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Cypress Semiconductor
Package Qualification Report

QTP# 164402 VERSION **
February 2018

28L SSOP (209mils)
NiPdAu Leadfinish , CuPd Wire
MSL3, 260C Reflow
CML-Philippines (RA)

FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT reliability@cypress.com or via a CYLINK CRM CASE

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PACKAGE QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
131804	Qualification of 28L SSOP (209mils) package in CML-RA, 0.8milCuPd wire with KEG3000 molding compound, QMI-509 die attach material and NiPdAu leadfinish at MSL3, 260 Reflow Temperature.	Jun 2013
164402	Qualification of 28L SSOP (209mils) package in CML-RA, 0.8milCuPd wire with KEG3000 molding compound, QMI-509 die attach material, Copper roughened leadframe and NiPdAu leadfinish at MSL3, 260 Reflow Temperature	Dec 2016

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SP28
Package Outline, Type, or Name:	28L SSOP (209mils)
Mold Compound Name/Manufacturer:	KE-G3000
Mold Compound Flammability Rating:	N/A (not low alpha mold compound)
Mold Compound Alpha Emission Rate:	UL 94 V=0 pass
Oxygen Rating Index:	65%
Lead Frame Designation:	FMP
Lead Frame Material:	Cu
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	100% Saw
Die Attach Supplier:	Henkel
Die Attach Material:	QMI-509
Bond Diagram Designation	001-72732
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8mil (20um)
Thermal Resistance Theta JA °C/W:	47.6 C/W
Package Cross Section Yes/No:	Y
Assembly Process Flow:	11-21099
Name/Location of Assembly (prime) facility:	CML-RA
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

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

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	SP28
Package Outline, Type, or Name:	28L SSOP (209mils)
Mold Compound Name/Manufacturer:	KE-G3000
Mold Compound Flammability Rating:	N/A (not low alpha mold compound)
Mold Compound Alpha Emission Rate:	UL 94 V=0 pass
Oxygen Rating Index:	54%
Lead Frame Designation:	FMP
Lead Frame Material:	Cu roughened
Substrate Material:	N/A
Lead Finish, Composition / Thickness:	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Henkel
Die Attach Material:	QMI-509
Bond Diagram Designation	001-98060
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8mil (20um)
Thermal Resistance Theta JA °C/W:	61.1 C/W
Package Cross Section Yes/No:	Y
Assembly Process Flow:	11-21099
Name/Location of Assembly (prime) facility:	CML-RA
MSL LEVEL	3
REFLOW PROFILE	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML (R)

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

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Pressure Cooker Test	JESD22-A102, 121 C, 100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Temperature Cycle	MIL-STD-883C, Method 1010, Condition C, -65 C to 150 C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow)	P
Constructional Analysis	Criteria: Meet external and internal characteristics of package	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110, 130 C, 85%RH, 5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 C°, 60% RH, 260C Reflow	P
X-Ray	MIL-STD-883 - 2012	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V, 1000v, 1200v JESD22-C101	P
Internal Visual	MIL-STD-883-2014	P
Post Stress Constructional Analysis	Criteria: Meet external and internal characteristics of a package	P
Post Stress Internal Visual	MIL-STD-883-2014	P
Bond Pull	MIL-STD-883 – Method 2011	P
Ball Shear	JESD22-B116A	P

Reliability Test Data

QTP #: 131804

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	15	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	15	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	15	0	
STRESS: BALL SHEAR								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	5	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	5	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	5	0	
STRESS: BOND PULL								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	5	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	5	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	5	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	5	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	5	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	5	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	128	78	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	128	78	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	128	77	0	
STRESS: INTERNAL VISUAL								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	5	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	5	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	5	0	

Reliability Test Data

QTP #: 131804

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: PRESSURE COOKER TEST								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	168	80	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	288	78	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	168	78	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	288	78	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	168	78	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	288	78	0	
STRESS: POST MSL3 CONSTRUCTIONAL ANALYSIS								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	3	0	
STRESS: POST TEMPERATURE CYCLE TEST INTERNAL VISUAL								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	1	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	1	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	1	0	
STRESS: TEMPERATURE CYCLE								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	500	77	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	1000	77	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	500	78	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	1000	78	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	500	78	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	1000	78	0	
STRESS: X-RAY								
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312250	CML-RA	COMP	15	0	
CY8C4245PVI (8CC44200AC)	SP28	4251884	611312251	CML-RA	COMP	15	0	
CY8C4125PVI (8CC44200AC)	SP28	4251884	611312252	CML-RA	COMP	15	0	

Reliability Test Data

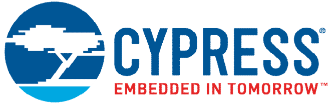
QTP #: 164402

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	COMP	15	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635644	CML-RA	COMP	15	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635643	CML-RA	COMP	15	0	
STRESS: BALL SHEAR								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	COMP	30	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635644	CML-RA	COMP	30	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635643	CML-RA	COMP	30	0	
STRESS: BOND PULL								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	COMP	30	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635644	CML-RA	COMP	30	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635643	CML-RA	COMP	30	0	
STRESS: CONSTRUCTIONAL ANALYSIS								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	COMP	5	0	
STRESS: BOND PULL								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	COMP	30	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635644	CML-RA	COMP	30	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635643	CML-RA	COMP	30	0	
STRESS: ESD-CDM								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	500	5	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	1000	5	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	1250	5	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, 85%RH, PRE COND 192 HR 30C/60%RH, MSL3								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	96	25	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	192	25	0	
STRESS: PRESSURE COOKER TEST								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	168	80	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	288	80	0	

Reliability Test Data

QTP #: 164402

Device	Package	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: TEMPERATURE CYCLE								
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	500	77	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635645	CML-RA	1000	77	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635644	CML-RA	500	80	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635644	CML-RA	1000	80	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635643	CML-RA	500	79	0	
CY8C4246 (8CP480001BB)	SP28	3635004	611635643	CML-RA	1000	79	0	



Document History Page

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Rev.	ECN No.	Orig. of Change	Description of Change
**	6053447	HSTO	Initial spec release