POWER8 Processor SCM Connector Assembly

Physical Outline Drawing

Advance

April 23, 2014

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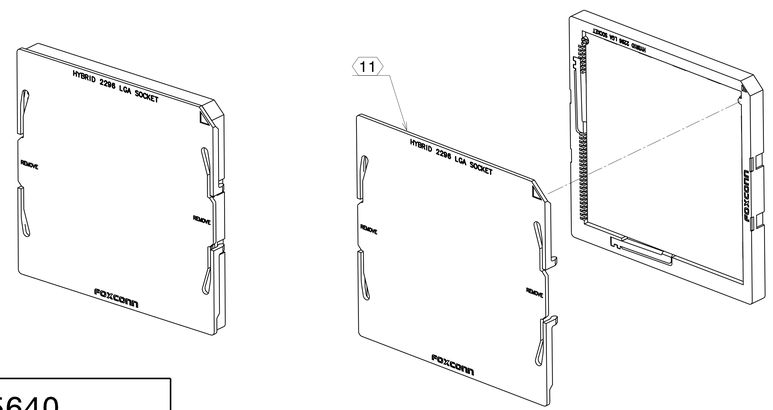
April 23, 2014

CRITERIA			
IBM PN		74Y5640	
CONNECTOR CONFIGURATION & PHYSICAL PARAMETERS	I/O CONFIGURATION	SINGLE ARRAY, 2296 I/O	
	MODULE CONTACT SPACING / PITCH	1.0 mm	
	SEATING PLANE HEIGHT	3.0 mm +/- 0.2	9
	Z AXIS COMPLIANCE, USEABLE	0.45 mm	
CONNECTOR MATERIALS	MATERIAL - HOUSING	PES, UL 94V-1	4
	MATERIAL - CONTACT	BeCu ALLOY, 10µ" SOFT Au OVER 20µ" HARD Au PLATED ON CONTACT AREA 50µ" MIN, Ni PLATED OVER WHOLE CONTACT	4
	MATERIAL - SOLDERBALL	Sn/Ag/Cu	4
	MATERIAL - COVER	LCP, MUST FACILITATE ATTACH AND MUST WITHSTAND REWORK TEMPERATURE/DURATION	4
CONNECTOR PERFORMANCE	NON- OPERATIONAL ENVIORONMENT	-40C TO 105C	
	DIELECTRIC WITHSTANDING VOLTAGE AT SEA LEVEL (UNMATED)	500Vrms MIN	
	INITIAL CONTACT RESISTANCE	15 MILLIOHMS (AVG) @ 40g NOMINAL LOAD	
	PLUG CYCLES	15 USAGES AS A MATING INTERFACE	
	CURRENT CARRYING CAPACITY, MAXIMUM ANY ONE CONTACT	2 A / CONTACT	30
	RELIABILITY	0.01 PPM/CONTACT/KPOH BASED ON DATA FROM TECHNOLOGY / APPLICATION	
	POWER ON CYCLES	1250	
	MAXIMUN OPERATING TEMP.	105C	
	COMPLIANCE	UL	2
MODULE PARAMETERS	MODULE SUBSTRATE TYPE	ORGANIC	
	MODULE I/O PAD DIAMETER	0.62mm +/- 0.05 mm	
	SOLDERMASK DIAMETER	0.72mm +/- 0.05 mm	
	SOLDERMASK THICKNESS	0.015mm ± 0.007mm	
	PLATED PAD HEIGHT	0.015mm ± 0.005mm	
	SOLDERMASK TO PAD CONCENTRICITY	0.03mm	
PCB PARAMETERS	PCB PAD DIAMETER	0.56mm +/- 0.05 mm	
	PCB SOLDERMASK DIAMETER	0.66 mm ± 0.05 mm	
	PCB PADSTACKS	IBM SPEC 39J0453	
	PCB LGA PAD CONFIGURATION	NO VIA IN PAD	
	PCB THICKNESS	DESIGN DEPENDENT	
APPLICATION / ASSEMBLY	MECHANICAL LOADING	40 GRAMS +/- 15%/ CONTACT - APPLIED THROUGH THEOPTICAL MODULE ARRAY ASSEMBLY	31
	SOCKET ALIGNMENT SCHEME	SELF-CENTERING BGAs	
	PRODUCT LIFE (POWER ON HOURS)	100K	
	UNMATED CONDITION FOR APPLICATION	NO	
	PROTECTIVE COVER	YES	
SPECIFICATIONS	ASIC PAD PLATING SPECIFICATIONS	N/A	
	IBM QUALIFICATION SPECIFICATIONS	31L3533	
	IBM TRACEABILITY SPECIFICATIONS	93H6757	
	IBM ENVIRONMENTAL SPECIFICATIONS	97P3864 (ROHS), 97P4412 (ANTI-SMOKE), 46G3772 (ENVIRONMENTAL)	
	QUALITY SPECIFICATIONS	34L4233	
	CONNECTOR COMPONENT QUALIFICATION PROCEDURES & SPECIFICATIONS	93H6757	



REL FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	EC NO.	SYM	DATE	EC NO.
		ELECTRICAL			REL	20100817	N24006			
		MATERIAL			PRE	20110601	L37149			

PART NO. 74Y5640

DEVELOPMENT NO. | Q/M

NOTES:

1 THE MECHANICAL COMPONENTS IN THIS ASSEMBLY MUST COMPLY WITH,
A) IBM SPECIFICATION 97P3864 - COMPLIANCE REQUIREMENTS FOR THE EUROPEAN UNION DIRECTIVE ON THE RESTRICTION OF THE USE OF CERTAIN HAZARDOUS SUBSTANCES IN ELECTRICAL AND ELECTRONIC EQUIPMENT FOR IBM PRODUCTS AND
B) IBM SPECIFICATION 46G3772- BASELINE ENVIRONMENTAL REQUIREMENTS FOR SUPPLIER DELIVERABLES TO IBM. SUPPLIER MUST COMPLETE AND FORWARD A PRODUCT CONTENT DECLARATION OR IBM APPROVED INDUSTRY STANDARD FORM AS PART OF THE FIRST ARTICLE INSPECTION PROCESS

2 CONNECTOR MUST BE UL RECOGNIZED. UL RECOGNITION MARKING IS REQUIRED ON THE PART OR ON THE SMALLEST BUNDLE OR UNIT CONTAINER IN WHICH THE PART IS PACKAGED

3 IN APPLICATION, CONTACTS MUST NOT SHORT TO ADJACENT PADS.

4 MATERIAL AND FINISH:
(IBM DEVT ENGINEERING APPROVED EQUIVALENT IS ACCEPTABLE) ALL MATERIAL MUST HAVE A UL RECOGNIZED FLAME CLASS OF V-1 OR BETTER.

5 ALTERNATE CONSTRUCTIONS ARE ACCEPTABLE WITH PRIOR IBM ENGINEERING APPROVAL. ALL OTHER DIMENSIONS AND FUNCTIONAL REQUIREMENTS MUST BE MAINTAINED.

6 THE MANUFACTURER SHALL NOTIFY IBM PROCUREMENT PRIOR TO CHANGES IN MANUFACTURING LOCATION, DESIGN, MATERIAL OR PROCESS AND SHALL OBTAIN WRITTEN ACCEPTANCE FROM IBM BEFORE MAKING AND CHANGES. THIS DOES NOT REQUIRE THE MANUFACTURER TO REVEAL ANY PROPRIETARY INFORMATION.

7 CONNECTOR FRAME MUST INDICATE IBM PN (44V6734), DATE CODE (YYWW), AND 4 DIGIT SERIAL NUMBER (XXXX).

8 QUALIFICATION OF INITIAL SUPPLIER PART NUMBER NOTED BELOW MAY NOT BE COMPLETE. CONSULT APPROVED SUPPLIER LIST, GENERATED FROM THE IBM CORPORATE SUPPLIER DATABASE, OR IBM PROCUREMENT FOR CURRENT APPROVED SOURCES. INITIAL SUPPLIER: FOXCONN, P/N - PE229623-4890-01H, IMAGES ON SHEET 2, 3, AND 4 FROM FOXCONN SUPPLIER
DRAWING # 351-0000-1048 REV - GX1

9 DIMENSION IS FOR SOCKET HEIGHT AFTER SMT ON BOARD

10 APPLY BAR CODE LABEL TO LGA ASSEMBLY SHIPPING PACKAGE IN LGA POCKET. BARCODE TO CONVEY THE FOLLOWING INFORMATION:
"11S74Y5640YF10 YYWW XXXX"
BARCODE TO CONVEY THE FOLLOWING INFORMATION.
THIS INFORMATION SHALL ALSO APPEAR IN HUMAN READABLE FORMAT DIRECTLY BENETH THE BARCODE
BARCODE DIGIT DEFINITION:
1-3 = 11S
4-10 = 74Y5640 (IBM P/N OF LGA/COVER ASM)
11 = Y
12 = F (FOXCONN) SUPPLIER-SPECIFIC DIGIT
13 = 1
14 = EC LEVEL OR BUILD LEVEL (0 FOR 1ST EC LEVEL)
15-18 = DATECODE- YY = YEAR, WW = WEEK
19-22 = 4 DIGIT SERIAL NUMBER

11 PLACEMENT CAP REMOVAL SEE SHEET 4 OF 4

12 CONNECTORS TO BE USED IN SECONDARY CIRCUITS ONLY.

13 CONNECTOR IS NOT APPROVED FOR CURRENT INTERRUPTION APPLICATIONS. CONNECTOR CURRENT RATING DETERMINED WHEN SUPPLIER SELECTION FINALIZED. CONSULT IBM DEVELOPMENT ENGINEERING FOR CLARIFICATION.

14 CONSULT MANUFACTURER FOR TECHNICAL BULLETINS ON APPLICATION AND ASSEMBLY REQUIREMENTS.

15 SEE IBM SPECIFICATION 44V4849 FOR HYBRID LGA SOCKET CRITICAL ASSEMBLY SPECIFICATION.

16 ASIC PAD PLATING RECOMMENDATIONS: CONSULT IBM ENGINEERING SPECIFICATION 44T7351.

17 THIS PART IS EXEMPT FROM CORP STANDARD C-51-1121-003 COUNTRY OF ORIGIN MARKING REQUIREMENTS PER THE IBM IMPORT COMPLIANCE OFFICE.

18 COEFFICIENT OF THERMAL EXPANSION OF HOUSING TO BE 15 +/- 5 PPM PER DEGREE C.

19 BGA COPLANARITY TO BE +/- 0.101mm (± 4 MILS) ACROSS ENTIRE PART.

20 INTERPOSERS TO BE SHIPPED IN JEDEC TRAY ALLOWING FOR PICK AND PLACE POPULATION.

21 INTERPOSER FRAME TO ALLOW FINGER ACCESS FEATURES FOR EASY REMOVAL OF MODULE.

22 THE MAX FRAME HEIGHT MUST BE LESS THAN THE SEATED HEIGHT OF THE MODULE TO ENSURE THAT THE ATTACHED HEATSINK MAKES CONTACT WITH THE MODULE AND DOES NOT BOTTOM OUT ON THE FRAME.

23 FRAME MUST INCLUDE BUMP FEATURES TO ACCEPT CIRCULAR KEYING FEATURES ON MODULE INSERT.

24 DESIGNATED KEEP-OUT IS COMPONENT FREE AREA BUT MAY CONTAIN SURFACE WIRING ELEMENTS.

25 PICK AND PLACE COVER MUST HAVE A 1" SQUARE LAND, CENTRALIZED, FOR VAC EXTRACTION.

26 COVER MATERIAL MUST WITHSTAND REWORK TEMPS.

27 CONNECTOR MUST WITHSTAND OPERATING TEMP OF 105°C.

28 MAXIMUM PROCESSING TEMP MUST BE SPECIFIED BY VENDOR.

29 HOUSING MATERIAL TYPE & GRADE TO BE DISCLOSED TO IBM ENGINEERING DEVELOPEMENT.

30 LGA SOCKET CURRENT PERFORMANCE REQUIREMENTS:

A. NOT RATED FOR CURRENT INTERRUPTION

B. HIGHEST APPLICATION CURRENT DENSITY OF 1.5 A/mm^2 AND 30 C TEMPERATURE RISE IN TEST VEHICLE.

C. MAXIMUM CURRENT TO BE DERATED BASED ON SPECIFIC DESIGN AND APPLICATION REQUIREMENTS ALONG WITH END-OF-LIFE RESISTANCE INCREASE FROM RELIABILITY TEST RESULTS

31 +/- 15% LOAD VARIATION DUE TO TOLERANCE STACK UP.

IBM MATERIAL NO.		MUST CONFORM TO ENG SPEC.	80X2324 46G3772	SI metric A0	SCALE: NONE
MATL ALTERNATE NO.		TOLERANCE UNLESS NOTED			0 <- mm -> 25
CASE DEPTH		LINEAR ±	0.2		THIRD ANGLE PROJECTION
HARDNESS		ANGLES ±			
SURFACE TREATMENT	CODE NO.	RADII UNLESS NOTED			
		EDGE/CORNER BREAKS	OUTSIDE MAX		
			INSIDE MAX		

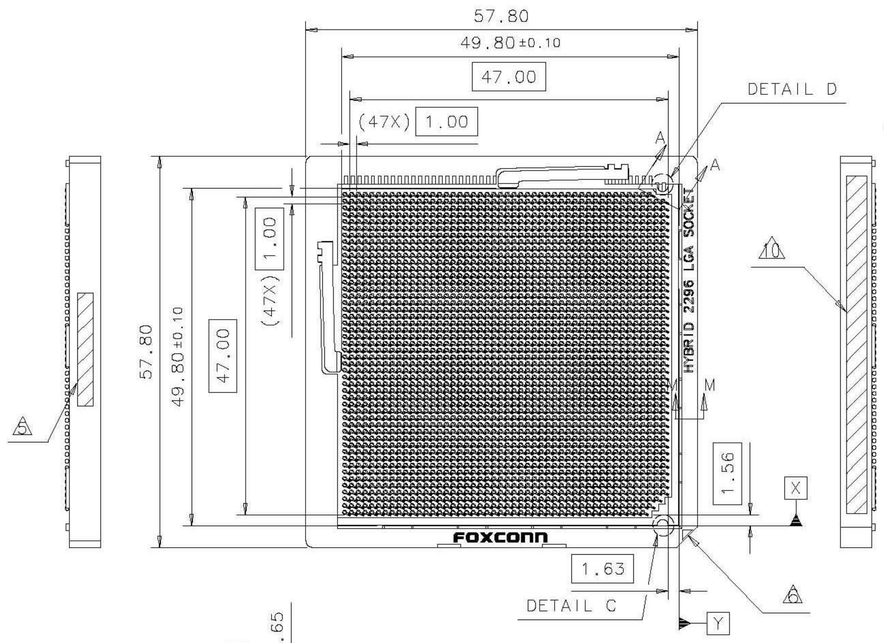
PART NO. 74Y5640			IBM
TITLE	CONNECTOR ASSEMBLY- 2296 POSN ARRAY (LEAD-FREE) (FOXCONN)		
DESIGNER	TFB	20100803	
CHECKED	YUY		
APPROVED	YUY		
CLASS			

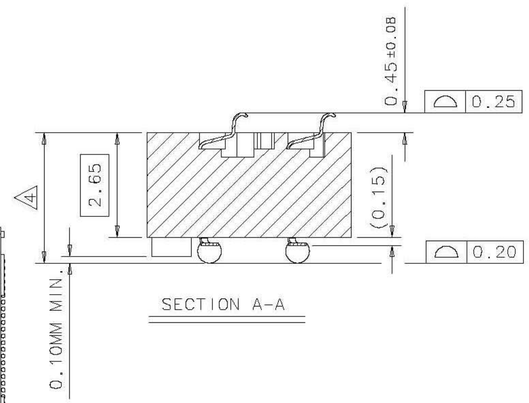
74Y5640

JIMK/01JUN11 CATV5R15

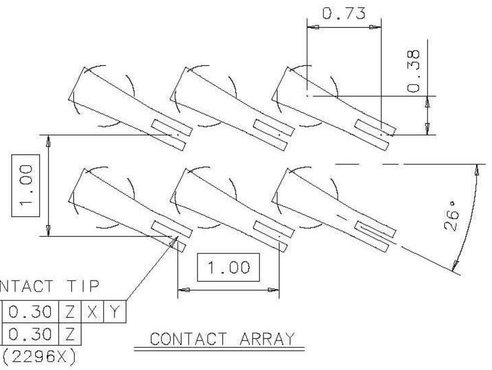
IMAGES FROM FOXCONN SUPPLIER DRAWING # 351-0000-1048 REV - GX1

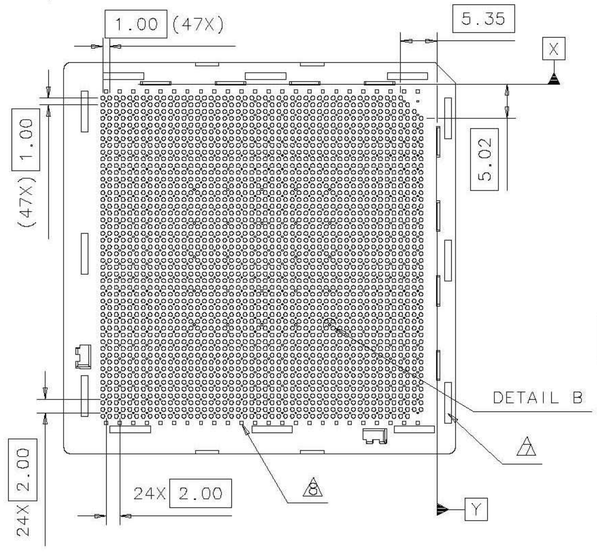
REL FOR ASM	QTY	TECHNICAL APPROVAL	SYM	DATE	EC NO.	SYM	DATE	EC NO.	PART NO. 74Y5640	
		ELECTRICAL	REL	20100817	N24006					
		MATERIAL	PRE	20110601	L37149				DEVELOPMENT NO.	Q/M

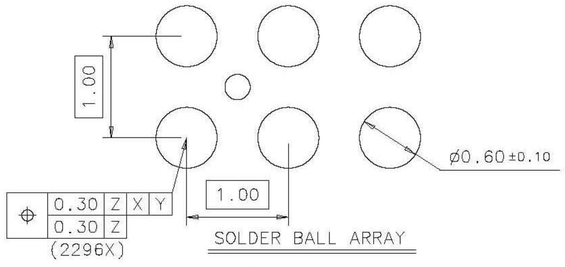


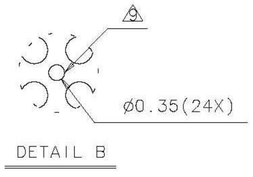


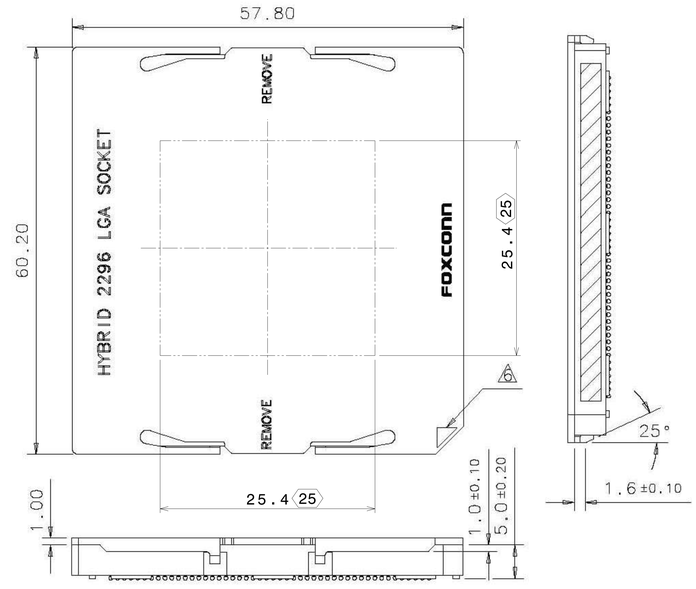
NOTES :
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M-1994.
3. MATERIAL:
   HOUSING: THERMALPLASTIC, UL94VO
   CONTACT: COPPER ALLOY
   PLATING: 10u" SOFT Au OVER 20u" HARD Au PLATED ON CONTACT AREA
   50u" Min. Ni PLATED OVER WHOLE CONTACT
4. CONTACT LOADED HEIGHT:
   3.10±0.20 mm BEFORE REFLOW PROCESS;
   3.00±0.20 mm AFTER REFLOW PROCESS.
5. FOXCONN DATE CODE POSITION.
6. PIN1 MARK.
7. PERIMETER STANDOFF POSITION WITH HIEGHT 0.48MM.
8. CORE-OUT POSITION.
9. 5*5 CENTER STANDOFF ARRAY WITH PITCH 5.00 MM, THE HIEGHT IS 0.38MM.
10. 11S LABEL POSITION.
    DIGIT INFORMATION: 11S74Y5640YF11YYWWXXXX
    - 4 DIGIT SERIAL NUMBER
    - DATECODE, YY=YEAR, WW=WEEK
    - EC LEVEL
    - (NEW PART)
    - FOXCONN
    - IBM P/N
11. HARMFUL MATERIAL CONTROL PLEASE FOLLOW DOC. NO. "EPI12".
12. PLEASE CONTACT FOXCONN SALES REPRESENTATIVE TO VERIFY PRODUCT DETAIL AND AVAILABILITY.











SOCKET WITH PICK-UP CAP

P/N	DESCRIPTION
PE229623-4890-01H	Sn/Ag/Cu TYPE

SHEET 2 OF 5

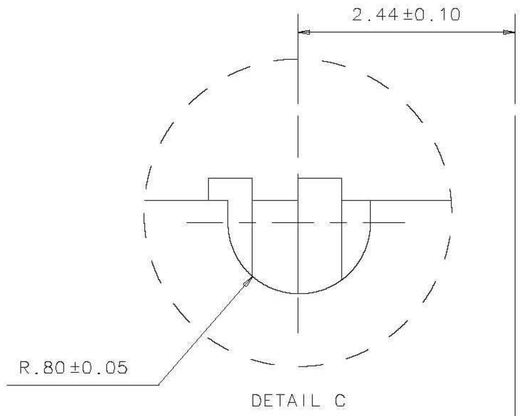
IBM MATERIAL NO.		MUST CONFORM TO ENG SPEC. 80X2324 46G3772		SI metric A0	SCALE: NONE 0 <mm> 25 THIRD ANGLE PROJECTION	PART NO. 74Y5640 IBM
MATL ALTERNATE NO.		TOLERANCE UNLESS NOTED				TITLE CONNECTOR ASSEMBLY- 2296 POSN ARRAY (LEAD-FREE) (FOXCONN)
		LINEAR ±	0.2			DESIGNER TFB 20100803
CASE DEPTH		ANGLES ±				CHECKED YUY
HARDNESS		RADII UNLESS NOTED				APPROVED YUY
SURFACE TREATMENT	CODE NO.	EDGE/ CORNER BREAKS	OUTSIDE MAX			CLASS
			INSIDE MAX			

74Y5640

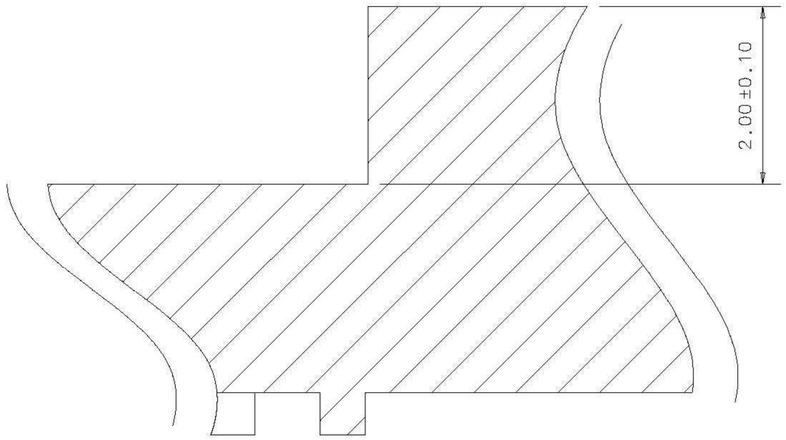
JIMK/01JUN11 CATV5R15

IMAGES FROM FOXCONN SUPPLIER DRAWING # 351-0000-1048 REV - GX1

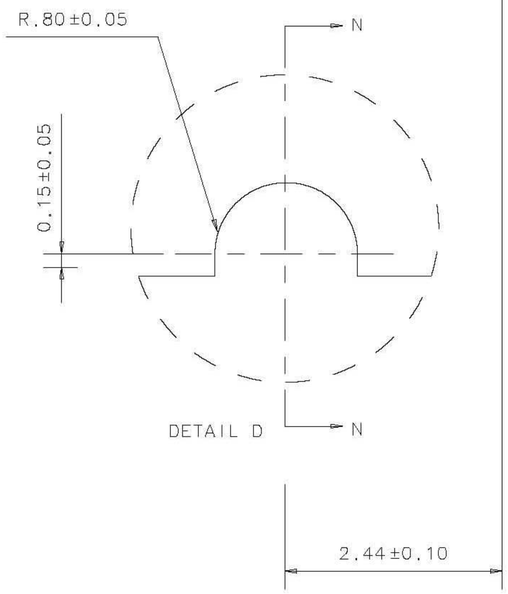
REL FOR ASM	QTY	TECHNICAL APPROVAL			SYM	DATE	EC NO.	SYM	DATE	EC NO.	PART NO. 74Y5640	
		ELECTRICAL			REL	20100817	N24006					
		MATERIAL			PRE	20110601	L37149				DEVELOPMENT NO.	Q/M



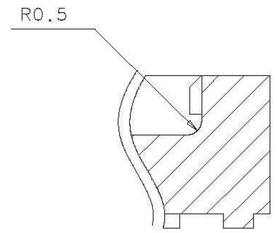
DETAIL C



SECTION N-N



DETAIL D



SECTION M-M

SHEET 3 OF 5

IBM MATERIAL NO.		MUST CONFORM TO ENG SPEC. 80X2324 46G3772			SI metric A0	SCALE: NONE 0 <mm> 25 THIRD ANGLE PROJECTION	PART NO. 74Y5640	IBM
MATL ALTERNATE NO.		TOLERANCE UNLESS NOTED					TITLE CONNECTOR ASSEMBLY- 2296 POSN ARRAY (LEAD-FREE) (FOXCONN)	
CASE DEPTH		LINEAR ±		0.2			DESIGNER TFB	20100803
HARDNESS		ANGLES ±					CHECKED YUY	
SURFACE TREATMENT	CODE NO.	RADII UNLESS NOTED					APPROVED YUY	
		EDGE/ CORNER BREAKS	OUTSIDE MAX				CLASS	
			INSIDE MAX					

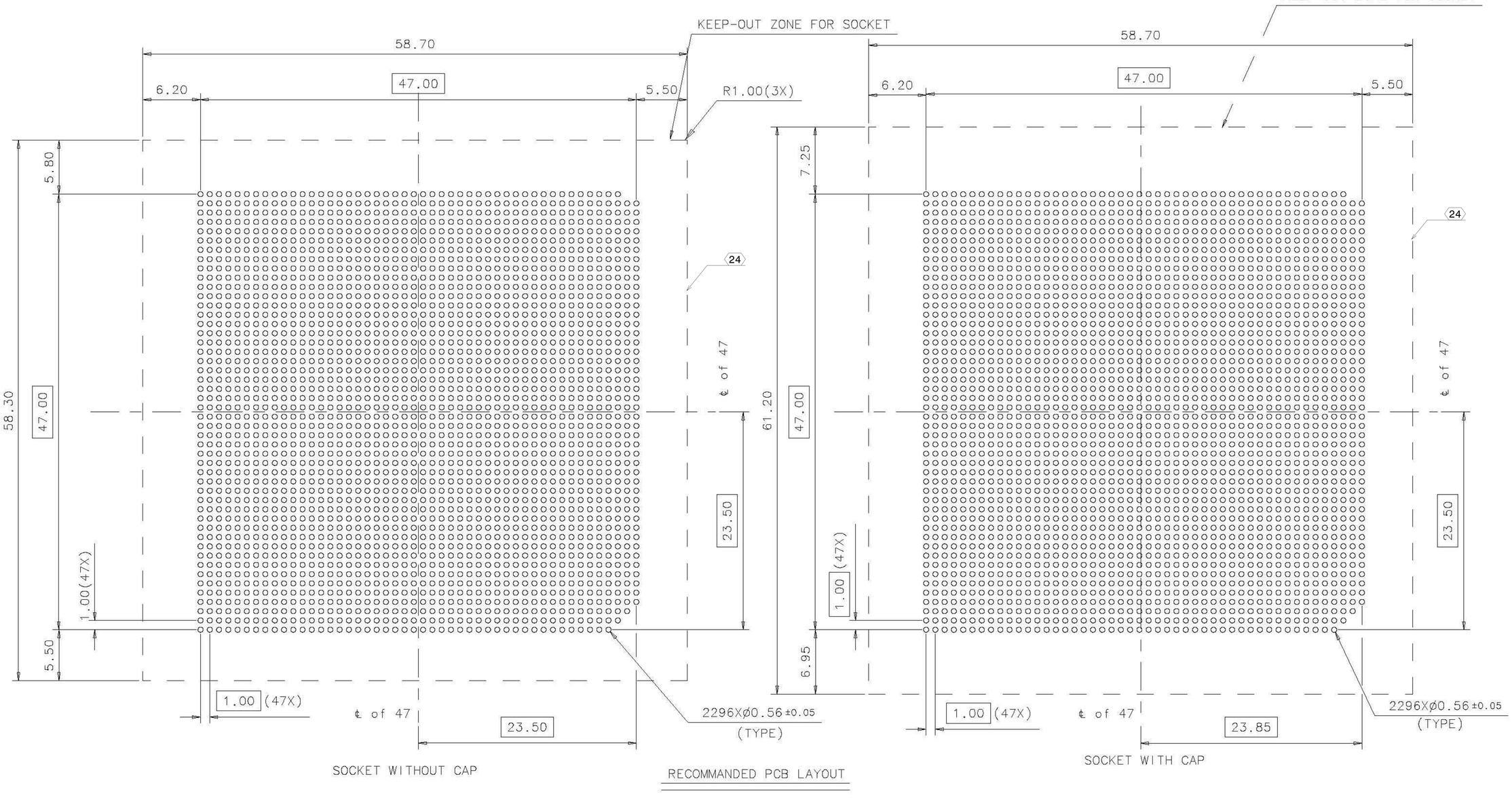
74Y5640

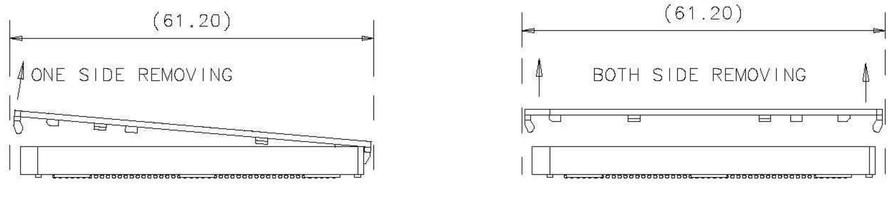
IMAGES FROM FOXCONN SUPPLIER DRAWING # 351-0000-1048 REV - GX1

REL FOR ASM	QTY	TECHNICAL APPROVAL	SYM	DATE	EC NO.	SYM	DATE	EC NO.
		ELECTRICAL	REL	20100817	N24006			
		MATERIAL	PRE	20110601	L37149			

PART NO. 74Y5640

DEVELOPMENT NO. | Q/M





CAP REMOVING CLEARANCE

SHEET 4 OF 5

IBM MATERIAL NO.		MUST CONFORM TO ENG SPEC.	80X2324 46G3772
MATL ALTERNATE NO.		TOLERANCE UNLESS NOTED	
		LINEAR ±	0.2
CASE DEPTH		ANGLES ±	
HARDNESS		RADII UNLESS NOTED	
SURFACE TREATMENT	CODE NO.	EDGE/CORNER BREAKS OUTSIDE MAX	
		EDGE/CORNER BREAKS INSIDE MAX	

SI metric A0

SCALE: NONE

0 < mm > 25

THIRD ANGLE PROJECTION

PART NO. 74Y5640 IBM

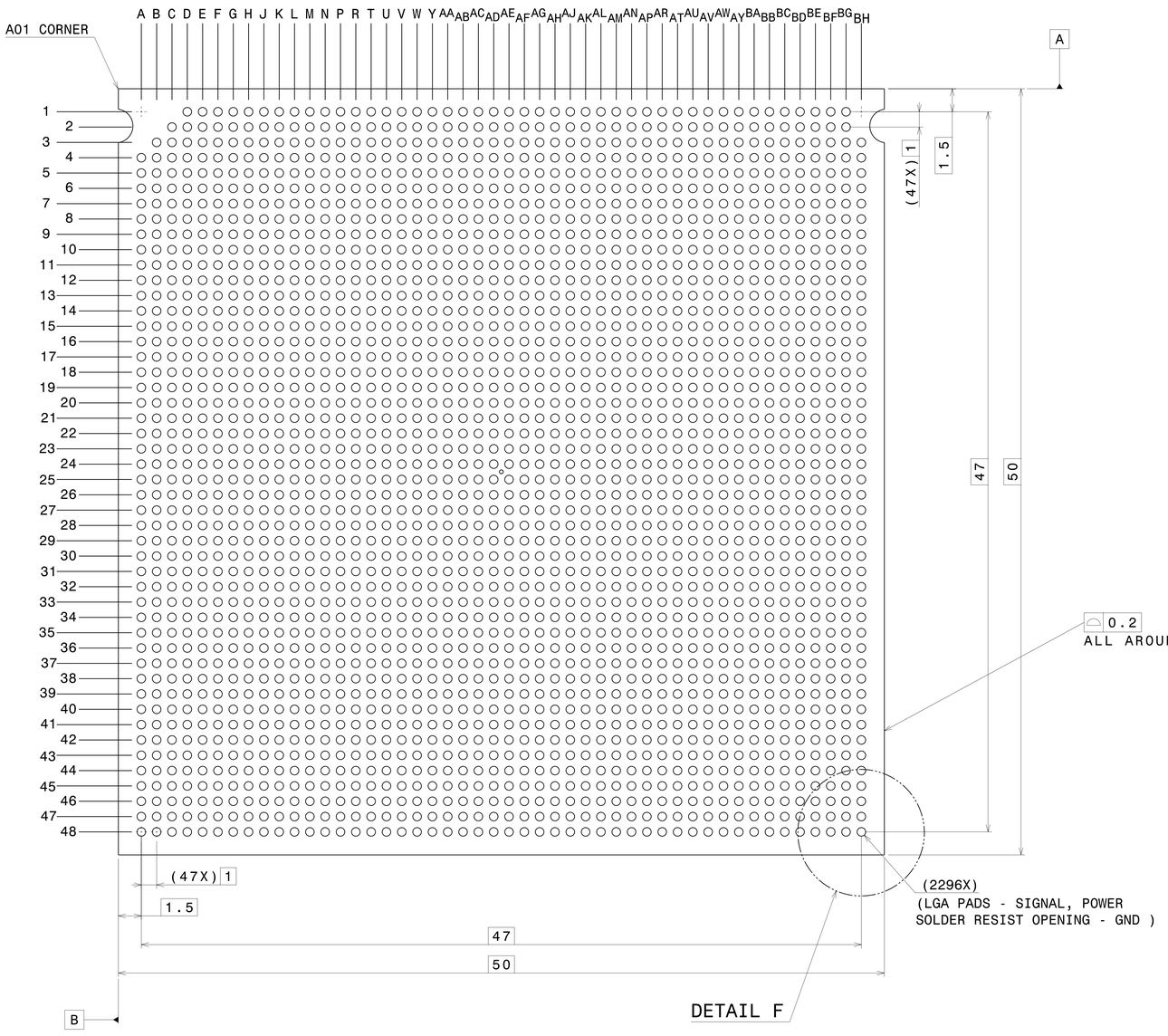
TITLE CONNECTOR ASSEMBLY-
2296 POSN ARRAY (LEAD-FREE) (FOXCONN)

DESIGNER	TFB	20100803
CHECKED	YUY	
APPROVED	YUY	
CLASS		

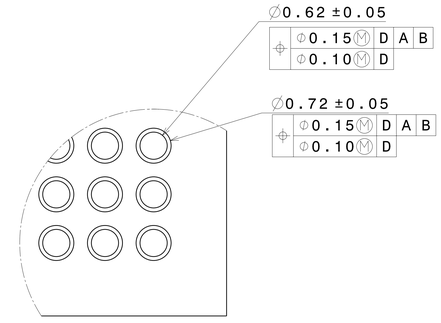
74Y5640

JIMK/01JUN11 CATV5R15

REL FOR ASM	QTY	TECHNICAL APPROVAL	SYM	DATE	EC NO.	SYM	DATE	EC NO.	PART NO. 74Y5640
		ELECTRICAL	REL	20100817	N24006				
		MATERIAL	PRE	20110601	L37149				DEVELOPMENT NO. / Q/M



RECOMMENDED MODULE LAYOUT



DETAIL F
(SCALE 23:1)

SHEET 5 OF 5

IBM MATERIAL NO.		MUST CONFORM TO ENG SPEC. 80X2324 46G3772		SCALE: NONE	PART NO. 74Y5640
MATL ALTERNATE NO.		TOLERANCE UNLESS NOTED		SI metric A0	TITLE CONNECTOR ASSEMBLY- 2296 POSN ARRAY (LEAD-FREE) (FOXCONN)
CASE DEPTH		LINEAR ±	0.2	THIRD ANGLE PROJECTION	DESIGNER TFB 20100803
HARDNESS		ANGLES ±			CHECKED YUY
SURFACE TREATMENT	CODE NO.	RADII UNLESS NOTED			APPROVED YUY
		EDGE/ CORNER BREAKS OUTSIDE MAX			CLASS
		EDGE/ CORNER BREAKS INSIDE MAX			