

Please note that Cypress is an Infineon Technologies Company.

The document following this cover page is marked as “Cypress” document as this is the company that originally developed the product. Please note that Infineon will continue to offer the product to new and existing customers as part of the Infineon product portfolio.

Continuity of document content

The fact that Infineon offers the following product as part of the Infineon product portfolio does not lead to any changes to this document. Future revisions will occur when appropriate, and any changes will be set out on the document history page.

Continuity of ordering part numbers

Infineon continues to support existing part numbers. Please continue to use the ordering part numbers listed in the datasheet for ordering.

Cypress Semiconductor Product Qualification Report

**QTP# 163901 VERSION *B
May 2018**

FM20H08 Device Family	
130nm Technology, TI 300mm Wafer Fab DMOS6	
FM25V05-G*	512-KBIT (64 K X 8) SERIAL (SPI) F-RAM
FM25V10-G*	1-MBIT (128K X 8) SERIAL (SPI) F-RAM
FM25VN10-G*	1-MBIT (128K X 8) UNIQUE SERIAL (SPI) F-RAM
FM25V05-PGC*	512-KBIT (64 K X 8) SERIAL (SPI) F-RAM
FM25V10-PG*	1-MBIT (128K X 8) SERIAL (SPI) F-RAM
FM25V10-DG*	1-MBIT (128K X 8) SERIAL (SPI) F-RAM
FM24V05-G*	512-KBIT (64K X 8) SERIAL (I2C) F-RAM
FM24V10-G*	1-MBIT (128K X 8) SERIAL (I2C) F-RAM
FM24VN10-G*	1-MBIT (128K X 8) UNIQUE SERIAL (I2C) F-RAM
FM28V100-TG*	1-MBIT (128K X 8) PARALLEL F-RAM

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

Prepared By:
Josephine Pineda (JYF)
Staff Reliability Engineer

Reviewed By:
Yusaku Ota (YUOH)
Reliability Manager

Approved By:
David Hoffman (DHH)
Reliability Director

PRODUCT QUALIFICATION HISTORY

QTP Number	Description of Qualification Purpose	Date
143905	TI F-RAM 130nm DMOS5 (200mm Wafer Fab) to DMOS6 (300mm Wafer Fab) Foundry Transfer using the TR20005B (2Mb Industrial 2T2C F-RAM Product)	January 2017
163901	TI F-RAM 130nm DMOS5 (200mm Wafer Fab) to DMOS6 (300mm Wafer Fab) Foundry Transfer using FM20H08 (1Mbit / 512Kbit Industrial F-RAM Product)	July 2017
180203	Qualification of Mask Change for the FM20H08BC (I2C/PARALLEL Option) ESD Design Fix	March 2018

PRODUCT DESCRIPTION (for qualification)	
Qualification Purpose: TI F-RAM 130nm DMOS5 (200mm Wafer Fab) to DMOS6 (300mm Wafer Fab) Foundry Transfer using FM20H08 (1Mbit / 512Kbit Industrial F-RAM Product)	
Marketing Part #:	FM25V05-G*/ FM25V10-G*/ FM25VN10-G*/ FM25V05-PGC*/ FM25V10-PG*/ FM25V10-DG* FM24V05-G*/FM24V10-G*/FM24VN10-G*/FM28V100-TG*
Device Description:	512-KBIT (64 K X 8) SERIAL (SPI) F-RAM 512-KBIT (64K X 8) SERIAL (I2C) F-RAM 1-MBIT (128K X 8) SERIAL (SPI) F-RAM 1-MBIT (128K X 8) SERIAL (I2C) F-RAM 1-MBIT (128K X 8) PARALLEL F-RAM 1-MBIT (128K X 8) UNIQUE SERIAL (SPI) F-RAM 1-MBIT (128K X 8) UNIQUE SERIAL (I2C) F-RAM
Cypress Division:	Cypress Semiconductor Corporation – Memory Products Division (MPD)

TECHNOLOGY/FAB PROCESS DESCRIPTION			
Number of Metal Layers:	Proprietary*	Metal Composition:	Proprietary*
Passivation Type and Thickness:	Proprietary*		
Generic Process Technology/Design Rule (μ -drawn):	130nm		
Gate Oxide Material/Thickness (MOS):	Proprietary*		
Name/Location of Die Fab (prime) Facility:	Texas Instruments / Dallas		
Die Fab Line ID/Wafer Process ID:	DMOS 6 / E035.1		

***Texas Instruments' proprietary information is available with signed NDA.**

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	SW815, SZ815
Package Outline, Type, or Name:	8L SOIC
Mold Compound Name/Manufacturer:	G600 / Sumitomo
Mold Compound Flammability Rating:	UL-94 V-0
Mold Compound Alpha Emission Rate:	<0.1
Oxygen Rating Index: >28%	37%
Lead Frame Designation:	FMP
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Matte Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Laser Groove + Wafer Saw
Die Attach Supplier:	Henkel
Die Attach Material:	8200T
Bond Diagram Designation	001-86116/001-86117/001-86094
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8 mil (20um)
Thermal Resistance Theta JA °C/W:	59°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	002-20375
Name/Location of Assembly (prime) facility:	UTAC, Thailand (UT)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	UTAC, Thailand (UT)
----------------	---------------------

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION

Package Designation:	PZ083
Package Outline, Type, or Name:	8L PDIP
Mold Compound Name/Manufacturer:	G600 / Sumitomo
Mold Compound Flammability Rating:	UL-94 V-0
Mold Compound Alpha Emission Rate:	<0.1
Oxygen Rating Index: >28%	37%
Lead Frame Designation:	FMP
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Matte Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Laser Groove + Wafer Saw
Die Attach Supplier:	Henkel
Die Attach Material:	8200T
Bond Diagram Designation	002-15911
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd / 0.8 mil (20um)
Thermal Resistance Theta JA °C/W:	75°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	001-94052
Name/Location of Assembly (prime) facility:	UTAC, Thailand (UT)
MSL Level	N/A
Reflow Profile	N/A

ELECTRICAL TEST / FINISH DESCRIPTION

Test Location:	UTAC, Thailand (UT)
----------------	---------------------

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	ZB32 / ZB32F
Package Outline, Type, or Name:	32L TSOP (8x13.4x1.2mm)
Mold Compound Name/Manufacturer:	G631 / Sumitomo
Mold Compound Flammability Rating:	V-0 / UL94
Mold Compound Alpha Emission Rate:	N/A
Oxygen Rating Index: >28%	54%
Lead Frame Designation:	FMP
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Pure Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Laser Groove + Wafer Saw
Die Attach Supplier:	Sumitomo
Die Attach Material:	CRM-1076
Bond Diagram Designation	002-21636
Wire Bond Method:	Thermosonic
Wire Material/Size:	Au and CuPdAu / 0.8mil (20um)
Thermal Resistance Theta JA °C/W:	38°C/W
Package Cross Section Yes/No:	Yes
Assembly Process Flow:	49-35999
Name/Location of Assembly (prime) facility:	OSE-Taiwan (T)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	CML-R, ASE-Taiwan (G), JCET-China (JT)

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	LH08D
Package Outline, Type, or Name:	8-Pin TDFN, 5x6x0.75mm
Mold Compound Name/Manufacturer:	G770HCD / Sumitomo
Mold Compound Flammability Rating:	UL-94 V-0
Mold Compound Alpha Emission Rate:	<0.1
Oxygen Rating Index: >28%	38%
Lead Frame Designation:	FMP
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Matte Sn
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Laser Groove + Wafer Saw
Die Attach Supplier:	Henkel
Die Attach Material:	8600
Bond Diagram Designation	002-11115
Wire Bond Method:	Thermosonic
Wire Material/Size:	CuPd/0.8mil (20um)
Thermal Resistance Theta JA °C/W:	31°C/W
Package Cross Section Yes/No:	No
Assembly Process Flow:	001-94051
Name/Location of Assembly (prime) facility:	UTAC, Thailand (UT)
MSL Level	3
Reflow Profile	260C

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	UTAC, Thailand (UT)

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Acoustic Microscopy	J-STD-020 Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Aged Bond Strength	200°C, 4HRS MIL-STD-883, Method 883-2011	P
Constructional Analysis	Criteria: Meet external and internal characteristics of Cypress package	P
Data Retention	125°C, 1000 Hours JESD22-A117 and JESD22-A103	P
Dynamic Latch-up	JESD78	P
Electrostatic Discharge Charge Device Model (ESD-CDM)	JESD22-C101 500V/750V/1000V/1250V/1500V/1750V/2000V	P
Electrostatic Discharge Human Body Model (ESD-HBM)	JESD22-A114 1100V/2200V/2500V/3300V/4000V	P
Electrostatic Discharge Machine Model (ESD-MM)	200V JESD22-A115	P
High Accelerated Saturation Test (HAST)	JEDEC STD 22-A110: 130°C, 85%RH, 3.6V Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
High Temperature Operating Life Early Failure Rate	JESD22-A108, 125°C Dynamic Operating Condition, Vcc = 3.6V	P
High Temperature Operating Life Latent Failure Rate	JESD22-A108, 125°C Dynamic Operating Condition, Vcc = 3.6V	P
High Temp Storage	JESD22-A103: 150°C, no bias	P
Low Temperature Operating Life	Dynamic Operating Condition, Vcc = 4.3V, -30 C, f = 4MHz JESD22-A108	P
Neutron Emission (SER)	Vcc nom, room temperature, JESD89	<1.47 FIT/Mb
Neutron Single Latch-up (SEL)	Vcc max, Data Sheet max temperature, JESD89	No event
Pressure Cooker Test	JESD22-A102: 121 C, 100%RH, 15 PSIG Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	P
Static Latch-up	JESD78 +/-100mA; +/-140mA, 125°C +/-140mA, 85°C	P
Temperature Cycle	MIL-STD-883, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22-A113 Moisture Sensitivity Level (192 Hrs., 30°C, 60% RH, 260°C Reflow)	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	6,651 Devices	0	N/A	N/A	0 PPM ¹
High Temperature Operating Life Long Term Failure Rate	611,000 DHRs	0	0.7	55	27 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.

¹Early Failure Rate was computed from QTP# 163901

² Long Term Failure Rate was computed from QTP# 143905 and QTP# 163901 Data.

Reliability Test Data

QTP #: 143905

<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: AGED BOND STRENGTH							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	COMP	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	COMP	3	0	
STRESS: ACOUSTIC, MSL3							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	15	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	COMP	15	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	COMP	15	0	
STRESS: CONSTRUCTIONAL ANALYSIS							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	5	0	
STRESS: DATA RETENTION, 125C							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	500	77	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	75	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	500	77	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1000	77	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	500	77	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1000	66	0	
STRESS: DYNAMIC/LATCH-UP							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	3	0	
STRESS: ENDURANCE, 125C							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	CYCLING	77	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	168	77	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	500	77	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	77	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	CYCLING	77	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	168	77	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	500	77	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1000	76	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	CYCLING	77	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	168	77	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	500	77	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1000	77	0	

Company Confidential

A printed copy of this document is considered uncontrolled. Refer to online copy for latest revision.

Reliability Test Data

QTP #: 143905

<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: ESD-CHARGE DEVICE MODEL							
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	500	9	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	750	3	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	3	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1250	3	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1500	3	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1750	3	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	2000	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	500	9	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	750	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1000	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1250	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1500	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1750	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	2000	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	500	9	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	750	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1000	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1250	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1500	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1750	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	2000	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	500	9	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	750	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	1000	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	1250	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	1750	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	2000	3	0	

Reliability Test Data

QTP #: 143905

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: ESD-CHARGE DEVICE MODEL

CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	500	9	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	750	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	1000	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	1250	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	1500	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	1750	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	2000	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	500	9	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	750	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	1000	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	1250	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	1500	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	1750	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	500	9	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	750	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	1000	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	1250	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	1500	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	1750	3	0	

STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1100	3	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	2200	8	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	3300	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1100	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	2200	8	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	3300	3	0	

Reliability Test Data

QTP #: 143905

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114

FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1100	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	2200	8	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	3300	3	0	
FM25V20A-G (FTP25V20B)	2443004	611444239	UTL-Thailand	1100	3	0	
FM25V20A-G (FTP25V20B)	2443004	611444239	UTL-Thailand	2200	8	0	
FM25V20A-G (FTP25V20B)	2443004	611444239	UTL-Thailand	3300	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	1100	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	2200	8	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	3300	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	1100	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	2200	8	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	3300	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	1100	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	2200	8	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	3300	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	1100	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	2200	8	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	3300	3	0	

STRESS: ESD-MACHINE MODEL

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	200	5	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	200	5	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	200	5	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	200	5	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	200	5	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	200	5	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	200	5	0	

Reliability Test Data

QTP #: 143905

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: HIGH ACCELERATED SATURATION TEST 130C, 85%RH, 3.6V, PRE COND 192 HRS 30C/60%RH, MSL3

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	96	28	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	96	27	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	96	28	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 3.6V, Vcc Max)

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	96	1500	0	
CY15B102Q7 (7A1502B9D)	2628001	611629751	UTL-Thailand	96	3283	0	
FM25V20A7-G (FPP25V20D)	2629051	611627197	UTL-Thailand	96	3500	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	96	941	0	
CY15B102Q7 (7A1502B9D)	2553000	611627196	UTL-Thailand	96	3500	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE, REG-ON

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	96	45	0	
------------------------	---------	-----------	--------------	----	----	---	--

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 3.6V, Vcc Max)

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	116	178	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	178	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	116	178	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1000	178	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	116	178	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1000	178	0	

STRESS: HIGH TEMPERATURE STORAGE, 150C

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	500	80	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	80	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	500	80	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1000	80	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	500	80	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1000	80	0	

STRESS: LOW TEMPERATURE OPERATING LIFE, -30C

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	500	32	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	32	0	

STRESS: LTOL READ & RECORD, -30C

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	32	0	
------------------------	---------	-----------	--------------	------	----	---	--

Reliability Test Data

QTP #: 143905

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

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

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	168	80	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	168	80	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	168	80	0	

STRESS: PRE/POST LFR CRITICAL PARAMETER

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	32	0	
------------------------	---------	-----------	--------------	------	----	---	--

STRESS: SOFT ERROR TEST-NEUTRON/PROTON/SEL

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	3	0	
------------------------	---------	-----------	--------------	------	---	---	--

STRESS: SOFT ERROR TEST-ALPHA-PATICLE/SEL

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	3	0	
------------------------	---------	-----------	--------------	------	---	---	--

STRESS: STATIC LATCH-UP (125C, 140mA)

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	COMP	3	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	COMP	3	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	COMP	3	0	
FM25V20A-G (FTP25V20B)	2443004	611444239	UTL-Thailand	COMP	3	0	
CY15B102Q7 (7A1502B9D)	2553000	611600876	UTL-Thailand	COMP	3	0	
CY15B102Q7 (7A1502B9D)	2602005	611602793	UTL-Thailand	COMP	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617892	UTL-Thailand	COMP	3	0	
CY15B102Q7 (7A1502B9D)	2538007	611617893	UTL-Thailand	COMP	3	0	

STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3

FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	500	80	0	
FM25V20A-G (FTP25V20B)	2443004	611503131	UTL-Thailand	1000	80	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	500	79	0	
FM25V20A-G (FTP25V20B)	2444010	611503700	UTL-Thailand	1000	79	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	500	80	0	
FM25V20A-G (FTP25V20B)	2445005	611503699	UTL-Thailand	1000	80	0	

Reliability Test Data

QTP #: 163901

<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							
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	COMP	15	0	
STRESS: DATA RETENTION, 125C							
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	500	80	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1000	80	0	
STRESS: ENDURANCE, 150C							
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	CYCLING	80	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	168	80	0	
STRESS: ESD-CHARGE DEVICE MODEL							
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	500	9	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	750	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1000	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1250	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1500	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1750	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	2000	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	500	9	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	750	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	1000	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	1250	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	1500	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	1750	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	2000	3	0	

Reliability Test Data

QTP #: 163901

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: ESD-CHARGE DEVICE MODEL

FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	2000	3	0	
FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	500	9	0	
FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	750	3	0	
FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	1000	3	0	
FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	1250	3	0	
FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	1500	3	0	
FM25V107 (FPP25V10B)	2705000	611720198	UTL-Thailand	1750	3	0	

STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1100	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	2200	8	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	3300	3	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	4000	3	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-EARLY FAILURE RATE (125C, 3.6V, Vcc Max)

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	96	2000	0	
FM25V107 (FPP25V10B)	2705000	611707142	UTL-Thailand	96	2000	0	
FM24V107 (FPP24V10B)	2705000	611707143	UTL-Thailand	96	2651	0	

STRESS: HIGH TEMP DYNAMIC OPERATING LIFE-LATENT FAILURE RATE (125C, 3.6V, Vcc Max)

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	500	77	0	
FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	1000	77	0	

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

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	168	79	0	
----------------------	---------	-----------	--------------	-----	----	---	--

STRESS: STATIC LATCH-UP (125C, 100mA)

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	COMP	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	COMP	3	0	

STRESS: STATIC LATCH-UP (125C, 140mA)

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	COMP	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	COMP	3	0	



Reliability Test Data

QTP #: 163901

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: STATIC LATCH-UP (85C, 140mA)

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	COMP	3	0	
FM24V057 (FPP24V05B)	2703000	611718939	UTL-Thailand	COMP	3	0	

STRESS: TEMPERATURE CYCLE COND. C -65C TO 150C, PRE COND 192 HRS 30C/60%RH, MSL3

FM25V107 (FPP25V10B)	2703000	611705981	UTL-Thailand	500	78	0	
----------------------	---------	-----------	--------------	-----	----	---	--

Reliability Test Data

QTP #: 180203

<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: ESD-CHARGE DEVICE MODEL							
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	500	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	750	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	1000	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	1250	9	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	1500	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	1750	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	2000	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	500	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	750	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	1000	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	1250	9	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	1500	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	1750	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	2000	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	500	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	750	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	1000	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	1250	9	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	1500	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	1750	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	2000	3	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	500	3	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	750	3	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	1000	3	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	1250	9	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	1500	3	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	1750	3	0	
FM25V10 (FPP25V10C)	2804004	611809498	UTL-Thailand	2000	3	0	

Reliability Test Data

QTP #: 180203

Device	Fab Lot #	Assy Lot #	Assy Loc	Duration	Samp	Rej	Failure Mechanism
--------	-----------	------------	----------	----------	------	-----	-------------------

STRESS: ESD-HUMAN BODY MODEL PER JESD22, METHOD A114

FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	1100	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	2200	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	2500	8	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	3300	3	0	
FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	4000	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	1100	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	2200	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	3300	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	4000	8	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	1100	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	2200	8	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	3300	3	0	

STRESS: STATIC LATCH-UP (125C, 100mA)

FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	COMP	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	COMP	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	COMP	3	0	

STRESS: STATIC LATCH-UP (125C, 140mA)

FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	COMP	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	COMP	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	COMP	3	0	

STRESS: STATIC LATCH-UP (85C, 140mA)

FM24V057 (FPP24V05B)	2804004	611804675	UTL-Thailand	COMP	3	0	
FM25VN107 (FPP25VN10C)	2804004	611804678	UTL-Thailand	COMP	3	0	
FM28V1007 (FP28V100B)	2804004	611805536	T-TAIWAN	COMP	3	0	

Document History Page

Document Title: QTP# 163901: FM20H08 Device Family 130nm Technology, TI 300mm Wafer Fab DMOS 6
Document Number: 002-20308

Rev.	ECN No.	Orig. of Change	Description of Change
**	5798699	JYF	Initial Release
*A	6102216	JYF	Added qualification data of QTP# 180203, wire size information in microns, 32L TSOP as package option and Cycling step for Endurance test; Deleted "NVM Endurance/Data Retention Plastic" in Reliability Tests Performed table and Static LU margin tests data (200mA/300mA) for QTP# 163901; Updated MPN coverage and Data Retention details.
B	6176641	JYF	Added ESD-CDM data for QTP# 180203/Lot 611809498 and FM25V10-DG in the MPN coverage; Change MSL Level "MSL 3" to "3" (page 4) and added "UT" code for UTAC (pages 4, 5).