distributors:
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034

Rochester Electronics, LLC, 10 Malcolm Hoyt Drive, Newburyport,, MA  01950
Distributors:
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034

STMicroelectronics, 3 rue de suisse CS80816, 35208 Rennes Cedex 2, FR
Distributors:
Future Electronics, 237 Hymus Boulevard, Qubeck, Point Claire, Quebec H9R 5C7 Canada
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210
Nu Horizons, 70 Maxess Road, Melville, NY  11747
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034

Teledyne e2v, Inc. (aerospace and defense), 765 Sycamore Drive, Milpitas,, CA  95035
Distributors:
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210

Texas Instruments, 12500 TI Blvd, Dallas,, TX  75243
Distributors:
Arrow Electronics, 50 Marcus Drive, Melville, NY  11747-4210
Avnet, 2211 S. 47th Street, Phoenix, AZ  85034
Rochester Electronics, 10 Malcolm Hoyt Drive, Newburyport, MA  01950-4018
QML Manufacturer Military Distributors

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Texas Instruments SVA (formerly National Semiconductor), Santa Clara, CA 95052-8090

Distributors:
Arrow Electronics, 50 Marcus Drive, Melville, NY 11747-4210
Avnet, 2211 S. 47th Street, Phoenix, AZ 85034
Future Electronics, 237 Hymus Boulevard, Qubec, Point Claire, Quebec H9R 5C7 Canada

Vishay-Siliconix, 2201 Laurelwood Road, Santa Clara, CA 95056-0951

Distributors:
Avnet, 2211 S. 47th Street, Phoenix, AZ 85034
Tri-Start Electronics, 979 Marconi Ave., Ronkonkoma, NY 11779
Spirit Electronics, 23910 N 19th Ave, Suite 26, Phoenix, AZ 85027
Newark Electronics, 4801 N. Ravenswood, Chicago, IL 60640
New Yorker Electronics, 209 Industrial Parkway, Northvale, NJ 07647
Mouser Electronics, 1000 North Main Street, Mansfield, TX 76063
Jaco Electronics, 145 Oser Avenue, Hauppauge, NY 11788-3721
Falcon Electronics, 47 Mall Dr (# 5), Commack, NY 11725
Arrow Electronics, 50 Marcus Drive, Melville, NY 11747-4210
Allied Electronics, 7410 Pebble Dr., Fort Worth, TX 76118
Future Electronics, 237 Hymus Boulevard, Qubec, Point Claire, Quebec H9R 5C7 Canada

Xilinx Incorporated, 2100 Logic Drive, San Jose, CA 95124-3450

Distributors:
Nu Horizons, 70 Maxess Road, Melville, NY 11747
Avnet, 2211 S. 47th Street, Phoenix, AZ 85034
Digi-Key, 701 Brooks Avenue South, Thief River Falls, MN 56701
Standardized Microcircuit Drawing (SMD) Approved Sources are available at the following web pages: