

# Cypress Semiconductor Product Qualification Report

**QTP# 152503 VERSION\*\***  
**January 2016**

<b>PSoC4A-DS2 Device Family</b>	
<b>S8SPF-10R Technology, Fab 4 CMI</b>	
<b>CY8C4246FNI CY8C4245FNI</b>	<b>PROGRAMMABLE SYSTEM-ON-CHIP (PSOC(R))</b>

**FOR ANY QUESTIONS ON THIS REPORT, PLEASE CONTACT**  
[reliability@cypress.com](mailto:reliability@cypress.com) or via a CYLINK CRM CASE

**Prepared By:**  
Honesto Sintos (HSTO)  
Reliability Engineer

**Reviewed By:**  
Zhaomin Ji (ZIJ)  
Reliability Manager

**Approved By:**  
Don Darling (DCDA)  
Reliability Director



### PRODUCT QUALIFICATION HISTORY

<b>QTP Number</b>	<b>Description of Qualification Purpose</b>	<b>Date</b>
083401	Qualify SONOS S8DI-5R Technology in Fab 4 using PsoC 8C20066BC Krypton Device	Jan 09
113905	Qualify device 8C20400BC S8P12-10P Technology Fabricated at Fab4 (CMI)	Jan 12
123502	Qualification of PSoC4A Device 8C44200AC, S8PF-10R Technology in CMI (Fab 4)	Apr 13
152503	Qualification of PSoC4A-DS2 Device (8C48000X/8F48000x), S8SPF-10R Technology in CMI (Fab4)	Nov 15



<b>PRODUCT DESCRIPTION (for qualification)</b>	
Qualification Purpose: Qualification of PSoC4A-DS2 Device (8C48000X/8F48000x), S8SPF-10R Technology in CMI (Fab4)	
Marketing Part #:	CY8C4246FNI-D412T, CY8C4245FNI-D402
Device Description:	1.8V core, Commercial/ Industrial Programmable System on a Chip
Cypress Division:	Cypress Semiconductor – Programmable Systems Division

<b>TECHNOLOGY/FAB PROCESS DESCRIPTION</b>			
Number of Metal Layers:	5	Metal Composition:	Metal 1: 100A Ti / 3200A Al 0.5%Cu / 300A TiW Metal 2: 100A Ti / 3200A Al 0.5%Cu / 350A TiW Metal 3: 150A Ti / 7200A Al 0.5%Cu / 350A TiW Metal 4: 150A Ti / 7200A Al 0.5%Cu / 350A TiW Metal 5: 300A Ti / 12000A Al 0.5%Cu / 300A TiW
Passivation Type and Thickness:	1,000A Oxide /6,000A Nitride		
Generic Process Technology/Design Rule ( $\mu$ -drawn):	S8 / 0.13u		
Gate Oxide Material/Thickness (MOS):	SiO <sub>2</sub> / 32A & SiO <sub>2</sub> / 120A		
Name/Location of Die Fab (prime) Facility:	Fab 4, CMI-Minnesota		
Die Fab Line ID/Wafer Process ID:	S8SPF-10P		

### PACKAGE AVAILABILITY

PACKAGE	WIRE MATERIAL	ASSEMBLY FACILITY SITE	QTP NUMBER
25-Ball WLCSP	N/A	DT	144402 145201

Note: Package Qualification details upon request.



<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
Package Designation:	SP28
Package Outline, Type, or Name:	28L SSOP (210mils)
Mold Compound Name/Manufacturer:	KE-G3000DA
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:	0.8mil / CuPd
Thermal Resistance Theta JA °C/W:	47.6
Package Cross Section Yes/No:	Y
Assembly Process Flow:	001-87834
Name/Location of Assembly (prime) facility:	CML-RA
MSL LEVEL	3
REFLOW PROFILE	260C

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
Test Location:	<b>ASE, Taiwan (G)</b>

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

<b>MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION</b>	
<b>Package Designation:</b>	FN25A
<b>Package Outline, Type, or Name:</b>	25-Ball Wafer Level Chip Scale Package (WLCSP) (2.07 x 2.11 x 0.55mm)
<b>Die Backside Preparation Method:</b>	Backgrind
<b>Die Separation Method:</b>	Saw
<b>Solder Ball/Bump Material:</b>	SAC405
<b>Bonding Method:</b>	Bump/ RDL
<b>Bond Diagram Designation:</b>	001-97945
<b>Thermal Resistance Theta JA °C/W:</b>	48 degC/Watt
<b>Package Cross Section Yes/No:</b>	N/A
<b>Assembly Process Flow:</b>	001-74876M
<b>Name/Location of Assembly (prime) facility:</b>	DT-Philippines
<b>MSL Level</b>	1
<b>Reflow Profile</b>	260C

<b>ELECTRICAL TEST / FINISH DESCRIPTION</b>	
<b>Test Location:</b>	<b>DECA, Philippine (DT)</b>

## RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy	J-STD-020 Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
Age Bond Strength	200C, 4hrs MIL-STD-883, Method 883-2011	P
Bond Pull	MIL-STD-883 – Method 2011,	P
Data Retention	150°C, No Bias JESD22-A117 and JESD22-A103	P
Dye Penetrant Test	Test to determine the existence and extent of cracks, Criteria: No Package Crack	P
Dynamic Latch-up	125°C, 8.5V JESD78	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	500V/1,000V/1,250V JESD22-C101	P
Electrostatic Discharge Human Body Model (ESD-HBM)	1,100V/1,600V/2,200V /3,300V JESD22, Method A114	P
Electrostatic Discharge Machine Model (ESD-MM)	200V, 220V, 275V, 330V JESD22-A115	P
Endurance Test	MIL-STD-883, Method 883-1033/ JESD22-A117	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85% RH, 5.25V/5.5V Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
High Temperature Operating Life Early Failure Rate	Dynamic Operating Condition, Vcc Max=2.1V/2.07V, 150°C JESD22-A-108	P
High Temperature Operating Life Early Failure Rate, Regulator On	Dynamic Operating Condition, Vcc Max=5V, 125°C/150°C Dynamic Operating Condition, Vcc Max=2.07V/6V, 150°C JESD22-A-108	P
High Temperature Operating Life Latent Failure Rate	Dynamic Operating Condition, Vcc Max=2.1V/2.07V, 150°C JESD22-A-108	P
High Temperature Steady State life	Static Operating Condition, Vcc Max=2.1V, 150°C JESD22-A-108	P
Internal Visual	MIL-STD-883-2014	P
Low Temperature Operating Life	Dynamic Operating Condition, -30°C, 2.1V JESD22-A108	P
Low Temperature Storage Life	-40°C, No Bias	P
Pressure Cooker	JESD22-A102:121°C /100%RH, 15 PSIG Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
SEM Analysis	MIL-STD-883, Method 2018	P
Static Latch-up	85C/125C, +/-140mA 85C, +/-180mA 85C, +/- 200mA JESD 78	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity Level (192 Hrs., 30 °C, 60% RH, 260°C Reflow)	P
Thermal Shock	MIL-STD-883, Method 1011, Condition B, -55°C to 125°C and JESD22-A106, Condition C, -55°C to 125°C	P

### RELIABILITY FAILURE RATE SUMMARY

Stress/Test	Device Tested/ Device Hours	# Fails	Activation Energy	Thermal AF <sup>3</sup>	Failure Rate
High Temperature Operating Life Early Failure Rate	1,550 Devices	0	N/A	N/A	0 PPM
High Temperature Operating Life Long Term Failure Rate	718,500 DHRs	0	0.7	170	8 FIT

- <sup>1</sup> Assuming an ambient temperature of 55°C and a junction temperature rise of 15°C.
- <sup>2</sup> Chi-squared 60% estimations used to calculate the failure rate.
- <sup>3</sup> 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<sub>A</sub> = The Activation Energy of the defect mechanism.

K = Boltzmann's constant = 8.62x10<sup>-5</sup> eV/Kelvin.

T<sub>1</sub> is the junction temperature of the device under stress and T<sub>2</sub> is the junction temperature of the device at use conditions.

<sup>1</sup> Early Failure Rate was computed from QTPs 152503

<sup>2</sup> Long Term Failure Rate was computed from QTPs 083401, 113905 & 123502 LFR Data.



## 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>
<b>STRESS: ACOUSTIC, MSL3</b>							
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	
<b>STRESS: AGE BOND STRENGTH</b>							
CY8C20566 (8C20566AC)	4827949	610844164	CML-R	COMP3	0		
CY8C20466 (8C20466AC)	4804681	610822808	Malaysia-CA	COMP	3	0	
CY8C20666 (8C20666AC)	4836589	610852813	Malaysia-CA	COMP	3	0	
<b>STRESS: DATA RETENTION, PLASTIC, 150C</b>							
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	
<b>STRESS: ENDURANCE</b>							
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	
<b>STRESS: ESD-CHARGE DEVICE MODEL, (500V)</b>							
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	
<b>STRESS: SEM CROSS SECTION</b>							
CY8C20066 (8C20066AC)	4810486	N/A	N/A	COMP	1	0	
<b>STRESS: STATIC LATCH-UP (85C, 8.25V)</b>							
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	





## 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>
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (2,200V)</b>							
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	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (3,300V)</b>							
CY8C20566 (8C20566AC)	4810486	610830371	CML-R	3300	3	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	3300	3	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	3300	3	0	
<b>STRESS: ESD-MACHINE MODEL, (200V)</b>							
CY8C20236A (8C202662A)	4126494	611143319	KOREA-L	200	5	0	
CY8C20236A (8C202662A)	4125077	611143627	PHIL-MB	200	5	0	
<b>STRESS: ESD-MACHINE MODEL, (220V)</b>							
CY8C20566 (8C20566AC)	4810486	610830371	CML-R	220	6	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	220	6	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	220	6	0	
<b>STRESS: ESD-MACHINE MODEL, (275V)</b>							
CY8C20566 (8C20566AC)	4810486	610830371	CML-R	275	3	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	275	3	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	275	3	0	
<b>STRESS: ESD-MACHINE MODEL, (330V)</b>							
CY8C20566 (8C20566AC)	4810486	610830371	CML-R	330	3	0	
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	330	3	0	
CY8C20466 (8C20466AC)	4835945	610847274	Malaysia-CA	330	3	0	
<b>STRESS: DYNAMIC LATCH-UP (125C, 8.5V)</b>							
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	



## 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>
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150, 2.1V, Vcc Max)</b>							
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	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (150, 5V, Vcc Max)</b>							
CY8C20466 (8C20466AC)	4815537	610834184	Malaysia-CA	48	45	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	48	45	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (125C, 5V, Vcc Max)</b>							
CY8C20466 (8C20466AC)	4810486	610828990	Malaysia-CA	96	45	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.1V, Vcc Max)</b>							
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	
<b>STRESS: HIGH TEMP STEADY STATE LIFE TEST (150C, 2.1V)</b>							
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	
<b>STRESS: LOW TEMPERATURE DYNAMIC OPERATING LIFE, -30C, 2.1V</b>							
CY8C20566 (8C20566AC)	4815537	610835437	CML-R	500	77	0	
CY8C20566 (8C20566AC)	4835945	610848270	CML-R	500	77	0	

(1) Destroyed during failure analysis



### Reliability Test Data

**QTP #: 083401**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Lot</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.25V), PRE COND 192 HR 30C/60%RH (MSL3)</b>							
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	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)</b>							
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	
<b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH (MSL3)</b>							
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 ER114031

<i>Device</i>	<i>Fab Lot #</i>	<i>Assy Lot #</i>	<i>Assy Lot</i>	<i>Duration</i>	<i>Samp</i>	<i>Rej</i>	<i>Failure Mechanism</i>
<b>STRESS: LOW TEMPERATURE STORAGE, -40C, No Bias</b>							
CY8C20236A (8C202662A)	4137730	611155459	L-KOREA	1000	100	0	



## Reliability Test Data

**QTP #: 113905**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: ACOUSTIC, MSL3</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	COMP	15	0	
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	COMP	15	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	COMP	15	0	
CY8CTMA443 (8C20401A)	4131142	611148867	G-TAIWAN	COMP	15	0	
<b>STRESS: BOND PULL</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	COMP	10	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	COMP	10	0	
CY8CTMA443 (8C20401A)	4131142	611148867	G-TAIWAN	COMP	10	0	
<b>STRESS: DATA RETENTION, 150C</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	500	80	0	
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	1000	80	0	
<b>STRESS: DYE PENETRANT TEST</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	COMP	15	0	
<b>STRESS: ENDURANCE</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	168	80	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, (500V)</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	COMP	9	0	
<b>STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114, (1100V)</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114, (1600V)</b>							
CY8CTMA443 (8C20401B)	4140358	611153801	CML-RA	COMP	8	0	
<b>STRESS: HI-ACCEL SATURATION TEST (130C, 85%RH, 5.5V), PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	128	80	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	128	78	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REG-ON (150C, 6.0V, Vcc Max)</b>							
CY8CTMA443 (8C20401A)	4130520	611147745	G-TAIWAN	48	45	0	



## Reliability Test Data

**QTP #: 113905**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150C, 2.07V, Vcc Max)</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	48	1492	0	
CY8CTMA443 (8C20401B)	4140358	611153800	CML-RA	48	1074	2	ISB Deep Sleep, CAR#201201012
CY8CTMA443 (8C20401B)	4140358	611153800	CML-RA	48	418	1	ISB Deep Sleep, CAR#201201012
CY8CTMA443 (8C20401B)	4141585	611156224	G-TAIWAN	48	1500	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	48	1000	0	
CY8CTMA443 (8C20401A)	4131142	611148870	G-TAIWAN	48	500	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)</b>							
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	80	116	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	500	116	0	
<b>STRESS: INTERNAL VISUAL</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	COMP	5	0	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH, 15 Psig), PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	168	77	0	
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	288	77	0	
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	168	80	0	
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	288	80	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	168	80	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	288	80	0	
<b>STRESS: TEMPERATURE CYCLE (COND. C, -65C TO 150C), PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	500	83	0	
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	1000	83	0	
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	500	79	0	
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	1000	79	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	500	80	0	
CY8CTMA443 (8C20401A)	4129433	611148871	G-TAIWAN	1000	80	0	
CY8CTMA443 (8C20401A)	4131142	611148867	G-TAIWAN	500	80	0	
CY8CTMA443 (8C20401A)	4131142	611148867	G-TAIWAN	1000	80	0	



## Reliability Test Data

**QTP #: 113905**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: THERMAL SHOCK (COND. B, -55C TO 125C)</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	200	80	0	
<b>STRESS: THERMAL JUNCTION MEASUREMENT</b>							
CY8CTMA443 (8C20401A)	4130520	611147744	G-TAIWAN	COMP	2	0	
<b>STRESS: STATIC LATCH-UP TESTING (125C, 8.25V, +/-140mA)</b>							
CY8CTMA443 (8C20401B)	4140358	611153802	CML-RA	COMP	6	0	



## Reliability Test Data QTP #: 123502

<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>
<b>STRESS: DATA RETENTION, PLASTIC, 150C</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G	500	70	0	
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G	1000	70	0	
<b>STRESS: ENDURANCE</b>							
CY8C4245 (8CC44200A)	4251883	611302906	TAIWAN-G	168	80	0	
CY8C4245 (8CC44200A)	4251883	611302906	TAIWAN-G	500	80	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, (500V)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	9	0	
CY8C4245 (8CC44200A)	4251883	611303718	TAIWAN-G	COMP	9	0	
CY8C4245 (8CC44200A)	4251883	611302173	CML-RA	COMP	9	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, (1000V)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	3	0	
CY8C4245 (8CC44200A)	4251883	611303718	TAIWAN-G	COMP	3	0	
CY8C4245 (8CC44200A)	4251883	611302173	CML-RA	COMP	3	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL, (1250V)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	3	0	
CY8C4245 (8CC44200A)	4251883	611303718	TAIWAN-G	COMP	3	0	
CY8C4245 (8CC44200A)	4251883	611302173	CML-RA	COMP	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (2,200V)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	9	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (3,300V)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	3	0	
<b>STRESS: STATIC LATCH-UP (85C, 140mA)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	6	0	
<b>STRESS: STATIC LATCH-UP (85C, 180mA)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	2	0	
<b>STRESS: STATIC LATCH-UP (125C, 140mA)</b>							
CY8C4245 (8CC44200A)	4251883	611302905	TAIWAN-G	COMP	2	0	





## Reliability Test Data

**QTP #: 123502**

<b>Device</b>	<b>Fab Lot #</b>	<b>Assy Lot #</b>	<b>Assy Loc</b>	<b>Duration</b>	<b>Samp</b>	<b>Rej</b>	<b>Failure Mechanism</b>
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (150, 2.07V, Vcc Max)</b>							
CY8C4245 (8CC44200A)	4251883	611303750	TAIWAN-G	48	189	0	
CY8C4245 (8CC44200A)	4251883	611302906	TAIWAN-G	48	1111	0	
CY8C4245 (8CC44200A)	4251883	611307128N	TAIWAN-G	48	1093	0	
CY8C4245 (8CC44200A)	4251883	611308275	TAIWAN-G	48	1049	0	
CY8C4245 (8CC44200A)	4251883	611308282	TAIWAN-G	48	1049	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE REGULATOR ON (150, 2.07V, Vcc Max)</b>							
CY8C4245 (8CC44200A)	4251883	611302906	TAIWAN-G	48	39	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (150C, 2.07V, Vcc Max)</b>							
CY8C4245 (8CC44200A)	4251883	611302906	TAIWAN-G	80	151	0	
CY8C4245 (8CC44200A)	4251883	611302906	TAIWAN-G	500	151	0	
<b>STRESS: PRE/POST LFR PARAMETER ASSESSMENT</b>							
CY8C4245 (8CC44200A)	4251883	611303750	TAIWAN-G	COMP	32	0	
<b>STRESS: PRESSURE COOKER TEST (121C, 100%RH), 15 Psig, PRE COND 192 HR 30C/60%RH (MSL3)</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G	168	77	0	
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G	288	77	0	
<b>STRESS: TC COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH (MSL3)</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G	500	77	0	
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G	1000	76	0	



## Reliability Test Data

**QTP #: 152503**

<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>
<b>STRESS: DATA RETENTION, PLASTIC, 150C</b>							
CY8C4246 (8CP480001AC)	4525559	611524557	CML-RA	500	80	0	
CY8C4246 (8CP480001AC)	4525559	611524557	CML-RA	1000	80	0	
CY8C4248 (8CP42488AC)	4511216	611514304	CML-RA	500	80	0	
CY8C4248 (8CP42488AC)	4511216	611514304	CML-RA	1000	80	0	
CY8C4248 (8CP42488AC)	4511217	611518965	CML-RA	500	80	0	
CY8C4248 (8CP42488AC)	4511217	611518965	CML-RA	1000	80	0	
<b>STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE</b>							
CY8C4246 (8CP480001AC)	4525559	611524557	CML-RA	48	1550	0	
<b>STRESS: ENDURANCE</b>							
CY8C4246 (8CP480001AC)	4525559	611524557	CML-RA	168	80	0	
CY8C4246 (8CP480001AC)	4525559	611524557	CML-RA	500	80	0	
<b>STRESS: ESD-CHARGE DEVICE MODEL</b>							
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	500	9	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	750	3	0	
<b>STRESS: ESD-HUMAN BODY CIRCUIT PER JESD22, METHOD A114, (2,200V)</b>							
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	1100	3	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	2200	8	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	3300	3	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	4000	3	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	5000	3	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	6000	3	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	7000	3	0	
CY8C4246 (8F480000AC)	4525559	611524701	CML-RA	8000	3	0	
<b>STRESS: STATIC LATCH-UP (+/-140mA 85C)</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G COMP		6	0	
<b>STRESS: STATIC LATCH-UP (+/-200mA 85C)</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G COMP		3	0	
<b>STRESS: STATIC LATCH-UP (+/-140mA 125C)</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G COMP		3	0	
<b>STRESS: STATIC LATCH-UP (+/-300mA 85C)</b>							
CY8C4245 (8CC44200A)	4251883	611301729	TAIWAN-G COMP		3	0	



## Document History Page

Document Title: QTP#152503: PSoC4A-DS2 Device Family S8SPF-10R Technology, Fab 4 CMI  
Document Number: 002-10630

Rev.	ECN No.	Orig. of Change	Description of Change
**	5074150	HSTO	Initial spec release