Cypress Semiconductor
Package Qualification Report

QTP# 021104 VERSION 1.0
July, 2002

Thin Quad Flat Pack 24 x 24 x 1.4mm (TQFP)
ASE Taiwan

CYPRESS TECHNICAL CONTACT FOR QUALIFICATION DATA:

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PACKAGE QUALIFICATION HISTORY

QUAL REPORT		DESCRIPTION OF QUALIFICATION PURPOSE		DATE COMP.
98415		160-lead (24 x 24 x 1.4mm) TQFP package with die size ≤ 201.1 x 322.8mils.		Nov 98
000303		Molding Compound Sumitomo EME 7320 for 160-lead (24 x 24 x 1.4mm) TQFP package with die size ≤ 316.3 x 275.5mils.		Feb 00
021104		Larger die size ≤271.2 x 415.5 mils, 176-lead TQFP (24 x 24 x 1.4mm)		Jun 02

MAJOR PACKAGE INFORMATION USED IN THIS QUALIFICATION	
Package Designation:	A176
Package Outline, Type, or Name:	176-pin Thin Quad Flat Pack (TQFP)
Mold Compound Name/Manufacturer:	Sumitomo EME 7320A
Mold Compound Flammability Rating:	V-O per UL94
Oxygen Rating Index:	>28%
Lead Frame Material:	Copper
Lead Finish, Composition / Thickness:	Solder Plate, 85%Sn, 15%Pb
Die Backside Preparation Method/Metallization:	Backgrind
Die Separation Method:	Wafer Saw
Die Attach Supplier:	Ablestik
Die Attach Material:	Ablestik 8361
Bond Diagram Designation	10-04266
Wire Bond Method:	Thermosonic
Wire Material/Size:	Gold/ 1.2mil
Thermal Resistance Theta JA °C/W:	38°C/W
Package Cross Section Yes/No:	N/A
Assembly Process Flow:	49-41021
Name/Location of Assembly (prime) facility:	ASE Taiwan (TAIWN-G)

ELECTRICAL TEST / FINISH DESCRIPTION	
Test Location:	ASE Taiwan (TAIWN-G)
Fault Coverage:	100%

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

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Temperature Cycle	1) QTP #021104, QTP #000303, QTP #98415 2) MIL-STD-883C, Method 1010, Condition C, -65°C to 150°C Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs., 30°C/60%RH+3IR-Reflow, 220°C+5, -0°C	P
High Accelerated Saturation Test (HAST)	1) QTP #021104, QTP #000303, QTP #98415 130°C, 5.5V,85%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 220°C+5, 0°C	P
Pressure Cooker	1) QTP #021104 121°C, 100%RH Precondition: JESD22 Moisture Sensitivity MSL 3 192 Hrs, 30C/60%RH+3IR-Reflow, 220°C+5, 0°C	P
X-Ray	1) QTP #021104, QTP #000303, QTP #98415 MIL-STD-883, Method 32012, Cypress Spec. 12-00292	P
High Temperature Storage	1) QTP #021104, QTP #000303, QTP #98415 150C, no bias	P
Ball Shear	1) QTP #98415 Cypress Spec 12-00292	P
Bond Pull	1) QTP #98415 Cypress Spec 12-00292	P
Die Shear	1) QTP #98415 Cypress Spec 12-00292	P
Solderability, Steam Aged	1) QTP #98415 Cypress Spec. 25-00018	P
External Visual	1) QTP #98415 Cypress Spec. 12-00292	P
Physical Dimensions	1) QTP #98415 Cypress Spec. 25-00031	P
Internal Visual	1) QTP #021104, QTP #98415 Cypress Spec 12-00292	P

RELIABILITY TESTS PERFORMED PER SPECIFICATION REQUIREMENTS (continuation)

Stress/Test	Test Condition (Temp/Bias)	Result P/F
Resistance to Solvents	1) QTP #98415 Cypress Spec. 25-00016	P
Thermal Shock	1) QTP #021104, QTP #000303, QTP #98415 -55C to +125C Cypress Spec. 25-00014	P
Acoustic Microscopy, MSL 3	1) QTP #021104, QTP #000303, QTP #98415 Cypress Spec. 25-00104	P

Reliability Test Data

QTP #: 021104

Device	Fab Lot #	Assy Lot #	Ass Loc	Duration	Samp	Rej	Failure Mechanism
STRESS: ACOUSTIC, MSL3							
CY7C0852V-AC (7C0853A)	4131840	*610135256L1*	*TA*IWN-G	COMP	15	0	
CY7C0852V-AC (7C0853A)	4131841	*610137123L1*	*TA*IWN-G	COMP	15	0	
CY7C0852V-AC (7C0853A)	4130707	*610133760L1*	*TA*IWN-G	COMP	15	0	
STRESS: HIGH TEMPERATURE STORAGE, 150C							
CY7C0852V-AC (7C0853A)	4128335	*610130788*	*TA*IWN-G	500	48	0	
CY7C0852V-AC (7C0853A)	4128335	*610130788*	*TA*IWN-G	1000	48	0	
CY7C0852V-AC (7C0853A)	4133334	*610200545*	*TA*IWN-G	500	50	0	
CY7C0852V-AC (7C0853A)	4133334	*610200545*	*TA*IWN-G	1000	50	0	
STRESS: INTERNAL VISUAL							
CY7C0852V-AC (7C0853A)	4133334	*610200545*	*TA*IWN-G	COMP	5	0	
STRESS: X-RAY							
CY7C0852V-AC (7C0853A)	4133334	*610200545*	*TA*IWN-G	COMP	15	0	
STRESS: ESD-HUMAN BODY CIRCUIT PER MIL STD 883, METHOD 3015, 2,200V							
CY7C0852V-AC (7C0853A)	4133371	*610137695*	*TA*IWN-G	COMP	9	0	
STRESS: ESD-CHARGE DEVICE MODEL, 500V							
CY7C0852V-AC (7C0853A)	4131840	*610135256L1*	*TA*IWN-G	COMP	9	0	
STRESS: HI-ACCEL SATURATION TEST, 130C, 85%RH, 3.63V, PRE COND 192 HR 30C/60%RH, MSL3							
CY7C0852V-AC (7C0853A)	4131840	*610135256L1*	*TA*IWN-G	128	48	0	
STRESS: PRESSURE COOKER TEST, 121C, 100%RH, PRE COND 192 HR 30C/60%RH							
CY7C0852V-AC (7C0853A)	4131840	*610135256L1*	*TA*IWN-G	168	47	0	
CY7C0852V-AC (7C0853A)	4131841	*610137123L1*	*TA*IWN-G	168	48	0	
STRESS: TC COND. C -65C TO 150C, PRECONDITION 192 HRS 30C/60%RH, MSL3							
CY7C0852V-AC (7C0853A)	4133371	*610137695*	*TA*IWN-G	300	47	0	
CY7C0852V-AC (7C0853A)	4133371	*610137695*	*TA*IWN-G	500	46	0	
CY7C0852V-AC (7C0853A)	4133371	*610137695*	*TA*IWN-G	1000	46	0	
CY7C0852V-AC (7C0853A)	4147843	*610203532*	*TA*IWN-G	300	44	0	
CY7C0852V-AC (7C0853A)	4147843	*610203532*	*TA*IWN-G	500	44	0	
CY7C0852V-AC (7C0853A)	4147843	*610203532*	*TA*IWN-G	1000	44	0	
CY7C0852V-AC (7C0853A)	4131841	*610137123L1*	*TA*IWN-G	300	46	0	

RELIABILITY TEST DATA

QTP#: 000303

DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS: ACOUSTIC MSL 3							
CY7C375-AC	TAIWN-G	2901582	619909347	COMP	15	0	
CY7C375-AC	TAIWN-G	2901582	619909347	COMP	15	0	
CY7C375-AC	TAIWN-G	2902720	619909600	COMP	15	0	
CY7C375-AC	TAIWN-G	2902720	619909600	COMP	15	0	
CY7C375-AC	TAIWN-G	2902720	619909601	COMP	15	0	
CY7C375-AC	TAIWN-G	2902720	619909601	COMP	15	0	
STRESS: HI-ACCEL SATURATION TEST, 130C/85%RH/5.5V, PRECOND. 192 HRS 30C/60%RH, MSL3							
CY7C375-AC	TAIWN-G		619909600	128	24	0	
STRESS: HIGH TEMPERATURE STORAGE, 165C							
CY7C375-AC	TAIWN-G	2901582	619909347	336	50	0	
STRESS: THERMAL SHOCK, CONDITION B, -55C							
CY7C375-AC	TAIWN-G	2901582	619909347	100	50	0	
CY7C375-AC	TAIWN-G	2901582	619909347	200	50	0	
STRESS: X-RAY INSPECTION							
CY7C375-AC	TAIWN-G	2901582	619909347	COMP	15	0	
STRESS: TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH, MSL 3							
CY7C375-AC	TAIWN-G	2901582	619909347	300	48	0	
CY7C375-AC	TAIWN-G	2902720	619909600	300	50	0	
CY7C375-AC	TAIWN-G	2902720	619909601	300	50	0	

RELIABILITY TEST DATA

QTP#: 98415

DEVICE	ASSY-LOC	FABLOT#	ASSYLOT#	DURATION	S/S	REJ	FAIL MODE
STRESS: HI-ACCEL SATURATION TEST, 130C, 5.5V, PRECOND. 192 HRS 30C/60%RH, MSL3							
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	128	20	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	128	29	0	
STRESS: HIGH TEMPERATURE STORAGE, 165C, NO BIAS							
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	336	48	0	
STRESS: THERMAL SHOCK, CONDITION B							
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	100	48	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	200	48	0	
STRESS: TC COND. C, -65 TO 150C, PRECOND. 192 HRS 30C/60%RH, MSL 3							
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	300	48	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836140	619811133	1000	48	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836141	619811134	300	48	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836141	619811134	1000	48	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836141	619811135	300	48	0	
CY37256P160-AC(7C37655A)	TAIWN-G	9836141	619811135	1000	48	0	