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Cypress Semiconductor Package Qualification Report

**QTP# 043102 VERSION*A
May 2014**

**ALL TSSOP/SSOP (MSL3)
ALL TSOP (MSL3)
Pb-Free, 260C Reflow
OSE-Taiwan**

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT
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PRODUCT QUALIFICATION HISTORY

Qual Report	Description of Qualification Purpose	Date
033104	32-Lead TSOP I & II (400mils), Pb-Free, MSL3, 260C IR-Reflow temperature assembled in OSE-Taiwan	Dec 03
030604	Qualify OSE-Taiwan for 28-Lead SSOP Pb-Free, MSL1, 260C Solder Reflow Temperature using 9220HF Mold Compound, 8340 Epoxy with 97% Sn 3% Bi	Mar 04
043102	ALL TSSOP & SSOP (MSL1), ALL TSOP (MSL3) Packages, New Lead Finish Option for Pb-Free, using Matte Sn with Post Plate Bake and Annealing Process, 260C Reflow temperature assembled in OSE-Taiwan	Dec 04
043102	Cypress established policy requiring MSL and Reflow Peak Temperature alignment for Cypress and its Assembly Subcontractors. Downgrade from MSL1 to MSL3	Dec 06

Major Package Information Used in this Qualification	
Package Designation:	ZB/ZT (TSOP I), ZD/ZW (TSOP II), ZZ (TSSOP, 173mils)
Package Outline, Type, or Name:	28/32/44/48-Lead Thin Small Outline Package (TSOP) 16-28-Lead Thin Shrink Small Outline Package (TSSOP)
Mold Compound Name/Manufacturer:	CEL9200THF
Mold Compound Flammability Rating:	V-O per UL 94
Oxygen Rating Index:	None
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	100% Sn
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	8340A
Bond Diagram Designation	Not Applicable
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 1.0mil
Thermal Resistance Theta JA °C/W:	72° C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	Not Applicable
Name/Location of Assembly (prime) facility:	OSE-T
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

Note: Please contact a Cypress Representative for other packages availability.

Major Package Information Used in this Qualification	
Package Designation:	SP20, SP28
Package Outline, Type, or Name:	20,28-lead Shrunken Small Outline Package (SSOP)
Mold Compound Name/Manufacturer:	CEL9220HF
Mold Compound Flammability Rating:	V-O per UL 94
Oxygen Rating Index:	None
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	100% Sn
Die Backside Preparation Method/Metallization:	Grinding
Die Separation Method:	Sawing
Die Attach Supplier:	Ablestik
Die Attach Material:	8340A
Bond Diagram Designation	Not Applicable
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au / 1.0mil
Thermal Resistance Theta JA °C/W:	90° C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	Not Applicable
Name/Location of Assembly (prime) facility:	OSE-T
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R

Note: Please contact a Cypress Representative for other packages availability.

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy Test	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH)	P
Adhesion of Lead Finish	MIL-STD-883, Method 2025	P
Die Shear	MIL-STD-883, Method 2019	P
External Visual	MIL-PRF-38535, MIL-STD-883, METHOD 2009	P
High Temperature Storage	150C, no bias	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max = 3.8V, 125C	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max= 3.8V, 150C	P
High Accelerated Saturation Test (HAST)	130C, 85%RH, 5.5V/3.6V Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C/60% RH+3IR-Reflow, 260°C +0, -5°C Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs, 85°C/85%RH+3IR-Reflow, 260°C +0, -5°C	P
Pressure Cooker	121C, 100%RH, 15 Psig Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C/60% RH+3IR-Reflow, 260°C +0, -5°C Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs, 85°C/85%RH+3IR-Reflow, 260°C +0, -5°C	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C/60% RH+3IR-Reflow, 260°C +0, -5°C Precondition: JESD22 Moisture Sensitivity MSL 1 168 Hrs, 85°C/85%RH+3IR-Reflow, 260°C +0, -5°C	P
Resistance to Solvents	MIL-STD-883 -2015	P
Solderability	J-STD-002, JESD22-B102 95% solder coverage minimum	P
X-Ray	MIL-STD-883 - 2012	P



Reliability Test Data

QTP #: 033104

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: ACOUSTIC, MSL3

CY62148BLL	4330154	610342548M	OSE-T	COMP	15	0	
CY62148BLL	4330154	610342548M1	OSE-T	COMP	15	0	

STRESS: ADHESION OF LEAD FINISH

CY62148BLL	4330154	610342548	OSE-T	COMP	3	0	
CY62148BLL	4330154	610342548M	OSE-T	COMP	3	0	

STRESS: EXTERNAL VISUAL

CY62148BLL	4330154	610342548	OSE-T	COMP	15	0	
CY62148BLL	4330154	610342548M	OSE-T	COMP	15	0	

STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.5 V) PRE COND 192 HR 30C/60%RH, MSL3

CY62148BLL	4330154	610342548	OSE-T	128	50	0	
CY62148BLL	4330154	610342548M	OSE-T	128	45	0	

STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192HRS 30C/60%RH, MSL3

CY62148BLL	4330154	610342548	OSE-T	168	46	0	
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STRESS: SOLDERABILITY

CY62148BLL	4330154	610342548	OSE-T	COMP	3	0	
CY62148BLL	4330154	610342548M	OSE-T	COMP	3	0	
CY62148BLL	4330154	610342548M1	OSE-T	COMP	3	0	

STRESS: TC CONDITION C, -65C TO 150C, PRE COND 192 HRS 30C/60% RH, MSL3

CY62148BLL	4330154	610342548	OSE-T	300	50	0	
CY62148BLL	4330154	610342548	OSE-T	500	50	0	
CY62148BLL	4330154	610342548	OSE-T	1000	50	0	
CY62148BLL	4330154	610342548	OSE-T	300	45	0	
CY62148BLL	4330154	610342548	OSE-T	500	45	0	
CY62148BLL	4330154	610342548	OSE-T	1000	45	0	
CY62148BLL	4330154	610342548M1	OSE-T	300	50	0	
CY62148BLL	4330154	610342548M1	OSE-T	500	50	0	
CY62148BLL	4330154	610342548M1	OSE-T	1000	50	0	



Reliability Test Data

QTP #: 030604

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: ACOUSTIC, MSL1

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	COMP	15	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	COMP	15	0	
CY2295PVC (7C83000D)	2230116	610240687-3	TAIWN-T	COMP	15	0	

STRESS: ADHESION OF LEAD FINISH

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	COMP	5	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	COMP	5	0	

STRESS: DIE SHEAR

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	COMP	5	0	
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STRESS: EXTERNAL VISUAL

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	COMP	15	0	
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STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 168 HRS 85C/85%RH, MSL1

W320-03H (W320031A)	9304372	610305557	TAIWN-T	128	45	0	
CY828409OC (7C828409D)	4315282	610347876	TAIWN-T	128	42	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, 125C, 3.8V, Vcc Max

CY7C65640 (7C65640C)	4235326	610249056	TAIWN-T	96	259	0	
CY7C65640 (7C65640C)	4235326	610249057	TAIWN-T	120	260	0	
CY828409OC (7C828409D)	4315282	610347876	TAIWN-T	96	494	0	
CY828409OC (7C828409D)	4315282	610347876M	TAIWN-T	96	493	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE, 150C, 3.8V, Vcc Max

CY7C65640 (7C65640C)	4235326	610249056	TAIWN-T	80	118	0	
CY7C65640 (7C65640C)	4235326	610249056	TAIWN-T	500	106	0	
CY7C65640 (7C65640C)	4235326	610249057	TAIWN-T	80	115	0	
CY7C65640 (7C65640C)	4235326	610249057	TAIWN-T	500	97	0	

STRESS: HIGH TEMPERATURE STORAGE

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	500	45	0	
CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	1000	42	0	

STRESS: PRESSURE COOKER TEST, 121C, 100%RH, 15 Psig, PRE COND 168 HRS 85C/85%RH, MSL1

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	184	50	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	176	50	0	

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Reliability Test Data

QTP #: 030604

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: SOLDERABILITY

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	COMP	5	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	COMP	5	0	
CY2295PVC (7C83000D)	2230116	610240687-3	TAIWN-T	COMP	5	0	

STRESS: TC CONDITION C, -65C TO 150C, PRE COND 168 HRS 85C/85%RH, MSL 1

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	300	46	0	
CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	500	46	0	
CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	1000	46	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	300	50	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	500	50	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	1000	50	0	
CY2295PVC (7C83000D)	2230116	610240687-3	TAIWN-T	300	47	0	
CY2295PVC (7C83000D)	2230116	610240687-3	TAIWN-T	500	46	0	
CY2295PVC (7C83000D)	2230116	610240687-3	TAIWN-T	1000	46	0	

STRESS: X-RAY

CY2295PVC (7C83000D)	2230116	610240687-1	TAIWN-T	COMP	15	0	
CY2295PVC (7C83000D)	2230116	610240687-2	TAIWN-T	COMP	15	0	
CY2295PVC (7C83000D)	2230116	610240687-3	TAIWN-T	COMP	15	0	



Reliability Test Data

QTP #: 043102

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
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STRESS: ADHESION OF LEAD FINISH

CY62148BLL			OSE-T	COMP	3	0	
CY8C27443			OSE-T	COMP	3	0	

STRESS: EXTERNAL VISUAL

CY62148BLL			OSE-T	COMP	15	0	
CY8C27443			OSE-T	COMP	15	0	

STRESS: SOLDERABILITY

CY62148BLL			OSE-T	COMP	9	0	
CY8C27443			OSE-T	COMP	9	0	

Document History Page

Document Title: QTP NO. 043102 : ALL TSOP-TSSOP-SSOP, Pure Sn, Pb-free, 260C, OSE Taiwan
Document Number: 001-85256

Rev.	ECN No.	Orig. of Change	Description of Change
**	3839153	HLR	Initial Spec Release.
*A	4371252	HSTO	Align qualification report based on the new template at front page. Add wire material "Au" in major package information table at page 3 and page 4. Deleted Cypress reference specs 12-00292, 12-00103, 25-00016 and 25-00018 and retained with industry standard.

Distribution: WEB

Posting: None