

Cypress Semiconductor Product Qualification Report

QTP# 120501 VERSION *F
April 2014

PSoC5 LP Device Family S8P12-10P Technology, Fab4 CMI	
CY8C5265 CY8C5266 CY8C5267 CY8C5268 CY8C5288/7	PsoC® 5LP CY8C52LP Family Programmable System-on-Chip (PsoC®)
CY8C5465 CY8C5466 CY8C5467 CY8C5468 CY8C5488	PsoC® 5LP CY8C54LP Family Programmable System-on-Chip (PsoC®)
CY8C5666 CY8C5667 CY8C5668 CY8C5688 CY8C5686 CY8C5687	PsoC® 5LP CY8C56LP Family Programmable System-on-Chip (PsoC®)
CY8C5866 CY8C5867 CY8C5868	PsoC® 5LP CY8C58LP Family Programmable System-on-Chip (PsoC®)
CY8C5886 CY8C5887 CY8C5888	PsoC® 5LP CY8C58LP Family Programmable System-on-Chip (PsoC®)

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

QTP Number	Description of Qualification Purpose	Date
083401	Qualify SONOS S8DI-5R Technology in Fab 4 using PsoC 8C20066BC Krypton Device	Jan 09
080902	Qualification of 8C38000BC revision ES2 on S8Q-5R at CMI	Apr 10
101101	Qualification of all layer tapeout 8C38000CC device revision ES3	Feb 11
110905	Qualification of PsoC5 (8C55000B) New Device in Fab4 MI Using S8P-5P technology	Sep 11
114110	PsoC5 device and fab process change qualification, reduce last metal layer to 12K Metal, and increase the oxide passivation to 10K, at Fab4 CMI using S8P- 5P technology.	Jan 12
120501	PsoC5 LP 8C56000AC Device, 8P12-10P Technology in CMI-Fab 4	Nov 12



PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: To qualify PsoC5 LP (8C56000A) New Device in S8P12-10P Technology, Fab4	
Marketing Part #:	CY8C526x, CY8C546x, CY8C566x, CY8C586x, CY8C5488, CY8C5288/7
Device Description:	Industrial Programmable System on a Chip in 100L TQFP and 68 QFN package
Cypress Division:	Cypress Semiconductor Corporation – Programmable Systems Division (PSD)

TECHNOLOGY/FAB PROCESS DESCRIPTION			
Number of Metal Layers:	5	Metal Composition:	Metal 1: 100Å Ti / 3200 Å Al – 0.5%Cu / 300Å TiW Metal 2: 100Å Ti / 3200 Å Al – 0.5%Cu / 350Å TiW Metal 3: 150Å Ti / 7200 Å Al – 0.5%Cu / 350Å TiW Metal 4: 150Å Ti / 7200 Å Al – 0.5%Cu / 350Å TiW Metal 5: 300Å Ti / 12,000 Å Al – 0.5%Cu / 300Å TiW
Passivation Type and Thickness:	9000Å SiO ₂ / 5400 Å Si ₃ N ₄		
Generic Process Technology/Design Rule (μ-drawn):	S8P-5P/ 0.13u		
Gate Oxide Material/Thickness (MOS):	Thermal oxide / 32Å (1.8V) or 120Å (5.0V)		
Name/Location of Die Fab (prime) Facility:	Cypress Semiconductor – Bloomington, MN		
Die Fab Line ID/Wafer Process ID:	Fab4/ S8P12-10P		

PACKAGE AVAILABILITY

PACKAGE	ASSEMBLY FACILITY SITE
100-Lead TQFP	JT-China, CML-RA
68 – QFN	CML-RA, ASE-K

Note: **Package Qualification details upon request.**

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	AZ100
Package Outline, Type, or Name:	100L TQFP 14x14mm / Thin Quad Flatpack package
Mold Compound Name/Manufacturer:	KE-G6000 / Kyocera
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	None
Lead Frame Material:	Copper
Lead Finish, Composition	NiPdAu
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Sawing
Die Attach Supplier:	Dexter
Die Attach Material:	QMI509
Die Attach Method:	Die Attach Epoxy
Bond Diagram Designation:	001-75839, 001-75838
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au. 0.8 mil
Thermal Resistance Theta JA °C/W:	44.66°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	001-73775
Name/Location of Assembly (prime) facility:	CML-RA
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML

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
High Temperature Operating Life Early Failure Rate (EFR)	Dynamic Operating Condition, 150°C, 2.07V/2.1V, 48 Hours JESD22-A108	P
High Temperature Operating Life Latent Failure Rate (LFR)	Dynamic Operating Condition, 150°C, 2.07V/2.1V, 500 Hours JESD22-A108	P
High Temperature Steady State life	150°C, 2.1V, Vcc Max JESD22-A108	P
Low Temperature Operating Life	-30°C, 2.1V JESD22-A108	P
Endurance	Per datasheet, JESD22-A117	P
Data Retention	JESD22-A117 and JESD22-A103, 150°C, No Bias	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65°C to 150°C, 500 Cycles Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C /60%RH+ Reflow, 260°C +0, -5°C	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110:130°C, 85%RH, 5.5V/5.25, 128 Hours Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C /60%RH+ Reflow, 260°C +0, -5°C	P
High Temp Storage	JESD22-A103: 150 C, no bias	P
Pressure Cooker	JESD22-A102: 121°C /100%RH, 168 Hours Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C /60%RH+ Reflow, 260°C +0, -5°C	P
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level 3 192 Hrs, 30°C /60%RH+ Reflow, 260°C +0, -5°C	P
Aged Bond Strength	200C, 4hrs, MIL-STD-883, Method 883-2011	P
Bond Pull	MIL-STD-883 – Method 2011, Cpk : 1.33, Ppk : 1.66	P
Ball Shear	JESD22-B116, Cpk : 1.33, Ppk : 1.66	
Current Density	Meets the Technology Device Level Reliability Specifications	P
Dynamic Latch-up	125°C, 8.5V JESD78	P
Electrostatic Discharge Human Body Model (ESD-HBM)	2200V, JESD22-A114	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V, JESD22-C101	P
Static Latch-up	± 140mA, 85°C JESD78	P
Neutron Single Latch-up (SEL)	6.26E+09 n/cm ² , Vccmax, 85°C, JESD89	<10 FITs/Device
SEM Cross Section	MIL-STD-883, Method 2018	P

RELIABILITY FAILURE RATE SUMMARY

Stress/Test	Device Tested/ Device Hours	# Fails	Activation Energy	Thermal AF ³	Failure Rate
High Temperature Operating Life Early Failure Rate ¹	1538 Devices	0	N/A	N/A	0 PPM ¹
High Temperature Operating Life ^{1,2} Long Term Failure Rate	1,203,080 DHRs	0	0.7	170	4 FIT ²

(1) Assuming an ambient temperature of 55°C and a junction temperature rise of 15°C.

² Chi-squared 60% estimations used to calculate the failure rate.

³ Thermal Acceleration Factor is calculated from the Arrhenius equation

$$AF = \exp \left[\frac{E_A}{k} \left[\frac{1}{T_2} - \frac{1}{T_1} \right] \right]$$

where:

E_A = The Activation Energy of the defect mechanism.

K = Boltzmann's constant = 8.62×10^{-5} eV/Kelvin.

T_1 is the junction temperature of the device under stress and T_2 is the junction temperature of the device at use conditions.

¹ EFR PPM Failure Rate was computed based from QTP 120501 data only.

² LFR FIT Rate was computed based from QTP 083401, 080902, 101101, 110905, 114110 and 120501



Reliability Test Data

QTP #: 083401

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	COMP	15	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	COMP	15	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	COMP	15	0	
STRESS: AGE BOND STRENGTH							
CY8C20566 (8C20566AC)	4827949	610844164	CML-R	COMP	3	0	
CY8C20466 (8C20466AC)	4804681	610822808	Malaysia-CA	COMP	3	0	
CY8C20666 (8C20666AC)	4836589	610852813	Malaysia-CA	COMP	3	0	
STRESS: DATA RETENTION, PLASTIC, 150C							
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	500	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	1000	77	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	500	78	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	1000	78	0	
CY8C20566 (8C20566AC)	4836589	610851914	CML-R	500	78	0	
CY8C20566 (8C20566AC)	4836589	610851914	CML-R	1000	78	0	
STRESS: ENDURANCE							
CY8C20566 (8C20566AC)	4810486	610830786	CML-R	168	77	0	
CY8C20566 (8C20566AC)	4815537	610835437	CML-R	168	77	0	
CY8C20566 (8C20566AC)	4827949	610844164	CML-R	168	79	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	168	78	0	
CY8C20566 (8C20566AC)	4836589	610851914	CML-R	168	76	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY8C20566 (8C20566AC)	4810486	610830371	CML-R	500	9	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	500	9	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	500	9	0	
STRESS: SEM CROSS SECTION							
CY8C20066 (8C20066AC)	4810486	N/A	N/A	COMP	1	0	



Reliability Test Data

QTP #: 083401

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: STATIC LATCH-UP (85C, 8.25V)							
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	COMP	6	0	
CY8C20666 (8C20666AC)	4836589	610852813	Malaysia-CA	COMP	6	0	
CY8C20666 (8C20666AC)	4837410	410.23.02	Promex	COMP	6	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (2,200V)							
CY8C20566 (8C20566AC)	4810486	610830371	CML-R	2200	8	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	2200	8	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	2200	8	0	
STRESS: DYNAMIC LATCH-UP (125C, 8.5V)							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	COMP	5	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	COMP	5	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	COMP	5	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150, 2.1V, Vcc Max)							
CY8C20566 (8C20566AC)	4827949	610844164	CML-R	48	1002	0	
CY8C20566 (8C20566AC)	4815537	610835437	CML-R	48	1008	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	48	1004	1	Read NV Latch (1)
CY8C20466 (8C20466AC)	4836589	610851747	Malaysia-CA	48	1004	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (150, 5V, Vcc Max)							
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	48	45	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	48	45	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (125C, 5V, Vcc Max)							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	96	45	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.1V, Vcc Max)							
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	80	390	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	500	390	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	80	390	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	500	390	0	
CY8C20466 (8C20466AC)	4836589	610851747	Malaysia-CA	80	390	0	
CY8C20466 (8C20466AC)	4836589	610851747	Malaysia-CA	500	390	0	

(1) Destroyed during analysis



Reliability Test Data

QTP #: 083401

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: HIGH TEMP STEADY STATE LIFE TEST (150C, 2.1V)							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	80	77	0	
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	168	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	80	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	168	77	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	80	77	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	168	77	0	
STRESS: LOW TEMPERATURE DYNAMIC OPERATING LIFE, -30C, 2.1V							
CY8C20566 (8C20566AC)	4815537	610835437	CML-R	500	77	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	500	77	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.25V), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	128	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	128	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	256	77	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	128	77	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	168	77	0	
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	333	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	168	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	288	77	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	168	77	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	288	77	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH (MSL3)							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	500	77	0	
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	1000	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	500	77	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	1000	77	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	500	77	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	1000	77	0	



Reliability Test Data

QTP #: 080902

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	COMP	15	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	COMP	15	0	
CY8C3866AXI-040ES2	4937255	611000644	CML-R	COMP	15	0	
STRESS: AGED BOND STRENGTH							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	DATA	10	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	DATA	10	0	
STRESS: DATA RETENTION, 150C							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	1000	77	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	1000	80	0	
CY8C3866AXI-040ES2	4937255	611000644	CML-R	1000	77	0	
STRESS: ENDURANCE							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	168	77	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	168	78	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	500	78	0	
CY8C3866AXI-040ES2	4937255	611000644	CML-R	168	79	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	COMP	9	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	COMP	9	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (500V)							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	COMP	8	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	COMP	8	0	
STRESS: STATIC LATCH-UP TESTING (125C, 8.25V, +/-100mA)							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	COMP	6	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	COMP	6	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C3866AXI-040ES2	4931690	610942165	CML-R	48	1000	1	SCAN, non-visual
CY8C3866AXI-040ES2	4936339	610945758	CML-R	48	1028	2	SCAN, non-visual
CY8C3866AXI-040ES2	4937255	611000644	CML-R	48	1006	0	



Reliability Test Data

QTP #: 080902

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REG-ON (150C, 6.0V, Vcc Max)							
CY8C3866AXI-040ES2	4931690	610942165	CML-R	48	51	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	48	47	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C3866AXI-040ES2	4931690	610942165	CML-R	500	116	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	500	125	0	
CY8C3866AXI-040ES2	4937255	611000644	CML-R	500	125	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.5V), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	128	77	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	128	75	0	
STRESS: LONG LIFE VERIFICATION (150C, 2.07V, Vcc Max)							
CY8C3866AXI-040ES2	4937255	611000644	CML-R	1000	125	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH, 15 Psig), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	168	77	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	168	78	0	
STRESS: TEMPERATURE CYCLE (COND. C, -65C TO 150C), PRE COND 192 HRS 30C/60%RH (MSL3)							
CY8C3866AXI-040ES2	4931690	610940091	CML-R	500	77	0	
CY8C3866AXI-040ES2	4936339	610945758	CML-R	500	77	0	
CY8C3866AXI-040ES2	4937255	611000644	CML-R	500	77	0	
CY8C3866AXI-040ES2	4937255	611000644	CML-R	1000	77	0	



Reliability Test Data

QTP #: 101101

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY8C3866AXI-040ES3	4014971	611030680	CML-RA	COMP	15	0	
STRESS: DATA RETENTION, 150C							
CY8C3866AXI-040ES3	4014971	611041229	CML-R	500	80	0	
CY8C3866AXI-040ES3	4014971	611041229	CML-R	1000	80	0	
STRESS: ENDURANCE							
CY8C3866AXI-040ES3	4014971	611041229	CML-R	168	78	0	
CY8C3866AXI-040ES3	4036951	611057357	CML-R	168	79	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY8C3866AXI-040ES3	4016039-21	OFFLINE BUILD	CML-R	COMP	9	0	
STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114, (750V)							
CY8C3866AXI-040ES3	4016039	611046656	CML-R	COMP	8	0	
STRESS: STATIC LATCH-UP TESTING (125C, 8.25V, +/-140mA)							
CY8C3866AXI-040ES3	4016039-21	OFFLINE BUILD	CML-R	COMP	6	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C3866AXI-040ES3	4045350	611104218	CML-R	48	1549	0	
CY8C3866AXI-040ES3	4045268	611104217	CML-R	48	1550	1	high via resistance
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REG-ON (150C, 6.0V, Vcc Max)							
CY8C3866AXI-040ES3	4033237	611048454	CML-R	48	56	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH, 15 Psig), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C3866AXI-040ES3	4045350	611104218	CML-R	168	80	0	
CY8C3866AXI-040ES3	4045268	611104217	CML-R	168	80	0	
STRESS: TEMPERATURE CYCLE (COND. C, -65C TO 150C), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C3866AXI-040ES3	4045350	611104218	CML-R	500	80	0	
CY8C3866AXI-040ES3	4045268	611104217	CML-R	500	78	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C3866AXI-040ES3	4045350	611104218	CML-R	500	120	0	
CY8C3866AXI-040ES3	4045268	611104217	CML-R	500	120	0	



Reliability Test Data

QTP #: 110905

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY8C5588 (8C55881AC)	4052988	611120567	JT-CHINA	COMP	15	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	COMP	15	0	
CY8C5568 (8C55881AC)	4112653	611122980	CML-R	COMP	15	0	
STRESS: DATA RETENTION, PLASTIC, 150C							
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	500	77	0	
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	1000	77	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	500	80	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	1000	80	0	
STRESS: ENDURANCE							
CY8C5588 (8C55881AC)	4052988	611120442	CML-R	168	78	0	
CY8C5568 (8C55881AC)	4112653	611123644	JT-CHINA	168	80	0	
CY8C5568 (8C55881AC)	4112653	611123644	JT-CHINA	500	80	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY8C5588 (8C55881AC)	4052988	611120442	CML-R	COMP	9	0	
CY8C5588 (8C55881AC)	4052988	611120221	CML-RA	COMP	9	0	
STRESS: STATIC LATCH-UP, 100mA, 85°C, 5.5V							
CY8C5568 (8C551001BC)	4113504	611138640	CML-R	COMP	6	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (750V)							
CY8C5588 (8C55881AC)	4052988	611120442	CML-R	COMP	8	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150, 2.07V, Vcc Max)							
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	48	998	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	48	957	0	
CY8C5568 (8C55881AC)	4112653	611122980	CML-R	48	1024	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (125, 6V, Vcc Max)							
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	96	49	0	



Reliability Test Data

QTP #: 110905

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	80	116	0	
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	500	116	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	80	116	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	500	116	0	
STRESS: PRE/POST LFR PARAMETER ASSESSMENT							
CY8C5588 (8C55881AC)	4052988	611120441	CML-R	COMP	30	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.5V), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C5588 (8C55881AC)	4052988	611120221	CML-RA	128	77	0	
CY8C5568 (8C550681BC)	4112653	611124413	CML-RA	128	83	0	
CY8C5568 (8C550681BC)	4113504	611135561	CML-RA	128	79	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C5568 (8C55881AC)	4112653	611123644	JT-CHINA	168	77	0	
CY8C5568 (8C55881AC)	4112653	611123644	JT-CHINA	288	77	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH (MSL3)							
CY8C5588 (8C55881AC)	4052988	611120567	JT-CHINA	500	77	0	
CY8C5588 (8C55881AC)	4052988	611120567	JT-CHINA	1000	74	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	500	78	0	
CY8C5588 (8C55881AC)	4102901	611121602	CML-R	1000	78	0	
CY8C5568 (8C55881AC)	4112653	611122980	CML-R	500	77	0	
CY8C5568 (8C55881AC)	4112653	611122980	CML-R	1000	76	0	



Reliability Test Data

QTP #: 114110

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	COMP	15	0	
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	COMP	15	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	COMP	15	0	
CY8C5568LTI (8C550681B)	4137655	611154512	CML-RA	COMP	15	0	
STRESS: BALL SHEAR							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	COMP	10	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	COMP	10	0	
CY8C5568LTI (8C550681B)	4137655	611154512	CML-RA	COMP	10	0	
STRESS: BOND PULL							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	COMP	10	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	COMP	10	0	
CY8C5568LTI (8C550681B)	4137655	611154512	CML-RA	COMP	10	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	COMP	5	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	COMP	5	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	COMP	9	0	
CY8C5568AXI (8C551001B)	4130915	611153438	JT-CHINA	COMP	9	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	COMP	9	0	
STRESS: STATIC LATCH-UP, 100mA, 85°C, 5.5V							
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	COMP	6	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (500V)							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	COMP	3	0	
CY8C5568AXI (8C551001B)	4130915	611153438	JT-CHINA	COMP	8	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	COMP	8	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150, 2.07V, Vcc Max)							
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	48	118	0	
CY8C5568AXI (8C551001B)	4135316	611154627	JT-CHINA	48	1444	1	Intermittent failure



Reliability Test Data

QTP #: 114110

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	80	118	0	
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	500	117	0	
STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.5V), PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	128	27	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	128	27	0	
STRESS: HIGH TEMPERATURE STORAGE TEST, 150C							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	500	80	0	
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	1000	80	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	168	80	0	
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	288	80	0	
CY8C5568AXI (8C551001B)	4130915	611153438	JT-CHINA	168	37	0	
CY8C5568AXI (8C551001B)	4130915	611153438	JT-CHINA	288	37	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	168	80	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	288	80	0	
STRESS: SEM X-SECTION							
CY8C5568LTI (8C550681B)	4130915	611148398	CML-RA	COMP	2	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH (MSL3)							
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	500	80	0	
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	1000	74	0	
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	500	80	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	500	77	0	
CY8C5568LTI (8C550681B)	4137655	611154512	CML-RA	500	84	0	
STRESS: POST TCT X-SECTION							
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	500	5	0	
CY8C5568LTI (8C550681B)	4130915	611148399	CML-RA	1000	5	0	
CY8C5568AXI (8C551001B)	4130915	611150107	JT-CHINA	500	1	0	
CY8C5568LTI (8C550681B)	4135316	611153052	CML-RA	500	5	0	
CY8C5568LTI (8C550681B)	4137655	611154512	CML-RA	500	5	0	



Reliability Test Data

QTP #: 120501

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Loc</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
STRESS: ACOUSTIC, MSL3							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	COMP	15	0	
STRESS: DATA RETENTION, PLASTIC, 150C							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	500	85	0	
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	1000	85	0	
STRESS: ESD-CHARGE DEVICE MODEL, (500V)							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	COMP	9	0	
CY8C5868LTI (8C560681A) 4223514	611224643	611224643	CML-RA	COMP	9	0	
STRESS: STATIC LATCH-UP, 140mA, 85°C							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	COMP	6	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (2200V)							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	COMP	8	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (150, 2.07V, Vcc Max)							
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	48	53	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150, 2.07V, Vcc Max)							
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	48	1538	0	
STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)							
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	80	126	0	
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	500	126	0	
STRESS: PRE/POST LFR PARAMETER ASSESSMENT							
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	COMP	30	0	
STRESS: ENDURANCE							
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	168	79	0	
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	192	79	0	
CY8C5868AXI (8C561001A) 4223514	611224639/4640	611224639/4640	CML-RA	500	79	0	
STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	168	79	0	
STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH (MSL3)							
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	500	80	0	
CY8C5888AXI (8C561001A) 4221483	611221588	611221588	CML-RA	1000	80	0	



Document History Page

Document Title: QTP 120501: PSOC5 LP DEVICE FAMILY S8P12-10P TECHNOLOGY, FAB4 CMI
Document Number: 001-85637

Rev.	ECN No.	Orig. of Change	Description of Change
**	3864500	NSR	Initial Spec Release
*A	3919420	ILZ	Added ASE-K as additional assembly site on Package Availability section on Page 3
*B	4002680	ZIJ	Include PRE/POST LFR PARAMETER ASSESSMENT data in the reliability database page 14.
*C	4024711	NSR	Delete redundant devices CY8C5866, CY8C5867, CY8C5868 in front page.
*D	4246966	JYF	Sunset Review: Updated Reliability Tests Performed table to standard template.
*E	4319808	HSTO	Align qualification report based on the new template in the front page Added device CY8C5288/7 and CY8C5488 in the cover page and page3 at Marketing Part# in reference to memo UVS-730.
*F	4343084	HSTO	Updated Static Latch-Up and ESD-HBM test condition in page 5.

Distribution: WEB

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